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NOVEL METHOD VITAMIN DEFICIENCY DETECTION USING ALEXNET DNN ALGORITHM

N. Srividhya¹, K. Divya¹, N. Sanjana¹, K. Krishna Kumari¹, M. Rambhupal¹

¹Department of Information Technology, Vasireddy Venkatadri Institute of Technology Guntur.

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ABSTRACT

Vitamin deficiencies can have significant impacts on overall health and well-being. Early detection plays a crucial role in preventing complications and improving outcomes. However, traditional methods for detecting deficiencies can be time-consuming and costly. This project aims to develop a novel method for detecting vitamin deficiencies using the AlexNet DNN algorithm, a powerful deep learning model for image classification. The purpose of this project is to explore the feasibility of using image analysis and deep learning techniques to detect vitamin deficiencies accurately and efficiently. The objectives include improving the accuracy of detection, reducing false positives and negatives, and developing a reliable and accessible tool for early detection. To achieve our objectives, we will gather a large dataset of images depicting various vitamin deficiencies. These images will be preprocessed to enhance features and reduce noise. The AlexNet DNN algorithm will be trained on this dataset, learning to recognize patterns and features associated with different deficiencies. The algorithm will undergo rigorous testing and evaluation to ensure its effectiveness.

KEYWORDS – Vitamins, Deficiency, AlexNet, Deep Neural Network(DNN), Effectiveness

I. INTRODUCTION

Vitamins are essential nutrients that our bodies cannot produce on their own. They play a crucial role in maintaining good health and preventing diseases. Vitamin deficiencies can have significant impacts on overall health and well-being. Early detection plays a crucial role in preventing complications and improving outcomes. Traditional methods for detecting vitamin deficiencies, such as blood tests and physical examinations, can be time-consuming, invasive, and expensive. However, traditional methods for detecting deficiencies can be time-consuming and costly. This project aims to develop a novel method for detecting vitamin deficiencies using the AlexNet DNN algorithm, a powerful deep learning model for image classification. This project aims to develop a novel method for vitamin deficiency detection using the AlexNet deep convolutional neural network (DNN) algorithm. The goal is to create a non-invasive, fast, and accurate method for diagnosing vitamin deficiencies that can be used in a variety of clinical settings.

One problem that affects more than two billion people globally is vitamin deficiency. One in three children do not get enough vitamins, according to the WHO. A common problem, vitamin deficiency affects over two billion individuals globally. One out of every three children does not get enough vitamins, according to the WHO. Thirty-three percent of young children under five suffer from a vitamin A deficiency. This syndrome manifests as night blindness and low immunity. Vitamin deficiencies can affect people of any age, and they often accompany deficiencies in minerals (such as iron, zinc, and iodine). The populations most at risk for vitamin deficiencies are youngsters and pregnant women because of their needs for these compounds and susceptibilities to their absence. The most prevalent

A lack of vitamins highlights hundreds of health problems that we face on a daily basis, many of which are caused by inadequate diet and/or mineral acquisition. Accurately monitoring our dietary requirements is challenging, particularly when people lack medical guidance and are unaware of the specific type of shortage they may be experiencing. Almost 2 billion people globally are deficient in certain vitamins. Every year, half a million people who are zinc deficient die, numbering over 1.2 billion. In a similar vein, anaemia brought on by an iron shortage claims the lives of over 100,000 individuals. Locally, deficits in several vitamins affect about 90% of the population in the United Arab Emirates. Even though there isn't a famine crisis affecting the entire nation, data gathered on American soil indicates that over 92% of people have at least one vitamin or mineral deficit. Because cheap, readily available processed junk food is so widely available, nutrient-rich meals are now seen as expensive and have shifted from being the usual daily food intake to more of a status symbol.

vitamin deficits are related to folate, vitamin D, vitamin A, and vitamin B. Diseases like pellagra and scurvy have become infrequent because to supplementation programs. Vitamin deficits emphasize many of the health issues we deal with on a daily basis. Our incapacity to receive the necessary variety of important minerals and nourishment is the cause of many of these problems. Measuring our nutritional needs is difficult, especially when people don't know what kind of shortfall they might be going through and don't have access to medical counsel. Insufficient amounts of vitamins impact around 2 billion individuals worldwide. Over 1.2 billion people globally are zinc deficient, and 500,000 of them die each year as a result.

II. METHODOLOGY

1. Proposed System

In the proposed system, high-quality image processing utilizes AlexNet DNN for improved accuracy and comprehensive detection of multiple vitamin deficiencies simultaneously. Alexnet is a deep convolutional network that was developed for image classification and was a breakthrough in the field of computer vision AlexNet was one of the first CNNs to successfully utilize techniques such as ReLU (Rectified Linear Unit) activation functions, dropout regularization, and data augmentation. These techniques helped improve the training speed and generalization performance of deep neural networks. Which gives better performance compared to other algorithms giving high accurate results.

2. AlexNet Deep Neural Network(DNN):

Eight layers make up the architecture: three fully-connected layers and five convolutional layers. However, these are not the qualities that set AlexNet apart; instead, they are some of the novel methods to convolutional neural networks that it uses. AlexNet is a very strong model that can achieve high accuracy on very difficult datasets. However, AlexNet's performance will be significantly reduced if any of the convolutional layers are removed. With its superior architecture for all object-detection tasks, AlexNet

3. Overview Of Proposed System:

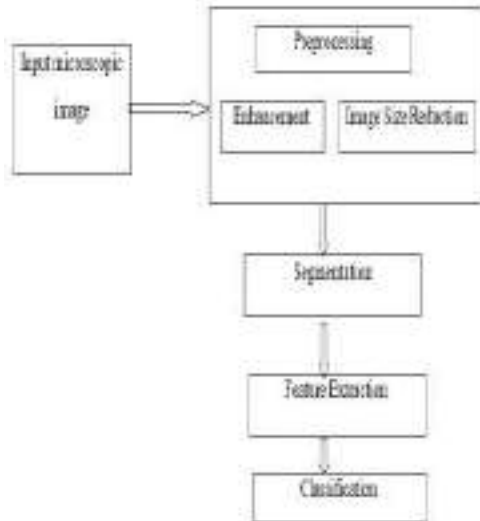


Fig : General Block Diagram Of Proposed System

3.1. Input Microscopic Image:

The cell samples collected are placed under a light microscope and digitized using a customized digital camera. The images are properly labeled and stored. The sputum cytology images are so chosen such that the target region contains glandular cells.

3.2. Preprocessing Stage

The input digital images may contain noises of various types as physical and biological. The physical noise such as impulse noise or due to

holds great potential for use in solving computer vision-related artificial intelligence challenges. AlexNet might be used more often for picture jobs in the future than CNNs. AlexNet is also recognized for introducing deep learning to related domains like medical image analysis and natural language processing, which is a significant step toward expanding the field's applicability.

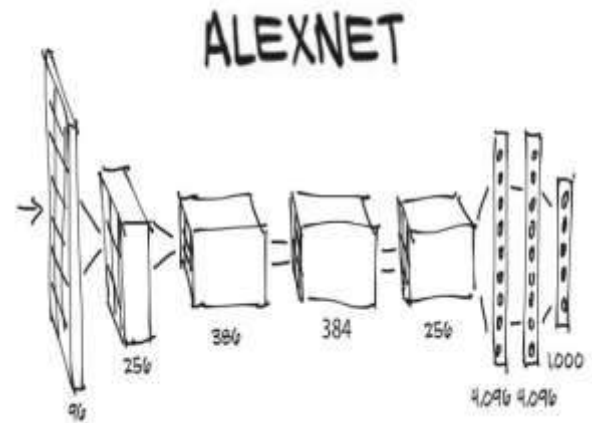


Fig1: AlexNetDNNArchitecture

power line frequency may possibly interfere with the image. These kinds of noises need to be dealt at an earlier stage otherwise can affect the proper functioning of the algorithm. The biological noises are of various types. In this work, focus is given for glandular cells only so anything other than this type of cell may have to be considered as biological noise. These usually include the presence of blood cells, leukocytes, or other non-cellular objects like mucus, pollen etc. All these types are to be marked as unwanted and have to be removed from further processing

3.3. Segmentation Stage

This stage properly marks out the position of glandular cells in the image. Various image processing algorithms are needed for this purpose. Sometimes a single algorithm may not give satisfactory segmentation and hence different algorithms are in parallel and chose the best output. Since clusters are dealt rather than individual cells it is often not possible to separate the clusters in a proper manner. So it is necessary to make segmentation an approximate one keeping the margin of error at a very low level.

3.4. Feature Extraction Stage

The segmentation results are fed into a feature extraction module. There using various image analysis techniques morphological, textural, color and scale based features are extracted. All these features are properly labeled and stored for further analysis.



3.5. Classification Stage

Classification is the crucial step in the entire operation as it is in this stage that the decision is taken whether the sample is malignant or benign. To train the system, the initial sample images are used.

extended to detecting symptoms of vitamin deficiency in medical images.

"Automated Diagnosis of Nutrient Deficiency in Plant Images Using Machine Learning" by S. M. Kamrul Hasan et al. (2018):

Although focused on plant images, this paper presents a similar concept of using deep learning algorithms for detecting nutrient deficiency. It discusses the effectiveness of CNNs, such as AlexNet, in analysing images for specific features indicative of deficiencies, which could be adapted for detecting symptoms in human subjects.

"Automated Diabetic Retinopathy Detection in Smartphone-Based Fundus Photography Using Artificial Intelligence" by Michael D. Abramoff et al. (2018):

While not directly related to vitamin deficiency, this paper showcases the application of deep learning, including CNNs, in medical image analysis. It highlights the potential for using similar techniques to detect health conditions from images, which could be extended to detecting symptoms of vitamin deficiency.

"Deep Learning for Health Informatics" by Shuiwang Ji et al. (2017):

This comprehensive book covers various applications of deep learning in health informatics, including medical image analysis. It provides insights into the state-of-the-art techniques and methodologies, offering valuable guidance for implementing deep learning algorithms like AlexNet for detecting symptoms of vitamin deficiency from medical images.

"Detection of Diabetic Retinopathy Using Deep Convolutional Neural Networks" by Gulshan et al. (2016):

This seminal paper demonstrates the effectiveness of deep learning, particularly CNNs, in detecting diabetic retinopathy from retinal fundus photographs. While focusing on a different medical condition, the methodology and insights presented can be adapted for detecting symptoms of vitamin deficiency using similar deep learning approaches

III. IMPLEMENTATION

The lack of nutrition detection using neural networks and image processing entails building a model that can examine people's photos and spot nutrient deficiency symptoms. The effectiveness of the model is critical to correctly identifying and classifying different kinds of deficiencies, such as deficiencies in vitamins A, B, C, D, or E. A dataset of photos featuring people with and without nutrient deficits is gathered in order to put this model into practice. The neural network uses this dataset as training data. Preprocessing is applied to the photos in order to standardize the data and improve attributes connected to defects. The pre-processed images are then used to create and train a AlexNet Deep Neural Network(DNN). Multiple layers make up the AlexNet, which predicts the shortcomings by extracting pertinent information from the input images. Gradient descent algorithms are used to optimize the model once it has been trained using a suitable loss function. After training, the model's accuracy and performance are assessed using a different test dataset. The model's accuracy in classifying nutrient deficits is measured using evaluation measures. When people's photos are sent into the trained neural network, the deployed model may identify vitamin deficiencies in real-time.



Fig 3: Images From Dataset

IV. LITERATURE SURVEY

"Deep Learning for Medical Image Analysis" by Daniel Rueckert et al. (2017):

This book provides an overview of various deep learning techniques applied to medical image analysis, including convolutional neural networks (CNNs) like AlexNet. It discusses the potential of CNNs in detecting patterns related to diseases, which can be

V. TEST RESULTS

The test results of the considering project i.e; vitamin deficiency detection using AlexNet Deep Neural Network(DNN) is shown below:



Fig 4: Home Page

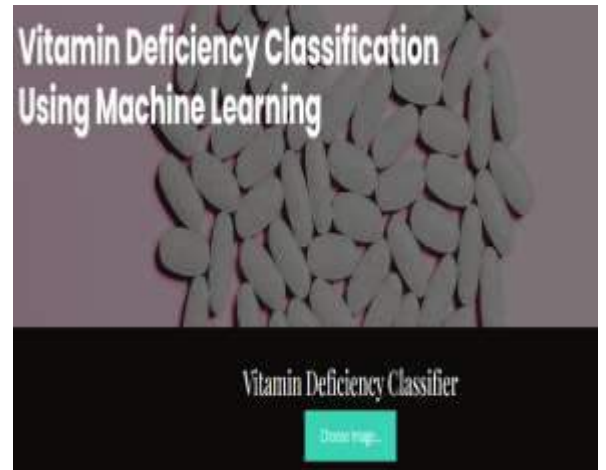


Fig 6 : Prediction page



Fig 5 : Login Page

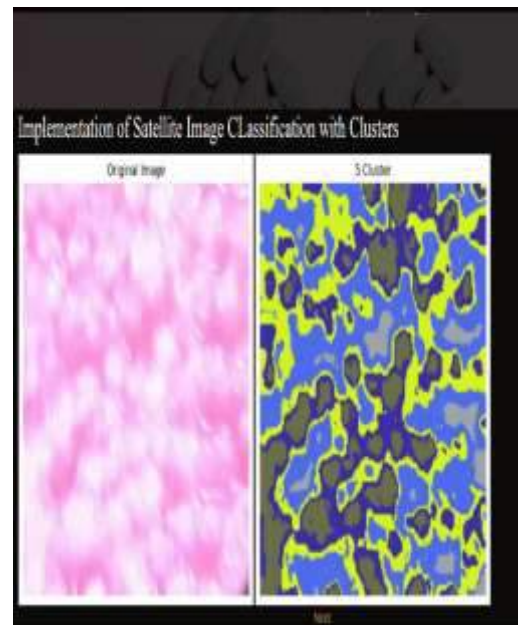


Fig 7: Output of Predicted Image with Clustered Image



Fig 6: Clustering Page

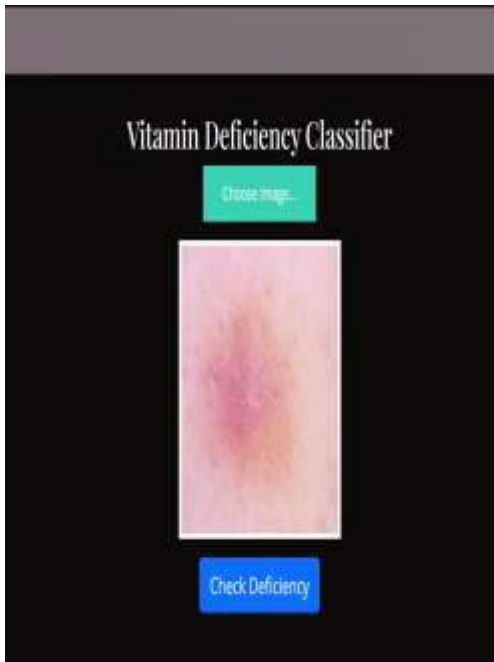


Fig 8: Analysis Page



Fig 4: Output Image

VI. CONCLUSION AND DISCUSSIONS

The objective of our study is to investigate a good method for automated analysis of tissue images for the purpose of detecting and recognizing Vitamin Deficiency diseases. The proposed method can recognize with accurately, in comparison to other methods and is potentially a powerful tool for the recognition of Vitamin Related diseases. The platform also enables medical experts to enhance the application's detection range and accuracy by contributing and verifying visual data from their patients. This study proposes a novel approach for detecting vitamin deficiencies using image processing techniques and Deep Neural Networks (DNNs). In this project, a classic image processing algorithm is designed to segment the lesion picture for shape analysis. After demonstrating the dataset and method used in this project, performance analysis shows that the algorithm can have an even better performance on extracting shapes than the labels do. Finally, some

improvement suggestions are proposed to have further optimization of the algorithm.

In the future, advancements in this project could include the development of more accurate and sophisticated algorithms for analysing images. Additionally, there may be advancements in imaging technologies that can capture more detailed and precise images, allowing for even more accurate analysis.

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EFFECT OF ISOTONIC STRENGTH TRAINING ON STRENGTH PHYSIOLOGICAL AND SKILL PERFORMANCE VARIABLES OF MEN HANDBALL PLAYERS

K. Ooraniyan¹, Dr. K. Murugavel²

¹Ph.D, Research Scholar, Department of Physical education, Bharathiar University, Coimbatore, Tamilnadu, India

²Senior Professor and Head, Department of Physical education, Bharathiar University, Coimbatore, Tamilnadu, India

ABSTRACT

The objective of this study was to find out the effect of isotonic strength training on strength physiological and skill performance variables of men handball players. To achieve the purpose of this study 40 Intercollegiate handball players were selected from affiliated colleges of Bharathiar university, Coimbatore. The selected subjects were randomly divided into two groups such as Group 'I' underwent isotonic strength (ISTG) (n=20) and Group 'II' acted as control group (CG). The respective training was given to the experimental group for 3 days per week (Monday, Wednesday and Friday) for the period of sixteen weeks. The control group was not be given any sort of training except their routine work. The strength parameter leg strength were measures by wall squat test, physiological variables breath holding time were measures by breath holding fitness test and skill performance variables shooting ability was assessed by Zinn team handball skill battery test. The data collected from the subjects was statistically analyzed with 't' ratio to find out significant improvement if any at 0.05 level of confidence. The result of the leg strength, breath holding time and shooting ability improved significantly due to effect of isotonic strength training with the limitations of (diet, climate, life style) status and previous training the result of the present study coincide findings of the investigation done by different experts in the field of sports sciences.

KEYWORDS: Isotonic strength training, handball, leg strength, breath holding time and shooting ability.

INTRODUCTION

Isotonic strength training for strength and conditioning professionals, and it includes a comprehensive discussion of isotonic strength training. The authors explain the principles of isotonic training and provide practical recommendations for designing and implementing effective isotonic training programs. The book covers various aspects of isotonic training, including exercise selection, load and repetition schemes, periodization, and progression. It also discusses the physiological adaptations that occur with isotonic training, such as improvements in muscular strength, power, and endurance. **N. Travis Triplett (2015)**. Overall, this book provides a thorough overview of isotonic strength training and its benefits for athletes and fitness enthusiasts. It is a valuable resource for anyone interested in incorporating isotonic training into their exercise routine or training program. Isotonic exercise is movement that requires muscles to resist weight over a range of motion, causing a change to the length of the muscle. We usually think of muscles shortening in isotonic exercise, as when you lift a dumbbell for a bicep curl or rise into a sit-up. This is called concentric muscle contraction. **Sara (2019)** Eccentric muscle contractions, however, such as steadily extending your arm or lowering to the ground while resisting the pull of gravity are also an important part of isotonic exercise. isotonic exercise is a type of physical activity that involves contracting and lengthening muscles through a full range of motion. **hiral parmar (2023)** The term "isotonic" comes from the Greek words "iso"

(equal) and "tonos" (tension), indicating that the tension in the muscles remains constant throughout the exercise. isotonic exercises, the muscles involved in the movement work against constant resistance, typically provided by free weights, weight machines, or the body's own weight. The goal is to create muscle contractions that result in movement and contribute to muscle strength, endurance, and overall fitness.

RATIONALE AND BENEFITS OF ISOTONIC EXERCISE

Isotonic exercise helps to strengthen your cardiovascular system, as it results in increased oxygen consumption, heart rate, stroke volume, cardiac output, and muscular endurance while reducing the risk of heart disease. **Sara (2019)** Isotonic exercise also improves bone density thanks to the consistent stress, which causes new bone to form. Stronger bones means you will be less likely to suffer a broken bone. Isotonic exercise also burns calories and improves important health numbers, such as cholesterol and blood sugar levels. Of course, it also helps to build bigger, stronger muscles, helping you to resist injury from strains, sprains, fractures, and falls. The more you participate in isotonic exercise, the easier it will get. **hiral parmar (2023)**.

HYPOTHESES

It was hypothesized that, the Isotonic strength training would produce significant changes over strength physiological and skill performance variables of men handball players.



TABLE-1
Characteristics of training groups (N=20) at pre training mean

Variable	TTG	CG
Age (Y)	18-21	18-21
Height (cm)	167.30	165.20
Weight (kg)	68	65

Methods

Forty Intercollegiate handball players were randomly selected as subjects and their age ranged between 18 and 21 years. The subjects are categorized into two groups namely Isotonic strength training group (ISTG) and control group (CG) each group had twenty subjects. The selected criterion variables strength parameter leg strength were measures by wall squat test, physiological variables breath holding time were measures by breath holding fitness test and skill performance

variables shooting ability was assessed by Zinn team handball skill battery test.

Isotonic strength training Programme

The training programme was lasted for 60 minutes for a session in a day, 3 days in a week for a period of twelve weeks duration. These 60 minutes included Isotonic strength training for 40 to 50 minutes and 10 minutes warm-up, and 10 minutes warm down. Every four weeks of training 5% of intensity of load was increased from 65% to 80% of work load.

Isotonic Strength Training Schedule

Skills	Drills	Sets	Re	Rest in b/w sets	Total Duration
I-IV	Shoulder press	2	3	60 sec	60 min
	Dynamic squats	2	3		
	Walking lunges	2	3		
	Bicep curls	2	3		
V-VIII	Wall squat	2	3	60 sec	60 min
	Russian twists	2	3		
	Squat	2	3		
	Crunches or situps	3	3		
IX-XII	Back extensions	2	3	60 sec	60 min
	Jogging	2	3		
	Pushups	2	3		
	Deadlifts	2	3		

Statistical Analysis

The means and standard deviations of Isotonic strength training groups were calculated for leg strength, breath holding time and shooting ability for the pre as well as post

tests. Statistical significance was set to a priority at $p < 0.05$. All statistical tests were calculated using the statistical package for the social science (SPSS).

TABLE - II
COMPUTATION OF ‘T’ RATIO ON SELECTED STRENGTH PARAMETERS OF ISOTONIC STRENGTH TRAINING ON EXPERIMENTAL AND CONTROL GROUP

(Scores in Seconds)

Group	Test	Mean	Std. Deviation	T ratio
Isotonic strength training Group	Pre test	59.13	3.01	23.95*
	Post test	61.50	3.17	
Control Group	Pre test	59.92	2.56	1.19
	Post test	59.70	2.79	

* The table values significant level 0.05 level (degree of freedom 2.093, 1 and 19)

Table II reveals the computation of mean, standard deviation and ‘t’ ratio on selected variables namely leg strength of Isotonic strength training group. The obtained ‘t’ ratio on leg strength were 23.95 respectively. The required table value was 2.093 for the degrees of freedom 1 and 19 at the 0.05 level of

significance. Since the obtained ‘t’ values were greater than the table value it was found to be statistically significant.

From the computation of mean, standard deviation and ‘t’ ratio on selected variables namely leg strength of Control group. The obtained ‘t’ ratio on leg strength were 1.19



respectively. The required table value was 2.093 for the degrees of freedom 1 and 19 at the 0.05 level of significance.

Since the obtained 't' values were less than the table value it was found to be statistically not significant.

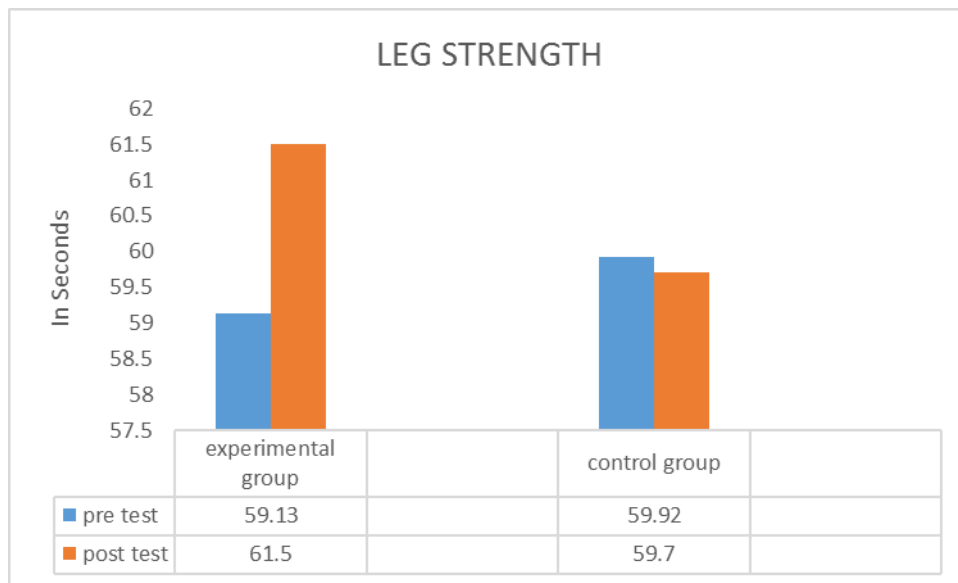


FIGURE-I
BARDIAGRAM SHOWS THE MEAN VALUES OF PRE AND POST TEST ON LEG STRENGTH OF EXPERIMENTAL AND CONTROLGROUPS
 (Scores in Seconds)

TABLE - III
COMPUTATION OF 'T' RATIO ON SELECTED PHYSIOLOGICAL VARIABLES OF ISOTONIC STRENGTH TRAINING ON EXPERIMENTAL AND CONTROL GROUP
 (Scores in Seconds)

Group	Test	Mean	Std. Deviation	T ratio
Isotonic strength training Group	Pre test	34.00	3.35	9.17*
	Post test	38.13	2.41	
Control Group	Pre test	34.06	3.33	0.43
	Post test	34.13	3.14	

*significant level 0.05 level (degree of freedom 2.093, 1 and 19)

Table III reveals the computation of mean, standard deviation and 't' ratio on selected variables namely Breath holding time of Isotonic strength training group. The obtained 't' ratio on Breath holding time were 9.17 respectively. The required table value was 2.093 for the degrees of freedom 1 and 19 at the 0.05 level of significance. Since the obtained 't' values were greater than the table value it was found to be statistically significant.

From the computation of mean, standard deviation and 't' ratio on selected variables namely Breath holding time of Control group. The obtained 't' ratio on Breath holding time were 0.43 respectively. The required table value was 2.093 for the degrees of freedom 1 and 19 at the 0.05 level of significance. Since the obtained 't' values were less than the table value it was found to be statistically not significant.

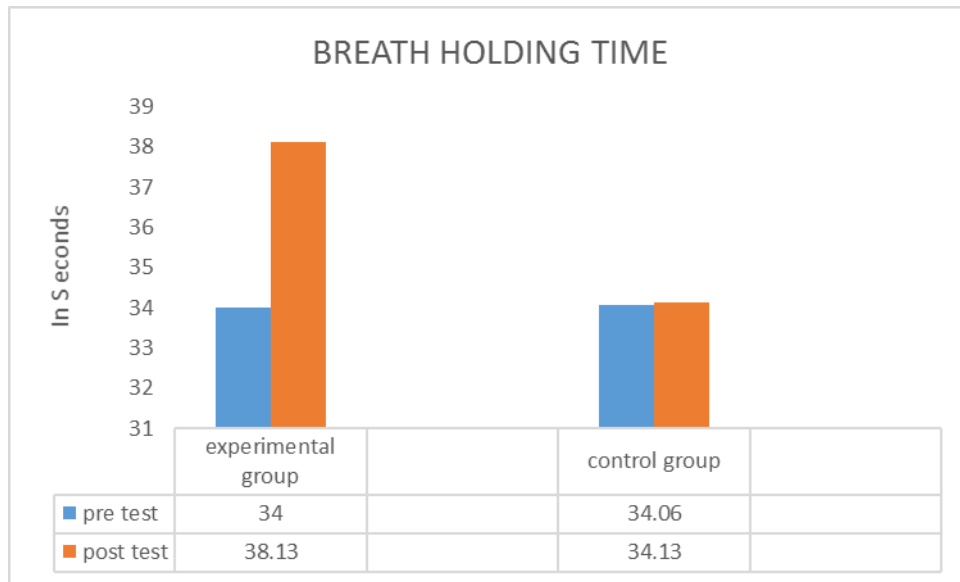


FIGURE-II
BARDIAGRAM SHOWS THE MEAN VALUES OF PRE AND POST TEST ON BREATH HOLDING TIME OF EXPERIMENTAL AND CONTROLGROUPS
 (Scores in Seconds)

TABLE - V
COMPUTATION OF 'T' RATIO ON SELECTED SKILL PERFORMANCE VARIABLES OF ISOTONIC STRENGTH TRAINING ON EXPERIMENTAL AND CONTROL GROUP
 (Scores in Points)

Group	Test		Mean	Std. Deviation	T ratio
Isotonic strength training Group	Shooting Ability	Pre test	6.36	1.69	23.45*
		Post test	8.80	1.84	
Control Group	Shooting Ability	Pre test	6.43	1.67	0.23
		Post test	6.40	1.94	

*significant level 0.05 level (degree of freedom 2.093, 1 and 19)

Table V reveals the computation of mean, standard deviation and 't' ratio on selected variables namely shooting ability of Isotonic strength training group. The obtained 't' ratio on shooting ability were 23.45 respectively. The required table value was 2.093 for the degrees of freedom 1 and 19 at the 0.05 level of significance. Since the obtained 't' values were greater than the table value it was found to be statistically significant.

From the computation of mean, standard deviation and 't' ratio on selected variables namely shooting ability of Control group. The obtained 't' ratio on shooting ability were 0.23 respectively. The required table value was 2.093 for the degrees of freedom 1 and 19 at the 0.05 level of significance. Since the obtained 't' values were less than the table value it was found to be statistically not significant.

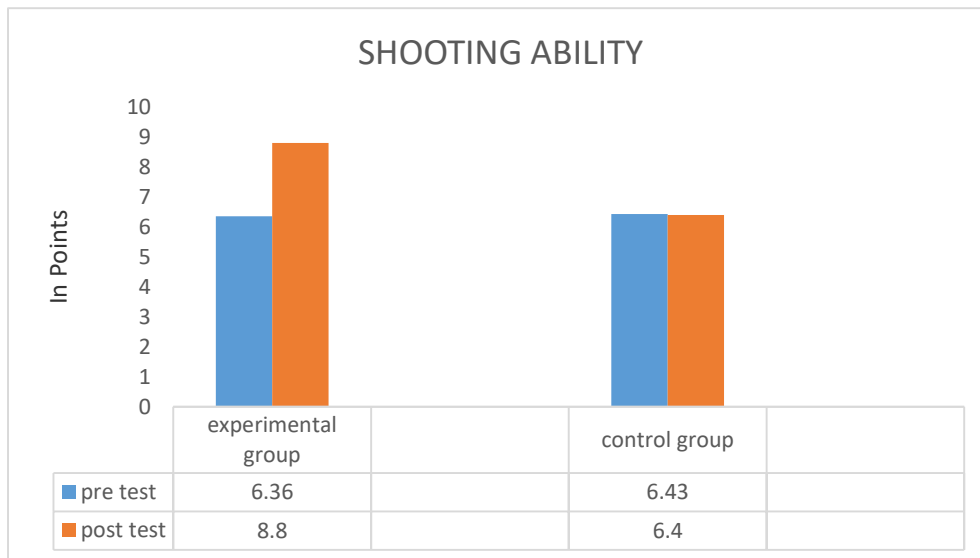


FIGURE-III

BARDIAGRAM SHOWS THE MEAN VALUES OF PRE AND POST TEST ON SHOOTING ABILITY OF EXPERIMENTAL AND CONTROL GROUPS

(Scores in numbers)

DISCUSSION ON FINDINGS

One of the main aims of this study was to determine the effect of isotonic strength training on strength physiological and skill performance variables of men handball players. To make such a determination, the effectiveness of isotonic strength training was questioned. Particular regarding application of isotonic strength exercises are related to the loads the handball players isotonic strength is subjected to during particular training units (Kvorning, T. (2006); Jonathan, A. (2009)). The isotonic strength training on strength, physiological and skill performance executes during a training session, and if there is a need to supplement basic training sessions with isotonic strength training. The results of a study by kumaravelu et al., (2020) show that the effect of strength, physiological and skill performance exercises on leg strength, breath holding time and shooting ability of isotonic strength training. The data presented in this work differ from the results of our own study, in which we demonstrated a significant increase in leg strength, breath holding time and shooting ability in a group subjected to isotonic strength training. Similar findings have also been reported by other researchers (Young et al., (2011); Tamilmani et al., (2022); Hermassi 2017; Haddad, 2019). Nevertheless, our research shows that well-planned strength, physiological and skill performance. with the focus on leg strength, breath holding time and shooting ability are more effective in developing strength, physiological and skill performance, and at the same time, induce a comparable increase in leg strength, breath holding time and shooting ability as strength, physiological and skill performance. These results are confirmed in another study in which the use of isotonic strength training directed at development of leg strength, breath holding time and shooting ability (chelly et al., (2017), Hermassi et al., (2019), pavithra et al., (2022)). Numerous reports have confirmed that this type of exercises should be used in training of handball players targeted at the development of leg strength, breath holding time and shooting ability (Hermassi et al., 2011;

Widodo et al., (2022); Labib 2014). However, we shall bear in mind that isotonic strength training proved to be more effective in developing leg strength, breath holding time and shooting ability. Thus, this seems to be the best solution for developing indicated that the leg strength, breath holding time and shooting ability were improved after Isotonic strength training.

Isotonic strength training is an excellent way to simultaneously improve leg strength, breath holding time and shooting ability. While the original study involved stationary bike, one can use the Isotonic strength with almost any activity or Isotonic exercise is movement that requires muscles to resist weight over a range of motion, causing a change to the length of the muscle. We usually think of muscles shortening in isotonic exercise, as when you lift a dumbbell for a bicep curl or rise into a sit-up. This is called concentric muscle contraction. One must try adding Isotonic strength training once a week to see how the body responds. The results of the study indicated that the leg strength, breath holding time and shooting ability were improved significantly after undergoing Isotonic strength training. The changes in the selected variables were attributed the proper planning, preparation and execution of the training package given to the handball players. The findings of the present study had similarity with the findings of the investigations referred in this study.

kumaravelu et al., (2020) speculated that isotonic training Program can help regulate on back strength and induce changes leg strength and related as criterion variables.

Tamilmani et al., (2022) examined special training programme apart from their regular activity Vo2 max, resting pulse rate, Hemoglobin and Red blood corpuscles which in turn led to the development of physiological variables.



Young *et al.*, (2011) the relationships between various measures of strength with performance indicators of maximum kicking, and the third part explores the research investigating the effects of isotonic strength training on skill performance.

However, the subjects participated in the control group did not improve their leg strength, breath holding time and shooting ability.

The result of the present study indicates that the Isotonic strength training methods is appropriate protocol to leg strength, breath holding time and shooting ability. The discrepancy between the result and the result of previous studies might be attributed to several reasons, such as the training experience level of the subjects, the training programme, in intensity used and the duration of the training programme.

CONCLUSIONS

Based on the results of the study it is referred that twelve weeks of Isotonic strength training program was found to be most effective training protocol to bring out desirable changes over leg strength, breath holding time and shooting ability of men handball players.

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PHYSICAL AND FUNCTIONAL RESPONSE TO THE RESPONSE OF POSITION WISE SPECIFIC SKILL TRAINING

N. Kodeeswaran¹. Dr. K. Murugavel²

¹Ph.D, Research Scholar, Department of Physical Education, Bharathiar University, Coimbatore, Tamilnadu, India.

²Senior Professor and Head, Department of Physical Education, Bharathiar University, Coimbatore, Tamilnadu, India.

ABSTRACT

Background

Position wise specific skill training is a program includes fitness and performance training designed specifically for athletic performance enhancement. One of the main benefits of utilizing position specific training drills within a training session is improving their positional sense. The study was designed to investigate the influence of position wise specific skill training on physical and functional (physiological) variables among school level football players.

Methods

To achieve the purpose of the study 60 school level football players were selected from various football academy in Coimbatore. Their aged of the subject ranged from 14 to 17 years. Selected subjects was randomly assigned to three equal groups (n=20), group I underwent forward specific skill training (FSST), group II underwent midfield specific skill training (MSST) and group III acted as defender specific skill training (DSST). The position wise specific skill training was given to the experimental group for 5 days per week for the period of 12 weeks. Soccer demands a wide range of motor skills and various physical attributes that include anaerobic metabolism, aerobic power, agility, speed, balance, and coordination that gives rise to a variety training methods (Araujo et al., 2016). Functional variables and physiological variables can be closely related, as functional variables often represent physiological parameters that indicate the state or performance of a biological system (Araujo et al., 2016). The following variables were measured with standard test items: Agility (4x10 meter shuttle run test), Balance (stork balance test) and Breath Holding Time (breath holding test). Pre and post test was conducted on separate days with warm up.

Result

The data was analyzed by applying dependent't test. The level of significance was set at 0.05. The position wise specific skill training had positive impact on agility, balance and breath holding time among school level football players. The result of the present study agility, balance and breath holding time speculated significant improvement due to the position wise specific skill training of school level football players.

Conclusion

The current findings provide a detailed description of the demands placed on elite football players, according to their positional role at different work intensities, which may be helpful in the development of individualized training programme for school level football players.

KEY WORD: Position wise specific skill training, forward, midfielder, defender, Agility, Balance Breath Holding Time and school level football players,

1. BACKGROUND

Football players must manage both his body and the ball with his feet and have to move and have with varied speed and direction. Agility is highly depending upon or inter related with speed, strength, balance and co-ordination. The physical requirements of soccer at the youth level are also great and attaining high levels of fitness is certainly a vital requirement for successful performance, especially for more advanced junior players. One important distinction however, is that the duration of games for younger players is usually less; with many leagues using a 60-minute match length instead of the 90-minute time frame used for senior players. Nonetheless, similar to their adult

counterparts, youth players have to perform and recover from repeated high-intensity bouts over the course of a game, and the amount and type also appears to vary depending on player position. Player should give themselves the flexibility of trying various positions; it will help them greatly down the road. This generalist approach allows a player to see how his strengths and weakness fit into the different positions in the game. All positions require players to both defend and attack, so the general principles of attacking and defending (discuss later in the book) will always apply. Good soccer teams are looked upon as a complete unit, meshing everybody's roles and responsibilities. However, the four distinct positions within that



unit goalkeeper, defender, midfielder, and forward- require varying talents, and each position involves further subdivisions with their own skill sets. (Parker, 2008). In the past players have specialized too much on a particular position or role within a team, and have been ignorant of the problems which other positions offer. The game today requires players to develop skills required of all positions and for all members of a team to be aware of both the defensive and attacking principles of play (Brown, 1980). Focusing on position wise specific training is known as one of the most beneficial ways to improve an individual's capabilities within a specific role, as the ability to

challenge, develop and support players is vital in preparing them for match day (Fifield, 2018). When the training for players at higher level or above the basic level, they have to trained with specific objectives in sport, the training program should designed specifically based on the components that are needed for the particular skill or technique in sport. Thus such type of specific skill training program is a need for the player to excellent in sport. Thus the present study has been carried out to study the position wise specific skill training on selected physical and functional (physiological) variables among football players.

TABLE-1
Characteristics of training groups (N=20) at pre training mean

Variable	FSST	MSST	DSST
Age (Y)	14-16	14-16	14-16
Height (cm)	148.30	154.20	152.70
Weight (kg)	50	47	49

2. METHODS

2.1 PARTICIPANTS

A total of 60 school level football players aged 14 to 17 years were invited to participate in the study. From these, 60 school boys sample due to having valid data on commuting to school. Participants were recruited various academy in the provinces of Master kids football academy, NSS football academy, First kick football academy, Rathinam football academy and UFC football academy to participate in an intervention to increase position wise specific skill training. School level football players with valid data on commuting to performance at baseline and follow-up, sex, age and distance from home to academy were included in the final analysis (n = 20; 65% of the invited sample). The subjects were randomly assigned in to three equal groups namely, group I underwent forward specific skill training (FSST), group II underwent midfield specific skill training (MSST) and group III acted as defender specific skill training (DSST). The respective training was given to the experimental group the 5 days per weeks for the training period of twelve weeks.

2.2 DESIGN

The evaluated physical and functional parameters were Agility (4x10 meter shuttle run test in was measured by seconds), Balance (stork balance test was measured by seconds) and Breath Holding Time (breath holding test was measured by seconds). Pre and post test was conducted on separate days with

warm up. The parameters were measured at baseline and after 12 weeks of position wise specific skill training were examined. The intensity was increased once in two weeks based on the variation of the exercises.

2.3 TRAINING PROGRAMME

The training programme was lasted for 60 minutes for a session in a day, 5 days in a week for a period of eight weeks duration. These 60 minutes included position wise specific skill training for 40 to 50 minutes and 10 minutes warm-up, and 10 minutes warm down. Every four weeks of training 5% of intensity of load was increased from 65% to 80% of work load. The volume of position wise specific skill training prescribed based on the number of sets and repetitions. Eight weeks of specific skill training was given to the selected subjects. Their training days and hours every week were from Monday to Friday from 6.00 to 7.30 am.

2.4 STATISTICAL ANALYSIS

The means and standard deviations of position wise specific skill training groups were calculated for agility, balance and breath holding time for the pre as well as posttests. Statistical significance was set to a priority at $p < 0.05$. All statistical tests were calculated using the statistical package for the social science (SPSS).



TABLE - II
ANALYSIS OF COVARIANCE ON PRE, POST AND ADJUSTED POST TEST MEANS ON AGILITY OF FORWARDERS, MIDFIELDERS AND DEFENDERS GROUPS
(Scores in Seconds)

Test	Forwards Specific Skill Training (FSST)	Midfielders Specific Skill Training (MSST)	Defenders Specific Skill Training (DSST)	Source of variance	df	Sum of square	Mean square	F-ratio
Pre-test mean	11.19	11.20	11.23	B / S	2	0.016	0.08	0.08
				W / S	57	5.61	0.98	
Post-test mean	10.62	10.72	10.85	B / S	2	0.55	0.27	5.38*
				W / S	57	2.97	0.05	
Adjusted post-test mean	10.62	10.73	10.84	B / S	2	0.49	0.24	6.32*
				W / S	56	2.18	0.04	

* Significant at 0.05 level for the degrees of freedom (2, 57) and (2, 56), 3.16

Table VI reveals the computation of 'F' ratios on pretest, posttest and adjusted posttest means of FSST, MSST and DSST on agility. The obtained 'F' ratio for the pretest means of FSST, MSST and DSST on speed was 0.08. Since the 'F' value was less than the required table value of 3.16 for the degrees of freedom 2 and 57, it was found to be not significant at 0.05 level of confidence. Further, the posttest 'F' ratio 5.38 after FSST, MSST and DSST on agility was higher than the required table value of

3.16 for the degrees of freedom 2 and 57, hence it was found to be statistically significant at 0.05 level of confidence. The obtained 'F' ratio for the adjusted post-test means of FSST, MSST and DSST on agility was 6.32. Since the 'F' value was higher than the required table value of 3.16 for the degrees of freedom 2 and 57, it was found to be statistically significant at 0.05 level of confidence.



FIGURE- I
BAR DIAGRAM SHOWING PRE, POST AND ADJUSTED POST TEST MEANS OF FORWARDERS SPECIFIC SKILL TRAINING GROUP, MIDFIELDERS SPECIFIC SKILL TRAINING GROUP AND DEFENDERS SPECIFIC SKILL TRAINING GROUP ON AGILITY
(Scores in Seconds)



TABLE - IV
ANALYSIS OF COVARIANCE ON PRE, POST AND ADJUSTED POST TEST MEANS ON BALANCE OF FORWARDERS, MIDFIELDERS AND DEFENDERS GROUPS
(Scores in Meters)

Test	Forwards Specific Skill Training (FSST)	Midfielders Specific Skill Training (MSST)	Defenders Specific Skill Training (DSST)	Source of variance	df	Sum of square	Mean square	F-ratio
Pre-test mean	35.25	35.40	35.55	B / S	2	0.90	0.45	0.18
				W / S	57	135.50	2.37	
Post-test mean	37.40	38.66	39.41	B / S	2	41.30	20.65	10.34*
				W / S	57	113.80	1.99	
Adjusted post-test mean	37.50	38.66	39.30	B / S	2	32.98	16.49	20.25*
				W / S	56	45.58	0.81	

* Significant at 0.05 level for the degrees of freedom (2, 57) and (2, 56), 3.16

Table VI reveals the computation of 'F' ratios on pretest, posttest and adjusted posttest means of FSST, MSST and DSST on balance. The obtained 'F' ratio for the pretest means of FSST, MSST and DSST on balance was 0.18. Since the 'F' value was less than the required table value of 3.16 for the degrees of freedom 2 and 57, it was found to be not significant at 0.05 level of confidence. Further, the posttest 'F' ratio 10.34 after FSST, MSST and DSST on balance was higher than the required table

value of 3.16 for the degrees of freedom 2 and 57, hence it was found to be statistically significant at 0.05 level of confidence. The obtained 'F' ratio for the adjusted post-test means of FSST, MSST and DSST on balance was 20.25. Since the 'F' value was higher than the required table value of 3.16 for the degrees of freedom 2 and 57, it was found to be statistically significant at 0.05 level of confidence.

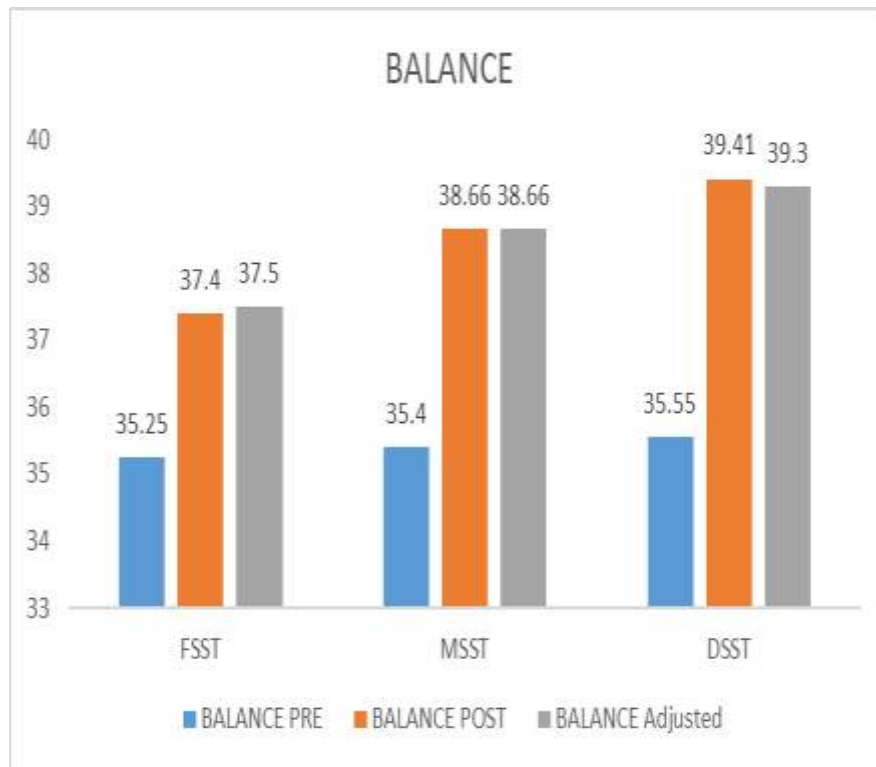


FIGURE- II
BAR DIAGRAM SHOWING PRE, POST AND ADJUSTED POST TEST MEANS OF FORWARDERS SPECIFIC SKILL TRAINING GROUP, MIDFIELDERS SPECIFIC SKILL TRAINING GROUP AND DEFENDERS SPECIFIC SKILL TRAINING GROUP ON BALANCE
(Scores in Seconds)



TABLE - V
ANALYSIS OF COVARIANCE ON PRE, POST AND ADJUSTED POST TEST MEANS ON BREATH HOLDING TIME OF FORWARDERS, MIDFIELDERS AND DEFENDERS GROUPS
(Scores in Seconds)

Test	Forwards specific Skill Training (FSST)	Midfielders specific Skill Training (MSST)	Defenders Specific Skill Training (DSST)	Source of variance	df	Sum of square	Mean square	F-ratio
Pre-test mean	29.38	29.70	29.52	B / S	2	1.03	0.51	0.84
				W / S	57	352.79	6.18	
Post-test mean	33.15	35.99	34.76	B / S	2	81.28	40.64	21.44*
				W / S	57	108.00	1.89	
Adjusted post-test mean	33.20	35.94	34.77	B / S	2	75.09	37.54	30.80*
				W / S	56	68.24	1.21	

* Significant at 0.05 level for the degrees of freedom (2, 57) and (2, 56), 3.16

Table VI reveals the computation of 'F' ratios on pretest, posttest and adjusted posttest means of FSST, MSST and DSST on breath holding time. The obtained 'F' ratio for the pretest means of FSST, MSST and DSST on breath holding time was 0.84. Since the 'F' value was less than the required table value of 3.16 for the degrees of freedom 2 and 57, it was found to be not significant at 0.05 level of confidence. Further, the posttest 'F' ratio 21.44 after FSST, MSST and DSST on breath holding time was higher than the required table value of 3.16 for the

degrees of freedom 2 and 57, hence it was found to be statistically significant at 0.05 level of confidence. The obtained 'F' ratio for the adjusted post-test means of FSST, MSST and DSST on breath holding time was 30.80. Since the 'F' value was higher than the required table value of 3.16 for the degrees of freedom 2 and 57, it was found to be statistically significant at 0.05 level of confidence

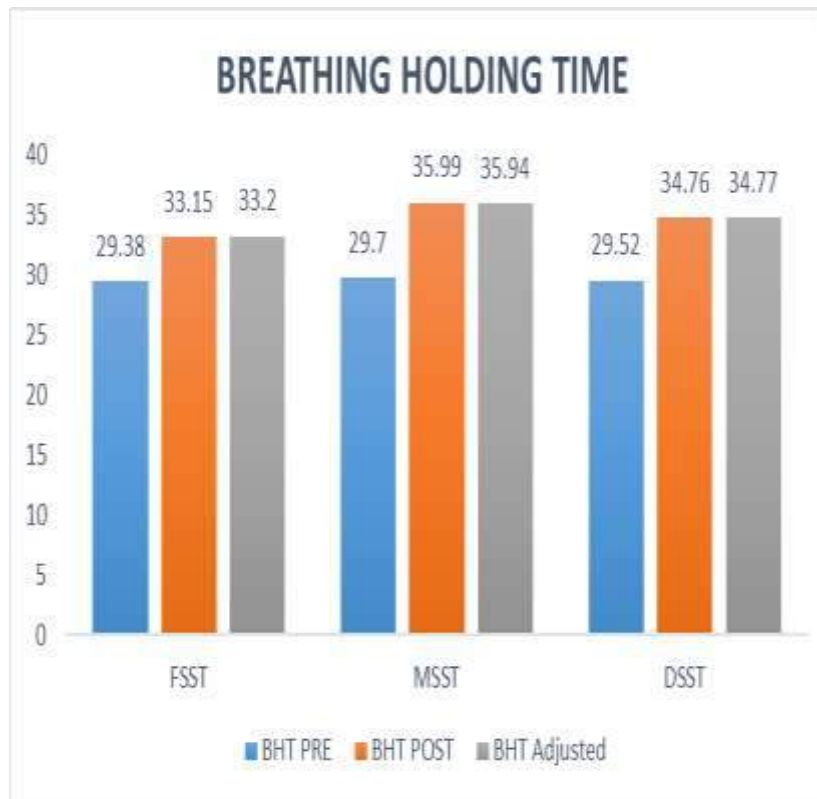


FIGURE- III
BAR DIAGRAM SHOWING PRE, POST AND ADJUSTED POST TEST MEANS OF FORWARDERS SPECIFIC SKILL TRAINING GROUP, MIDFIELDERS SPECIFIC SKILL TRAINING GROUP AND DEFENDERS SPECIFIC SKILL TRAINING GROUP ON BREATH HOLDING TIME
(Scores in Seconds)



3. DISCUSSION ON FINDINGS

Football is fast, quick, aggressive and attractive it is considered a strenuous game because the game demands a high degree of fitness as well as intelligence, balance, flexibility are the basic qualities for all the elite players (Worthington,1980). The present study investigated the development of physical and functional variables among football players due to the impact of position wise specific skill training. The results of the present study clearly indicated that methods of position wise specific skill training had a significant acute effect on physical and functional variables. The football players who underwent position wise specific skill training were able to improve their physical and functional variables. Based on the data of the current study, both position wise specific skill training are positively related to the development of following variables (Agility, Balance and Breath Holding Time) and found to have a significant effect in improving the training model. Moreover, there are significant differences brought out as a result of position wise specific skill training. Thus, the selection of drills of the load stimulus in conjunction with selection of position wise specific skill training (Forwards, Midfielders, Defenders) seem to play a vital role in determining the effectiveness of complex training regimes.

The hypotheses of the current study were very well experimented. The results of this study are very encouraging and demonstrate the benefits of position wise specific skill training over physical and functional variables. Besides, the result support that improvement in physical, and functional variables can occur in 12 weeks of position wise specific skill training. It can be useful during the last preparatory phase before the competition. The result of the current study suggests that the position wise specific skill training are an appropriate and effective programs to improve selected physical and functional variables school level football players.

Kokstein et al., (2019) found a strong relationship between fundamental motor skills (running, broad jumping, leaping, hopping, galloping and sliding) and game specific motor skills (dribbling and shooting) in adolescent Czech football players. **vanttinen et al., 2010** also reported that passing accuracy is associated with the 10m sprint ($r=0.71$, $p<0.05$), countermovement jump performance ($r=-0.62$, $p<0.05$) and eye hand foot coordination ($r=-0.63$, $p<0.05$) in adolescent soccer players. **Kadagadakai et al., (2018)** reported no correlation between the grip strength; flexibility; sit-ups; Harvard step test performance; and soccer skill tests, such as dribbling, lofted-passing, shooting, short-passing, and juggling, in 41 diploma college soccer players. Research demonstrates that positional difference in maximal oxygen uptake (VO_2 max) are evident for soccer players, with central midfielders and full backs displaying the highest values (**Reilly et al., 2000**).

It is noted that, subject of forward specific skill training group improved agility (5.09% VS 4.28%, 3.38%) than midfielder and defender specific skill training. Noted that subject

defender specific skill training improved balance (9.20% VS 6.09%, 3.70%) than forward and midfielder specific skill training group. It is noted that, subject of midfielder specific skill training group improved Breath holding time (21.17% VS 12.83%, 17.75%) than forward and defender specific skill training group respectively.

4. CONCLUSIONS

Findings from the current study suggest that playing a football who are more competent in position wise specific skill training spend more time engaged in physical and functional in particular during time periods of the day that represent key physical activity opportunities for school level football players. Physical and functional competency appears to be a better predictor of school level football player's position wise specific skill training during school-based physical activity opportunities than breathing competency. This suggests that improving movement skill competency, particularly physical and functional variables are agility, balance and breath holding time among school level football players is a potential avenue for promoting abilities of the performance for position wise specific skill training throughout the day. Findings from the current study substantially contribute to the understanding of position wise specific skill training in school level football players and will assist in evidence-based intervention design to increase performance capacity.

Based on the results, the following conclusions have been arrived.

1. From the results of the present study, it is very clear that, football players at school level significantly differ in agility, balance and breathe holding time.
2. It was concluded that forward players have better agility than midfielders and defenders at school level football players.
3. Also, it was concluded that midfielders have better breath holding time than forward players and defenders at school level football players.
4. Further, it was concluded that defenders have better balance than forward players and midfields at school level football players.

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DEALING WITH THE LEARNING GAPS DURING THE IN-PERSON CLASSES: PERSPECTIVES OF PUBLIC ELEMENTARY SCHOOL HEADS

Lea C. Castro¹, Celso G. Casamayor Jr., Ph.D.²

¹ORCID No. 0009-0000-9104-7426

Teacher I, Causwagan Elementary School, Mabuhay, Causwagan, Banaybanay, Davao Oriental, Philippines

²ORCID No. 0009-0006-8613-7324

School Principal, Father Saturnino Urios College of Trento, Inc., Poblacion, Trento, Agusan del Sur, Philippines

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ABSTRACT

This phenomenological study aims to delve into the experiences, opinions, and perspectives of the school heads in the Banaybanay district of the Department of Education, Division of Davao Oriental. In addressing the learning gaps during in-person classes, this qualitative study used a phenomenological approach to collect and analyze data. In order to close learning gaps, particularly after two years of distance learning, school heads' experiences and perspectives on the gaps in learning during in-person sessions are crucial. These viewpoints focused on closing the gaps, especially in reading and numeracy abilities. A sample of fourteen (14) participants was selected using a purposive sampling technique. Seven participants underwent focus group discussions, and the other seven underwent in-depth interviews, highlighting the experiences, coping mechanisms, and insights of the school heads in the research locale. As to the participants' experiences, two major themes emerged: encountered problems with unpreparedness for the in-person classes; and b) observed students with reading difficulties. With regard to their responses to coping mechanisms, six major themes emerged: implemented reading intervention activities, established open communication, extended technical assistance to teachers, collaboration with stakeholders, provided additional learning and reading materials, and implemented a literacy and numeracy program. Lastly, their insights revealed five major themes: reduction of teacher workloads, provision of learning materials, strengthened programs in teaching fundamental skills, intensification of feedback mechanisms, and assignment of remediation teachers. The study revealed that the school heads in Banaybanay district collaborated with stakeholders, including teachers and parents to solve difficulties and prepare students for academic success during in-person classes. It emphasizes open communication, providing reading materials, technical assistance, and implementing numeracy and literacy programs, which were very significant to the participants. Public elementary school heads as well as the Department of Education implementers need to intensify feedbacking to assess the real situation of students in the field so that they can perform their duty as leaders in addressing gaps based on the situation in the field.

KEYWORDS: education, school heads, learning gaps, in-person classes, and coping mechanisms and strategies, phenomenological research, thematic analysis, Division of Davao Oriental

INTRODUCTION

As a result of two years of distance learning, children's learning was dormant. During the in-person classes, there were a lot of school heads and teachers who faced the quest of how to address the learning gap for our children. Even though students returned to face-to-face classes, our young children still suffered from a learning gap. Unsurprisingly, our children may have forgotten some of the skills they had acquired in previous grade levels and missed out on gaining knowledge during modular distance learning. The comprehensive discussion and analysis based on the elementary public school heads' perspectives were considered and significantly identified to bridge the learning gaps during the in-person classes.

In Pakistan, children's learning had been studied after the school closures due to the 2005 earthquake, and schools were closed for more than 100 days in the affected area. However, in the later years, it was discovered that they were not just 100 days behind; they were behind in learning for the equivalent of 1.5 years of schooling (Andrabi et al., 2020). Also, in Malaysia, learning gaps after school closures consisted of a small loss rate of 0.45 years (5.4 months). Of all the developing Asian nations studied, it suffered from the greatest learning losses, with a startling rate of loss of 0.95 years (11.4 months) (Aruta et al., 2021). Meanwhile, in Cambodia, learning gaps due to school closures were estimated at 2 to 5 months per learner in primary education. In East Asia,



South Asia, the Pacific, and Latin America, learning crises had been a problem even before the pandemic, and they were relatively increasing in terms of learning poverty (Azevedo, 2020).

Meanwhile, in the Philippines, results from National Achievement Tests (NATs) and international large-scale assessments (ILSAs) have shown that students are performing poorly. The Department of Education remains committed to addressing the learning loss exacerbated by school closures and disruptions during the COVID-19 pandemic (DO. 13 s. 2023). The Department of Education was promoting in-person instruction, claiming it improves academic attainment and mental health (Malipot, 2022). Moreover, in-person learning was essential to addressing learning gaps because it enabled teachers and students to collaborate in an environment that fosters learning by doing and seeing. Monitoring learning progress was easy when learning through physical activity (Media Advisory, 2022). Thus, DepEd aimed to close learning gaps and assist K–12 learners nationwide in attaining standards (DO 14 s. 2023).

Furthermore, NAT results from the 2017-2018 school year in one of the schools in the Division of Davao Oriental revealed that pupils scored less than 70% in problem solving, information literacy, and critical thinking. Prior to COVID-19, the scores were already poor, and the scores were projected to be lower after the school closures. Furthermore, based on my observations, pupils were having difficulties catching up with the lessons. This was notably true for all subjects, particularly English/reading, math, and science. They struggled to understand the concepts since they hardly read.

Based on my readings, Moscoviz and Evans (2022) investigated learning loss and dropouts two years after school closures due to the pandemic; Engzell et al. (2021) investigated learning gaps after school closures and discovered that while learning at home, pupils made little or no progress; and Kaffenberger (2021) discovered that effective remediation during in-person classes could reduce half of long-term learning loss. However, these studies only looked at learning gaps after school closures and did not investigate the experiences and perspectives of school heads on learning gaps during these in-person classes. As a result, this study filled a void left by previous studies.

Thus, the urgency of this qualitative study provided additional references and insights for individuals, authorities, and organizations interested in learning about the perspectives, coping mechanisms, and viewpoints of school heads on the learning gap in the return of in-person classes. Also, the result of this study encouraged school heads to engage in teachers' and learners' processes to bridge gaps and monitor students' progress.

Furthermore, this study had social significance because the findings helped all school leaders manage and monitor the teaching-learning process, as well as design and improve remedial programs in numeracy and literacy skills to meet the

needs and interests of students. It also equipped all teachers with the skills to address students' learning needs, which was especially important in the aftermath of the COVID-19 pandemic. It benefited students while providing guidance and support to improve the educational system.

Purpose of the Study

The purpose of this phenomenological study was to explore and describe the views and perspectives of school heads in dealing with the learning gaps, coping mechanisms, and insights of public elementary schools during in-person classes after the two years of implementation of modular distance learning at Banaybanay District.

Research Questions

1. What are the lived experiences of elementary school heads in dealing with the learning gaps during in-person classes?
2. How did elementary school heads cope with the challenges they encountered in dealing with the learning gaps during in-person classes?
3. What are the insights drawn from the experiences of elementary school heads in dealing with the learning gaps during in-person classes?

METHODOLOGY

This study utilized a qualitative research design employing a phenomenological approach aimed at describing and understanding the lived experiences, perspectives, coping mechanisms, and insights of school heads regarding learning gaps during in-person classes following school closures due to the pandemic. According to Creswell (2013), employing descriptive types of data allows qualitative research to explore topics where little is known about a phenomenon. Therefore, a qualitative research design using a phenomenological approach was deemed appropriate as it focused on the lived experiences, perspectives, coping mechanisms, and insights of school heads in the return to in-person classes.

The study involved fourteen (14) public elementary school heads who shared their experiences and perspectives on the learning gap among students during in-person classes post-school closures. Seven (7) participated in a Focus Group Discussion (FGD), and another seven (7) underwent an Individual In-Depth Interview (IDI). They were chosen based on their ability to provide accurate information pertinent to the research questions. A qualitative approach, involving five (5) to twenty-five (25) individuals selected through the phenomenological process, was employed to ensure participants shared experiences with the phenomena (Creswell, 2013). Thus, there were a total of fourteen (14) participants in this study. Purposive sampling was employed in qualitative research, emphasizing the importance of participants' cooperation and availability to engage and share their experiences and ideas in clear, expressive, and introspective ways (Etikan et al., 2016).



Furthermore, the criteria for selecting study participants included: (a) current public elementary school heads in Banaybanay District, Division of Davao Oriental; (b) school heads with a minimum of three (3) years of experience who observed learning gaps among students; (c) school heads overseeing either large or small schools. Excluded were school heads on forced leave, elderly individuals with illnesses, pregnant women on bed rest, and assistant school heads. The participants varied in gender, age, status, and ethnicity.

Data from interviews underwent thematic analysis, a flexible method in qualitative research. Thematic interpretation was employed to understand the lived experiences, coping mechanisms, views, and perspectives of school heads in addressing learning gaps during in-person classes. Analysis was based on participants' responses, with data organized, separated,

and thoroughly examined. Coding was utilized to sort and categorize participants' answers. Finally, results were written and presented in a table for in-depth examination. Ethical considerations were also integrated into the process to safeguard the participants' welfare.

RESULTS

Experiences of Public Elementary School Heads in Dealing with the Learning Gaps During the In-Person Classes

After analyzing the experiences of public elementary school heads in dealing with the learning gaps during the in-person classes, two major themes emerged: a) Encountered Problems on Unpreparedness for the in-Person Classes; b) Observed Students with Reading Difficulty.

Table 1
Major Themes and Core Ideas on the Experiences of Public Elementary School Heads in Dealing with the Learning Gaps During the In-Person Classes

Major Themes	Core Ideas
Encountered Problems on Unpreparedness for the in-Person Classes	<ul style="list-style-type: none"> • lack of preparedness on the challenges related to health protocols • felt the culture shock of students and teachers during the in-person classes • dealt with the misbehavior of students towards their teachers • being challenged in improving the school physical environment for the opening of in-person classes
Observed Students with Reading Difficulty	<ul style="list-style-type: none"> • observed students with anxiety in reading • encountered grade 4 pupils with reading difficulty • noticed students with difficulty in reading, writing and arithmetic

Coping Mechanism of Elementary School Heads on the Challenges they Encountered in Dealing with the Learning Gaps During In-Person Classes

After analyzing the experiences of the school heads about coping mechanisms and the challenges they had encountered in dealing with the learning gaps during in-person classes in public elementary schools, six major themes emerged: a) Implemented

reading intervention activities; b) Established open communication; c) Extended technical assistance to teachers; d) Collaborated with stakeholders; e) Provided additional learning and reading materials; f) Implemented a literacy and numeracy program.

Table 2
Major Themes and Core Ideas on the Coping Mechanism of Elementary School Heads on the Challenges they Encountered in Dealing with the Learning Gaps During In-Person Classes

Major Themes	Core Ideas
Implemented Reading Intervention Activities	<ul style="list-style-type: none"> • reminded teachers to conduct remedial classes for non and slow readers • had remediation for students with reading difficulty • applied Project BOOKas, the district reading intervention • adopted the DEAR Program and the after-lunch reading time • introduced Project CAROL to learners
Established Open Communication	<ul style="list-style-type: none"> • solved learning gaps through open communication with students and teachers



	<ul style="list-style-type: none"> • had proper communication with stakeholders • communicated with teachers DepEd programs and consulted with parents • shared best practices to cope with the challenges
Extended Technical Assistance to Teachers	<ul style="list-style-type: none"> • oriented teachers on the possible problem during in-person classes • guided teachers to solve or deal with class-related problems • conducted LAC sessions to give teachers technical assistance • had LAC sessions to improve learning and teaching style • had LAC session to resolve issues and concerns.
Collaborated with Stakeholders	<ul style="list-style-type: none"> • worked collaboratively with teachers and parents • connected with partners to assist children in reading • Implemented programs and activities in collaboration with stakeholders to solve problems at the opening of classes • one-on-one interaction between the speaker and the teacher during LAC sessions • provided books through donations from stakeholders
Provided Additional Learning and Reading Materials	<ul style="list-style-type: none"> • provided pupils with additional reading materials • gave supplementary reading materials for remedial classes
Implemented Literacy and Numeracy Program	<ul style="list-style-type: none"> • implemented programs on reading, writing, and numeracy in the school continuity plan • monitored the implementation of reading, writing, and numeracy program

Insights of Elementary School Heads in Dealing with the Learning Gaps During In-Person Classes

After analyzing the insights of the school heads in dealing with the learning gaps during in-person classes, five major themes came out: a) Reduction of Teachers Work Loads; b) Provisioned

of Learning Materials; c) Strengthened Programs in Teaching Fundamental Skills; d) Intensification of Feedback Mechanism; and e) Assigned Remediation Teacher.

Table 3

Major Themes and Core Ideas on the Insights Drawn from the Experiences of Elementary School Heads in Dealing with the Learning Gaps During In-Person Classes

Major Themes	Core Ideas
Reduction of Teacher Work Loads	<ul style="list-style-type: none"> • decongesting school activities to have more time for teaching and learning • assigning a teacher aid to lessen and help on the paper works • rearranged class programs to reduce the burden of teachers • lessened paperwork for teachers • shortening competencies in other subject areas for quality time • implementing administrative support systems like AO (Administrative Officer) and ADAS (Administrative Assistant) in every school can reduce the workload of school heads.
Provision of Learning Materials & Facilities	<ul style="list-style-type: none"> • hoping to be provided with instructional materials • paying attention on the materials needed in the classroom • hoping to provide schools with room, building, and learning resources



Strengthening Programs in Teaching Fundamental Skills	<ul style="list-style-type: none"> utilizing an 8-week curriculum to help the struggling students in their capabilities in numeracy and literacy implementing literacy and numeracy program strengthening programs on reading, writing, and arithmetic
Intensification of Feedback Mechanism	<ul style="list-style-type: none"> suggesting to identify and give attention to the school related feedbacks Having open communication with the teachers and other stakeholders on the problems identified monitoring religiously, giving feedback and recommendations for better results
Allocation or Provision of Additional Remedial Teachers	<ul style="list-style-type: none"> suggesting to send more personnel to be assigned in addressing the learning gaps suggesting to have additional teachers focusing specifically on reading suggesting to assign a person to concentrate on reading

CONCLUSIONS

Never begin something that you are not willing to finish. All that began has now come to an end. Due to persistence and the desire for accomplishment, this study was finished in a valuable way. This research was a difficult road for the researcher, requiring perseverance and diligence. The researcher now has a better understanding of the duties and responsibilities of school leaders, according to the study's findings. Their tireless efforts and commitment to helping the schoolchildren made the researcher realize how difficult their job was. As a result, the researcher praised their commitment and tenacity in serving.

The hardest aspect of this study was the interview section, which required a lot of patience and understanding because the participants were all busy and the researcher had to follow their available time. This allowed the researcher plenty of time to collect the data required for this investigation. Although some school heads' responses to the FGD were limited and some simply agreed with what other participants said, the researcher gave them time to answer probing questions, which encouraged the researcher to find more information pertinent to the investigation. On the other hand, the in-depth interview (IDI) of the other school heads gave the researcher confidence that they could provide suitable answers related to the study since their answers were informative. They provided sufficient data that was relevant to my thesis questions. The participants were challenged to express their thoughts and opinions about the study. After the interview, transcription was followed, and the researcher primarily analyzed the data. Also, the researcher was grateful for the participants' full cooperation and trust during the interview process. Further, this journey allowed the researcher to explore the viewpoints of the school heads on the learning gaps during in-person classes. It gave an understanding of the experiences they had encountered.

Recommendations

The study underscores the challenges confronted by school administrators due to their unpreparedness for in-person classes, particularly in addressing students with reading difficulties.

Administrators have tackled learning gaps during face-to-face instruction, emphasizing the necessity of collaborative efforts among stakeholders to overcome these challenges. Ensuring student readiness through targeted interventions in foundational skills is imperative for successful learning outcomes, requiring proactive direction and monitoring by school leaders.

Moreover, the study offers practical strategies for school administrators to close learning gaps effectively. It emphasizes the importance of providing teachers with technical support to eliminate gaps in learning and to oversee the teaching and learning process more effectively. During the recovery phase, it encourages administrators to actively participate in and guide effective teaching practices, providing additional learning materials as needed and monitoring the implementation of literacy and numeracy programs.

Furthermore, students directly benefit from efficient strategies implemented by school heads and teachers to address learning losses during school closures. Enhanced learning performance and readiness, particularly in fundamental skills such as writing, reading, and mathematics, equip students to catch up with globally competitive education standards. Importantly, it helps students understand the impact of their behavior on relationships and shapes them into better individuals.

Subsequently, the study encourages teachers to address learning gaps, especially in reading, through remedial classes and activities that strengthen fundamental skills. It advocates for effective communication with stakeholders and the implementation of programs for numeracy and literacy enhancement, providing additional learning materials as necessary. Job-embedded learning opportunities aid in swiftly applying newly acquired knowledge and skills to teaching practices, thereby improving teaching approaches and strategies to respond to student needs.



Recommendations for Further Research

While this study successfully addresses the perspectives of fourteen school administrators, it is essential to recognize its limitations in terms of sample size. Therefore, it is suggested that future research expand the sample size to encompass a wider population for more robust findings. Additionally, exploring various coping strategies employed by administrators to address learning gaps in face-to-face instruction warrants further investigation.

Moreover, recommendations are extended to education officials to streamline school activities, prioritize teaching and learning, and provide adequate support to teachers. Decongesting school activities, rearranging class programs, and implementing administrative support systems can significantly alleviate teachers' workload and create a conducive learning environment. Shortening competencies in other subject areas can allow for more focused instruction on literacy and numeracy, while effective feedback mechanisms and additional personnel can further support struggling students and improve overall learning outcomes.

Lastly, this study serves as a valuable resource for future researchers examining school administrators' perspectives on in-person instruction post-pandemic. It offers insights into potential areas for further investigation and underscores the importance of effectively addressing learning gaps in classroom settings.

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SEMANTIC CHARACTERISTICS OF SLANGS SPECIFIC TO THE SUB-DIALECTS BELONGING TO THE AREA OF KHOREZM REGION

Khalmenova Tamara Zaripboyevna

Master of Uzbek Philology Faculty of Urganch State University

ABSTRACT

This article presents a study of slangs related to the sub-dialects of the Khorezm region, and talks about the main functions of slangs and the factors motivating their formation. Also, the semantic analysis of slangs related to the sub-dialects of the Khorezm region, information on their formation and other morphological features will be revealed.

KEY WORDS: *sociolinguistics, slang, transfer of meaning, negative coloring, creativity, social processes, sub-dialects of the Khorezm region, regional dialect.*

INTRODUCTION

Sociolinguistics is a branch of linguistics that studies the relationship between language and society. It mainly studies how social groups influence the use of language in different communication situations. Language has never been an unchanging, static, fixed phenomenon. Because humanity, as a language user, is a dynamic creature that tries to change its environment and learn new ways of doing different activities. Based on their socio-cultural relations, people in the same social environment use new linguistic tools or language changes in order to increase the effectiveness of mutual communication and increase the level of interaction. Slangs are also the result of these processes, and they also develop together with the individual society. It is natural that the expansion of scientific works aimed at their research will greatly contribute to the development of the field of sociolinguistics. Because the emergence and use of slangs are related to social processes, they appear between language units characteristic of different social strata.

Slangs have the ability to connect and unite language users belonging to a certain group, especially young people. Young people prefer to use this means of communication to strengthen their collective solidarity and reflect the socio-cultural features hidden in their worldview. But research on slangs is often neglected, which is explained by their ephemeral nature, the fact that many slangs belong to informal language, have a humorous and taboo character, and are also seen as deviations from the standard language.

LITERATURE ANALYSIS

Researches focused on slangs have been carried out on a large scale mainly in European linguistics, and it should be recognized that there are not enough studies in Uzbek linguistics. At this point, before focusing on the study of slangs in the dialects of the Khorezm region, it is appropriate to comment on the meaning of the concept of slang in linguistics.

E.Arua and M.Alimi interpret slang as the use of non-standard, diverse and new tools in communication [1].

Slangs have an informal character, and the use of these tools, which belong only to representatives of a narrow social community, creates a unique form of social communication and solidarity. According to M.Harris, as a sociolinguistic phenomenon, slangs are created by a certain group of users by using special terms in a new sense or imposing a new definition on it [2]. According to S.Johnson and J.Shirley, “slangs are informal, non-standard words or phrases characteristic of sub-cultures within society [3]”. In this sense, it is worth noting that slang is a common linguistic phenomenon that exists in almost all languages of the world, and their tasks can be different, but its main task is to strengthen the collective unity. M.Adams considers the functions of slang to be rooted, first of all, in the social context and a person’s need to belong to a particular group [4]. R.Aboh puts forward the opinion that “slang is a functional language created to meet the communicative needs of a community that speaks a certain language. [5]”

In many studies of slang in European linguistics, young people are considered as a separate social group, which is explained by the fact that they are the largest social group that uses slang. Because, as G.Yule pointed out, “youth and teenagers are responsible for linguistic innovations and changes in the language.” Therefore, innovations and changes, on the one hand, help to enrich the vocabulary of the language, and on the other hand, create social harmony among users. Therefore, it is appropriate to see slang not as an informal, non-standard negative concept, but as an example of linguistic creativity [6].

MATERIALS AND METHODS

In many ways, among all the important units of the language (for example, lexeme, phoneme, syllable, morpheme, etc.), learning slang is a relatively more difficult process. This is partly due to its abstract nature, mainly because it is a



phenomenon that resides in the minds of language users. Also, certain extralinguistic factors, such as the socio-cultural context of the speech, the socio-cultural origin of the interlocutors, their worldview, cause problems in the analysis of this phenomenon. In this work, slangs related to the sub-dialects of Khorezm region were taken as the main material, and we used semantic, contextual and conceptual analysis methods to analyze them.

RESULTS AND DISCUSSIONS

The dialects of the Khorezm region are distinguished by their richness, the level of acquisition of a specific meaning of words. The results of the study of slangs characteristic of the Khorezm dialect showed that most of them express a pessimistic, that is, a negative attitude. As a proof of our opinion, below we give a list of some slangs and an analysis of their explanations (Table 1).

Table 1. Semantic analysis of some slangs related to the Khorezm dialect

Slang	Lexical meaning	Contextual meaning
<i>bāqāčanaq</i> (baqachanoq)	Shell	It is used as an insult to a person with big eyes.
<i>öliskä</i> (o'liska)	Physically weak, faint, powerless, flimsy	It is used to increase the negative connotation when describing a person who has no will.
<i>qani käm</i> (qoni kam)	A person with a low amount of red blood cells, or hemoglobin, is used in the body.	In a negative sense, it is used to describe a weak person who complains about something, powerless, flimsy, faint.
<i>källä aylanma</i> (kalla aylanma)	It is used to describe a person who is not in good health and dizzy	It is used to describe people who do not keep their word, change their mind often, are unstable, and make decisions without thinking.
<i>čišmä</i> (chishma)	It means a swelling of an object.	It is used to describe a person who is arrogant, extremely proud, who likes to show off.
<i>čolašiq</i> (cho'lashiq)	It is used to express its confusion, clarity and inaccuracy in relation to a subject.	It is used to describe a person who is unstable, indecisive, and makes decisions without thinking.
<i>usta</i> (usto)	A craftsman, that is, a person who makes or repairs something	It is used to describe people who are masters of their work, skillful, skilled profession.
<i>pī:r</i> (pir)	According to religious views, they are considered divine and respected persons	A master of a job, a professional, skilled person.
<i>mäkkäm</i> (makkam)	Strong, durable, unbreakable, robust	People, who spend their money thoughtfully, save too much, use it wisely.
<i>īpla:s</i> (iplos)	Dirty, unwashed	used for malicious, inconsiderate, vile person
<i>dä:li</i> (dali)	Silly, stupid	helpful, generous, honest
<i>sindirmaq</i> (sindirmoq)	To break something into two or three pieces	To admire, to do something better than expected, or to beat someone in an argument.
<i>uxlatmaq</i> (uxlatmoq)	Putting the baby to sleep	To cheat, to deceive.
<i>ot</i> (o't)	A natural phenomenon with the characteristic of burning, fire	A master of the work, a high-level professional, a highly skilled worker

CONCLUSION

In addition to reflecting the socio-cultural views of language users, slangs also demonstrate their specific competences in various communicative contexts.

The analysis of slangs related to the dialects of the Khorezm region shows that the majority of slangs are negative (*bāqāčanaq*, *öliskä*, *qani käm*, *källä aylanma*, *čišmä*, *čolašiq*, *īpla:s*, *uxlatmaq*), and some of them has positive coloring (*usta*,

pī:r, *mäkkäm*, *dä:li*, *sindirmaq*, *ot*). Also, in the slangs of the dialects of Khorezm region, a person's character and human qualities are mainly exaggerated. The transfer of a characteristic of an object to a person played a key role in the formation of slangs in the dialects of the Khorezm region (*bāqāčanaq*, *ot*, *čišmä*, *čolašiq*, *īpla:s*, *sindirmaq*). Slangs related to the Khorezm dialect are morphologically composed of units related to noun, adjective and verb word groups.



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THE GENDERED IMPACTS OF NATURAL DISASTERS: A FOCUS ON WOMEN AND CHILDREN

Mandira Devi

PhD Candidate, Department of Social Work, University of Science and Technology, Meghalaya

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ABSTRACT

Natural disasters have become increasingly common and intense in recent years due to human activity and climate change, with significant consequences. Women and children are especially vulnerable during and after natural disasters, with long-term physical, emotional, and psychological impacts. While climate change research has been ongoing for a long time, climate change has socio-economic repercussions and has impacted the ecosystem. While individual case studies are important, additional comparative studies that analyse the similarities and differences in natural disaster consequences across different locations and cultures are needed. The paper looks at how gendered the effects of natural disasters are, with a focus on the disproportionate burden on women and children. Due to climate change, several natural hazards will change in frequency, severity, timing, and location making the children and women in poor and developing countries more vulnerable and at risk.

KEYWORDS: natural disasters, climate change, environmental factors, natural hazards, droughts, floods.

INTRODUCTION

The perception that all individuals within a population face similar impacts during disasters is often inaccurate. Natural disasters exhibit a non-neutral nature, impacting women, men, girls, and boys disparately due to existing gender inequalities stemming from socio-economic circumstances, cultural beliefs, and entrenched traditional practices frequently intensified by marginalisation attributed to various factors such as age, race, ethnicity, disability, and sexual orientation. These factors consistently place females at a disadvantage, resulting in differentiated and often more severe consequences for them during disasters. The intersectionality of these multiple dimensions further amplifies the vulnerability of certain groups, particularly women, to heightened risk and adverse impacts from natural disasters (GFDRR, 2018).

The article looks at an important aspect of disasters: the gendered dimension of disaster liability as demonstrated by gender-specific disaster mortality. The difference in the impact of natural disasters on female versus male life expectancy is not a physiological or biological gender gap but also a distinct socially constructed vulnerabilities resulting from either the social roles men and women undertake, whether they choose to or not, as well as decades of prejudice against women (Neumayer and Plumper 2007).

Pre-existing disparities in gender structures lead to distinct impacts of disasters on women and girls compared to boys and men. Women and girls, especially those from disadvantaged socio-economic backgrounds, face heightened vulnerability during disasters, particularly evident in regions of the Global South or low-income countries. This increased vulnerability

significantly affects preparedness, evacuation procedures, response efforts, mortality rates, and rehabilitation post-disaster. The underlying causes of this vulnerability often stem from the societal roles assigned to women and girls, coupled with prevalent gender and cultural norms within their communities. These norms encompass the specific responsibilities, attire, expected behaviours, and duties imposed on women and girls, contributing to their heightened vulnerability during disasters (Centre for Disaster Philanthropy, 2022).

THEORETICAL FRAMEWORK

In situations where disasters strike communities controlled by power dynamics established on gender, age, or socio-economic class, the effects of such calamities are likely to mirror these pre-existing discrimination and patterns. As a result, an individual's encounters with disaster will likely be distinct. It is widely acknowledged that a gender perspective is imperative during times of crisis and disaster, given the diverse impacts that men and women experience and the varied coping mechanisms they employ. The concept of vulnerability considers individuals and their differences; in other words, it increases knowledge of the social condition by confirming that individual circumstances change and can be altered, such as by a disaster. As a result, the notion examines the resources available across different social strata to describe their current place in society (vulnerability as a passive term) instead of the prospects of changing the situation (vulnerability as an active concept) (Bradshaw, 2004).

Many theories, such as intersectionality theory, can be understood here while discussing gendered implications in disaster situations. Intersectionality has also been utilized for



gender and economic equality for women who have to surpass discrimination other than gender only. Recognizing the constraints of theorizing gender as a single collective transcending race and class, intersectionality encourages scholars to include a broader group of women, which includes women from different backgrounds, in their gender analyses. (Samuels and Ross-Sheriff, 2008).

Regarding identifying the reason why women are more vulnerable to disasters, the intersectionality theory, which critical race theorist Kimberle Crenshaw (1991) propagated in the 1980s, plays an important role in understanding how not just gender but many other multiple reasons are at play. According to this theory, social categories like gender, race, and class interact to create unique experiences of privilege and discrimination. In the context of natural disasters, intersectionality theory implies that women and children from marginalized groups may be more vulnerable and have fewer assets to deal with the disaster's repercussions (Crenshaw, 1991). Adopting an intersectional approach to investigate the gendered effects of natural disasters can help uncover how many forms of discrimination interplay and aggregate to enhance vulnerabilities (Enarson and Morrow, 1998).

Moving along the same lines of thought, another theoretical perspective that can be utilised to understand the gendered phenomenon in a disaster is feminist political ecology, which emphasises the significance of recognising the gendered components of environmental challenges. In the context of natural disasters, feminist political ecology suggests that women are frequently responsible for managing natural resources such as water and food and maybe disproportionately affected when a disaster disrupts these resources, as we further understand the patriarchal system in which men and children have first access to resources such as food and water makes it more difficult for women to get proper rehabilitation (Rocheleau et al., 1996).

To address natural disasters, the need for human, financial, physical, natural and social capital for risk management is crucial (Bahera 2021). It is further explained by the social capital theory, which contends that social networks and relationships are essential resources for disaster management. In the wake of a natural disaster, social capital theory predicts that women and children with strong social networks may be better able to obtain financial and emotional assistance to rehabilitate (Partelow S. 2021). Finally, we look into environmental justice, a theoretical concept that emphasises how marginalised people are frequently disproportionately impacted by environmental risks due to characteristics such as race, class, and location (Bullard, R. 2005).

¹ In certain disaster scenarios, a notable discrepancy in mortality rates between women and men has been observed. Studies indicate that in disasters such as Cyclone Nargis in Myanmar in 2008, the 2004 Indian Ocean Tsunami in Banda Aceh, and Cyclone Gorky in Bangladesh in 1991, a higher percentage of fatalities were women, reaching 61%, 70%, and 91%, respectively. However, in instances

Environmental Justice is a complex, multidimensional, and continually evolving concept. It recognises the equal distribution of harm and benefits of environmental disasters. For example, environmental hazards such as pollution tend to be disproportionately located in low-income communities, minorities or politically disadvantaged communities. These groups would face the legacy pollution caused by earlier generations and rich people (Bass, 1998). Environmental Justice typically centres around three overarching objectives: firstly, ensuring fairness in the allocation of environmental risks; secondly, acknowledging and valuing the various perspectives and diverse experiences within impacted communities; and finally, facilitating active participation in the political mechanisms responsible for formulating and overseeing environmental policies (Bass, 1998).

Using an environmental justice perspective, studying natural disasters can highlight how systemic inequalities can produce and aggravate vulnerability. Some of these systematic inequalities are explored in the following sections. It focuses on the human impacts of natural disasters, particularly the vulnerability of women and children, and how the long-term consequences will be comprehended. Some immediate and main effects of disaster-related human impacts, particularly on women and children are studied. Physical well-being, health impacts, displacements and loss of livelihoods, sexual violation and exploitation are some of the disaster-related issues explored.

PHYSICAL WELL-BEING

Women are at risk for physical harm during natural disasters due to factors such as increased caregiving responsibilities and lack of access to healthcare (Shakya D. R. 2016). Gender inequality in all areas of society increases women's vulnerability to catastrophe risk, affecting community resilience overall. To address the repercussions of inequality, first, one must identify the specific needs and where gaps may exist. Disasters have an adverse economic effect on everyone, but women are disproportionately affected. According to a World Bank study, female who works as farmers are largely more vulnerable to disasters than male farmers¹. Due to limited access to information about incoming disasters and fewer resources to prepare or respond effectively being a primary caregiver might hinder escaping a disaster. This lack of knowledge access might make them more vulnerable during a disaster. As many women's primary source of income, disruption to this can be disastrous. Many people, such as women, do not have the protection of bank accounts to secure their savings when a crisis strikes (Okai, 2022).

One important data gap in disaster death studies is the existence of more gender categories than merely distinguishing between women/girls and men/boys. Women die as a result of societal

where economic and social rights are more evenly distributed between genders, research suggests that death rates tend to show less disparity. For instance, following Hurricane Katrina, there was a minimal difference between female and male mortality rates, with age emerging as a more significant contributing factor (Centre for Disaster Philanthropy, 2022).



roles, such as wearing specific clothing during a disaster, which caused many women to die due to physical restraints when evacuating. At the same time, another example is women dying in Indonesia while waiting for their husbands to return from fishing in the coastal area. These mortality tolls reveal little about the overall vulnerability of different sexes or genders. These result from varied societal responsibilities encapsulating broader and deeper concerns about unaddressed disaster threats. There are some more examples of how societal roles become an obstacle in surviving a sudden disaster. Women must commonly wear clothing that impedes fast mobility while care responsibilities hinder responses. They would never wear less or alternate apparel for convenience, and they would never forsake the children or older people for whom they are responsible. Meanwhile, men frequently want to take on greater responsibility for caregiving, but they are discouraged as being unmasculine (Kelman, 2023).

HEALTH IMPACTS

Natural disasters can have a variety of health consequences, including injuries, illnesses, hunger, and mental health issues. Women and children are especially vulnerable to these health consequences, especially if they lack access to healthcare and sanitation (Djalante et al., 2015). As mentioned in the previous section, societal duties make a woman's status more vulnerable in a disaster. Further investigation reveals that women and children are at a higher risk of starvation and disease during and after natural disasters. Research conducted following the 2010 earthquake in Haiti discovered that children were at a higher likelihood of becoming malnourished due to food supply interruptions, while women were at a higher risk of reproductive health problems because of less access to healthcare (Rudowitz et al., 2006). These circumstances can aggravate the psychological discomfort experienced by women and children. Women, as we all know, are in a disadvantaged and vulnerable position in society. Thus, trauma and emotional distress can lead to difficult rehabilitation. Natural disasters can result in severe mental distress, such as trauma, anxiety, and depression. Women and children are especially exposed to these psychological effects, which can have long-term consequences for their well-being because adolescents are still maturing (Shakya D. R. 2016).

When it comes to women, the psychological well-being is more complicated. Women may also face longer-term psychological effects from natural disasters. Numerous research on the impact of natural disasters on women will show how dire the situation is. A study conducted in the United States discovered that women who were affected by Hurricane Katrina suffered higher rates of post-disaster psychological distress than men and that these effects lasted for up to three years after the disaster. (Shooshtari, S., et al, 2018). These impacts have psychosocial effects on women and children, with women and children experiencing anxiety and depression and most women feeling stressed and powerless (Dube, A., 2018).

The absence of adequate support services and the presence of social stigma often result in women coping silently and independently with enduring psychosocial consequences following natural disasters. It can lead to social exclusion and disruptions within families. Similarly, the lack of necessary support for men can manifest in violence, frustration, and depression, further worsening abusive behaviours and contributing to the exclusion and marginalisation of women within communities. This interconnected cycle highlights how the absence of support for both genders can perpetuate negative outcomes, impacting both men's and women's well-being and social dynamics post-disaster (GFDRR, 2018).

DISPLACEMENT AND LOSS OF LIVELIHOODS

Women and children are frequently compelled to escape their homes during natural disasters, becoming internally displaced or refugees. Displacement can lead to the loss of livelihoods and the disintegration of social networks, resulting in economic and psychological hardship (Shultz et al., 2016). Disasters, as experienced by people in poverty, poorer, and with lower incomes, suffer more in times of natural disaster, and we know that women are the lowest income group in any society. Moreover, with the loss of male members or families, women's position during a disaster may be worse, so women experience more risk and feel more threatened by both natural and manmade disasters. This finding may be related to the fact that some rehabilitation is expensive, maybe too expensive for individuals, especially women in poverty, to pay, for example, purchasing materials to rebuild houses, and a lack of resources and access to property inducing hardships on women and children (SAMHSA, 2017).

A study after Hurricane Katrina found that women and children accounted for more displaced people who had difficulty accessing temporary housing (Rhodes, 2010). Finally, the loss of a home after a disaster can lead to additional distress, such as disrupting access to education, particularly for girls who may be forced to drop out owing to family responsibilities or safety concerns. It can have long-term implications for their educational and economic prospects (Anderson, 2009). Safety might concern vulnerable women living in camps and shelter houses. A crisis may appear to be a scenario in which everyone suffers. Gender discrimination, on the other hand, can aggravate the hazards for women and girls. For example, they will likely have fewer skills and resources to repair destroyed homes and livelihoods. Loss of shelter can put individuals at risk of gender-based violence. Girls dropping out of school might be vulnerable to sexual violation, or marrying too young may increase. These adolescent girls are at risk of becoming child brides in the camps, married off before the age of 18. More camp awareness is needed to avoid child marriage, which can be accomplished by working with families to keep girls in school and not drop out (UN Women, 2017).

SEXUAL VIOLENCE AND EXPLOITATION

Women and children are at a higher risk of sexual violence² and exploitation during and after natural disasters. There are

² Following a disaster, there's often a notable lag in reporting incidents of sexual violence, attributable to various factors. Victims tend to

prioritize basic recovery needs over-reporting due to the immediate necessity for survival. Moreover, the limited availability or complete



numerous reasons why solely women and children are victims of sexual abuse during such crises, including a lack of protection as a result of the situation and displacement owing to homelessness. It was discovered during a thorough analysis of the 2015 Nepal earthquake (Chaudhary P et al. 2017). These are the primary reasons why, as described in the previous section, women and children have a greater case of post-traumatic stress disorder (PTSD) than men (Musa, R. 2014). Similarly, gender-based violence and inequities and crimes like prostitution and human trafficking, early marriage or forced marriage, and so on take place in such a situation, while men may resort to violence as a result of a collapse in social norms, law and order breakdown and support systems (Enarson, 2012).

Gender-based violence (GBV), including sexual violence, affects men and boys as well. There has not been much research on GBV against males, and hardly any in disaster circumstances. Given the special challenges that men and boys confront in confessing that they have been victims of GBV, it necessitates extra attention and caution. Domestic violence was the most common kind of violence in nations where GBV was documented, and most respondents claimed it had been common long before the disaster. Marital tension aggravated by stress brought on by the loss of family and friends, livelihoods, and houses; insufficient resources; and infidelity and promiscuity as a result of constrained life in internally displaced person (IDP) camps were identified as reasons for this. The investigations also appeared to indicate that single women who reside in temporary shelters are particularly vulnerable to abuse of these kinds (IFRC, 2015).

These impacts are not limited to one specific region or disaster; they are global and affect vulnerable populations worldwide. Addressing these impacts requires a comprehensive approach that includes disaster risk reduction, social protection, gender mainstreaming, and promoting human rights to properly reduce such hardships and problems (United Nations, 2015).

CONCLUSION

Gender inequality during natural disasters is still a major concern in present times. The impacts on women in the aftermath of a disaster disproportionately damage women and girls due to gendered power imbalances and discriminatory social practices (Oxfam International, 2019). Moreover, as of now, the problem persists despite the efforts of several international organisations to address it through various means. According to the United Nations Development Programme (UNDP), gender-responsive disaster risk reduction and management measures are needed to protect against gendered discrimination. Research shows that women and girls are frequently excluded from disaster preparedness and response decision-making processes due to the perception of weaker gender (UNDP, 2019).

Gender inequalities in disaster response and recovery activities are made worse by discriminatory societal norms and power

imbalances. Women in disaster-affected areas confront significant challenges in terms of caregiving, reproductive health, and livelihood. As a result, more gender-sensitive disaster response and recovery methods that recognise and address the unique issues women and girls encounter are crucial. Furthermore, ensuring women's participation in disaster preparedness and response decision-making processes is important to obtaining equal outcomes. Gender inequality during natural disasters must be addressed as a first step towards developing more resilient and sustainable communities.

Children are substantially affected during disasters, and they are the most vulnerable group in the world, in addition to the gendered effects. Disasters can result in physical harm, separation from parents, displacement from homes, and emotional anguish, all of which can have long-term consequences for the mental health of children. Education can also be disrupted by disasters, which can lead to child labour, child marriage, and child trafficking. Child-centred disaster risk reduction and management solutions that prioritise their safety, well-being, and rights are required to address the consequences of natural disasters on children. These approaches should consider the specific needs of different age groups, such as infants, toddlers, school-aged children, and adolescents. Furthermore, ensuring that impacted children have access to school, healthcare, and psychosocial assistance is critical in minimizing disasters' long-term effects. To sum up, these studies indicate that gendered discrimination and significant impacts on children during natural disasters remain a permanent issue, and there is a need for more gender-sensitive disaster response and recovery efforts.

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VALENCIA CITY BUKIDNON, JAIL MANAGEMENT AND PENOLOGY REHABILITATION PROGRAMS: AN ASSESSMENT

Gerry J. Caño, Ph.D.¹, Harry Santiago P. Achas, Ph.D.², June Rey A. Buenaflor, Mscrim.³

¹Graduate Education, serving as the Dean and Professor for the Master of Science in Criminal Justice program at Cagayan De Oro College Pinma Education in the Philippines, and working as a Researcher in the same institution.

²Graduate Education, Professor for the Master of Science in Criminal Justice program at Cagayan De Oro College Pinma Education in the Philippines and working as a Researcher in the same institution

³Graduate Education, Researcher Master of Science in Criminal Justice Cagayan De Oro College Pinma Education Philippines

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ABSTRACT

This study attempted to assess Valencia City Bukidnon, Jail Management and Penology Rehabilitation Programs for the fiscal year 2022-2023. Specifically, it aimed to describe the respondents' profile in terms of age, sex, and years of stay in the jail institution; determine the respondents' assessment level of Valencia City Bukidnon, Jail Management and Penology Rehabilitation Program in terms of Educational Program, Skill Training/Enhancement Program, Livelihood Program, Cultural and Sports Program, Interfaith Program, and Para Legal Program; and find out whether significant relationship exists between the respondents' assessment level of the rehabilitation program and the profile of the respondents. The respondents were 193 detained in the Valencia City Bukidnon Jail Management and Penology. Quantitative descriptive method was utilized to address the problem. The findings highlight a stark gender disparity among inmates, with males comprising the majority. Programs targeting the specific needs of male offenders, particularly those aged 26-30, are emphasized. The Paralegal Program stands out as highly effective, providing crucial legal assistance to detainees. However, disparities in program assessment based on gender suggest potential biases in program delivery. Ensuring equitable and unbiased program implementation is crucial to addressing the diverse needs of all individuals deprived of liberty.

KEYWORDS: Rehabilitation Programs, Jail Management, Person Deprived of Liberty, Prison, Assessment, Valencia City Jail.

INTRODUCTION

Jail plays a vital role in the criminal justice system, serving as an isolation mechanism that separates the accused or the offender from the community. The constitution embeds the fundamental rights of the citizenry to live in a healthy and safe society. Indeed, individuals having unacceptable behavior that violates the set of laws in society deemed necessary to be isolated. One feature of democracy is that every member of society is provided with equal protection of the law; one is that the accused and even criminals are allowed to correct their socially unacceptable behavior and enjoy the right to live as one of their constitutional rights.

In the Philippines, Corrections Systems comprise the government, civil society, and business sectors involved in the confinement, correction, and restoration of persons charged for and convicted of delinquent acts or crimes.

The Bureau of Jail Management and Penology (BJMP) is created to address the mounting concern of jail management and penology problems as one of the disciplinary bodies that exercise

supervision and control over all districts, city, and municipal jails. The Bureau envisions itself as a dynamic institution highly regarded for its sustained humane safekeeping and development of inmates (Section 2, BJMP Manual 2015). In addition, there are significant programs under the mandate of the Bureau of Jail Management and Penology, and they are the following: (1) inmates' custody, security, and control programs, (2) inmates' welfare and development programs, (3) decongestion Program, and good governance.

Jails and prisons are correctional institutions of reformation and rehabilitation. It serves as a shelter for education, socialization, moral recovery, and self-improvement. Municipal jails are basically under the Department of the Interior and Local Government, specifically under the Bureau of Jail Management and Penology. Prisons are the last link in the chain of the criminal justice system and are often the most overlooked by the public and state alike (Fielding et al., 2019).



Usually, individuals behind bars are often forgotten and neglected by the public without thinking that society will likely have to deal with them again. Mostly, many of them will return to where they came from. Moreover, while the prison population continues to grow, there needs to be more evidence of success in rehabilitating prisoners. Understanding how to improve prisons and their ability to rehabilitate and reintegrate offenders is the key to reducing crime and its negative consequences.

The criminal justice system appreciates the value of rehabilitation and community reintegration for condemned criminals. Correction, one of the cornerstones of the Philippine Criminal Justice System (PCJS), is a form of discipline and chastisement administered by a master or other person in authority to one who has committed an offense to cure his faults or bring him into proper subjection, according to the (Law Dictionary 2019). The Moral and Spiritual Program, Education and Training Program, Work and Livelihood Program, Sports and Recreation Program, Health and Welfare Program, and Behavior Modification Program were some of the rehabilitative programs implemented by this pillar.

Criminal rehabilitation is gaining popularity among many who are forward-thinking. Such forms of rehabilitation can help to reduce the number of repeat offenders who return to jail after being unable to adapt to life outside the jail. Moreover, this can also help to solve some of the more severe cases, such as sexual offenders who may continue in their ways after being released, preying on women or children (Jhonson et al., 2021).

Different jails and prisons offer various rehabilitation programs, including educational programs, recreational activities, livelihood programs, and others. All these programs are provided and carefully organized for the rehabilitation of inmates.

The Bureau of Jail Management and Penology of Valencia City Bukidnon implements various programs including Educational Programs, Skills Training/Enhancement Programs, Livelihood Program, Cultural and Sports Programs, Interfaith Program, and Paralegal Program. As part of their educational program, they offer an Alternative Learning System (ALS) approved by the Department of Education.

Teachers in this area are BJMP personnel who are professional teachers trained in teaching ALS. On the other hand, in the skills training and enhancement program, they have welding, baking, cosmetology, automotive, and electrical courses that TESDA accredits. If the inmates complete the Program, they will receive a National Certificate that can be used when applying for work upon their release from prison. For their livelihood program, they have cooking and gardening, income-generating activities for the inmates during their confinement. Another is the cultural and sports program, which promotes camaraderie among inmates, encouraging them to showcase their talents through dancing, singing, theater/drama, and art workshops. For sports programs,

inmates can engage in basketball, volleyball, badminton, and chess, promoting teamwork and cooperation."

Next is the interfaith programs, wherein different religious activities and services are provided, like mass celebrations, communal prayers, spiritual counseling, and catechism. Interfaith activities vary depending on the inmates' religion. Additionally, accredited organizations are welcome to participate. The facility also provides a paralegal program where BJMP officers conduct continuous informative seminars, orientations, and counsel inmates inside the jail.

The implementation of the rehabilitation programs requires the cooperation of the inmates, who must comply with the guidelines of the programs and be open to making a change. Prisoners participate in meaningful activities that help them feel like part of the community. These programs may help offenders successfully transfer from jail to the working world. Through these programs, inmates can acquire essential employability skills to increase their chances of finding employment after release (Jang, 2020).

The factor that plays a significant role in their success in life. Inmates suffer significant barriers while looking for work anywhere, according to a Baltimore release report by the Urban Institute, so returning with this disadvantage to a place with probably few job opportunities increases the risk of unemployment. Every prisoner will undergo personality change because of rehabilitation programs, which will also help to improve public safety by increasing offenders' productivity after release. The fundamental idea of the program is to always maintain the human rights of inmates. Therefore, keeping this in mind, the programs should be able to treat prisoners not as criminals but as people who require care and are less than human so that when the time comes for their release, they will not feel cast out of society.

(BuCor 2020) states that rehabilitation and treatment programs focus on providing services that will encourage and enhance the inmates' self-respect, self-confidence, personal dignity, and sense of responsibility. Therefore, inmates respond differently to the various programs offered by the Valencia City Jail, as each person has a unique attitude and personality.

The Researcher conducted this study to assess the different rehabilitation programs of the Bureau of Jail Management and Penology of Valencia City Bukidnon and determine whether the Rehabilitation Programs, such as Educational Program, Skills Training/Enhancement Program, Livelihood Program, Cultural and Sports Program, Interfaith Program, and Paralegal Program are effective or not based on inmate's perception. Thus, by assessing, the government or the public will determine what programs to enhance and give much more attention to inmates' development and attainable transformation as law-abiding and productive community members.



REVIEW OF RELATED LITERATURE AND STUDIES

This chapter presents the review of related literatures and researchers of the study. These include the concept or framework of the Valencia City Bukidnon, Jail Management and Penology, and the satisfaction level of Person Deprived of Liberty (PDL).

Bureau of Jail Management and Penology

Republic Act 6975, often known as the Department of Interior and Local Government (DILG) legislation, created the Bureau of Jail Management and Penology (BJMP). The Bureau of Jail Management and Penology is called the "Jail Bureau" (Sec. 60 to 65, Chapter V, RA No. 6975). The President may prolong the Chief of the Jail Bureau's term of service in times of war and other national emergencies, but it cannot exceed four years. The Chief of the Jail Bureau holds the rank of Director. The Inmates' Welfare and Development Program (IWDP) was established by the Bureau of Jail Management and Penology to achieve its goal and realize its vision.

The study conducted by (Bocar, 2018) stated that prisons should be healthy places for rehabilitation with a reasonably good environment for developing the offender's character. They should reform him so that he lives peacefully and socially when released and does not return to crime. Many think negatively of a person coming from prison. Some discriminate against them, though they are not yet guilty of the crime accused. Social support is one of the greatest needs for released inmates, particularly acceptance from others toward them (Estillore & Aoas, 2020)

However, addressing gender dynamics within jails is a crucial aspect of criminal studies. As stated by Wilson et al. (Boco DD. et al. 2023), understanding the intersection of gender and incarceration is essential for developing effective policies and interventions. This includes recognizing the unique challenges faced by women in jails, such as inadequate access to healthcare, higher rates of victimization, and limited vocational and educational opportunities. Furthermore, gender-responsive approaches to rehabilitation and reentry programs are necessary to address the specific needs and experiences of incarcerated women. Therefore, incorporating a gender lens into jail management and programming is essential for promoting rehabilitation and reducing recidivism among female inmates.

Being accepted by people helps the Persons Deprived of Liberty (PDL) from the Bureau of Jail Management and Penology feel valued upon their release from prison. They gain confidence as they engage in various rehabilitation programs, knowing they have undergone transformation and have acquired knowledge and skills that they can utilize outside the prison walls (Mogstad et al 2020).

Furthermore, the satisfaction of inmates with their quality of life can serve as a measure of the effectiveness of various services

provided. The degree of life that adds to happiness, contentment, and mental health advantages is called quality of life. Understanding their quality of life is vital to notifying the government, jail administrators, and the community about the inmates' current situation. Araa et al. suggests that measuring their happiness with their quality of life could provide baseline data for developing and designing effective and efficient rehabilitation programs. (Quinones, et al. 2019).

Free dental care and free medicine/vitamins came in second and third, respectively, which was deemed adequate, and the conduct sanitary inspection had the highest weighted mean, placing it first. It implies that the jail strictly enforces cleanliness to prevent the spread of contagious diseases. Free dental care and free medicine/vitamins came in second and third, respectively. The passage aligns with existing literature emphasizing the importance of jail rehabilitation programs. Numerous studies have demonstrated that effective rehabilitation programs can reduce recidivism rates by addressing the root causes of criminal behavior and equipping individuals with the skills necessary for successful reintegration into society. According to a study, prison education programs can potentially boost inmates' employability by providing them with vocational skills, academic credentials, and opportunities for personal development. As a result, this could increase their prospects of finding employment upon release and diminish their dependence on criminal behavior (Hardison E, Ojeda, V.2018).

The first research is situated within a critical pedagogical framework, emphasizing the cultivation of agency and self-directed learning, along with the ability to analyze and question ideological norms, while gaining deeper insights into social contexts. Results suggest that involvement in the programs contributed to challenging negative personal and interpersonal dynamics in the prison setting. Participants experienced increased confidence, pride, healthier self-perceptions, enhanced empathy, and a motivation to contribute positively to others. The implications of this study can guide educators and program leaders in crafting curricula that effectively address learners' developmental needs and aspirations. Prison terms deter crime by the ideas of particular and universal deterrence. Recent research from Norway suggests that prison time has a preventive effect on later criminal activity and recidivism by individuals and throughout their family and criminal network, supporting this viewpoint and precisely specific deterrence (Conway et al., 2022).

Moreover, according to the research conducted by (Lebbie H. et al., 2021), creating and implementing innovative rehabilitation strategies within jails poses notable difficulties. Therefore, implementing evidence-based rehabilitation programs, led by skilled professionals, and equipped with necessary resources, effectively reduces recidivism rates. Additionally, impactful rehabilitation endeavors support the execution of individualized goal plans for inmates, aiding them in reconstructing their lives



and navigating the demanding prison environment. However, the ongoing issue of inadequate funding for rehabilitation programs within the criminal justice system remains a significant barrier, highlighting the crucial need for each state to prioritize sufficient funding to effectively address recidivism.

Moreover, the primary objective of vocational training within jails is to provide inmates with practical skills tailored to their individual aptitudes and capabilities, empowering them to compete for relevant employment opportunities upon their release. This training also seeks to foster confidence, satisfaction, and self-respect among prisoners by empowering them with valuable skills, aiding their reintegration into society and reducing the likelihood of recidivism. However, despite these objectives, a study conducted across 17 countries found that only a minority possess adequate vocational training programs and sufficiently trained instructors to effectively deliver them. While vocational training in prison may resemble prison work, it should prioritize skill development to enhance inmates' competitiveness in the job market post-release (Chung M. et al., 2022).

Rehabilitation within jails has been shown to impact the spiritual development of offenders positively. Participation in various programs and activities offered at these centers presents individuals with opportunities to amend their criminal behaviors. Furthermore, the after-care plan is designed to assist offenders in achieving social acceptance and successful reintegration into their communities during their parole period. Chaplains prioritize offender adjustment and rehabilitation as core objectives of their counseling sessions, utilizing methods and correctional treatment approaches proven to reduce recidivism rates. This approach is crucial as it addresses the needs of inmates who do not adhere to specific religious beliefs but still require rehabilitation (Whonskenya et al., 2021).

Person Deprived of Liberty

Many of the inmates are capable of re-entering society if they are prepared and willing to undergo therapy and evaluation. This is a relevant topic for drug users because many of them are dealing with addiction issues. Counseling could assist in resolving the inner conflicts that gave rise to the addiction and, possibly, the criminal activity that supported it. Criminal rehabilitation has numerous advantageous effects and has the potential to affect the lives of many prisoners and their families. Additionally, it can aid in broader social challenges, including lowering stigma and discrimination. According to statistics, only 35% of released prisoners do not return to prison. As a result, a sizable portion of the criminals who were released continue to commit crimes and become repeat offenders. (Bhuller et al. 2020).

This puts pressure on society, and it is a significant challenge to monitor these potential repeat offenders and maintain the jail systems; the government must spend enormous sums of money. Of course, the notion of releasing repeat offenders from prison poses a risk to public safety. The situation does, however, have

hope at the end of the road. Some former inmates do not appear to return to prison for no good reason; instead, their time there was productively used to alter some significant component of their personalities.

Meanwhile, Research assessing the effectiveness of various rehabilitation programs in reducing recidivism rates has yielded mixed findings. Some programs, such as cognitive-behavioral therapy (CBT), vocational training, educational programs, and substance abuse treatment, have shown promising results in reducing re-offending rates (Howley C. et al., 2021). However, the effectiveness of these programs may vary depending on individual needs and the fidelity of program implementation (Chum M. et al., 2022).

Rehabilitation

The study conducted by (Beatty, 2021) reported that in South Carolina, 1,137,410 males are in federal corrections, followed by 83,754 females. However, the 25-29, 30-34, and 35-39 age brackets are comparable and the highest in age, while the 18-20 and 40+ age brackets are the lowest. Moreover, 14,800 people were serving sentences of one year or less in state prisons by the end of 2021 (nearly 1.5% of the total state prison population), while 10,800 were sentenced (more than 1.0%). Meanwhile, rehabilitation programs for individuals deprived of liberty (PDLs) in jails are crucial for reducing recidivism rates and facilitating their successful reintegration into society. As a result, prioritizing the implementation of rehabilitation initiatives within these institutions is essential (De Vera & Arde, 2022).

Rehabilitation plays a significant role for many inmates at Valencia City Jail, as it has a positive impact. After rehabilitation, inmates are likely to continue applying the knowledge they have acquired and utilize the skills they have learned within the institution's programs upon release.

According to Mack (2020), The main objective of rehabilitation should indeed be rehabilitation itself. Numerous correctional facilities provide programs prioritizing employment prospects post-release, acknowledging the pivotal role of securing employment in ensuring success after leaving prison.

However, all prisoners have access to equal protection from harassment, sickness, physical harm, sexual assault, and other forms of maltreatment. It is forbidden to discriminate against any committed inmate because of their race, religion, national origin, sex, disability, or political opinions. All inmates will have equal access to the jail's different programs and jobs and participate in their categorization status decisions, subject to security. (De Vera et al., 2022).

Furthermore, the main benefit of trustee programs lies in the chances they present for the growth and revival of the work habits and skills essential to the inmate's successful occupational reintegration into society. Convicts are required to carry out the



daily cleaning and other housekeeping tasks. However, some intramural work assignments, including food service, painting, washing, or other tasks, allow inmates to get vocational training. These opportunities for vocational training might give the prisoner the knowledge and abilities needed to land jobs of a similar nature in the free world. (Tolio W et al., 2021).

Perhaps recreational programs offer a variety of activities as part of the rehabilitation of inmates to allow them to express their talents and healthily pursue their interests. In addition to ensuring the inmate's general well-being while confined, this can play a significant role in their ability to reintegrate into society. By evaluating inmate needs and considering physical plant constraints, security/operational concerns, financial considerations, staff availability, resource availability, and seasonal restrictions, specific activities within a category are selected. This also includes unstructured entertainment such as playing board games and other games. Activities relating to the creative arts include art, music, drama, graphic arts, in-cell craft studies, etc. All activity programs contain wellness education, focusing on the knowledge of the beneficial use of leisure time. A practical, positive lifestyle requires wellness knowledge. Inmates reported that the program positively impacted their prison life and believed that their involvement might greatly influence their inclination to continue participating in sports upon release (Int J Environ Res Public Health. 2020)

According to the study conducted by Isiaka and Adewuyi (2020), a sporting and recreational program ranked number 1 in the survey and was rated highly effective as a rehabilitation program. This finding was confirmed by the study by Lindquist M.J. (2020), which stated that recreational activity accounts for 66.5 percent of effective rehabilitation programs in Remand Homes. However, participating in the programs has significantly benefited their prison life, mainly by providing enjoyment and increasing their happiness. Since spirituality is fundamentally about love and connectedness, spiritually connected inmates would be less likely to hurt other inmates or engage in wrong activities. The Kenyan government has institutionalized faith-based programs that 15 emphasize moral values, good Conduct, spiritual transformation, and obedience to the Kenyan laws, and they are supervised by chaplaincy services (Nyaberi, 2021).

Additionally, inmates believe their involvement in sports programs fosters the habit of engaging in sports, instills educational values, and enhances their prospects for successful integration into society post-release. Moreover, inmates express immense satisfaction with the performance, which is pivotal for the continuity of the programs. (Castillo J., García B. Pardo R. 2019)

In a study conducted by (Environ J et al. 2020), These findings underscore the significance of gauging inmates' perceptions regarding physical exercise and sports in assessing the relevance of such programs in prisons. They also emphasize the importance

of thorough planning and execution of such initiatives and the necessity for further research.

Meanwhile, government and private organizations should, as a matter of urgency, considerably improve inmates' literacy and vocational education, considering the long-term the society would derive from it. By so doing, it will correct the erroneous impression of underplaying inmates' education, which leads to their stigmatization at the point of re-entry into society. What motivates inmates to participate in educational programs is that most inmates report escaping from the suffocating prison environments, with 44 % saying (Papaioannou et al. 2019.)

Prioritizing education and making it their top priority, they will keep going to school because they believe it will simplify their social and professional reintegration. They want to show their surroundings and themselves that they are "others," or because education "won" them. Then, during the start of their academic careers, "I" would develop into "I want" and "I can." The literature review indicates that programs are more likely to succeed when rigorous, capable of fostering a distinct community within the prison environment and providing post-release support services to inmates. At Agusan Del Norte provincial jail, the Alternative Learning System (ALS) is inaccessible due to insufficient budget for school supplies and reading materials. Additionally, TESDA vocational courses are limited, given the number of scholarship slots allocated by TESDA. This means that not all inmates can avail themselves of the Skills/Training Enhancement Programs of which TESDA is involved (Patlonag 2020).

Furthermore, the provincial jail implements various programs to keep Persons Deprived of Liberty (PDLs) occupied and productive during incarceration. One notable initiative is collaborating with the Department of Education to administer the Alternative Learning System (ALS) program, allowing PDLs to pursue elementary and secondary education. After completing the programs, Persons Deprived of Liberty (PDLs) are awarded certificates and diplomas endorsed by the Department of Education, validating their competencies at a level equivalent to traditional school graduates. After successfully completing the Accreditation and Equivalency Test for elementary and high school levels, both the DepEd and the provincial government recognize the achievement. (Eusebio E. 2019).

Afterward, a resolution made by Villanueva J. (2022) to equip individuals with marketable skills. Individuals can embark on a fresh start upon their release from detention, steering clear of incarceration. Technical and vocational training instills newfound optimism among offenders as they recognize the potential of their acquired skills to unlock employment prospects post-release. Furthermore, Technical and vocational training serves as a crucial tool in disrupting the cycle of recidivism among specific inmates. Meanwhile, studies by Jang and Johnson indicate that religion significantly contributes to the rehabilitation of offenders by promoting moral transformation, improving well-being, and



fostering personal growth. As a result, correctional policymakers and prison administrators should acknowledge religious programs as effective alternatives to traditional methods. Additionally, ensuring prisoners' constitutional right to spiritual practice is essential for supporting their reformation and successful reintegration into society as productive members. (Jang S. and Johnson. B 2022).

Perhaps the goal of this department accordingly is to integrate Religious Programs, staff, and services into an institutional response to meet the needs of the inmate population. This department also seeks the highest professional response from staff chaplains and volunteers involved in delivering various religious activities across the state. Additionally, this is the ideal time to challenge newly adjudicated criminals' unfavorable attitudes and behaviors. Religious communities strive to stimulate virtue development as they collectively engage in practices (e.g., worship) that promote the connection between a transcendental narrative and virtuous behavior (Schnitker et al., 2019).

However, they also found that inmates' perceived presence of meaning in life and virtues (forgiveness, compassion, and gratitude) were inversely related to negative emotional states (depression and anxiety) and the likelihood of aggression toward another inmate. Furthermore, the virtue of self-control was also inversely associated with negative emotional states and the risk of aggressive misconduct (Jang et al., 2022).

Additionally, one could contend that inmates are most intensely engaged in religious activity, consistent with most religion-crime research. If they think religion will help them in some manner, inmates who are having significant difficulty with the institution's officials may be more likely to attend a religious event. Religion can be consoling or even a tool for manipulation. It gives the option to forgive, to start again, to be given another chance, and even to try to cover up (or cover up) their jail "sins." Spirituality can be empowering in a setting where status erosion is frequent, especially for people who feel distressed and alone. (Booyens et al., 2021).

However, the most prominent countries and most notorious criminals stayed in the massive New Bilibid Prison, located south of the Philippine capital. Less well-known is that fashion has just established a presence inside this 551-hectare complex. A maximum-security prisoner group of 40 will meet with a Manila haute couture designer every Tuesday to learn how to hand-paint and embellish elegant evening outfits and formal wear. Depending on the complexity of the design and the time required for completion, each participating convict was compensated between 100 and 500 pesos for each gown once they had developed their talents (Brian et al., 2022).

Besides, the fashion industry has paid much attention to the originality, excellence, and craftsmanship of the painting of these garments. The Fashion Creativity class is a component of the

livelihood programs designed to prepare prisoners for life outside prison. Numerous initiatives, including those in education, sports, business, spiritual development, agriculture, vocational training, and alternative learning, are designed to address the needs of the 22,000 prisoners serving time at New Bilibid, the largest jail in the nation. The Fashion Creativity Workshop's most significant success for convicts is the sense of restored dignity, self-esteem, and pride in one's work (Quinones, 2019).

As a result, it yielded positive effects on released inmates' lives. Also, the livelihood programs experienced by the released inmates contributed to their socioeconomic status (Estillore & Aoas, 2020).

Also, the International Committee of the Red Cross (ICRC) helped the Bureau of Jail Management and Penology (BJMP) create an electronic learning platform as part of its jail decongestion initiatives. The Electronic Paralegal Learning Module offers an engaging offline learning environment with resources and basic legal modules. It intends to assist jail paralegals in their ongoing education and provide them with an electronic resource hub for quick assistance to detainees (Tumukunde et al., 2022).

Additionally, paralegal programs are offered in jail institutions for speedy disposition of court cases, provision of counsel, and application of legal release modes. In the study conducted by (Bocar et al., 2018), paralegal services are one of the programs Easter Samar Provincial Jails offer inmates.

Among the implemented services under the paralegal program, Prompt Notification of Inmates' Families on Legal Matters rated as the highest weighted mean, followed by the Availability of competent legal personnel, Conduct of information/dissemination/orientation of Good Conduct Time Allowance/Various Modes of Release with 3.01, Provision of Assistance to Inmates' cases (assessment, monitoring, evaluation) with 2.95 and Prompt legal action/assistance has only 2.90 weighted mean, which means that taking legal action on the inmates' cases lacks attention like the study of Patlunag 2020, wherein the result shows that inmates are not updated on their cases status with the help of paralegal officers.

In summary, the reviewed literature and studies corroborate the undertaken research. The ICRC (2017) has collaborated with the BJMP on programs for the past decade to mitigate the endemic national jail congestion rate, which as of February 2017 averaged 55%. To alleviate the overcrowding of jails nationwide, the BJMP's plan requires the assistance of jail paralegals.

Statement of the Problem

This study assessed the rehabilitation programs in the Valencia City Bukidnon, Jail Management, and Penology in 2022.



Specifically, this study sought to answer the following research questions:

1. What is the profile of the respondents in terms of:
 - 1.1 Age.
 - 1.2 Sex.
 - 1.3 Years of stay in the jail institution.
2. What is the respondents' assessment level on the rehabilitation program of the BJMP in terms of:
 - 1.1 Educational Program.
 - 1.2 Skill Training/Enhancement Program.
 - 1.3 Livelihood Program.
 - 1.4 Cultural and Sports Program.
 - 1.5 Interfaith Program; and
 - 1.6 Para Legal Program?
3. Is there a significant difference in the assessment level of the rehabilitation program on the respondents when grouped according to their profile?

Scope and Limitation of the Study

The primary focus of this study is to evaluate the efficacy of rehabilitation programs implemented within the Bureau of Jail Management and Penology in Valencia, Bukidnon. The research will involve 193 individuals, including persons deprived of liberty (PDL) and convicted individuals housed in the BJMP facility in Valencia, Bukidnon. However, the scope of the study will be limited to analyzing six specific rehabilitation programs offered exclusively at the Valencia City Jail. These include the Educational Program, Skill Training/Enhancement Program, Livelihood Program, Cultural and Sports Program, Interfaith Program, and Paralegal Program.

Araa et al. suggests that measuring their happiness with their quality of life could provide baseline data for developing and designing effective and efficient rehabilitation programs. (Quinones, et al. 2019).

RESEARCH METHODOLOGY

This chapter presents the research method, research design, research setting, respondents and sampling procedures, research instrument, data gathering procedures, and statistical treatment of the study.

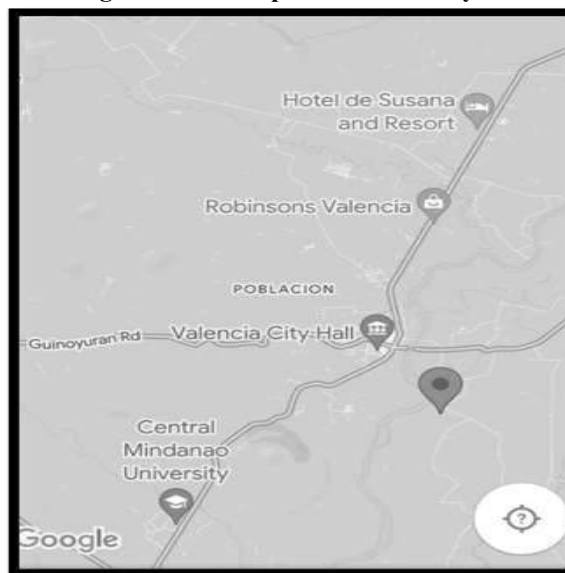
Research Design

The research design employed in this study was a quantitative descriptive approach. This approach is utilized to characterize the features of a population or phenomenon under examination, as outlined by Siedlecki (2020). It aims to delineate the 'what,' rather than delving into the 'when,' 'how,' or 'why' of feature development. Typically, descriptive categories, a categorical scheme, are used to categorize the qualities necessary for characterizing the situation or population.

Research Locale

The study was conducted at the Valencia City, Bukidnon Jail Management and Penology facility, located in Barangay Pinatilan, Valencia, Bukidnon. The setting of this research is a fully fenced facility consisting of various cells designed to segregate different types of persons deprived of liberty.

Figure 2. The map of Valencia City Jail



Respondents of the Study

As of June 11, 2022, the total population of persons deprived of liberty is 193, irrespective of their gender, age, or type of case. The researcher utilized the Slovin formula to calculate the sample size, considering a 5% margin of error, resulting in 193 respondents for this research. Simple random sampling was employed to select respondents included in the study.

Research Instrument

The instrument of this study was pattern from the assessment of the services of the Bureau of Jail Management and Penology (Patlunag,2020); the researcher slightly modified the instrument to be suitable for the research area. Part 1 of the questionnaire solicited the profile of the respondents, and Part 2 determined the respondent's perception of the level of effectiveness of the rehabilitation programs. The questions were based on the study's objectives focusing on the following indicators: Educational Program, Skills Training/Enhancement Program, Livelihood Program, Cultural and Sports Program, Interfaith Program, and Paralegal Program. The researcher personally administers the distribution of questionnaires to the respondents to ensure a one hundred percent return rate.

Validity of the Instrument

To validate the reliability of the research instruments, the researcher took the following steps: administering the pre-test survey using the questionnaire to selected inmates who were not



part of the respondents' category, such as persons deprived of liberty and convicted persons. The chosen pilot area is in the Bureau of Jail Management and Penology in Malaybalay City. Following validation, 10 selected inmates participated in pilot testing. The questionnaire's validity was tested using Cronbach's Alpha, resulting in high score validation.

Data Gathering Procedure

The researcher conducted data gathering, prepared a letter duly signed and with the conformity of the dean of the graduate studies, and addressed it to the Bureau of Jail Management and Penology administrator in Valencia City, Bukidnon. Upon approval of the letter, the researcher will administer the questionnaire to the 193 people deprived of liberty on the allowable time by the BJMP Bukidnon.

The researcher used a simple random sampling procedure to determine the respondents. The researcher consolidated the instruments and summarized the data. The data were analyzed using statistical tools, and afterward, a summary of findings, conclusions, and recommendations was drawn.

Statistical Tool

This study applied quantitative measurements such as the frequency and percentage distribution will be applied to determine the profile of the respondents. The weighted mean was used to determine the respondent's assessments of the Bureau of Jail Management and Penology rehabilitation program. Analysis of Variance (ANOVA) was utilized to determine the significant difference in the assessment level of the rehabilitation program on the respondents when grouped according to their profile.

The research employed a quantitative descriptive approach to characterize the features of rehabilitation programs at the Valencia City, Bukidnon Jail Management and Penology facility. Simple random sampling was used to select 193 respondents from the total population of persons deprived of liberty. An adapted questionnaire, comprising two parts focusing on respondent profiles and perceptions of program effectiveness, was administered. The validity of the instrument was ensured through pre-testing and validation using Cronbach's Alpha. Data gathering involved the distribution of questionnaires personally by the researcher, following approval from the facility's administrator. Statistical tools including frequency and percentage distribution, weighted mean, and Analysis of Variance (ANOVA) were utilized for data analysis, leading to the formulation of findings, conclusions, and recommendations.

PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA (SUMMARY)

Program	Weighted Mean	Description
Educational Program	4.27	Extremely Effective
Skills Enhancement Program	4.17	Very Effective
Livelihood Program	4.13	Very Effective
Sports and Cultural Program	4.23	Extremely Effective
Interfaith Program	4.35	Extremely Effective
Paralegal Program	4.38	Extremely Effective
Overall Weighted Mean	4.26	Extremely Effective

Firstly, the Educational Program, as indicated by Estillore et al. (2020), received high ratings across various metrics, suggesting its efficacy in preparing inmates for life outside the institution and boosting their employability. This aligns with the assertions of Castro et al. (2018), highlighting the potential of educational initiatives in reducing recidivism rates.

Similarly, the Skills Enhancement Program, supported by Guadamor and Martinez (2018), was perceived as highly effective, particularly in fostering confidence and social skills among inmates. This underscores the importance of such programs in facilitating successful reintegration into society.

Moreover, the Livelihood Program, as noted by Estillore & Aoas (2020), significantly contributed to the socioeconomic status of released inmates, emphasizing the importance of acquiring vocational skills and financial literacy for successful reentry into the community.

Furthermore, the Cultural and Sports Programs, supported by Int J Environ Res Public Health (2020), were perceived positively, indicating their role in promoting mental health, social interaction, and community-building among inmates.

The Interfaith Program, as indicated by Jang and Johnson (2023), was effective in addressing the spiritual needs of inmates and fostering respect for diversity, contributing to their overall well-being and rehabilitation.

Moreover, the Paralegal Program, as supported by Dolores et al. (2021) and Bocar et al. (2018), empowered inmates with legal



knowledge and resources, enhancing their agency and preparation for reintegration into society.

FINDINGS

In this final chapter, the study results are presented in detail, including an analysis of the data and a discussion of the key findings. The conclusions drawn from the research and the implications for practice are also presented, along with recommendations for future research in this area.

It discusses the role of jails in the criminal justice system and the importance of correctional systems in the Philippines. Emphasizes the need for isolation of individuals who violate the laws of society while also highlighting the democratic principle of equal protection of the law, which allows for the opportunity to correct societal behavior and enjoy constitutional rights. It introduces the Bureau of Jail Management and Penology (BJMP) as the correctional body responsible for addressing jail management and penology issues in the Philippines, focusing on the humane safekeeping and development of inmates. Finally, it outlines the major programs under the mandate of the BJMP.

On Problem-1

The demographic profile of inmates at the Valencia City Bureau of Jail Management and Penology reveals a stark gender disparity, with males comprising 97.4% of the sample population, underscoring the need for targeted interventions tailored to address the specific needs and challenges of male offenders (Bhuller et al., 2018).

On Problem-2

The assessment of rehabilitation programs within Valencia City Jail reveals a range of practical initiatives to facilitate the successful reintegration of Persons Deprived of Liberty (PDL) into society. Among these, the Paralegal Program stands out as the highest-rated program, as indicated by its extremely effective impact on providing legal assistance and information to detainees, supported by Dolores et al. (2021) and Bocar et al. (2018).

On Problem-3

The analysis of various rehabilitation programs within Valencia City Jail reveals consistent findings across different demographic variables. Specifically, statistical tests indicate no significant differences in the assessment levels of these programs at the $\alpha=0.05$ level of significance, leading to the retention of the null hypothesis. Regardless of respondents' age, years in prison, or sex, the assessment levels of programs such as the Skills Enhancement Program, Educational Program, and Livelihood Program remain consistent. However, there is a significant difference noted in the evaluation level of the BJMP paralegal program concerning respondents' sex. The findings suggest that individuals deprived of liberty may perceive the effectiveness of programs differently based on gender-related aspects. It's possible that the paralegal service prioritizes gender-related issues, potentially introducing biases, especially in their approach to

incarcerated females who represent a smaller portion of the population. This implication underscores the importance of ensuring that programs and services are equitable and unbiased, regardless of gender, to truly address the needs of all individuals deprived of liberty. Additionally, it highlights the necessity of ongoing evaluation and adjustment of programs to mitigate any unintended biases that may arise.

CONCLUSION

The assessment of rehabilitation programs within Valencia City Jail reveals a diverse range of initiatives to facilitate the successful reintegration of Persons Deprived of Liberty (PDL) into society. While the Paralegal Program emerges as the highest-rated program, providing essential legal assistance and information to detainees, the Cultural and Sports Development Program shows potential gaps in its implementation. However, both programs were recognized for their significance in promoting mental health and social interaction among inmates.

The stark gender disparity among inmates underscores the need for gender-specific interventions tailored to address the unique challenges faced by male offenders. Additionally, focusing on offering programs and services that cater to the prevalent age group of 26-30 is essential for maximizing the effectiveness of rehabilitation efforts. Efficient resource allocation is also crucial, particularly for short-term inmates, to expedite legal processes and facilitate successful reintegration into society upon release.

In conclusion, the assessment of rehabilitation programs within Valencia City Jail provides valuable insights into the effectiveness of interventions to promote the successful reintegration of inmates into society. While specific programs, such as the Paralegal Program, stand out for their impact and effectiveness, there is room for improvement and refinement, particularly in addressing gender-specific needs and optimizing resource allocation. Valencia City Jail can enhance its rehabilitation efforts and contribute to reducing recidivism rates, promoting community safety, and supporting the successful reintegration of inmates into society by using these insights and implementing targeted interventions.

Insufficient funding can result in an inefficient rehabilitation program offered to Person Deprived of Liberty (PDL), diminishes the availability of organized recreational, spiritual, and vocational activities, depriving individuals of avenues for positive development and reformation.

RECOMMENDATIONS

Based on the concentration of individuals aged 26-30 in the Bureau of Jail Management and Penology, the researcher considers this recommendation that the said agency should develop targeted rehabilitation initiatives that specifically address the needs, concerns, and interests of individuals aged 26-30.

1. To the Bureau of Jail Management and Penology.

1.1. Conduct workshops and training sessions that focus on developing practical skills relevant to the local job market based on the residence of Persons Deprived of Liberty (PDL). This can



include vocational training, resume building, interview skills, and job search strategies.

1.2. Allocate additional resources to enhance and expand programs facilitating financial assistance for inmates' families, especially in sports. This could also include initiatives such as financial literacy education, vocational training, or job placement assistance.

1.3. Expand and tailor existing programs and services to better cater to the prevalent age group of 26-30, focusing on life skills development, educational opportunities, and reintegration support to empower individuals in this demographic to make positive life choices upon release.

1.4. Develop a sports program that may not only focus on men, though most of the Person Deprived of Liberty were men. The Bureau of Jail Management and Penology should also promote inclusivity among different gender orientations in their sports program. Suggested sports that may be able to play with other gender orientation and it will be played indoor, such as Table Tennis, and Badminton.

1.5. Optimize resource allocation to expedite legal processes and provide comprehensive support during incarceration, including access to educational and vocational programs, mental health services, and reentry planning to ensure successful reintegration into society upon release.

1.6. Conduct a comprehensive review and assessment of the Cultural and Sports Development Program to identify areas for improvement and address potential gaps in implementation. May include diversifying program offerings, increasing participation opportunities, and enhancing support services to maximize the program's impact on promoting mental health and social interaction among inmates.

2. To the Community.

2.1 Involve external stakeholders, especially non-government organizations, in facilitating the acceptance of Persons Deprived of Liberty.

2.2 Strengthened family support systems and explore community-based that help the gap between incarceration and reintegration.

2.3 The Sangguniang Kabataan, with the guidance of the Department of the Interior and Local Government, and in cooperation with the Department of Justice, may formulate a program to address the needs of reintegrated individuals and their families.

3. To the Future Researcher.

3.1 It is recommended to study the gender disparities gap deeply to understand the specific needs concerning paralegal services and cultural sports programs.

3.2 It is advisable to study on the cases of individuals incarcerated for less than one year, also known as Person Deprive of Liberty (PDLs), in jail facilities.

By implementing these targeted interventions and enhancements, Valencia City Jail can strengthen its rehabilitation efforts, reduce recidivism rates, promote community safety, and support the successful reentry of inmates into society.

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ORIENTATION TO PROFESSIONAL EDUCATION IS THE DEMAND OF THE PRESENT TIME

Utebaev Tajibay Tileumuratovich¹, Tileumuratova Mekhriban Tajibay qizi²

¹DSc, Professor, Department of Preschool Education, Nukus State Pedagogical Institute

²Student, Department of English Language and Literature, Nukus State Pedagogical Institute

ABSTRACT

This article provides the necessary information about guiding students to the profession, getting them interested in the profession, and what kind of profession they will have in the future. Also, the paper describes the significance and implications of professional education orientation in response to contemporary societal demands. The text discusses the necessity of aligning educational curricula and practices with the evolving needs of the professional landscape, emphasizing the importance of preparing students for successful careers in an ever-changing global economy. Overall, this paper offers a thought-provoking exploration of the imperative for orientation to professional education in contemporary times, providing valuable insights for educators, policymakers, and stakeholders invested in shaping the future of education and workforce development.

KEY WORDS: profession, student, person, profession, education, education, professional education.

INTRODUCTION

In the contemporary landscape, orientation to professional education has emerged as an indispensable demand, vital for both individuals and society at large. This imperative arises from several key factors:

- Economic Advancement:** In an era characterized by rapid technological evolution and globalization, professional education equips individuals with the knowledge, skills, and competencies essential for participating in and contributing to the modern economy. A workforce educated in relevant fields is crucial for driving innovation, productivity, and sustainable economic growth.
- Employability and Career Development:** Professional education provides learners with specialized training and expertise tailored to the demands of specific industries and professions. By acquiring relevant qualifications and practical experience, individuals enhance their employability and career prospects, positioning themselves for success in competitive job markets.
- Adaptation to Technological Change:** The digital revolution has transformed the nature of work across virtually every sector, creating a demand for professionals with advanced technical skills and digital literacy. Professional education programs play a critical role in preparing individuals to navigate and harness emerging technologies, ensuring they remain adaptable and competitive in evolving job markets.
- Quality Assurance and Industry Standards:** Professional education institutions adhere to rigorous standards and accreditation processes, ensuring the delivery of high-quality education that meets industry standards and professional requirements. This focus on quality assurance instills confidence in employers and stakeholders, validating the credentials and expertise of graduates in their respective fields.

5. Lifelong Learning and Continuing Professional Development:

Orientation to professional education extends beyond initial qualifications, emphasizing the importance of lifelong learning and continuing professional development. In dynamic industries and rapidly evolving fields, professionals must continually update their skills and knowledge to remain relevant and effective in their roles.

6. Social Mobility and Inclusive Growth:

Access to quality professional education opportunities promotes social mobility by providing individuals from diverse backgrounds with pathways to upward economic mobility and improved social outcomes. By fostering inclusivity and diversity within professional fields, orientation to professional education contributes to more equitable and sustainable patterns of growth and development.

In summary, orientation to professional education addresses the contemporary demands of a rapidly changing world, offering individuals the opportunity to acquire specialized knowledge, develop relevant skills, and pursue rewarding careers aligned with their interests and aspirations. By investing in professional education, individuals, communities, and societies can unlock pathways to prosperity, innovation, and social progress in the present and future generations.

LITERATURE REVIEW

When choosing a profession, psychological preparation or maturity is an important factor of professional self-awareness, helps to choose the right profession, and strength is manifested in stability, tension, which is provided by awareness, independence and is part of the formal-dynamic aspect of professional choice. Professional activity plays an important role in human life. From the first steps of their children, parents start thinking about what kind of profession they will have in the future. By monitoring their children's interests and abilities,



they try to determine their future career choices. Especially, the education provided at school brings out the student's interest in various subjects. In some children, interest in a certain subject is quickly noticed, that is, drawing, music and other subjects. These interests create goals and actions in the child and encourage him to choose a profession. Vocation is the main conceptual concept of vocational science. There are many descriptions of the concept of profession in the vocational literature. First of all, it is an activity that requires special training, always puts a person through experience and serves as a source of livelihood. A trade that people are used to learning and working on is called a profession. A person's needs in life are endless. To satisfy these needs, a person engages in a certain type of activity. Many school graduates are faced with the problem of choosing a career without having any special training or understanding the future of the profession, with the question of who I will be in the future or in which field I will be an expert. In this case, finding a place in the professional world will have a special meaning.

Professional education plays a crucial role in meeting the demands of the present time, equipping individuals with the knowledge, skills, and competencies necessary to succeed in today's rapidly evolving global economy. This literature review explores the significance of professional education in addressing contemporary challenges and meeting the needs of various industries and sectors.

Importance of Professional Education

Skills Gap and Workforce Development: Professional education is essential for closing the skills gap and preparing individuals to meet the evolving demands of the labor market, particularly in high-demand sectors such as technology, healthcare, and finance [4].

Lifelong Learning and Continuous Professional Development:

Continuous professional education is critical for enabling individuals to adapt to technological advancements, industry trends, and changing job roles throughout their careers, fostering lifelong learning and career advancement opportunities [5].

Strategies for Delivering Professional Education

Higher Education Institutions and Vocational Training Programs:

Higher education institutions and vocational training programs play a key role in delivering professional education, offering degree programs, certifications, and skills training tailored to the needs of specific industries and occupations [6].

Online Learning Platforms and Continuing Education Providers:

Online learning platforms and continuing education providers offer flexible, accessible, and cost-effective options for professionals to acquire new skills, earn certifications, and stay abreast of industry developments without disrupting their careers [7].

Impact of Professional Education on Economic Development

Human Capital Development and Innovation: Investment in professional education contributes to the development of human capital, driving innovation, productivity growth, and economic competitiveness at the individual, organizational, and societal levels [1].

Workforce Diversity and Inclusion: Professional education initiatives that promote diversity, equity, and inclusion help to broaden participation in the workforce, cultivate talent from underrepresented groups, and foster a more inclusive and resilient economy [8].

Thus, professional education is indeed the demand of the present time, serving as a catalyst for economic growth, social mobility, and individual empowerment in an increasingly knowledge-driven and competitive global landscape. By investing in professional education, policymakers, educators, and industry stakeholders can build a skilled, adaptable, and future-ready workforce capable of addressing emerging challenges and driving sustainable development in the 21st century.

DISCUSSION

Therefore, the problem of choosing a profession remains relevant for them. By chance, being anxious in the chosen field without having special training, looking with distrust towards the future, creates certain difficulties in finding oneself in the world of work. A person's individual characteristics, abilities, interests and talents play a key role in the acquisition of a profession. Who learns which profession is optional, but only a person who studies this profession deeply and becomes a role model is recognized as a mature specialist. Profession unites people engaged in the same activity. Within this activity, certain relationships and moral norms are established. Profession is a special form of social organization of the able-bodied members of the society, in which the members are united by the general type of activity and professional consciousness. E.A. Klimov puts forward several definitions in this regard in his works. According to the detailed definition, the ratio is a necessary and valuable field for the profession-society, which requires human physical and mental strength. These forces appear as an important means of survival and development instead of the labor expended on it.

It is necessary for the student to have information about the world of professions during the educational process. We are witnessing an increase in the number of types of professions and specializations as there are innovations and developments in all fields around the world. The growth of new professions and fields is based on the needs of this person. According to the data, in 1965, 21,741 professions and 400 types of specialties were listed alphabetically. All these professions and specialties serve for people [1]. Directing the mind of the growing young generation to the right profession is an urgent issue in the process of education. Because the right occupation and work will be a person's spiritual and fashionable food for a lifetime.



One of the great writers said: If a person works in a profession he loves, he never thinks that he is going to work every morning. Being engaged in one's beloved profession gives a person pleasure, joy, enthusiasm, motivation and spiritual nourishment. A person who does what he likes does not notice how quickly time passes. He never gets tired of what he is doing. Today, many people around the world are sitting on clocks in factories, offices, cars, and workplaces in order to make the working time pass faster. It is known from the behavior of people in this category that they did not choose the occupation they liked as their profession. That is, they are engaged in a profession that they do not like. Some people believe that it is secondary to being able to earn a lot of money from the work they do.

But no one can make a lot of money from his work unless he enjoys his profession. It may be that the profession a person is engaged in is a highly profitable one, or that someone is earning a lot of income from this profession, but if the owner of this profession does not have interest and enjoyment in his work, he will never be able to enjoy his profession. Based on this, we can see that in real life, those who enjoy their profession are successful, and those who hate their profession spend their days in boring idleness. In such conditions, an ordinary shoe repairer who loves his profession and enjoys what he does can benefit much more than a person who works as a mature specialist in an advanced organization that can make a profit today, but who hates his profession and cannot find pleasure in what he does.

Profession is not only a way to earn money, but also a means of meaningfully spending a large part of life. When a person chooses a profession for his future from a young age, he should consider not only the material income from this profession, but also the spiritual nourishment that should be obtained from it. A person can face the problem of choosing a profession at different times, but mostly he has to solve this problem during his studies at school. Some children have an idea about the profession or specialty that they can get in the future from the moment they remember. This is especially true for children of families with professional traditions (family doctors, artists, etc.). However, many young people take the path of independently finding their place in life, choosing a profession. First of all, young people observe their elders (parents, grandparents and other people around them) and begin to evaluate some of their professional situations as positive or negative. All people face the problem of choosing a profession. Choosing a profession that matches a person's interests, talents, creates conditions for personal development in the future, and brings good income, is a reasonable solution to this problem. In ancient times, people were only engaged in hunting. Later, with the development of the society, farming, animal husbandry, fishing, pottery and other similar crafts appeared. With the increase of human needs, their types have increased.

As the child's personality creates its own source of livelihood, the parent's effort stops. Therefore, it is necessary to start early for the child to choose a profession suitable for his interest and ability. If he chooses a profession suitable for his internal and external capabilities, from that moment the child begins to grow independently. In the same way, without dragging the child in

life, it is necessary to find out what germs are in him and create conditions for his growth. Parents spend 30-40 years for their children to become independent in life and find their place in the society. That is, if a child is engaged in the process of choosing a profession from the age of 5-10, it will be reduced to 15-20 years instead of 30-40 years for the processes listed above. Which field a student is interested in from a young age depends on his mental and physical capabilities. During the educational process, it is necessary to consult with teachers and class leaders about this. At a time when the problem of unemployment is an urgent issue in the whole world, the measures taken to ensure the employment of young people in order to make the life and future of the young people of our Republic clear, are a great attention to the young people. Only young people are required to use the opportunities created correctly and wisely. In this regard, our president said, "The fact that our youth are able to rightfully take responsibility for the future of our country and are becoming the decisive force of today and tomorrow gives us all pride and pride. It is necessary to bring our large-scale work in this field, in particular, to the logical conclusion of our national programs on education" [2].

A child can find his identity in the professional world and be selected as a mature specialist by actively acting with his abilities, talents, and knowledge from a young age. For this, in the process of education, parents can guide, create opportunities and influence the child through inspirational factors. For example, teachers provide students with a complete understanding of the world of professions, and if necessary, provide practical assistance to school leaders in introducing the work of professional specialists to their activities, conducting excursions and lectures, organizing meetings and conversations with representatives of various professions. Organizes and conducts methodical seminars on the current problems of continuous professional orientation of students of general education schools at the district and city levels. Through such activities, interest and passion in teenagers creates a stable goal. When conducting career guidance activities at school, high school students often have conversations with people who are mature experts in their profession, giving teenagers insights into what to do to become an expert in their chosen profession.

CONCLUSION

One of the factors that motivates the development and formation of a teenager's personality is the qualitative change in the motives of educational activities. Different from a child of junior school age, a teenager is no longer only motivated to acquire a knowledge system, to hear the teacher's praise and to increase grades, but to occupy a certain positive position among his peers and to acquire a future profession. A teenager begins to be interested in various professions, imagines who he will be in the future. E.A. Klimov (1996) separates the adolescent from the main stages of professional development. It is very important for a teenager to choose a specific profession and direct his activities to it. The adequacy and correctness of such a choice depends on the formation of the adolescent's knowledge-related interests and professional direction. The formation of professional interests itself is considered by scientists as a four-stage process. Its first stage corresponds to the age of 12-13 and is characterized by the fact that it is not



connected with the original talent. In the second stage, which corresponds to the age of 14-15, interests appear, which are numerous and are directly related to the child's cognitive abilities and personal characteristics. In the third stage, 16-17-year-olds have such an integration of interest that they develop primarily in connection with sexual characteristics and individual characteristics in a person. For example, girls and boys begin to choose a profession that is suitable and suitable for them. According to L. Golovey (1996), in the fourth decisive stage, the range of interests is significantly narrowed, there is a professional direction, and it ends with the choice of a profession.

Thus, such people should not be forced if they do not want to acquire a profession and certain arts. Because the purpose of educating urban residents is to make them possess virtues and turn them into artists [3].

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PERIPHERAL NERVE BLOCKS IN GERIATRIC ORTHOPEDIC ANESTHESIA FOR HIP FRACTURES: UNVEILING ECONOMIC AND CLINICAL DIMENSIONS

Emery Niyonkuru¹, Xu Zhang² and Peng Ma¹

¹Department of Anesthesiology, Affiliated Hospital of Jiangsu University, Zhenjiang City, Jiangsu Province, China

²School of Medicine, Jiangsu University, Zhenjiang City, Jiangsu Province, China

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ABSTRACT

Hip fractures in elderly patients significantly burden health and healthcare costs. Effective pain management is crucial for optimal recovery, prompting the exploration of innovative strategies like peripheral nerve blocks (PNBs). This review investigated the clinical and economic impact of PNBs on geriatric patients undergoing hip fracture surgery. A systematic review identified relevant research on PNB use in this population, searching databases like PubMed, Cochrane, and others for studies published before September 2023. The findings revealed several potential benefits associated with PNBs, including targeted pain control, decreased opioid dependence, and facilitated earlier mobilization. Notably, the analysis highlighted a dual impact, with PNBs demonstrating potential clinical advantages like shorter hospital stays and fewer complications alongside their costs. However, the evidence of their influence on healthcare costs remains inconclusive. Despite the uncertainty surrounding cost-effectiveness, the overall trend suggests positive clinical outcomes associated with PNBs, including improved recovery and reduced opioid reliance. These potential benefits could translate to a positive impact on healthcare resource utilization.

In conclusion, PNBs show promise for improved clinical outcomes and potentially reducing healthcare resource utilization. To solidify cost-effectiveness, future studies should pinpoint economic benefits and refine PNBs use. A more thorough analysis is needed to confirm these financial advantages.

KEYWORDS: hip fracture, peripheral nerve blocks, elderly, hospitalization duration, healthcare costs.

INTRODUCTION

Hip fractures exert a substantial toll on healthcare and communities, and are anticipated to surpass other types of fragile fractures globally[1][2]. The prevalence of hip replacement procedures is expected to reach 7–21 million by 2050, driven by population growth and aging demographics[3]. Beyond sheer numbers, the implications are profound, encompassing significant morbidity, mortality, and substantial healthcare costs[4]. The journey from hip fracture to recovery is marked by challenges, with a stark 35% mortality rate within a year[5]. Post-surgical pain further complicates the scenario, affecting a significant number of patients with ongoing moderate to severe pain[6]. This pain not only hampers recovery but also poses the risk of delirium, compounded by the use of opioids in this vulnerable population[7]. Since the 1980s, local anesthesia and opioids have been the mainstay of post-surgical pain management[8]. The effectiveness of opioids in reducing post-surgery pain has been widely proven. Nevertheless, there are still worries about the potential short-term side effects and the risk of long-term addiction [9]. Regional blockade is effective in reducing pain during movement within 30 minutes of placement.

It also reduces the risk of pneumonia, allows for quicker mobilization, and lowers costs associated with pain medication, especially with single-shot blocks[10]. Driven by concerns about opioids, particularly their risks in the elderly, pain management is undergoing a shift. PNBs are emerging as a promising alternative, offering a different approach to managing pain[8]. However, studies examining peripheral nerve blocks in elderly hip fracture patients after hip arthroplasty present conflicting findings. While Fu et al. observed a potential decrease in short-term mortality associated with PNBs, they are also associated with higher hospitalization costs. Additionally, the impact on longer-term outcomes such as one-year mortality, walking ability, major complications, and length of stay remains unclear, as no significant differences were observed between PNBs and other anesthesia types[11]. Conversely, Chan et al. emphasized the positive effect of PNBs in significantly reducing opioid use, particularly during hospitalization, suggesting potential benefits for both clinical outcomes and resource utilization[12]. However, Jørgensen et al. found no association between routine PNB use and early discharge or 30-day readmission rates within specific surgical protocols like fast-track THA and TKA[13]. To



thoroughly evaluate the clinical and financial benefits of nerve blocks in hip surgery for elderly patients, a detailed analysis is necessary to determine their cost-effectiveness and their role in providing sustainable healthcare. This review aims to fill the research gap by focusing on the use of peripheral nerve blocks specifically for anesthesia in hip fractures in older adults. The objective is to assess the economic and clinical implications, postoperative issues, length of hospital stays, pain control, patient recovery, and cost-effectiveness, to provide information for evidence-based decision-making.

Methodology

A comprehensive literature search was conducted to identify relevant studies published up to September 2023, encompassing PubMed, Ovid Medline, Google Scholar, and Cochrane databases. The search strategy included clinical trials, review articles, observational studies, case reports, and meta-analyses, focusing on senior hip fracture patients. The search terms strategically combined keywords like “hip fracture,” “femoral neck fracture,” “postoperative pain,” “cost savings,” “analgesia,” “coeffective,” “pain management,” and “peripheral nerve block” with relevant medical subject headings terms for enhanced precision. By reviewing various study types, researchers hoped to gain insights into both clinical effectiveness and potential financial benefits associated with different nerve blocks in managing pain in this population. The outcomes of nerve blocks on both clinical and economic dimensions are elucidated through narrative description.

Anesthesia Selection in Total Joint Arthroplasty

In total joint arthroplasty, spinal anesthesia, and general anesthesia are common modalities, with varying preferences based on surgery type, patient demographics, and outcomes. The choice between these two approaches, particularly in hip fracture surgeries, is crucial due to its implications for postoperative

mortality and considerations for patients on anticoagulants[14]. Research by Chowdary et al. suggests that spinal anesthesia, especially in elderly hip hemiarthroplasty patients, is associated with reduced complications, shorter surgery times, and overall mortality[15]. Further evidence supports the advantages of spinal anesthesia, such as decreased pneumonia, infections, critical care utilization, and falls, making it a recommended choice for total hip and knee replacements[16][17].

Challenges in Traditional Pain Management

The multifaceted landscape of hip fracture pain management involves non-opioid and opioid strategies (Table 2). Non-opioid analgesics, despite their use in managing post-surgery pain, prove ineffective for dynamic pain, necessitating exploration of alternative approaches[18]. Postoperative pain management after hip replacement surgery traditionally involves medications such as acetaminophen, Nonsteroidal Anti-Inflammatory Drugs (NSAIDs), and opioids (figure 1). However, drowsiness can hinder recovery[19]. The elderly population, facing the dilemma of excruciating discomfort and potential complications from pain medications, requires careful consideration of pain management strategies[20](Table 1).

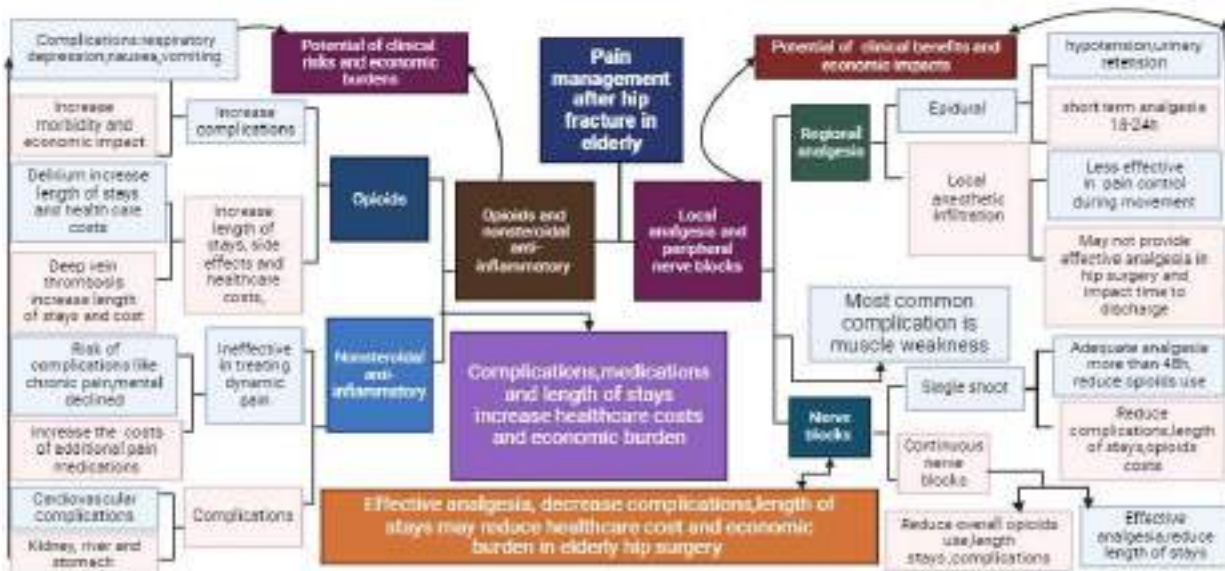
Opioids in Perioperative Pain Management

Opioids, though historically effective in surgical settings like hip replacement, present concerns due to side effects, particularly in the elderly. The opioid crisis has highlighted the significant dangers and expenses linked to opioid misuse, prompting a reevaluation of prescribing patterns and a shift towards opioid-free and sparing techniques for effective alternatives[21][22]. Peripheral nerve blocks emerge as a viable option, offering pain relief for limb surgeries, improving patient satisfaction, and reducing opioid dependence[8][23].

Table 1. Medications to avoid in elderly patients due to the complications associated[24]

Drug	Complications
Benzodiazepines	Cognitive dysfunction, delirium, falls that lead the Fractures
Tramadol	Unpredictable negative effects, variable metabolism
Diphenhydramine	Confusion, dry mouth, constipation, delirium
Morphine	Neurotoxicity, Delirium

Figure 1. Pain management in elderly hip fractures: Mechanisms Impacting Clinical Outcomes and economic implications



Epidural Analgesia: Benefits and Limitations

While initially providing better pain control than systemic opioids, epidural analgesia comes with limitations, including a diminishing effect within 18-24 hours[25][26]. Studies exploring the impact of postoperative epidural analgesia on pain and rehabilitation in hip fracture patients suggest varying outcomes, emphasizing the need for careful consideration of its application[27]. Combining peripheral nerve blocks with epidural anesthesia offers additional benefits, particularly in elderly patients with cardiac comorbidities[28].

Local Anesthetic Infiltration and its Comparative Efficacy

Local infiltration analgesia (LIA) or periarticular analgesia (PAI) during joint replacement surgery provides pain relief at rest comparable to peripheral nerve blocks or epidurals but exhibits limitations in managing pain during movement. Evidence from meta-analyses suggests varying outcomes for knee and hip surgeries, indicating the need for further investigation regarding hospital stay and time to discharge[29].

Peripheral nerve blocks.

Geriatric orthopedic anesthesia for hip fractures necessitates precise pain management strategies to enhance outcomes. Regional anesthesia techniques offer benefits compared to general or spinal anesthesia. Peripheral nerve blocks (PNBs) have emerged as innovative alternatives, exhibiting benefits in hemodynamic stability, reduced complications, and shorter hospital stays[30][31][32].

1. Analgesic efficacy

1. Femoral nerve block (FNB)

A study by Unneby et al. found that preoperative femoral nerve blocks reduced acute pain and opioid use in elderly hip fracture patients compared to conventional management. This benefit extended to patients with dementia[33]. Additionally, Xing et al. found that pre-operative femoral nerve block (FNB) led to a

significant reduction in postoperative pain and opioid use compared to controls undergoing hip arthroscopy, supporting the potential benefits of FNB for pain management in lower extremity surgeries[34].

2. 3-in-1 block

Deniz et al. conducted a study comparing the analgesic efficacy of ultrasound-guided 3-in-1 nerve block and fascia iliaca compartment block (FICB) in hip prosthesis surgery. Both blocks demonstrated similar analgesic effects, evidenced by comparable reductions in tramadol use (33.2% for FICB, 27.4% for 3-in-1) at 24 hours postoperatively. Additionally, both groups exhibited decreased stress hormone levels at 60 minutes after block administration[35].

3. Psoas component block (PCB)

Becchi et al. conducted a study investigating the efficacy of continuous psoas compartment block (cPCB) for pain management after total hip arthroplasty (THA). Compared to patients receiving systemic analgesic injections, the cPCB group demonstrated significantly lower pain scores and reduced requirements for additional pain medication, suggesting superior analgesic efficacy of cPCB for post-THA pain management[36].

4. Fascia iliaca compartment block (FICB)

Chen et al. conducted a study demonstrating that ultrasound-guided supra-inguinal fascia iliaca compartment block (US S-FICB) provided effective and rapid pain relief for senior patients with hip fractures who arrived at the emergency department. Additionally, US S-FICB improved tolerance to movement and promoted better sleep quality[37].

5. The Sacral Nerve Block (SNB)

In a study by Shah et al., combined lumbosacral plexus block (CLSPB) emerged as a safe and effective anesthesia option for high-risk patients undergoing unilateral lower limb surgery. This technique offered several advantages compared to traditional approaches, including stable hemodynamics during surgery (potentially reducing cardiovascular complications), improved



postoperative pain management (potentially leading to faster recovery and reduced need for painkillers), cost-effectiveness through reduced resource utilization, and shorter hospital stays contributing to improved healthcare efficiency and potentially better patient outcomes[38]

7. Quadratus lumborum block (QLB)

Acharya et al. conducted a double-blinded, placebo-controlled trial to evaluate the efficacy of ultrasound-guided anterior quadratus lumborum block (US-guided Ant. QLB) in managing pain after total knee arthroplasty (TKA). Patients receiving US-guided Ant. QLB demonstrated significantly lower Visual Analog Scale (VAS) pain scores ($p < 0.05$) compared to controls. Additionally, they required significantly less rescue pain medication (chi-square value 5.9341, $p = 0.0148$) and reported higher overall satisfaction. These findings suggest that US-guided Ant. QLB may be a valuable tool for improving pain management and patient experience following TKA[40].

8. Erector Spinae Plane Block (ESPB)

In a study of anesthesia options for elderly patients undergoing hip surgery with medical comorbidities, the Lateral Erector Spinae Plane Block (LESPB) showed promising results. LESPB, combined with minimal sedation and analgesia, provided effective anesthesia for all participants. All patients reported postoperative pain scores below 2 on a 10-point scale upon arrival in the recovery room, indicating well-tolerated pain management in this vulnerable population with potential medical complexities[41]. Tulgar et al. found that LESPB and QLB-T provided better pain relief than standard injectable analgesia in hip and proximal femoral procedures. Patients receiving nerve blocks reported lower pain and needed less tramadol and fewer additional medications within 24 hours. This indicates that LESPB and QLB-T offer more effective and sustained postoperative pain management in these procedures[42]

2. Clinical Efficacy of Nerve Blocks

1. Potential Complications Associated with Nerve Blocks

Peripheral nerve blocks present potential complications, including local anesthetic systemic toxicity, nerve damage, infection, and motor block (Table 1)[43][44]. Research indicates that FNB increases the risk of falls after hospital discharge. Additionally, Perioperative FICB improves recovery after spinal anesthesia for elderly THA patients but may also reduce muscle strength[34][45]. In contrast to traditional blocks, motor-sparing techniques like anterior iliopsoas space block and pericapsular nerve group block (PENG) focus on sensory nerves, preserving motor function. Studies indicate the potential advantages of these techniques in managing perioperative pain without compromising mobility [32][46][47].

2. Impact on Mortality and high-risk patients

Numerous studies highlight the potential of nerve blocks in reducing mortality after hip fractures. One by Pederson et al. suggests continuous femoral nerve block catheters can lower twelve-month mortality by 6%, potentially due to various contributing factors. Another study by Lees et al. found significantly lower mortality rates (5.5% vs. 15%, $p = 0.0024$) in

patients receiving femoral nerve blocks[48]. In the elderly, where hip fractures often present significant risks, research also demonstrates the success of peripheral nerve blocks, even in high-risk patients. A 96-year-old with severe aortic stenosis underwent successful hip surgery using this method[49].

3. Economic Implications of Nerve Blocks

1. Reduction in Analgesic Use (Opioids)

Peripheral analgesia, particularly through techniques such as peripheral nerve blocks (PNBs) and femoral nerve blocks, demonstrates promising outcomes in minimizing the reliance on opioids during surgical interventions. Joanne Guay et al. revealed that a one-time peripheral nerve block not only decreased pneumonia incidence but also expedited post-surgery mobilization and reduced expenses for pain relief medications[50]. In a prospective study by John M et al., fascia iliaca blocks were associated with a diminished need for preoperative opioids and a low incidence of opioid-related adverse events in elderly hip fracture patients[51]. Intraoperative morphine usage was the least common among individuals undergoing FNB, and its absence was a predictor of increased morphine consumption postoperatively and 48 hours thereafter[52].

Morrison et al. conducted a randomized controlled trial, highlighting a 33% reduction in injectable morphine equivalents in the intervention group receiving a single-dose FNB in the emergency department [53]. Peripheral nerve blocks in elderly hip fracture patients contribute not only to reduced discomfort during mobility but also to a lowered risk of severe confusion (RR 0.67, 95% CI; 0.50 to 0.90) and pulmonary infection (RR 0.41, 95% CI; 0.19 to 0.89). Additionally, PNBs result in cost savings for analgesic medications and expedite the time to initial movement[54]. Preoperative FNB has demonstrated improved pain control and reduced opioid reliance post-hip arthroscopy, particularly with decreased opioid use observed 48 hours after surgery[34]. Furthermore, studies, including that by Deniz et al., suggest comparable analgesic efficacy for hip prosthesis surgery with both ultrasound-guided 3-in-1 and FICB, leading to significant reductions in tramadol consumption and decreased stress hormone levels at 60 minutes postoperatively [35].

2. Reduced Complications

Nerve blocks, by minimizing complications have the potential to reduce healthcare costs associated with prolonged hospital stays. Utilizing peripheral regional anesthesia in hip surgeries is linked to enhanced hemodynamic stability and a decreased incidence of complications, presenting a favorable alternative to general or spinal anesthesia[30]. Within this patient population, localized anesthesia, specifically peripheral and neuraxial nerve blocks, is associated with a reduced risk of pulmonary complications, postoperative cognitive dysfunction, and shorter intensive care unit stays[31]. Postoperative challenges, including hypostatic pneumonia, delirium, and deep vein thrombosis, often arise due to immobilization linked to pain, leading to extended hospital stays and increased healthcare costs. Initiating analgesia as early



as possible, even before surgery, is crucial to address these challenges effectively [55]. A comprehensive review by Guay et al. suggests that nerve blocks, compared to traditional pain management approaches, significantly reduce pain, decrease the risk of confusion, potentially lower chest infections, and expedite mobilization time [56].

Effect of Nerve Blocks on Delirium

Delirium risk in hip fractures varies widely (4-61%). Pain and opioid use are major causes, especially in intermediate-risk patients (Table 1). Regional anesthesia like nerve blocks can be a powerful tool, offering better pain control, reducing opioid reliance, and potentially lowering delirium risk[57][7]. Ultrasound-guided iliac fascia block using radionics improves postoperative pain, reduces fentanyl dosage, C-Reactive Protein(CRP), and Neuron-specific enolase (NSE) levels, decreases the incidence of postoperative cognitive dysfunction(POCD), and improves nerve block effectiveness in elderly patients undergoing hip surgery[58]. Nerve blocks contribute to reducing delirium risk by providing better pain control and decreasing opioid reliance[58][57][7].

Effect of Nerve Blocks on Deep Venous Thrombosis (DVT)

Delayed rehabilitation is associated with complications like pulmonary infections and deep venous thrombosis[59]. However, the use of nerve blocks, a form of regional anesthesia, is correlated with increased chances of early ambulation and a lower risk of DVT[60].

3. Length of Hospital Stays and Resource Impact

Lenart et al.'s investigation into peripheral nerve blocks for orthopedic surgery showcased their efficacy. Single-injection PNBs resulted in shorter hospital stays, while continuous PNBs reduced overall hospitalization duration. Both techniques exhibited a potential for earlier recovery compared to conventional pain management approaches (figure 1) [61]. In total hip arthroplasty for the elderly, continuous fascia iliaca compartment block (FICB) demonstrated superior recovery quality and lower pain levels after 24 hours. However, it did not significantly impact the time for the first postoperative ambulation and hospital stay length[62]. Houserman et al.'s retrospective analysis demonstrated the impact of nerve block analgesia on hip fracture patients. Those receiving fascia iliaca compartment block experienced significantly shorter hospital stays and lower pain levels on postoperative days 2 and 3. Moreover, Verbeek et al.'s findings highlighted the advantages of continuous FICB (CFICB) over single-shot FICB, including extended pain relief, the potential for faster recovery, reduced opioid reliance, and shortened hospital stays. CFICB may also be associated with lower mortality rates and reduced delirium, representing a promising tool for enhancing pain management and outcomes in hip fracture patients[5][63].

5. Resource Impact and Cost-Effective Care in Hip Surgery

1. Resource Impacts

Continuous Peripheral Nerve Block (CPNB) suggests a comprehensive approach using diverse pain relief methods and advanced regional anesthesia techniques to reduce both hospitalization time and costs[52]. Prioritizing patient satisfaction and resource efficiency, recommendations include minimizing the length of hospital stays after hip surgery and concurrently decreasing readmission rates[64]. Administering a single preoperative dose of Femoral Nerve Block (FIB) is proposed as a strategy to decrease opioid use and enhance the likelihood of home discharge for hip fracture surgery patients, contributing to resource optimization[65]. Chan et al.'s retrospective study establishes a strong correlation between peripheral nerve block use and significantly reduced opioid consumption during inpatient care, advocating for wider adoption of this pain management technique to improve clinical outcomes and resource allocation within healthcare systems [12].

2. Potential for Cost-Effective Care

Perioperative delirium in elderly individuals undergoing hip fracture surgery significantly impacts hospital stay duration and associated costs. Measures to diminish perioperative delirium incidence, particularly in low-energy hip fractures, are crucial[57]. Simic et al.'s study identifies severe pain and opioid use as major contributors to delirium, highlighting the effectiveness of regional analgesia via peripheral nerve blocks in reducing these risks. Compared to traditional approaches, nerve blocks offer advantages such as improved pain relief, decreased opioid need, and reduced delirium incidence[7]. A comparative analysis across five healthcare systems demonstrates the clinical and economic efficacy of structured core treatment programs in hip fracture cases. Integrating these programs into established clinical pathways proves more efficient in utilizing healthcare resources and improving primary care delivery [66].

With the European Union addressing the challenges of hip fractures in the elderly, substantial costs and prolonged hospitalizations are projected. Research by Melton et al. suggests that nerve blocks could potentially reduce these costs and hospital stays[67]. Duncan et al. contribute to understanding cost-effectiveness in nerve block (NBs) utilization, highlighting potential savings through reduced hospital stays, especially during prolonged admissions. This finding introduces complexity to the discourse on NBs' economic impact, emphasizing the need for further exploration of anesthesia choices[50]. Advocacy for shortening hospital stays after hip surgery, balancing resource conservation and patient satisfaction without increasing readmission rates, underscores the importance of delving into the economic dimensions of anesthesia choices[61].



Table 2. Comparison of Various Multimodal Analgesia Techniques Used in Pain Management,

Technical	Advantages	Disadvantages	Potential Complications
Non-opioid analgesics (NSAIDs)	Provide pain relief and reduce inflammation.	May cause stomach ulcers, and kidney problems, and are not effective for all types of pain.	Gastrointestinal bleeding, kidney damage
Opioid analgesics	Offer potent pain relief for moderate to severe pain.	Can lead to serious side effects like respiratory depression, drowsiness, constipation, and vomiting, increasing the risk of falls after surgery. They may also contribute to delirium, blood clots, and longer hospital stays.	Respiratory depression, drowsiness, constipation, vomiting, increased delirium, and DVT risk, longer hospitalization, decreased quality of life, potential mortality
Spinal anesthesia	Provides rapid pain relief during surgery, reducing the need for systemic opioids.	Has a limited duration of action and carries potential complications like post-dural puncture headaches and low blood pressure	Post-dural puncture headache, low blood pressure, nausea, vomiting
Local anesthetic infiltration:	Controls pain at the surgical site.	Offers limited effectiveness for pain control after total hip arthroplasty.	Limited area of action, potential for local anesthetic toxicity
Epidural analgesia	Delivers continuous pain relief, reducing systemic opioid use.	Has a limited duration of action and can lead to complications like low blood pressure, difficulty urinating, and infection at the insertion site.	Low blood pressure, difficulty urinating, infection
Patient-controlled analgesia (PCA)	Empower patients to manage their pain with individualized dosing.	Carries a risk of overmedication and respiratory depression. May increase the risk of delirium.	Overmedication, respiratory depression, the potential increase in delirium risk
Single-shot nerve blocks	Offer effective pain relief with minimal systemic effects. May reduce delirium, DVT, and mortality risks, improve quality of life, decrease opioid use, and shorten hospital stays.	May not provide complete pain relief, and technical or anatomical challenges can arise. Can cause temporary muscle weakness, nerve injury, bleeding, block failure, or infection.	Incomplete pain relief, motor blockade, local anesthetic toxicity, muscle weakness, nerve injury, bleeding, block failure, infection
Continuous catheter nerve blocks (CCNB)	Provide prolonged pain relief, and reduce opioid use and hospital stay duration. May decrease delirium, DVT, and mortality risks.	Carries a risk of catheter dislodgement and infection.	Infection, bleeding, catheter-related complications



Table 3: Impact of nerve blocks on elderly hip surgery

Internship	The nerve blocks	Clinical benefits and economic implications
Immediate	↓ Effective analgesia	Minimized pain and decreased reliance on additional pain medications, such as opioids, resulting in a potential reduction in healthcare expenses
	↓ Early mobilization	Enhanced ability to move and engage in physical therapy sooner, promoting better mobility
	↓ Faster ambulation	Speedier resumption of independent walking, facilitating improved performance in daily activities
	↓ Prevent complications (delirium, DVT)	Diminished chances of confusion and blood clot formation by reducing opioid dependence and promoting increased mobility
Long term	↓ Reduce hospital stays and enhance recovery	Decreased hospitalization duration and accelerated recovery for a quicker return to normal health
	↓ Enhance functional independence	Heightened capability to carry out daily tasks without assistance, fostering greater self-sufficiency
	↓ Improved quality of life	Alleviated pain, enhanced mobility, and greater independence collectively contribute to an improved overall sense of well-being
	↓ Decrease readmissions and healthcare resource utilization	Lowered risk of complications and reduced hospital stays may potentially decrease readmissions and associated healthcare expenditures

DISCUSSION

The study's results reveal that peripheral nerve blocks in geriatric orthopedic anesthesia for hip fractures offer clinical advantages

such as reduced opioid use and improved patient outcomes, along with potential cost savings. This dual impact underscores the value of PNBs in optimizing perioperative care by minimizing



opioid-related complications and enhancing healthcare resource allocation. Incorporating PNBs in pain management strategies for elderly hip surgery patients can lead to better clinical outcomes and more efficient use of healthcare resources.

The retrospective analysis of 65,271 hip fracture surgeries unveils compelling evidence for the positive impact of peripheral nerve blocks (PNBs) on both patient outcomes and healthcare costs. Administration of PNBs is linked to a statistically significant decrease in median hospital length of stay (7 days shorter) and a substantial reduction in healthcare costs (approximately \$1,421 less) compared to cases without PNBs[68]. Duncan's findings underscore the pivotal role of hospitals in achieving cost savings, particularly in room and board and medical supplies, with shorter stays demonstrating significant cost reductions, especially towards the end of prolonged admissions[61]. Anesthetic techniques, specifically pain management through nerve blocks, emerge as influential factors impacting healthcare costs and hospital admission rates[61]. The recognition of continuous peripheral nerve blocks (CPNB) for decreasing both hospital length of stay and overall hospitalization costs highlights the potential economic implications of advanced regional anesthesia and multimodal analgesia [64].

PNBs offer safe and effective alternatives to spinal anesthesia for surgeries like total knee and hip arthroplasty, potentially avoiding associated side effects and complications[49]. The consideration that single-injection blocks may reduce drug costs adds to the promising outlook for better patient outcomes and potentially reduced overall costs[64]. Combining PNBs with neuraxial anesthesia is advantageous for perioperative care, particularly for elderly patients[69]. Supporting studies underline the economic and clinical benefits of PNBs across diverse patient cohorts. In anterior cruciate ligament(ACL) surgery outpatients, PNBs significantly reduced resource use and expenditures, with a majority avoiding post-anesthesia care unit (PACU) and hospitalization[70]. Similar positive outcomes are observed in hip fracture patients, where PNBs led to reduced analgesic costs, faster mobilization, shorter stays, and lower overall costs[54][7].

Addressing perioperative delirium, a significant risk factor, becomes crucial in light of associated cost burdens[57]. The emphasis on cost-effective interventions to mitigate the impact of perioperative delirium is underscored. A study of 242 patients seniors underwent hip surgery revealed that 48% developed perioperative delirium. Patients with delirium experience longer hospital stays (7.4 days), longer post-surgical stays (7.4 days), and increased healthcare expenses (\$8,286). Delirium resulted in a \$961,131 additional cost. It is for this reason that perioperative delirium must be addressed in the elderly with hip fractures. Furthermore, it emphasizes the necessity of cost-effective interventions to mitigate its impact[57]. The use of FNB can still be beneficial to patients with dementia because it reduces pain and reduces systemic analgesia[71]. Total joint arthroplasty's high-cost burdened Medicare in 2013, exceeding \$33,000 per surgery and totaling \$6.5 billion. Longer hospital stays further

inflate costs, highlighting the need for cost-containment strategies[16]. Hospital et al.'s study considered \$3,500 as the median price for the analysis. They found that routine utilization of PNBs for anesthesia resulted in a 12% reduction in expenditures (\$420/patient), and the reduction in hospital admissions resulted in an 11% reduction in hospital costs (\$385/patient)[70]. The PNB not only reduces the price of analgesics but also reduces the mobilization time, resulting in a reduction in hospital days as well as the cost of the hospitalization itself[54]. Optimal selection of a multimodal analgesic regimen is vital for individuals undergoing total hip arthroplasty, as it has the potential to minimize side effects, optimize recovery, reduce opioid consumption, and decrease overall postoperative morbidity and mortality[72]. In elderly THA patients, Continuous Femoral Infusion Catheter Block (CFICB) improved the quality of recovery at 24 hours and reduced pain scores compared to Patient-Controlled Intravenous Analgesia (PCIA), while the time of first postoperative ambulation and length of hospital stay was not significantly affected[62]. Additionally, patients with femoral neck fractures after total hip arthroplasty experienced less pain and demonstrated superior hip mobility and walking ability during hospitalization compared to those with trochanteric fractures, irrespective of factors such as early vs. late mobilization and full vs. partial weight-bearing[4]. This study supports prior research on nerve blocks for elderly hip surgery, suggesting benefits for both patient recovery and cost. However, it acknowledges limitations: while shorter stays and less medication are seen, specific cost savings and resource use weren't directly measured.

CONCLUSION

Peripheral nerve blocks emerge as a compelling alternative to existing pain management practices. They show promise for improved clinical outcomes, potentially reducing healthcare resource utilization through less opioid use, decreased postoperative complications, and shorter hospital length of stays. This review highlights the potential cost-effectiveness of nerve blocks for hip surgery in elderly patients. While upfront costs exist for materials and training, potential savings from shorter stays, less medication, and fewer complications might outweigh them. However, the review doesn't delve deep into specific cost data and acknowledges the need for further research on factors like hospital stay length and resource use. A more detailed analysis considering all cost components and their relationship to nerve blocks is needed for optimal resource allocation.

Competing Interests

The authors have declared that they have no competing interests in this article.

Authors' Contributions

Xu Zhang conceptualized the study design. The first draft of this review was written by Emery NIYONKURU. Peng Ma revised the manuscript. The final manuscript has been read and approved by all of the authors before it is submitted to the journal.



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THE RELATIONSHIP BETWEEN SOCIAL MEDIA ADDICTION AND MENTAL HEALTH: A COMPREHENSIVE REVIEW

Arti Soni¹

¹Assistant Professor, Mental Health Nursing Department, Regional Institute of Nursing, Jabalpur

ABSTRACT

In recent years, the pervasive use of social media platforms has raised concerns about its impact on mental health. This review critically examines the existing literature to elucidate the intricate relationship between social media addiction and mental health. Drawing upon empirical evidence, theoretical frameworks, and conceptual models, this article discusses the various dimensions of social media addiction, its prevalence rates, associated psychological factors, and its implications for mental well-being. Furthermore, it explores the bidirectional nature of the relationship, highlighting how pre-existing mental health conditions can contribute to social media addiction, while excessive usage of social media platforms can exacerbate mental health problems. The review also identifies potential mechanisms underlying this relationship, such as social comparison, fear of missing out (FOMO), cyberbullying, and sleep disturbances. Moreover, it discusses the role of individual characteristics, socio-cultural factors, and platform features in influencing susceptibility to social media addiction and its impact on different aspects of mental health, including depression, anxiety, loneliness, self-esteem, and body image concerns. Finally, the review concludes with implications for research, clinical practice, and public health interventions aimed at mitigating the adverse effects of social media addiction on mental well-being.

KEYWORDS: Social media addiction, Mental health, Depression, Anxiety, Loneliness, Self-esteem, Body image, Cyberbullying, Fear of missing out, Social comparison.

INTRODUCTION

The advent of social media platforms has revolutionized the way individuals communicate, interact, and share information globally. While social media offers numerous benefits, including enhanced connectivity and information dissemination, its excessive and compulsive use has raised concerns about its impact on mental health. This review aims to provide a comprehensive overview of the relationship between social media addiction and mental health, synthesizing evidence from diverse disciplines such as psychology, sociology, and public health.

The advent of the internet and subsequent rise of social media platforms have transformed the landscape of human communication and interaction. Social media platforms such as Facebook, Instagram, Twitter, Snapchat, and TikTok have become ubiquitous in modern society, facilitating connections, information sharing, and online communities on a global scale. While the proliferation of social media has undoubtedly brought about numerous benefits, including enhanced connectivity, access to information, and opportunities for self-expression, concerns have emerged regarding its impact on mental health.

The increasing pervasiveness of social media in daily life has raised questions about its potential role in shaping individuals' psychological well-being. Researchers and mental health professionals alike have become increasingly interested in understanding the intricate relationship between social media

usage and mental health outcomes. This burgeoning field of inquiry has given rise to a growing body of literature exploring various aspects of social media addiction and its implications for mental well-being.

At the heart of this discourse lies the concept of social media addiction, a phenomenon characterized by excessive, compulsive, and dysfunctional use of social media platforms, leading to negative consequences in various domains of life. Although social media addiction is not formally recognized as a psychiatric disorder in diagnostic classification systems such as the DSM-5 or ICD-11, its prevalence and adverse effects have garnered significant attention from researchers, clinicians, and policymakers.

The phenomenon of social media addiction raises important questions about its potential impact on mental health, including its association with depression, anxiety, loneliness, low self-esteem, and body image concerns. Understanding the mechanisms underlying this relationship is crucial for developing effective interventions and strategies to mitigate the adverse effects of social media addiction on mental well-being.

This review aims to provide a comprehensive overview of the relationship between social media addiction and mental health, drawing upon empirical evidence, theoretical frameworks, and conceptual models from diverse disciplines such as psychology, sociology, and public health. By synthesizing



existing research findings, this review seeks to elucidate the complex interplay between social media usage patterns, individual characteristics, socio-cultural factors, and mental health outcomes.

Through a critical examination of the literature, this review aims to shed light on the prevalence and definitions of social media addiction, factors contributing to its development and maintenance, mechanisms underlying its relationship with mental health, and implications for research, clinical practice, and public health interventions. By elucidating the multifaceted nature of the relationship between social media addiction and mental health, this review seeks to inform future research directions and guide efforts to promote responsible social media use and safeguard users' mental well-being in the digital age.

PREVALENCE AND DEFINITIONS OF SOCIAL MEDIA ADDICTION

Social media addiction, also known as problematic social media use or social networking addiction, refers to the excessive, compulsive, and dysfunctional usage of social media platforms, leading to negative consequences in various domains of life. Although not formally recognized as a diagnostic entity in current psychiatric classification systems such as the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) or the International Classification of Diseases (ICD-11), social media addiction has garnered significant attention from researchers and clinicians due to its prevalence and adverse effects on mental well-being. Studies have reported varying prevalence rates of social media addiction across different populations and measurement instruments, with estimates ranging from a few percentage points to over 50% in certain demographic groups.

Social media addiction, a phenomenon often referred to as problematic social media use or social networking addiction, has garnered significant attention in recent years due to its potential impact on mental health and well-being. While there is no universally agreed-upon definition or diagnostic criteria for social media addiction, researchers and clinicians have proposed various conceptualizations and assessment tools to characterize this phenomenon.

The lack of a standardized definition has contributed to variability in prevalence estimates across studies. Prevalence rates of social media addiction have been reported to vary widely, ranging from a few percentage points to over 50% in certain demographic groups. These variations can be attributed to differences in measurement instruments, population characteristics, and cultural factors.

Despite the absence of formal recognition in psychiatric classification systems such as the DSM-5 or ICD-11, social media addiction is commonly conceptualized as the excessive, compulsive, and dysfunctional use of social media platforms, leading to negative consequences in various domains of life. Individuals affected by social media addiction often exhibit symptoms such as preoccupation with social media, loss of

control over usage, withdrawal symptoms when access is restricted, and negative impact on academic, occupational, or social functioning.

Numerous assessment tools have been developed to measure social media addiction, including self-report questionnaires, structured interviews, and diagnostic criteria adapted from related behavioral addictions such as internet addiction disorder. Examples of widely used instruments include the Bergen Social Media Addiction Scale (BSMAS), the Social Media Disorder Scale (SMDS), and the Social Networking Addiction Scale (SNAS). These measures typically assess various aspects of social media use, including frequency, duration, motivations, and perceived negative consequences.

Understanding the prevalence and definitions of social media addiction is essential for elucidating its impact on mental health and informing prevention and intervention efforts. While the field continues to evolve, consensus on diagnostic criteria and standardized assessment tools is needed to facilitate cross-study comparisons and advance our understanding of this burgeoning public health issue. Moreover, future research should consider cultural and contextual factors that may influence the manifestation and consequences of social media addiction across diverse populations.

FACTORS CONTRIBUTING TO SOCIAL MEDIA ADDICTION

Several psychological, social, and environmental factors contribute to the development and maintenance of social media addiction. Individual characteristics such as personality traits (e.g., neuroticism), emotional vulnerabilities (e.g., low self-esteem), and underlying psychiatric conditions (e.g., depression, anxiety) have been associated with heightened susceptibility to social media addiction. Moreover, socio-cultural factors, including peer influence, social norms, and cultural values, shape individuals' attitudes and behaviors towards social media use. Additionally, features inherent to social media platforms, such as gamification, notifications, and algorithmic content recommendation, exploit psychological mechanisms to promote user engagement and prolong usage.

Social media addiction, characterized by excessive, compulsive, and dysfunctional use of social media platforms, is influenced by a myriad of psychological, social, and environmental factors. Understanding these contributing factors is essential for delineating the complex etiology of social media addiction and designing effective prevention and intervention strategies. This section elaborates on various factors that contribute to the development and maintenance of social media addiction:

1. Individual Characteristics

- *Personality Traits:* Research suggests that certain personality traits, such as neuroticism, extraversion, and impulsivity, play a significant role in predisposing individuals to social media addiction. Neurotic individuals may use social



media as a coping mechanism to alleviate negative emotions, while extraverts may seek social interaction and validation through online platforms.

- **Emotional Vulnerabilities:** Individuals with low self-esteem, high levels of loneliness, or underlying mental health conditions (e.g., depression, anxiety) are more susceptible to developing problematic social media use patterns. Social media may serve as a means of seeking validation, social support, or distraction from emotional distress.
- **Cognitive Biases:** Cognitive biases, such as the illusion of control and the availability heuristic, may contribute to excessive social media use by distorting individuals' perceptions of their ability to regulate their online behavior and magnifying the salience of social media-related cues.

2. Socio-cultural Factors

- **Peer Influence:** Social norms and peer pressure significantly influence individuals' attitudes and behaviors towards social media use. Adolescents and young adults, in particular, may conform to peer expectations and engage in excessive social media use to fit in or maintain social connections.
- **Cultural Values:** Cultural attitudes towards technology, social interaction, and leisure activities shape individuals' engagement with social media platforms. Cultures that prioritize technological innovation and digital connectivity may exhibit higher rates of social media addiction compared to those with more traditional values.

3. Environmental Factors

- **Technological Accessibility:** The widespread availability and accessibility of smartphones, tablets, and high-speed internet facilitate constant connectivity to social media platforms, blurring the boundaries between online and offline activities. The omnipresence of digital devices exacerbates the risk of compulsive social media use and diminishes opportunities for disengagement.
- **Platform Features:** Design elements and features embedded within social media platforms, such as push notifications, infinite scrolling, and personalized content algorithms, are meticulously crafted to maximize user engagement and prolong usage. These features exploit psychological mechanisms, such as operant conditioning and intermittent reinforcement, to foster habitual and addictive patterns of behavior.

4. Interpersonal Dynamics

- **Social Comparison:** Social media platforms provide fertile grounds for social comparison, wherein individuals evaluate their own lives, achievements, and appearance relative to others. Upward social comparisons may elicit

feelings of envy, inadequacy, or inferiority, driving individuals to seek validation and self-worth through social media interactions.

- **Social Support and Connection:** While social media offers opportunities for social connection and support, excessive reliance on online relationships may undermine the quality of offline interactions and exacerbate feelings of loneliness and social isolation, particularly among vulnerable populations.

5. Developmental and Life Stage Factors

- **Adolescent Development:** Adolescence is a critical period characterized by heightened susceptibility to peer influence, identity exploration, and risk-taking behaviors. Adolescents' developing sense of self and need for social validation may predispose them to excessive social media use and addictive behaviors.
- **Life Transitions:** Life transitions, such as starting college, entering the workforce, or experiencing significant life changes, may trigger increased reliance on social media as a means of coping with stress, seeking social support, or maintaining social ties.

IMPACT OF SOCIAL MEDIA ADDICTION ON MENTAL HEALTH

Emerging evidence suggests that social media addiction is associated with a myriad of adverse mental health outcomes, including depression, anxiety, loneliness, low self-esteem, and body image concerns. Excessive use of social media may exacerbate existing psychiatric conditions or precipitate the onset of new ones, particularly among vulnerable populations such as adolescents and young adults. Moreover, the addictive nature of social media platforms can disrupt sleep patterns, impair offline social relationships, and contribute to feelings of social isolation and alienation.

MECHANISMS UNDERLYING THE RELATIONSHIP

Several mechanisms have been proposed to elucidate the relationship between social media addiction and mental health. Social comparison theory posits that individuals engage in upward or downward comparisons with others on social media, leading to either feelings of inadequacy or superiority, thereby influencing their self-esteem and emotional well-being. Fear of missing out (FOMO) drives individuals to incessantly check social media feeds to avoid the perceived fear of being excluded or left behind, contributing to heightened anxiety and compulsive usage. Moreover, cyberbullying and online harassment on social media platforms can inflict psychological distress and exacerbate mental health problems among victims.

INTERVENTIONS AND FUTURE DIRECTIONS

Addressing social media addiction and its impact on mental health requires a multi-faceted approach encompassing individual-level interventions, community-based initiatives,



and policy-level changes. Psychoeducation, cognitive-behavioral therapy (CBT), and mindfulness-based interventions have shown promise in mitigating problematic social media use and improving mental well-being. Additionally, fostering digital literacy skills and promoting healthy online behaviors among children, adolescents, and adults is crucial in preventing the onset of social media addiction. Furthermore, collaboration between researchers, policymakers, and technology companies is essential to develop evidence-based guidelines and regulations to promote responsible social media use and protect users' mental health.

CONCLUSION

In conclusion, the relationship between social media addiction and mental health is complex and multifaceted, influenced by individual, social, and environmental factors. While social media offers unprecedented opportunities for communication, connection, and self-expression, its excessive and uncontrolled use can have detrimental effects on mental well-being. Addressing the adverse impact of social media addiction requires concerted efforts from researchers, clinicians, policymakers, and technology companies to develop effective interventions and strategies aimed at promoting responsible usage and safeguarding users' mental health in the digital age

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EXPLORING THE FINANCIAL MANAGEMENT TRANSITION OF SCHOOL HEADS TO FACE-TO-FACE CLASSES: A PHENOMENOLOGY

Gene Paulette A. Hontanosas, Maed, Mervin G. Salmon, Ph.D.

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ABSTRACT

The purpose of this phenomenological inquiry was to focus on lived experiences, coping mechanisms, and insights experienced by the school heads regarding their financial management transition to face-to-face classes. This study was conducted in elementary public schools of the Schools Division of the City of Mati, involving ten school heads who participated in the in-depth interviews. The data were analyzed through thematic analysis. The results revealed that school heads faced difficulties in their financial management during the transition from distance learning to face-to-face classes. Furthermore, the participants expressed that the challenges they encountered included issues in managing school finances, instructional difficulties in the transition of teaching modality, increase in expenditures, budget allocation, and inadequate funding. To address the challenges, school heads obtained administrative support from heads and experts, conducted effective financial management planning, and solicited assistance from stakeholders. Moreover, insights gained included assessment and evaluation of school problems and needs, management of financial resources based on needs, and possession of positive traits in handling the difficulties. The results of this study can bring awareness to all school heads and stakeholders of the academe, who in turn can help in designing appropriate interventions and policies associated with Financial Management in schools.

KEYWORDS: Education, Financial Management, budget allocation, COVID-19, face-to-face classes, phenomenological inquiry, thematic analysis, City of Mati, Philippines

INTRODUCTION

The educational system bore a significant impact when the world was shaken by the COVID-19 pandemic. And the person who had to step up, take most responsibilities, and lead the school is the school head. From the sudden closure of schools to the unprepared shift from traditional face-to-face instructions to Distance Learning, the biggest burden in running the school's operation and managing finances fell on the school head. Now as the full face-to-face classes have resumed, the burden of managing the finances still falls on the school heads. However, the school head's budget considerations are much greater now because, only COVID-19-related concerns, were added to those budget concerns that were set aside for two years due to the pandemic.

In Indonesia, the response of the government to Education due to the COVID-19 outbreak was to launch a program of flexibility in using the budget allocation as explored in the study of Mudjisatyo (2022). This study explained how the Ministry of Education, Research and Technology allowed school heads as managers to allocate their School Operational Assistance Funds (BOS) in accordance with the conditions during the pandemic. However, in Thailand, the government's response to the COVID-19 education crisis was to welcome assistance from non-

governmental groups like the Asia Foundation to help manage the schools' finances to launch the country's online education (Chang, 2020). Basic materials were in insufficient supply in Bangkok and other regions' government-run schools like computers and internet for online distance learning. For all students to be able to continue learning, school heads had to overcome logistical challenges and resource shortages. Notably in South Korea, the Ministry of Education (MoE) secured additional money and emergency aid to mitigate COVID-19's unforeseen negative effects (Ministry of Education 2020).

Meanwhile, in the Philippines, the response of the Department of Education was to implement the Basic Education Learning Continuity Plan in the time of the Covid-19 Pandemic (Department of Education, 2019). The COVID-19 era's primary educational necessities were encompassed by BE-LCP incorporating the most crucial learning competencies, diverse learning delivery methods for teachers, school heads, and students, vital health standards for schools and workplaces, along with distinctive projects like Brigada Eskwela, Oplan Balik Eskwela, and collaborations (Briones, 2020). An order from the Department of Education was released, DO no. 15, series of 2020 on how school heads should allocate their Maintenance and other operating expenses (MOOE) in time of the Pandemic. This



DepEd Order was set to provide guidance to school heads during the COVID-19 epidemic, in the successful and productive administration of allocating maintenance and other operational expenditures for the schools to support the BE-LCP implementation. This was the basis for the utilization of funds for the school years of the Pandemic (Department of Education, 2020).

Further, due to my firsthand observation, the elementary school heads in our locality of the Division of Mati City were having difficulties in their financial management during the height of the pandemic. I have personally witnessed the first-hand experiences of our school head and the problems she encountered in the budget allocation of resources of our school's finances during the pandemic years and most importantly the problems she was encountering during the financial management transition to face-to-face classes. In support of this claim, some school heads of the research locale spoke of the challenges they were also experiencing in their financial management.

Numerous studies were done on how school heads handled their finances throughout the pandemic. One study by Solikhin and Munastiwi (2022), highlighted one method used by school heads to manage school expenses during the epidemic was to evaluate their school budget, plan for estimated expenditures in the delivery of education, and then implement a program policy that cut 30% of their school operating cost and 10% cut to school activity budget. The study by du Plessis (2022) further showed that school heads were not prepared to spend a lot of money on getting the school ready for COVID-19 requirements, as this was not on their allocated budgets at the beginning of the school year. Consequently, as revealed by Khamidullina et. al (2021) school heads are compelled to look for the most cost-effective distribution of funds in the COVID-19 era. However, none of these have yet to investigate the school heads' financial management now that the full traditional five-day-a-week face-to-face instruction had been implemented on November 2, 2022 (Magsambol, 2022). Hence, the school head's financial management had more concerns.

Thus, I saw the need to pursue this research work to close the gap and explore the insights and experiences of the school heads in their financial management transition from distance learning to the implementation of the traditional five days in school face-to-face learning. Thus, there must be quick action this to provide attention to the present situation.

This study would have considerable importance, particularly to school heads in the locality due to the fact that this study outlined the difficulties, challenges, and insights of how financial management is implanted by the school heads during the execution of five days of traditional face-to-face instruction.

This study will serve as a foundation for an intervention plan for the school administration in aiding school heads in their financial

management. Furthermore, the Department of Education will also use this report as a resource to look into the financial management status of the schools. Wherein, the findings of my research can be shared by my submission to research conferences and submission of copies to different DepEd officials.

Purpose of Study

The purpose of this phenomenological study was to explore and understand the lived experiences, coping mechanisms, and insights of school heads in their financial management transition to face-to-face classes in the Division of Mati City.

At this stage in the research, Financial Management was generally defined as how school heads handle the finances of the school in terms of planning, organizing, delegating, and controlling the school's resources to fulfill its intended objectives during the transition period of face-to-face.

Research Questions

1. What are the lived experiences of school heads on their financial management transition to face-to-face classes?
2. How do school heads cope with the challenges they encountered on their financial management transition to face-to-face classes?
3. What are the insights of school heads on their financial management transition to face-to-face classes that can be shared with higher DepEd authorities?

Theoretical Lens

This study employed Ostman's Financial Control as its theoretical lens. The Theory of Financial Control regards the current and future personal functions of humans as its basic point of reference. This theory highlighted the significance of financial instruments' current and practical use. It underscored the importance of considering payments, financial instruments, accounting, control models, economic calculations, and related matters across every stage and level of an organization's internal and external financial aspects. It was also noted that the link between activities and financial processes must be understood in the context of financial control (Ostman, 2007).

In the context of this study, financial control unveiled the contributing factors of the school heads financial management transition to full face-to-face classes. The current and future personal responsibilities of school leaders worked as mechanisms to link goals and roles to available funding, which in turn affected the school leaders' immediate experiences and activities during the pandemic.

Also, this study was gleaned through Adam's Budget Theory (1985). This theory focused on the academic investigation of the political and socioeconomic drivers of governmental and non-governmental organization budgets. Throughout the Progressive Period, this theory was addressed more openly and even in academic and quasi-academic settings. In a different research,



Schick (1988) also talked about how the emphasis of budget theory is on involvement in public sector operations. According to this budget theory, there was widespread public engagement in budgeting, and the budgets formulated were based on the average person's needs.

In the context of this study, Budget Theory provided a basis why for the financial management of school heads particularly in the budgeting process, all parties should be included in the decision-making process at the schools, but especially the administration, parents, teachers, and government officials. The participation of the school's different public and private stakeholders in the financial management of the school heads will prove to be very important and helpful for the school, especially during this pandemic era.

Crisis Management Theory by Herrero and Pratt (1996) was also adopted as one of the theoretical frameworks of this research because this is an emergency response strategy. The capacity of Crisis Management to develop strategies for handling unpredictable situations was crucial in deciding the course of action. Through the application of Crisis Management, a manager foresees potential crises, communicates with employees regarding their potential repercussions, and takes essential precautions. Any institution, business, and organization—both public and private—can experience this circumstance. Wherever and at any time, a crisis can occur. Of course, the institution will be impacted when a crisis arises.

In relation to this study, the abovementioned proposition emphasized the strategy for handling the crisis. The COVID-19 pandemic crisis was the one under consideration in this study and how school leaders managed their finances as schools were now open to full face-to-face classes wherein more financial concerns were being handled by the school heads.

Scope and Limitation of the Study

This study examined the financial management experiences of ten (10) public elementary school heads as they made the switch from online learning to traditional in-person instruction. This study was conducted from February to March 2023 of the academic year 2022-2023.

This study's data was limited to the responses and experiences of public elementary school heads on their financial management. Participants in this study were chosen from a variety of elementary schools in the Division of Mati City.

Thus, this research was limited to the outcomes of the in-depth interviews among the selected public elementary school heads.

METHODOLOGY

The study employed a qualitative phenomenological approach to explore the experiences of elementary school heads during the transition of financial management to face-to-face instruction.

The research design involved in-depth interviews with the school heads to understand their lived experiences. The participants, ten active school heads from various elementary schools in the Division of Mati City, were selected using purposive sampling. The researcher played multiple roles, including interviewer, transcriber, translator, data analyst, and encoder, ensuring ethical conduct throughout the research process (Creswell & Creswell, 2018; Sloan & Bowe, 2014; Creswell, 2013; Crossman, 2020; Creswell, 2014).

Data was collected through in-depth interviews conducted at the participants' locations. Secondary sources such as articles, journals, and books were also used to support the primary research. The data collection process involved securing approval from the St. Mary's College of Tagum, Inc. Research Ethics Committee, obtaining informed consent from the participants, and recording the interviews. The data was then analyzed through data coding and thematic analysis, with the assistance of an expert data analyst (Creswell, 2018; Akinyode & Khan, 2018; Jamshed, 2014; Milena et al., 2008; Yuksel & Yildirim, 2015; Vaismoradi et al., 2016; Akinyode and Khan 2018).

RESULTS AND DISCUSSIONS

Lived Experiences of School heads on their Financial Management Transition to Face-to-Face Classes

There are five (5) emerging themes that was deduced from the participants through the interview, and these were difficulty in managing school finances, increase of expenditures due to high-cost supplies, lack of financial management trainings, budget allocations on learning needs and lastly, inadequate funding for trainings and sudden activities .

Difficulty in Managing School Finances

Managing the school's finances has always been hard for school heads because of their limited budget. They have difficulty procuring resources and materials needed by the school. With the sudden COVID-19 pandemic, they were forced to create measures in order to follow through with the services that their school is providing. Even more during the transition from Distance Learning to full Face-to-Face classes, school heads faced significant challenges in managing school finances. This transition involves various aspects such as adapting infrastructure, procuring educational materials, ensuring safety measures, and managing operational costs. Since the implementation of a stricter regulation of safety procedures in schools were implemented, school heads had to rethink of different ways to make use of the tight budget that they have been given.

In connection to that, Zhang et. al. (2020) supported that the advent of the pandemic has created too many ambiguities and disagreement in the schools. Thinking about the method of teaching towards the students is not just the problem itself, working in the modular learning or online teaching infrastructure, the lack of technical experience of teachers about distance



learning, the information gap of the curriculum, the complexities of the learning environment and lastly the resources that are needed to be allocated towards different aspects are hanging in the balance. Moreover, Qurotul Aini et. al., (2020) added another aspect in the difficulty of managing finances and that is the problems in connectivity, e-learning system support, technology and self-regulation issues that cannot be solved by the teacher or student, this latter would reflect on the institutions that identified the financial aspect quite challenging.

Further, Abuhammad (2020) confirms that schools had personal, technical, logistical, and financial barriers. Jacob et.al (2020) also added that in some institutions, such as colleges or universities, it is not just the disruption of academic activities were hindered but also budget cuts and loss of manpower has also been documented.

Lastly, Osiesi et. al. (2022) agreed that there is a need for school heads to increase their budget allocation during and after COVID-19. In relation to this, Tuga et. al. (2023) mentioned that in the Philippines, enactment of various Republic Acts like RA 11469 (2020) or the Bayanihan to Heal as One Act made use of other agencies such as the IATF or Inter-Agency Task Force for the Management of Emerging Infectious Disease to provide certain preventive measures that schools needed to create in order for their resumption of classes, these measure likes safety and health protocols already took a lot of chunk of budget on schools and were one of the most pressure issues the school heads had to deal with.

Increase of Expenditures due to High-Cost Supplies

School heads, in their financial management during the transition to full face-to-face classes had to deal with a major concern and that is the increase of expenditures due to high-cost supplies. One of the negative effects of the pandemic was that there was a great increase in the prices of in demand products such as personal protective equipment for and health and safety purposes and module production needs such as printers and paper. School heads faced challenges in balancing the increased expenditures with limited financial resources. Budget constraints, reduced funding from government sources, economic uncertainties and high-cost supplies further exacerbate the financial strain on schools during this transition period.

In connection to that, Castillo et. al. (2022) added that there was a problem with the economic growth and government expenditures during the pandemic times, and this was more evident in third world countries such as the Philippines. To ensure the well-being of the people, the government was made to create short term policies that can control the spread of virus, vaccination supply and supplies provided to each Filipino household. Moreover, Uy et.al. (2023) confirmed that the concerns from school heads included maintaining the learning process, ensuring the safety of the learners, support the teachers and lastly, managing the resources.

Lack of Financial Management Trainings

During the transition to face-to-face classes, school heads were significantly impacted due to lack of financial management trainings. Without adequate financial management training, school heads struggled developing and implementing strategic budget plans. They lack the knowledge and skills required to assess financial risks, forecast expenditures accurately, and allocate resources efficiently. The lack of expertise can increase the risk of financial mismanagement, errors, or even fraud within the school administration. It is crucial for school heads to receive ongoing professional development and training in financial management to effectively navigate the complexities of managing school finances and ensure the efficient allocation of resources to support quality education for students.

In connection to that, Wanjala et. al. (2020) confirms that when school heads are equipped to handle school finances properly and efficiently, there is a strong and positive correlation between financial management and academic success in public secondary schools. Therefore, it is imperative for school heads to possess strong financial management skills to ensure high educational standards are achieved within their schools.

Moreover, Lunio- Toctocan et. al. (2023) agrees in the importance of specific elements influencing the understanding of school heads regarding accounting and financial management within the school environment. Particularly, the tenure in the role of school heads, the educational attainment level, and participation in financial training courses have been identified as critical factors shaping their competency in these domains.

Budget Allocations on Learning Needs

The main concern for school heads during the pandemic has and will always be their learners. Providing a large portion of the schools budget for the continuity of the learning process is one of the topmost priorities and that is why it was always addressed in every meeting. They had to prioritize budget allocation for essential learning materials and resources, such as textbooks, laboratory equipment, and instructional materials such as TV in the classroom.

In connection to that, Carpio et. al. (2022) confirms the high extent that MOOE is utilized to finance essential consumable supplies for non-face-to-face classes and learning activities. School heads also allocated higher amount of budget for reproduction/ printing of modules and teacher-made test papers as well as providing teachers instructional materials like CGs, TGs and MELCs.

Moreover, Potoy et. al. (2023) considered unavailability and insufficiency of ICT resources as the main concern. Since the absence of these resources are important predictors on how well the learners would perform in the chosen modality, allocating to this factor would increase the chances of high-quality instruction throughout the learning process.



However, Acido and Kilongkilong (2020) stated that while proper budgeting and resource management was present all the time throughout the school year, planning and control practices were not properly implemented which begs to differ that these practices must be ensured in order anticipate the school's success.

Inadequate Funding for Trainings and Sudden Activities

The sudden onset of cases of COVID-19 pushed the government to make drastic measures in order to prevent the spread of virus, one particular change was the temporary closing of schools and that education had to stop for a few months, the start of the school year was also move from its previous date and moved near the end of the year. Along with these changes, the learning modality was also turned upside down and the government had no choice but to adopt distance learning, which in turn was the rapid mobilization of webinars in order to help the teachers be ready for the opening of classes. School heads were not able to fully comply since there were limits in the school's yearly budget. Added measures like isolation rooms, safety kits, even the necessary tapering specific pathways was also included in the restructuring of the school. This in turn was challenging for the school heads since on top of the learning materials, trainings and activities were added burden to the already constraints budget. Moreover, after the pandemic, the budgetary requirements of schools have already taken a toll on the current status of their spending allocations, this would mean that the previous dire implementations would then be used for other purposes that includes materials to maintain infrastructures and things needed for the face-to-face modalities.

In connection to that, Anyika et. al. (2023) agreed that once such dilemma was also the same for schools in Nigeria, wherein their problems after the pandemic were inadequate or dilapidating infrastructures, unconducive learning environment and even poor teacher's welfare. Moreover, Carpio et.al. (2022) confirmed this that although it may be difficult, school heads had to address various challenges, such as procuring sports equipment necessary for student participation in sports academies/activities and conducting community mapping and house-to-house campaigns to boost school enrollment, all falling under the umbrella of students' welfare and development. The MOOE is allocated funds for both public and secondary schools, intended to be utilized for activities and essentials that bolster learning initiatives and contribute to the upkeep of a safe and healthy school environment.

Coping Mechanisms of Elementary School Heads on the Challenges they Encountered in Financial Management Transition

to Face-to-Face Classes

It was important for people in the higher office to plan and prepare the teachers and school heads for the changes that was going to happen when COVID-19 affected the country. There were five (5) emerging themes that the school heads experienced when they had to adapt to the changing transition from the pandemic to the new normal setting and these are: administrative support from

heads and expert; provision of instructional materials and safety needs; effective financial management and planning strategies; assistance from stakeholders; and motivation and commitment to work.

Administrative Support from Heads and Experts

School heads often turn to educational experts, consultants and experienced administrators for guidance and expertise. They may consult with experts in curriculum development, pedagogy, technology integration, school management and financial management to gather insights, best practices, and innovative solutions to address challenges during the transition. The school heads were grateful to their superiors in the department for their administrative support and expertise. Collaborating with their superiors helped them make informed decisions, implement effective strategies, and enhance the quality of education provided.

Certainly, the creation of important groups to assist school heads and principal during the transition of the pandemic was very crucial for the resumption of face-to-face classes. It brought about easy line of communication, referrals from a higher position to those who needs further instructions and inputs and suggestions from those who specialize in the field of health like medical practitioners who are more receptive on how to reduce the transmission of the virus.

In connection to that, Akbaba and Bulut (2021) agreed that the responsibilities of school heads included planning for the school's reopening, launching online courses, fostering stronger relationships and social media presence, managing the online program, attending to teacher and student concerns, and corresponding with higher authorities.

Moreover, Aytac (2020) agreed that prevalent challenges encountered during the pandemic diminished motivation for learning, insufficient home support, and limited access to the educational sites, which then in turn was the action called for by school heads to provide an action plan in technology support and financial crisis management.

Further, Lin (2023) added that meetings made by supervisors also provided discussion among teachers and school heads about how and what to teach in an online setting and in a modified face-to-face class. Moreover, since communications are ineffective between school heads and supervisors, there was also a need to address and be sensitive to the needs of school heads and their teachers. Torres and Sudaria (2021) agree that there was an improvement in the quality implementation of policies, organizational structure between supervisors and school heads through collaborative time to discuss the curriculum, monitoring the progress of the schools, sponsoring teachers for seminars, INSETS, flexible technology such as printed modules, learning packers and LMS.



Provision of Instructional Materials and Safety Needs

A school requires resources for effective functioning, and the acquisition of essential materials must be carefully tailored to the school's specific needs. During its transitions, prioritizing materials that ensure the safety and well-being of learners is crucial, and achieving this balance constitutes a responsibility of school heads. School heads prioritized the safety needs of the school particularly the well-being of the learners and teachers. Subsequently, the school heads focused on providing instructional materials for the teaching-learning process after the safety needs of the school were met.

In connection to that, Mina et. al. (2020) confirms that in Nueva Ecija, Philippines, efforts have been made to make sure that workers in the educational sector are safe and have complied with the Inter-Agency Task Force (IATF) protocols on areas that needed to be improved have been implemented in order to adapt the schools needs and reduce the virus's transmission without compromising daily operations.

Moreover, Asio and Jimenez (2021) added that ADM Learning Resources showed that learners preferred modular printed learning modality to the point that it showed almost seventy percent (70%) of the students who had chosen it. Further, Filomeno and Rivera (2021) agreed that digital infrastructure and resources promoted collaborative working environment in a school setting, which meant resources are the antecedents of increasing the capabilities of teachers and school heads, so there is a need to intensify the faculties competencies in order to promote a meaningful learning community.

Further, Rodrigo and Ladrido (2022) confirmed that using the principles of quality and equity showed that video lectures influenced the learning experience of students and consequently demonstrated their inclusion as educational tools. The teachers were able to integrate their own lectures following their own learning preferences and strategies.

Lastly, Ignacio (2021) affirmed that to mitigate the concerns and ensure the education quality, school heads prioritize the implementation of the safety needs and needed learning materials to provide the school personnel less mental health matters and focus more on giving quality education to learners.

Effective Financial Management and Planning Strategies

Preparation for the resumption of classes in schools has been one of the main concerns of school heads, making use of what little resources can be a lot to handle especially for school heads, which is why there is a need to conduct seminars and workshops that can help alleviate matters related to finances. It is important to cope with the challenges of transitioning to face-to-face classes. School heads should engage in proactive budget planning to anticipate and address financial needs associated with the transition. This includes conducting thorough assessments of expenses related to classroom setup, hygiene protocols, technology upgrades, and staff training. By developing detailed budget plans well in

advance, school heads can allocate resources strategically, identify potential funding gaps, and explore alternative sources of funding to support transition-related expenses.

In connection to that, Du Plessis (2020) confirms that the pandemic has brought changes in school especially its big impact towards the school budget, teaching posts and activities related to fundraising for clubs or school organizations, thus acquisition or support relating to accountability, transparency and responsibility are considered to be the main concerns for financial management strategies of school heads. Moreover, Operario (2022) agrees that the financial management practices in terms of financial planning are always practiced effectively by public secondary school heads. This financial planning includes collection and recording of school income, assisting in the preparation of a school budget, maintenance of auditable records of all school expenditure, preparation of quarterly financial reports for Board of Management meetings and community as well as the financial management practices in terms of financial control such as ensuring that resources are efficiently utilized and safe keeping of all financial records. Further, Susajan and Wibowo (2021) added that openness in schools about the promotion of accountability and fighting corruption in the education sector can ensure the improvement and sustainability of the school.

Lastly, Riinawati (2021) confirmed that one of the impacts of COVID-19 was allowing those in the educational section to be more well versed in educational planning. It allowed them to enhance their learnings and seek out new information to help them face challenges.

Assistance from Stakeholders

The school is an organizational body of individuals having the same goal to deliver quality education for its learners, and since it is all about the collaborative efforts of the people involve, there must be an effective line of communication and action to achieve those goals. School heads with the assistance from stakeholders were able to sustain the school and to help the learners with their learning process. School heads leverage the expertise and resources of stakeholders to address specific challenges and opportunities during the transition.

In connection to that, Palad (2022) confirms that It was found out that communication with students and their parents were one of the struggles in areas that had limited internet signals or mobile services, through the creation of collaborative efforts and strong partnerships with the parents and colleagues, they were able to overcome these challenges. Creating a routine activity for the student to study was one of the difficulties in the pandemic and through the assistance with the teachers, provision of learning resources like books, Internet guide or help in answering the modules were very helpful.

In relation, Jenkins and Walker (2021) added that it was crucial to assess the effectiveness of the delivery of instruction and



procedural compliance related to education programs, it was the role of the stakeholders to ensure that the transition was effective for the learners. Moreover, Kaim et. al. (2023) also added that another role of the stakeholders was the integration of long-term response to challenges like the pandemic which can be supplemented through capacity building and intervention programs that focus on resiliency. Further, Alicamen et. al. (2021) agreed that prioritizing collaboration with stakeholders is essential. School leaders must consistently engage with stakeholders to foster teamwork and unity between the institution and the community. Together, they should collaborate closely in strategizing to address unprecedented changes and challenges.

Lastly, Carpio et. al. (2022) confirms the important role of stakeholders as the sources of funding of the school include school MOOE allocation, donations, funding support from LGU/SEF, local stakeholders such as SGC, PTA, CSO, alumni associations, revenue from school canteen operations and other income generating projects. School heads established community networks by actively being present in both their schools and the surrounding community. They must cultivate trust and foster transparency, fostering a shared sense of purpose among parents, staff, community members, and students.

Motivation and Commitment to Work

School heads maintain a clear vision and purpose for their work, focusing on the well-being and success of students and the school community. School heads were inspired to overcome the challenges in their financial management transition to face-to-face classes because of their motivation and commitment to work. They remind themselves of their mission to provide quality education, support student development, and create a conducive learning environment, which serves as a source of motivation and commitment during the transition. School heads set realistic goals, action plans, and timelines to guide their financial management during transition.

In relation to this, Francisco and Nuqui (2020) supported that in the new normal, school heads being adaptable is a contributing factor along with one's dedication, and it is essential for a school head who engages in forward planning, who is vigilant, and an initiator are the virtues that are needed to survive the changes. Moreover, Panadero et. al., (2022) agreed that adaption through changes in emotions, motivations and well-being are the important aspects of financial management especially by school heads. Further, Alarcon (2021) added that despite the pandemic, school heads were able to adjust their leadership styles with the current challenges and were able to work in harmony with other stakeholders in planning and managing their schools.

The Insights of School Heads on their Financial Management Transitions to Face-to-Face classes that can be shared with DepEd Authorities

Throughout this endeavor, the school leaders went through a lot of challenges with the COVID-19 pandemic, from the temporary suspension of classes to the reopening of the school following the

new normal protocols. The themes that they have experienced were collated into six (6) topics which are: increase of budget allocation; assessment and evaluation of school problems and needs; need of administrative and stakeholder support; management of financial resources based on needs; possession of positive traits; and transparency on financial operations.

Increase of Budget Allocation

A functioning school demands many needs. These need may be for learning and instruction, infrastructure, operational costs, safety, and welfare of learners, etc. With procuring sufficient resource to maintain the school and also allow the provision of different services the school has to offer, there was a much-needed increase for its budget allocation. Since schools only follow through the prescribe MOOE provided by the government, the increasing prices of materials and resources has made it more difficult for the school heads. Providing school heads with increased budget allocation offers greater flexibility in resource management. This flexibility enables them to respond promptly to evolving needs, allocate funds where they are most needed, and seize opportunities for educational enhancement.

In connection with that, Amelia and Rinindi (2023) confirms that for developing countries like the Philippines, development process tends to have a decrease or increase in funding, since it allows the changes through infrastructure, modalities and especially if any problems may appear like the pandemic for example. This holds true in certain respects, as Shidiq and Herawas (2021) suggested a necessity for a shift in high school funding to accommodate the protocols introduced by COVID-19, one example may be the use of School Based Budgeting (SBB), enforcing an effective budget and maximizing community contributions for educational funding. This is helpful because school can adjust their needs based on the pandemic itself.

Assessment and Evaluation of School Problems and Needs

School heads have the most responsibilities in the school they manage. One responsibility of school heads is the analysis of the different procedures that happens within the school premises. As such they would take measures in order to preserve school order and permit the school to continue operating in order to support students' learning. Effective assessment and evaluation of school problems and needs necessitate active engagement with various stakeholders, including teachers, students, parents, administrators, and community members. In conclusion, effective assessment and evaluation of school problems and needs are essential for empowering school heads in their financial management transition to face-to-face classes.

In connection to that, Suswanto et. al. (2021) supported that evaluation during the pandemic was through adaptation and innovation strategies like online learning media, Microsoft teams and the Learning Management System (LMS). Evaluation is important since it can provide improvement or enhance to the already existing programs made by the school. Ahmed et. al.



(2021) added that throughout the context of COVID-19, ideas like social distancing, enhancement and collaboration, financial incentives, utilizing technology were the vital strategies to focus upon, since the pandemic was a new experience for everyone, the chance to propose effective strategies in solving these challenges is very useful. Further, Alea et. al. (2020) confirmed that in evaluating present needs that was used by school heads was being conscious of the COVID-19's existence and effects, in terms of geographical location, teachers and school heads were more adaptable in terms of distance learning.

Need of Administrative and Stakeholders Support

The school heads faced the daunting task of managing financial resources effectively amidst changing needs and priorities. The school heads sought the need of administrative and stakeholder support in empowering them to navigate the complexities of financial management transition. It is very crucial for each school to receive support from the higher ups the necessary guidance, resources, and organizational backing to navigate financial management challenges effectively. It can be achieved through a proper way of communication, collaboration and even trainings to help the teachers and faculty in improving the functionality and services in a school. Supports would often come through like materials, trainings or even advices which the school heads utilize as improvement for their activities.

In relation, Tupas and Linas- Laguda (2020) confirmed that the pandemic was the event that allowed school heads and educators to impart what learning they have from a national scale and implement it locally. Also, these trainings and seminars were able to help teachers and school heads in overcoming the challenges brought by the pandemic. In our country, blended learning was introduced as a way for transition from distance learning to face-to-face classes, with DepEd proposing to make use of different ways to cater the students learning process and thus, the education sector has sought assistance from various government entities, as well as private individuals and organizations, to maximize the utilization of the program. Moreover, Asio et. al. (2021) added that seeking support from administrators is much needed because before the transition, certain educational institutions were not adequately prepared for remote learning, highlighting the essential requirements of readiness, skills, financial support, and necessary devices for this mode of education.

School heads also sought the support of the school community's stakeholders. They realized that engaging parents, community members, and other stakeholders in the financial management process fosters transparency, trust, and accountability. Regular communication, feedback mechanisms, and collaborative decision-making forums enable stakeholders to contribute input, voice concerns, and support school fundraising efforts.

In connection to that, Gulac (2023) confirms that in the involvement of stakeholders on the school plan and performance, there was a high perception of both internal and external stakeholders on the continuation of basic education continuity

plans. This meant that in order to combat the different challenges in schools like enrollment rate, dropout rate, and completion rate, it was crucial to engage in cooperation with various stakeholders especially in the pandemic time. In addition, Mercado (2023) agreed that with the stakeholders' engagement, it showed five different aspects that all relate to collaboration between the school and its constituents. Moreover, Alicamen et. al. (2021) supported that collaborating with stakeholders was one of the key points of school leaders in their attrition towards the challenging times.

Further, Dalit (2021) added another crucial idea is that the challenges experienced within a school environment can impact the well-being and resilience of individuals involved in the school processes, which means that asking help through proper communication and collaborative effort can enable the success of the endeavors of the school itself.

Lastly, Amora et. al. (2023) added that one insight from school heads is that the most effective approach to address challenges encountered in face-to-face classes is to seek assistance from others, take ownership of the situation, foster supportive relationships, and adjust your expectations accordingly.

Management of Financial Resources Based on Needs

In terms of financial management, school heads have to properly scrutinize the list of needs for their teachers and their learners, which is why there is a need to have some support regarding their financial budget. With this, the school head were able to share that listing the urgency of the school needs helps to stop senseless expenses and focus on what are the most important things required for school operations. In response to these evolving needs, school heads are tasked with the strategic allocation of financial resources. This involves prioritizing expenditures based on their alignment with institutional goals and objectives. For instance, funds may be directed towards the safety precautions of the learners and teachers or renovating classrooms to facilitate social distancing or investing in professional development programs to equip teachers with the necessary skills for the face-to-face classes. By aligning financial allocations with strategic priorities, school heads can optimize the utilization of resources and maximize their impact on student learning outcomes.

In connection to that, Kavrayic and Kesim (2021) confirmed that school heads focused more on precaution resources during the pandemic. Physical precautions such as signs and ropes for separating areas of the school, informative precautions, and modules. An additional conclusion from the same study indicated that school heads faced two main challenges: the first concerned the resources available for the school and pupils, and the second revolved around decisions related to the educational and instructional processes.

Moreover, Winamo et. al. (2020) supported that a model was created to help the school in their financial administration, suggested from the Borg and Gall model, it focused on the



procurement of resources through seven steps and was able to help alleviate some burdens of the school heads in budgeting their funds. In relation, Bantilan et. al. (2023) added that with the school heads financial management challenges, these differ to the type of school being involved wherein small schools focuses on prioritization, medium schools on liquidation and School Monitoring, Evaluation, and Adjustment or SMEA, and for bigger school, its continuous implementation. The school all share in common the development of financial plans, transparency, and engagement with stakeholders. noted

Possession of Positive Traits

The ability to adapt to new situations and environments is vital for school heads during the transition to face-to-face classes. They must be flexible in their approaches to financial management, willing to embrace change, and open to exploring innovative solutions to address emerging needs. The possession of positive traits is indispensable for school heads during their financial management transition to face-to-face classes. By embodying traits such as resilience, adaptability, effective communication, strategic vision, collaborative leadership, innovative thinking, ethical integrity, and emotional intelligence, school heads can navigate the challenges of financial management with confidence, resilience, and effectiveness.

In connection to that, Edara et. al (2021) confirmed that religiosity, resilience, and optimism were significantly connected and were one of the traits of school heads while the pandemic was still rampant. It also suggested that optimism was one of the few factors that help the faculty cope up with the sudden changes, which meant that while facing adversities, teachers use religiosity and its other dimensions to combat the academic challenges. Moreover, Datu et. al. (2022) agreed about coping up with burnouts and maintaining efficacy in the continuity of the school process was the inclusion of positive emotions like gratitude, kindness, and control. This meant that even with the high amount of stress the teachers and school heads had, promoting these positive emotions was still present even in the COVID-19 pandemic. Further, Bayod et. al. (2021) supports that rising above the challenges and finding beauty and motivation and even inspiration was one of the key factors some teachers in Mindanao used in order to keep their sanity amidst straining and exertion. Lastly, Jimenez (2021) agreed that during the pandemic, school heads demonstrate emotional intelligence, showcasing attributes such as self-awareness, emotional management, motivation, empathy, and social skills.

Transparency on Financial Operations

For school heads to promote accountability throughout the pandemic, it is essential to provide enough efforts in following through the processes and procurements that was made on that span of time. Transparency and accountability must go hand-in-hand since it is an indispensable virtue for the operation of government transactions and also tools to prevent corruption.

School heads who prioritize transparency in financial management build strong relationships with stakeholders, inspire confidence in their leadership, and create a culture of openness, collaboration, and accountability that supports student success and academic excellence.

Certainly, Gaspar et. al. (2022) confirms that school heads and finance personnel possessed educational qualifications at the graduate level and had experience in handling financial affairs. Despite facing difficulties associated with policy procedures, programmed budgets, and limited opportunities for training and seminars, they managed to successfully address and complete these tasks. Delays in the release of budget allocations, insufficient manpower, school team members being occupied with various responsibilities, inadequate planning with stakeholders, and interference from school heads are significant factors that can impede the effective utilization of financial resources.

Moreover, Acido and Kilongkilong (2022) supported that effective finances in a school education setting, budgeting and allocation were manifested all the time while especially in the pandemic times, planning and control practices were also observed to be implemented. Further, Panunciari et. al. (2020) added that maximizing and outsourcing sufficient funds to provide enough resources were one of the main goals of school heads, with the aim of enhancing support for both the school and the local community, plans tailored to the school's context and responsive to community needs was one of the primary objectives for school leaders.

Lastly, Carpio et. al. (2022) confirms that school heads are confident in their practices as they openly disclose their funding sources to stakeholders and adhere to government procurement regulations. Measures such as Transparency Boards, PhilGEPHS postings, public bidding, distributing SRC, and ensuring visibility of financial documents are employed to consistently uphold the school's reputation for honesty, transparency, and integrity in handling public funds. Additionally, school heads must stay well-informed and comply with relevant provisions outlined in COA-DBM-DepEd Joint Circular No. 2019-1 and DepEd Order No. 8, s. 2019 to demonstrate efficiency in fund utilization. The high regard garnered by school administrators reflects their ongoing commitment to maintaining a bank account in the school's name, a mandated and essential practice for managing fund operations, particularly concerning MOOE disbursement.

Implications for Administrative Practice

The study's results successfully mirror the lived experiences of school heads as they navigate the transition in financial management amid the shift to face-to-face classes. The hurdles and challenges associated with leading a school comes in a diverse array of forms, situations and decisions that can be beneficial for the school. With the first cases of COVID virus in the year of 2019, these problems have given more and more



problems that the school had to tackle. The factors that resulted from the sudden and temporary closure of schools, and unprecedented measures in the transition to face-to-face classes were all had to be experienced by the school, the school heads, teachers, stakeholders, and its students. With all these findings, significant implications will be utilized to improve financial management in elementary schools and improve school heads performance in school financial management. Each of these implications is covered individually.

First, to the school heads, proper support must be given towards the school heads in overcoming the different challenges that the school must overcome and creating a proper line of communication will imply a better way of solving problems through sharing ideas and opinions for the pandemic. Creating a set of information and guidelines regarding the arising problems that might come and such learning will go a long way since, instructions that come from the central office will still go through proper channels before arriving to the receivers and in this case; the school itself. The study will benefit school heads since it contains the different experiences their co-leaders have overcome throughout the course of the pandemic.

Second, teachers must be more receptive to the decisions made by their school heads since school heads have been taking on a lot of responsibility and need support in these endeavors—to the point where they are feeling the weight of pressure from the administration. These beliefs and viewpoints helped them to become more open-minded and understanding of the various challenges they faced, such as motivating students to enroll in distance learning programs during COVID-19 and even after classes resumed, managing the risk of the virus spreading, and handling classes with limited resources.

Further, the Stakeholders must be aware of their role and importance in helping the school head manage the school. They should show their support to the different endeavors of the school which would greatly benefit the students.

In addition, the Department of Education Officials and the government should be more sensitive regarding the actual experiences of school heads and teachers, since they are the ones who cater most to the services being provided towards the students. Another implication would be the utmost regard towards the trainings to school heads and teachers relevant to pandemics and other health concerns that may arise in the future, since inter-agency collaboration would increase the time given for any action to be taken especially in the field of education. Appropriating funds provided by the LGU's is one of the most needed support the school could get from the community, since they are still part of the stakeholders, a proper model regarding the maximum amount of support a school can get from them would also enlighten some issues towards the phenomenon.

Furthermore, this study is able to provide ideas for further researchers towards the experiences of school heads in their ordeals and experiences during and after the COVID-19 pandemic.

Recommendation for Future Research

This study exclusively incorporates the results derived from the feedback provided by ten participants. The primary objective of this research inquiry has been successfully accomplished, which was to understand the lived experiences of school heads in their financial management transition to face-to-face classes. This is emphasized by the fact that the key themes extracted from the endeavor will effectively offer pertinent data and explanations for the same phenomenon. Nevertheless, it is essential to note that this research is not the be-all and end-all of the study pertaining to the specific topic under investigation. As a researcher, I acknowledge humbly that the findings of this study are merely descriptive and should not be regarded as generalizations. Therefore, as a researcher, my focus is solely directed towards the opinions, perspectives, and explanations provided by the ten participants who experienced the phenomenon under investigation.

In this section, it is suggested that other researchers do their own settings-based replication of this study. Furthermore, this could be accomplished by interviewing a broader range of participants to identify similarities with the gathered data. It is also suggested doing various research about the coping strategies that school heads have encountered during their financial management transition to face-to-face classes. It should be given undivided attention to better understand the lived experiences of school heads in their financial management transition to face-to-face classes.

Concluding Remarks

Setting goals is the first step in turning the invisible into the visible. Observing the completion of this work instilled confidence and inspiration in the researcher. The entire thesis-writing process appeared to be a challenging journey. It was a difficult task that required the researcher to be more persevering, have considerable dedication, and possess intellectual rigor in doing the research. The study's findings gave the researcher a better understanding of the difficulties faced by elementary school heads but also provided valuable insights into the ways in which they can be supported in their financial management endeavors. Thus, the researcher commends their devotion to their work and commitment to their service.

Doing the in-depth interviews was the hardest part of this study, which gave the researcher a long span of time just to gather the needed data and choose the qualified and available participants who were part of this study. The participants' responses sometimes vary. Some participants gave short responses even after the researcher gave probing questions. Some participants also gave very long responses. But most of the participants



answered in English showing command of the language. Thankfully, all of the participants' answers provided the researcher with lots of data suited to the research questions. After the interview, transcription followed by transcribing, and the researcher primarily analyzed the data. The participants were challenged to express their thoughts and opinions about the study. The researcher was very pleased and glad enough of their full cooperation and trust during the interview process.

As the study went along, the researcher experienced how it feels to be a researcher. It took the necessary processes to conduct successful research with the help of people with significant roles. On the other hand, this journey allowed the researcher to be unprejudiced about the lived experiences of the school heads in their financial management transition to face-to-face classes. It also widened the researcher's empathy on how they cope with the challenges they encountered.

Moreover, to the participants, in the hopes that you will know how much your commitment to this study is valued, despite the enormous tasks expected of you, you never fail to prioritize all of your teachers and students.

Finally, to achieve this academic endeavor, the researcher would say that this study is the result of perseverance, constant dedication, sleepless nights, sacrifices, time, and unending commitment.

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WATER QUALITY PREDICTION WITH MACHINE LEARNING ALGORITHMS

Oliver North Rogers III¹, Ambili P S²

¹School of CSA, REVA University, Bangalore, India

²School of CSA, REVA University, Bangalore, India

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ABSTRACT

Water quality prediction plays a significant role in safeguarding human health, preserving aquatic ecosystems, supporting sustainable water management practices, and ensuring regulatory compliance in aquatic environments. This study explores the use of machine learning (ML) models to predict water quality in various aquatic environments. By analyzing a comprehensive dataset of water quality indicators like pH, dissolved oxygen, and turbidity, the research employs several ML algorithms including Random Forest, Support Vector Machines, and Gradient Boosting Machines. Through rigorous training, validation, and optimization, the models are evaluated for their accuracy, sensitivity, and error rate. Additionally, the study identifies key factors impacting water quality variations through feature importance analysis. The study provides valuable insights for environmental monitoring, resource management, and regulatory compliance. Integrating advanced ML techniques with water quality assessment, this research aims to contribute to the development of effective early warning systems and decision-support tools that promote sustainable water management practices.

KEYWORDS: Machine Learning, Water quality prediction, pH, Dissolved oxygen, Random Forest, Support Vector Machines (SVM), Gradient Boosting Machines.

I. INTRODUCTION

In India, a considerable segment of the population, especially in rural areas, has had limited awareness regarding water quality issues. While there's an increasing focus on water-related problems, especially in urban areas facing acute water scarcity or pollution, rural regions and marginalized communities often have limited awareness of these issues. Water quality prediction models empower individuals to be more informed about the health of their water [1]. These models analyze various data points, including historical water quality records, weather patterns, land use, and pollution sources, to forecast potential changes in water quality. This information can be used to create personalized alerts and warnings, keeping individuals up to date on potential risks.

An important development in environmental science and technology is the use of machine learning algorithms to forecast water quality. Machine learning presents itself as a game-changing technology, able to handle large datasets in an effective manner and change our comprehension and forecasting of the dynamics of water quality. The intrinsic shortcomings of conventional monitoring are the source of this technological revolution. Population growth and industrialization overwhelm current approaches, and thorough analysis and real-time data are still scarce.

Regression models and complex neural networks are only two examples of machine learning algorithms that provide

a comprehensive approach [3]. Beyond discrete variables like pH or temperature, they incorporate a variety of data, such as physical, chemical, and biological aspects. This thorough research opens the door for precise prediction models by illuminating the complex interactions between variables impacting water quality. Researchers and experts in water management can benefit greatly from machine learning, which offers insights beyond the constraints of conventional statistical techniques[4]. Through the identification of hidden correlations and patterns in the data, these models enable a more sophisticated understanding of the dynamics of water quality. Furthermore, predictions may be continually refined and learned from because of their inherent flexibility, which helps them remain relevant even in the face of changing environmental conditions. When dealing with dynamic components like shifting pollution sources and changing meteorological circumstances, this flexibility becomes even more crucial.

The ultimate goal remains to implement robust and sustainable water management strategies that can effectively navigate the many difficulties posed by our rapidly changing environment. To put it briefly, the creation and application of machine learning models for the prediction of water quality is a revolutionary step in the direction of guaranteeing that future generations will have access to clean and safe water. We can obtain a more thorough, effective, and timely understanding of the



dynamics of water quality by utilising artificial intelligence and data analytics[18]. Thus, the door is opened for the wise and sustainable management of water resources in the future, safeguarding the welfare of people and the environment.

In conclusion, the use of water prediction models plays a crucial role in empowering individuals and communities with information crucial to making informed decisions regarding their water usage. By raising awareness, enabling proactive measures, encouraging responsible behavior, and fostering community engagement, these models become essential tools in ensuring access to clean and safe water for all.

2. LITERATURE SURVEY

Given its importance in resource management, regulatory compliance, and environmental monitoring, water quality prediction has emerged as a crucial field of study[2]. In a variety of aquatic situations, machine learning (ML) models have shown promise as tools for forecasting water quality. In their analysis of water quality indicators including pH, dissolved oxygen, and turbidity, Singh et al. [1] showed the effectiveness of machine learning techniques like Random Forest, Support Vector Machines, and Gradient Boosting Machines. Their research made clear how crucial it is to use exacting training, validation, and optimization procedures to assess the sensitivity and accuracy of machine learning models when it comes to forecasting changes in water quality.

Furthermore, Jalagam et al. expanded the use of machine learning approaches to urban streams, highlighting the necessity of customized solutions to deal with the problems presented by urban surroundings [6]. The use of Autoencoder-Long Short-Term Memory (AE-LSTM) models for water quality prediction was investigated by Zhang and Jin [5], who demonstrated how well these models capture temporal dependencies and forecast fluctuations in water quality over time. Furthermore, Chahar et al. demonstrated how deep learning methods, such as recurrent neural networks (RNNs) and convolutional neural networks (CNNs), may be used to identify complex patterns in water quality data and improve prediction accuracy [11,13,14].

In a related endeavor, Kavitha et al. examined the incorporation of ensembled machine learning models for forecasting water quality, exhibiting their capacity to enhance predictive precision and resilience through the amalgamation of numerous machine learning algorithms [8]. Tejaswi et al. underscored the significance of utilizing artificial neural networks (ANNs) to identify nonlinear correlations in water quality data, hence enabling more precise forecasts and anticipatory water management approaches [4]. Ooko et al. emphasized the value of employing machine learning techniques to forecast water quality in real time, demonstrating how ML models may provide prompt interventions and proactive management approaches [9]. Additionally, Negi et al. suggested a method based on AI and ML for forecasting water hardness, highlighting the potential of these approaches to address a range of issues related to water quality [16]. In a thorough analysis of machine learning techniques for predicting water quality,

Ahmed et al. brought to light the wide variety of ML techniques and modeling strategies used in this field.[17,19]

All things considered, ML model integration into water quality prediction is a potential direction for improving environmental management and monitoring techniques. Researchers want to create efficient early warning systems and decision-support tools that assist sustainable water management practices and guarantee the supply of clean, safe water for future generations by utilizing machine learning techniques.

3. METHODOLOGY

The data science and machine learning community Kaggle offers a platform called "Kaggle Dataset Repositories" where members can find, share, and work together on datasets. It acts as a single repository for a variety of datasets that are supplied by members of the data science community and Kaggle users. "Water_potability.csv," the file we used, seemed to provide data on water quality. Your data is shaped like (3276, 10), meaning that it consists of 10 columns (features or variables) and 3276 rows (instances). Gaining knowledge of the dataset's size and structure is essential for carrying out efficient data analysis and modeling.

3.1 Method

The process of forecasting water quality entails examining many factors and trends present in water bodies. A six-step procedure may be used to explain the methodology:

- Loading the dataset
- Preprocessing the dataset
- Make use of different algorithms
- Evaluating models
- Selecting the best model
- Implementing model

Flow Chart



Figure 1. Process Flow

The approach for predicting water quality consists of a methodical six-step procedure. First, the pertinent dataset, which contains historical data and water quality characteristics, is loaded. Preprocessing, which includes duties like resolving missing values, eliminating outliers, and standardizing features to ensure data quality and dependability, is the second stage after loading the information. The third stage then applies a range of prediction-ready algorithms, utilizing machine learning techniques to find patterns and correlations in the information. The resulting models are then thoroughly assessed using performance metrics and error measurements in the fourth stage.

The correctness of the models and their capacity to generalize to new data must be evaluated, and this assessment stage is essential. The best-performing model is chosen in the fifth stage based on its high accuracy and low error rates. To choose the most trustworthy model for predicting water quality, this step is essential. The chosen model is then implemented using a User Interface Framework in the sixth and last stage, which allows end users to interact and use the model with ease. For stakeholders, this intuitive interface provides a useful tool for accessing and interpreting water quality estimates produced by the selected model.

By combining data preprocessing, algorithm selection, model evaluation, and user interface implementation for real-world deployment, this six-step methodology guarantees an exhaustive and methodical approach to water quality prediction.

3.2 Data Models

The optimal model for predicting water quality must be chosen through a thorough review procedure that considers several algorithms. The following algorithms are used to determine which model is most appropriate:

- **Linear Regression:** Predicting a continuous outcome variable from one or more predictor variables is a simple process using the linear regression algorithm.
- **Decision Tree:** A decision tree is a model that resembles a tree in which each node reflects a choice made in response to an attribute. The dataset is partitioned recursively according to characteristics to establish the tree topology. By moving up the tree from the root to a leaf node, the prediction is formed.
- **Random Forest:** This ensemble learning technique builds many decision trees during training and outputs the mean prediction (regression) or mode of the classes (classification) of the individual trees. Using a random subset of characteristics at each split introduces unpredictability.
- **Extreme Gradient Boosting, or XGBoost:** XGBoost is a scalable and effective gradient boosting method. Sequentially, the approach constructs an ensemble of weak learners (usually decision trees), with each tree fixing the mistakes of the preceding ones. A weighted total of the forecasts made by each tree makes up the final forecast. An enhanced gradient boosting method is called XGBoost.
- **K-Nearest Neighbors (KNN):** This non-parametric technique predicts using the average value (regression) or

majority class (classification) of the k-nearest data points in the feature space. To estimate closeness, the distance metric—such as the Euclidean distance—is frequently employed. The average of the target values of the k nearest neighbors determines the forecast value (ρ) for a new data point.

- **Support Vector Machine (SVM) Regressor:** Designed for regression analysis, Support Vector Machine is a supervised learning algorithm that examines data and identifies patterns. Regression support vector machines search for the hyperplane that minimizes the difference between the expected and actual values in order to best represent the data.
- **AdaBoost Regressor:** Also known as Adaptive Boosting, AdaBoost is an ensemble learning technique that builds a strong learner by aggregating the predictions of several weak learners. The performance of each weak learner is used to determine the weights given to the data points as they are trained successively. AdaBoost builds a powerful learner by combining weak learners, usually decision trees. The weighted total of each poor learner makes up the anticipated output.
- **Artificial Neural Network (ANN) Regressor:** Layered networks of linked nodes, or neurons, make up Artificial Neural Networks[7,10]. A neural network usually consists of an input layer, hidden layers, and an output layer for regression problems[12]. The output of every neuron is determined by its activation function and weights. The output layer usually has one neuron in it.

The best method to choose will depend on the particulars of the data and the type of prediction task. Each of these algorithms has advantages and disadvantages. The basis for comprehending how each algorithm generates predictions based on input data is provided by the mathematical formulations.

3.3 System Architecture

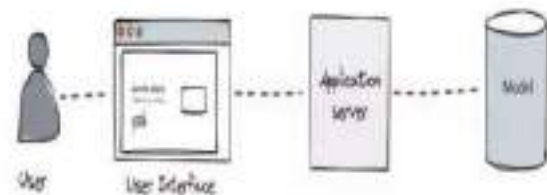


Figure 2. 2: System Architecture

- **User:** Using a web browser or a mobile application, the end user communicates with the web application. Requests are entered by users, who also engage with the UI and get answers from the program.
- **User Interface (UI):** The layer that users interact with visually is the UI. It has components that let users browse and interact with the program, such as text fields, forms, and buttons. "Streamlit," an open-source Python toolkit for building web apps for data science and machine learning, was utilized to construct the user interface.



- Application Server: The application server handles the generation of dynamic content, application logic execution, and user request processing. It serves as a go-between for the database and the user interface. Python was used to write the logic on the server side.
- Machine Learning (ML) Model: Predictions based on input data are made by this module through the loading, training, and application of the ML model. Based on fresh input data, the machine learning model, which was trained on past water quality data, can forecast future water quality. The application server houses the ML model, and APIs are used to facilitate communication between the application server and the ML model.

A condensed description of how these elements work together:

- The user submits data or makes requests while interacting with the UI.
- Using the API, the UI makes queries to the application server.
- The application server handles requests and carries out required tasks, such as business logic.
- and changes or obtains information from the model.
- The processed data is returned to the user interface by the application server.
- The user sees the information shown in the UI.

4. RESULTS AND DISCUSSION

The performance parameters (MSE, RMSE, and MAE) of each regression model for water quality prediction are shown in Figure 3.

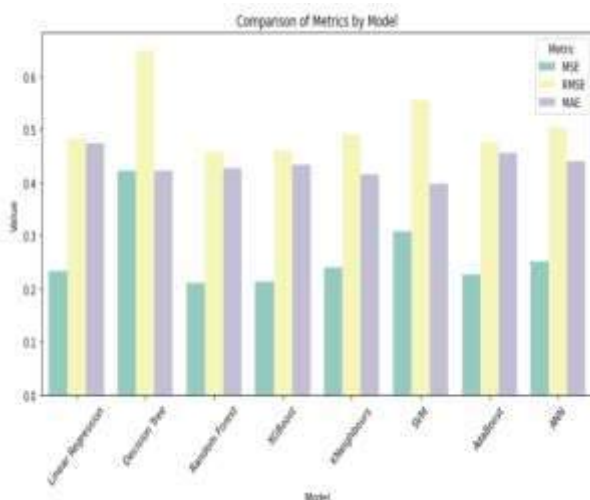


Figure 3: Performance comparison of various models

The Figure explanation:

- Model: The regression models that were trained and assessed are listed in this column.
- Mean Squared Error, or MSE, calculates the average squared difference between the values that were predicted and those that occurred. Better model performance is indicated by lower values. The average of the squared discrepancies between the expected and actual values is used to compute it. The Random Forest model is the best

in minimizing squared errors because it has the lowest MSE (0.210705). With an MSE of 0.421442, the Decision Tree has the highest.

- Root Mean Squared Error (RMSE): The MSE's square root is the RMSE. It offers a meaningful measurement in the same units as the intended variable. Better model performance is indicated by lower values. Random Forest has the lowest RMSE (0.459026), similar to MSE. With an RMSE of 0.649185, Decision Tree has the highest.
- The average absolute difference between the expected and actual values is measured by the Mean Absolute Error or MAE. In contrast to MSE, it is less susceptible to outliers. Better model performance is indicated by lower values. With the lowest MAE (0.397225), SVM appears to have the least average absolute errors. The MAE of the Decision Tree is the highest (0.421442).

The precise objectives of your regression work will determine which method performs the best. As a result, our top-performing algorithm is Random Forest. SVM seems to function better if models with smaller absolute errors (MAE) are prioritized. When choosing the optimal method, it's critical to consider the characteristics of your data as well as the real-world effects of prediction mistakes. It's important to keep in mind that these metrics offer several viewpoints on model performance and that your application's particular needs may influence whether the "best" technique is selected. To make a better-informed choice, it is customary to consider a variety of metrics and maybe carry out further analysis, such as cross-validation.

To evaluate the practicality of our idea, we implemented an extensive testing plan. Two previously unpublished data sets were used: a "bad water sample" that simulated suboptimal settings and a "good water sample" that represented ideal conditions. This made it possible for us to thoroughly assess the accuracy, resilience, and responsiveness of the model in a variety of possible scenarios. This rigorous testing validates the model's applicability for real water quality prediction and guarantees its efficacy in a variety of settings.

5. CONCLUSION

The application of machine learning (ML) models to forecast water quality in aquatic situations is investigated in this work. A collection of water quality indicators, including pH, turbidity, and dissolved oxygen, is analyzed by the researchers using a variety of machine learning methods, including Random Forest, Support Vector Machines, and Gradient Boosting Machines. The models undergo extensive training, validation, and optimization processes to assess their accuracy, sensitivity, and error rate. Through feature significance analysis, the research also pinpoints important variables influencing variances in water quality.

The study emphasizes the value of machine learning in environmental science and technology as it can manage massive information efficiently and alter our perceptions of the dynamics of water quality. Conventional approaches, including population expansion and industrialization, are constrained by laborious and time-consuming laboratory experiments.



Regression models and sophisticated neural networks are two examples of machine learning algorithms that offer a thorough method that considers biological, chemical, and physical factors.

To import and preprocess datasets, apply prediction-ready algorithms, assess models, choose the best model, and implement the model using a UI Framework, the study makes use of Kaggle Dataset Repositories. Regression methods are evaluated for performance using matrices like Mean Absolute Error (MAE), Root Mean Square Error (RMSE), and Mean Square Error (MSE). Better model performance is shown by lower MSE, RMSE, and MAE values, which minimize variances between predicted and actual values.

The user interface (UI) is the layer that allows users to interact graphically in the two-tiered system architecture. Random Forest is the best method; fewer absolute mistakes are given priority. It is advised to do more analysis, such as cross-validation, before selecting the best approach.

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SURYA NAMASKAR EXERCISE AND WORSHIP

Dr. Rajesh Bawankule¹, Rajesh Madhukar Sonkusare²

¹Director of Physical Education, Arts and Commerce Night College, Mahal, Nagpur

²Assistant Professor (History)(CHB), Arts and Commerce Night College, Mahal, Nagpur

ABSTRACT

Surya Namaskar or Sun Salutation is a sequence of 12 powerful yoga poses. Besides being a great cardiovascular workout, Surya Namaskar is also known to have an immensely positive impact on the body and mind.

Practicing Surya Namaskar steps is best done early morning on an empty stomach. Each round of Sun Salutation consists of two sets, and each set is composed of 12 yoga poses. You might find several versions on how to practice Sun Salutation. However, it is advisable to stick to one particular version and practice it regularly for the best results.

Besides good health, Surya Namaskar also provides an opportunity to express gratitude to the sun for sustaining life on this planet.

KEYWORDS: Surya Namaskar, Exercise, Worship(Upasna), Om, Ashtang, Purak, Rechak, Kumbhak

1. INTRODUCTION

Surya Namaskar is a form of exercise and worship. It gives exercise to all the senses of man and supplies blood everywhere. It is considered a scientific form of exercise as the contraction-expansion movements are continuous and easy.

Since ancient times, Hindus have considered the sun as a deity because the sun provides energy, warmth, joy and life to creation. The Vedas say that the sun is the soul of the moving world. In India, the practice of combining religion and health dates back to ancient times. So Surya Namaskar must have become a way of worship. In India, attempts were made to give a scientific form to this healing worship. Many hymns, resolutions and practices were created from it. In many places in India, it is considered a religious duty to bow regularly before sunrise for Suriyapoasan. It is also known as 'Ashtang' or 'Sashtang' Namaskar or 'Ashtang Danda'. Suryanamaskar is a useful and fruitful form of exercise and worship.

Surya Namaskar is a unique form of worship on this earth. Many times Surya Namaskar is mistakenly considered as 'yoga' or a form of 'yoga' but that is not correct. There are some very basic differences between 'Yoga' and 'Surya Namaskar'. There are fundamental differences in the objectives of yoga and Surya Namaskar, in the results obtained and in the physical abilities required. The attitudes of these two forms of exercise are completely different. Although there are seven yoga poses in the 12 positions of Surya Namaskar, the process of doing them is completely different. So their effect is also different.

'Worship' is English meaning of Upasana. 'Upasana' means 'Upa' + 'Asana (seat)' And now we are supposed to go and sit at the feet (Upa Asana) of that deity. It simply means, we should look, talk and act like that deity. So, in short, the word 'Upasana' means to

try as much as possible to be like the deity whom one worships. This is the way to identify with that deity.

Surya Namaskar is the worship of the sun deity and its main purpose is that the seeker is expected to become bright, selfless, powerful, wise and charitable like the sun.

We are all part of that universal and self-luminous Sun. We are created from the sun. The clothes we wear, the food we eat, the house we live in, everything is an invention of power and energy and is directly or indirectly created by the Sun, the first creator of all energy.

2. HISTORY OF SURYA NAMASKAR

The beginning of Sun Worship (Upasana) is as ancient as the history of man. Not only Indians, but most of the ancient civilizations of the world have worshiped the sun as the god. It contains Egyptian culture, Mayan culture, Chinese culture, Native Indian in America culture. In each of these cultures there are mentions of worshiping the sun in some form or the other.

In Indian culture we find many references to Sun being worshiped in different ways as the god of power and knowledge. Agni is the closest invention of the Sun to the Earth. The very first verse of the Rigveda is Agni-mile-purohitam- yagyasya dev mrita-vijamhotaran-ratnadhatam' in commemoration and praise of fire and alternately of the sun.

The most ancient and important evidence of Sun Worship is in 'Valmiki Ramayana'. When Lord Rama went to fight Ravana, Sage Agastya blessed Rama with a hymn called 'Aditya Hridayam'. It means that the sheen that came from fighting round the clock should go away and Lord Rama should be ready for battle with the new Chautanya. The purpose of this stotra is that



Lord Rama should be victorious everywhere and get all the achievements. All the names of the sun are taken in a very poetic manner in this hymn. The sun is very beautifully described. In it, it is said that whoever takes these names of Surya will also get victory everywhere.

It is mentioned later in the Taittiriya Upanishad. The Taittiriya Upanishad presents the doctrine of non-dualism in a total of three volumes (Sikshavalli, Brahmananda Valli and Bhriгу Valli). In the first part of this, there is a discussion about what can be done to acquire Brahman in 'Shiksha Valli'. Sun worship is also mentioned in it.

Another important mention is in the book 'Hatha Yoga Pradipika'. This book is the supreme book of Hatha Yoga. Awakening Kundalini is very important in it. To do that, he has guided many asanas, diet, sleep, thoughts. The purpose of this book and Hatha Yoga as a whole is completely different from Surya Namaskar Upasan. However, the asanas performed in Surya Namaskar, how those asanas affect the spine and medulla are mentioned in a very scholarly manner.

After this, Samarth Ramdas, an important worshiper in the history of Surya Namaskar. He was a great worshiper of Sri Rama and Surya. He was celibate. It is said that he performed 1200 Surya Namaskars a day. Samarth Ramdas is a very apt confluence of Jnana Yoga, Bhakti Yoga, Raja Yoga and Karma Yoga as described by Vivekananda. It would not be an exaggeration to say that he got the energy of his self-reflection from Surya Namaskar.

In the later period, the Shrimant Sadashivarabhau Peshwa was a great practitioner of this form of exercise. He had started several new Talamis in Pune. It is said that he used to perform 1500 Surya Namaskar daily.

3. HISTORY OF SURYANAMASKAR PERFORMED TODAY

Surya Namaskar that we practice today seems to have been first experimented with by King Appasaheb Pantapratinidhi of the Aundh state around 1930's. Aundh king Appasaheb Pant representative and Mirjee Patvardhan Sarkar were personal friends. Many times they used to exercise together. Pantapratinidhi invited a maestro named Imad from Punjab-Haryana to teach him wrestling. This form of exercise was born while studying wrestling from him. Pantapratinidhi also taught this form of exercise to his Rani Saheb. Rani Saheb was relieved from many pains due to this exercise.

The exercise was refined and popularized by Bhavanarao Pant Pratinidhi in the 1920s. He wrote a book about it in 1928 called 'Surya Namaskaras'. In 1938, Pratinidhi wrote another short book called 'The Ten-Point Way to Health', which again gave a central role to Surya Namaskar

4. CIRCUMSTANCES FOR PERFORMING SURYA NAMASKAR

The best time to do Surya Namaskar is in the morning, on an empty stomach. With this simple and effective Surya Namaskar we can start a healthy life. A clean, quiet and ventilated place is suitable for Surya Namaskar. A space of about 2 to 3 meters long and about 1/5 to 1 meter wide is sufficient for this. Namaskar is performed by wearing loose and light clothes and spreading mat on the floor. Surya Namaskar can also be performed on the ground without using mat. But the ground should not be very smooth, so that the hands and feet do not slip on it. Bathing in cold water and salutations, if the young rays of the sun fall on the body, are of good use. Getting enough exercise in a short space and time is one of the characteristics of Surya Namaskar.

5. METHOD OF SURYA NAMASKAR

While doing Namaskar, the eight parts of the head, chest, two hands, two feet and both knees directly touch the ground. Sight, speech and mind are involved in mental worship. At the beginning of the salutation, the gaze is kept in front or towards the nostrils, which helps to concentrate the mind. Before that some mantras are chanted after meditating on Sun God.

Ways in which respiration (breathing) should be done during a Surya Namaskar

1. Purak – Taking in a long breath .
2. Rechak – Leaving out a long breath.
3. Kumbhak – Holding the breath.
4. Aantar Kumbhak – Holding the breath after breathing in.
5. Bahir Kumbhak – Holding the breath after breathing out.

First by pronouncing Om (called 'Pranava') then twelve salutations are made with the twelve names of the sun like 'Om Mitraya Namah'. These twelve names are as follows:

- (1) Om Mitraya Namah,
- (2) Om Ravye Namah,
- (3) Om Suryai Namah,
- (4) Om Bhanve Namah,
- (5) Om Khagai Namah,
- (6) Om Pushne Namah,
- (7) Om Hiranyagarbhaya Namah,
- (8) Om Marichaye Namah,
- (9) Om Adityaya Namah,
- (10) Om Savitre Namah,
- (11) Om Arkaya Namah,
- (12) Om Bhaskarai Namah.

While offering the thirteenth salutation, 'Om Srisavitri-Suryanarayanaya Namah' is said. This is considered a version.

Surya Namaskar is performed slowly without haste means that one does not get out of breath. One should feel joy and excitement after completing Namaskar. If you feel tired, you should reduce the number of salutations, thinking that the number of salutations



has exceeded the body. To add Bara Namaskar, start by increasing the number as you jump.

6. SURYA NAMASKAR STEPS TO FOLLOW



Step 1. Pranamasana (Prayer pose):

Both feet touching each other, both hands joined at the center of the chest straight.

Breathing : Kumbhak

Benefit : Helps maintain the balance of the body.

as in prayer position back and neck straight and look

Step 2. Hastauttanasana (Raised arms pose):

Continuing from the first position take your hands straight up above your head and bend slightly backwards to stretch your back. Keep your hands in prayer position (without bending your elbows). Keep your neck between your arms and looking upwards bend slightly backwards from the waist.

Breathing : Purak (While going from Position 1 to 2 slowly, start taking long breaths)

Benefit : Strengthens chest muscles which in turn help in breathing.

Step 3. Hastapadasana (Standing forward bend):

Continuing from 2nd position take your hands from above your head bending in the front and place your hands beside your feet on both sides. Keep your knees straight and try to touch the head to your knees.

Breathing : Rechak (Leave your breath slowly while going from Position 2 to 3)

Benefit : Makes the waist and spine flexible. It strengthens the muscles and is beneficial for the functioning of the liver.

Step 4. Ashwa Sanchalanasana (Equestrian pose):

From the 3rd position start sitting down and take one leg backwards in full stretching position, your hands resting on the ground on either sides of the front leg. The other leg should be bent at the knee. Put the chest weight on the front knee, your eyes should be looking slightly upwards.



Breathing : Purak

Benefit : Strengthens the leg muscles and makes the spine and neck muscles flexible.

Step 5. Chaturang Dandasana (Stick pose)

Now slowly take the second leg back and beside the first. Keep the legs in line with the knees. The whole body weight should rest on the palms and toes. The foot, waist and head should be in a straight line. Look ahead towards the ground

Breathing : Rechak

Benefit : Strengthens the arms and maintains body posture

Step 6. Ashtangasan (Salute with eight parts or points):

Lower the chest towards the ground bending both arms at the elbows. The following eight organs should touch the ground, forehead, chest, both palms, both knees and both toes. (Because eight body parts touch the ground it is called Ashtangasan)

Breathing : Kumbhak (Bahirkumbak)

Benefit : Makes the spine and waist flexible and strengthens the muscles.

Step 7. Bhujangasana (Cobra pose)

Now lift your body above the waist, bending it slightly backwards and looking backwards. Make sure your legs and thighs are touching the ground and your back is in a semi-circular position.

Breathing : Purak

Benefit : Makes the spine and waist flexible and strengthens the muscles.

(Positions 5, 6 and 7 together, strengthen the arms and reduce the fat around the abdomen and waist.)

Step 8. Adho Mukha Svanasana (Downward facing dog pose):

Now lift your waist upwards and arms fully stretched with hands and legs resting on the ground, try to touch the chin to the chest.

Breathing : Rechak

Benefit : Beneficial for spine and waist muscles.

Step 9. Ashwa Sanchalanasana (Equestrian pose):

Breathing in, bring the right foot forward in between the two hands. The left knee goes down on the floor. Press the hips down and look up. Tip to deepen this yoga stretch: Place the right foot exactly between the two hands and the right calf perpendicular to the floor. In this position, make a gentle effort to push the hips down towards the floor, to deepen the stretch.

Breathing : Purak

Benefit : Strengthens the leg muscles and makes the spine and neck muscles flexible.

Step 10. Hastapadasana (Standing forward bend):

Breathing out, bring the left foot forward. Keep the palms on the floor. You may bend the knees, if necessary. Tip to deepen this yoga stretch: Gently straighten the knees, and if you can, try and touch your nose to the knees. Keep breathing.

Breathing : Rechak

Benefit : Makes the waist and spine flexible

Step 11. Hastauttanasana (Raised arms pose):

Breathing in, roll the spine up. Raise the hands up and bend backward a little bit, pushing the hips slightly outward. Tip to deepen this yoga stretch:

Ensure that your biceps are beside your ears. The idea is to stretch up more rather than stretching backward.

Breathing : Purak

Benefit : Strengthens chest muscles which in turn help in breathing.

Step 12. Tadasana (Mountain Pose)

As you exhale, first straighten the body, then bring the arms down. Relax in this position and observe the sensations in your body. This completes one set of Surya Namaskar. Complete the round by repeating the steps. Only this time, start with taking the left foot behind in step number 4 and bringing the left foot forward in step number 9. Once done, you would've completed one round of Surya Namaskar.



7. SURYA NAMASKAR AND ITS BENEFITS

Surya Namaskar can help you a lot to stay healthy. You just need to spend 10 minutes every day for this. Also, try Surya Namaskar in the morning at sunrise and always on an empty stomach.

Following are the benefits of daily Surya Namaskar

i. Improves body condition

Surya Namaskar improves your overall body condition. It is beneficial for your muscles. It also relieves spine pain, neck pain and back pain. Daily Surya Namaskar also improves spinal alignment, which leads to better body posture. Flexibility also increases and muscles appear stronger and in better condition.

ii. Peace of Mind

One thing we all need in this fast paced life is to relieve stress. Daily Surya Namaskar calms your mind and reduces your stress. Along with this, the problem of insomnia is also relieved. It also improves your focus.

iii. Beneficial for Heart Health

Daily Surya Namaskar can be beneficial for your heart health. Suryanamaskar increases blood circulation. This makes your heart muscles stronger and blood can pump better.

iv. Useful for weight loss

Surya Namaskar reduces excess body fat and helps maintain a healthy weight. By doing this, digestion also improves and metabolism speeds up, which burns calories faster. Daily Surya Namaskar also reduces digestive problems. All these factors help in maintaining a healthy weight.

v. Beneficial for Lungs

Special attention should be paid to breathing while performing Surya Namaskar. In each position one has to take a deep breath and slowly exhale. This strengthens your lungs and also increases your lung capacity.

vi. Beneficial for Children

Surya Namaskar makes the mind calm and focused. In today's age of fierce competition, Surya Namaskar should be a part of children's routine. It increases stamina and reduces anxiety and restlessness, especially during exam periods. Regular practice of Surya Namaskar increases physical strength and stamina. This is a great form of exercise for aspiring athletes. This increases the strength of the muscles as well as the flexibility of the spine and other organs. Even a five-year-old child can start performing Surya Namaskar daily.

vii. Very beneficial for women

This is a boon for health conscious women as Surya Namaskar not only burns extra calories but also makes the body toned in an easy and inexpensive way by stretching the abdominal muscles. Irregularities in menstrual cycle are also regularized by Surya Namaskar. Surya Namaskar should be done for easy delivery.

viii. Beneficial for healthy skin

Surya Namaskar not only keeps your face fresh but prevents wrinkles and keeps you youthful and energetic.

ix. Other Benefits

Surya Namaskar is energizing, meditative and relaxing. They make the body flexible and improve blood circulation. With good blood circulation, the hair does not turn white, it does not fall, it does not have dandruff and its health improves. Improves the

functioning of vital organs in the body. Improves your bones and digestive system. Along with this, the balance of all three body-doshas namely Vata, Pitta and Kapha is achieved.

8. CONCLUSION

Suryanamaskar is a form of worshipping the sun. Apart from this Suryanamaskar is also a form of exercise. Surya Namaskar can be done by men or women of any age. Surya Namaskar takes little space. The body benefits even if Surya Namaskar is performed for 10 minutes.

Surya Namaskar is gaining popularity all over the world due to its benefits. Suryanamaskar is one such yoga, which can help you a lot to stay healthy. Surya Namaskar has many benefits. Like improves body condition, mental peace, beneficial for heart health, helpful for weight loss, beneficial for lungs...etc.

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CONTRIBUTIONS OF COTTAGE INDUSTRY TO INDIAN ECONOMY

Vijayalaxmi K¹, Dr. Shripathi Kalluraya²

¹Research Scholar, Institute of Social Science and Humanities, Srinivas University, Mangalore, Karnataka, India-575001

²Research Professor, Institute of Social Science and Humanities, Srinivas University, Mangalore, Karnataka, India-575001

ABSTRACT

The sector of the Indian Economy known as cottage industries is one of the most significant contributors. More money will be available to support the expansion of cottage industries. Generally speaking, the term "Economic Development" refers to efforts undertaken to improve the standard of living and financial security of a particular area through the implementation of both quantitative and subjective economic improvements. This essay focuses on the role cottage industries play in the expansion of the national economy. Numerous facets of economic expansion have been identified, and our research indicated that the cottage sector is significantly contributing to these areas. Using a structured questionnaire, we have collected primary data to offer this explanation. This paper also discusses the difficulties associated with small industries. Five distinct kinds of cottage industries were looked into throughout this study. The main focus of this scholarly study is the contributions that each industry has contributed to India's total economic growth. In order to ensure that this sector may thrive and contribute more, we offer a few recommendations for the development of the cottage industry in India in our conclusion.

KEYWORDS: Cottage Industry, Economic Development, Expansion of national economy, Difficulties, poverty rates, Literacy Rates.

1. INTRODUCTION

India's cottage industry has long been a pillar of the country's economy, permeating both its cultural and economic fabric. These small-scale manufacturing ventures, which are often run out of houses or tiny workshops, have played a significant role in creating job possibilities, especially in rural regions where there are few other options for generating income. Cottage industries play a vital role in rural development by providing dispersed job opportunities. This helps to mitigate the negative effects of urban migration and promotes regional economic balance. These sectors help protect India's rich cultural legacy by keeping traditional skills and crafts alive and making money off of the demand for handmade goods throughout the world. Cottage industries are essential to the world of international commerce because they increase exports and a nation's foreign currency reserves. Beyond their financial benefits, cottage businesses empower disadvantaged populations and support sustainable lives by acting as sources of income and reducing poverty. Their value in modern economic environments is highlighted by their flexibility in responding to market dynamics and ecologically responsible practices. Given the complex role that cottage industries play, it is thus imperative that policies and infrastructure that support them be strengthened in order to ensure their long-term resilience and ability to contribute to equitable and sustainable economic development in India.

1.1. Types of Cottage Industries in India

India is renowned for its vast array of traditional and handcrafted cottage businesses as well as its diverse cultural

heritage. Nonetheless, the following is a summary of the main cottage industry kinds in India:

Cotton weaving: In India, the cotton weaving industry is a significant one. All over the nation, cotton apparel is popular. Consequently, the knowledge is old. Cotton apparel is renowned for its vibrant colours, timeless styles, and patterns made by expert weavers on handlooms. Gujarat, Maharashtra, and Tamil Nadu produce the most cotton.

Silk weaving: In India, one well-known cottage business is silk weaving. Our nation is a major producer and exporter of silk, both domestically and outside. Karnataka is the state that produces the most silk, making up over 70% of the total silk weaving market. All around the nation, Tassore, Mulberry, Eri, and Muga silks are produced.

Carpet weaving: During the Mughal era, the carpet weaving business was brought to India. The distinctive texture and quality of Kashmiri carpets are well-known. In a similar vein, durries and coir carpets are also favoured. Although there are carpet industries all throughout the nation, the majority are located in Rajasthan, Kashmir, Uttar Pradesh, Punjab, and Andhra Pradesh. To encourage the sale of knotted carpets across the nation, the Indian government also founded the Carpet Export Council.

Leather production: Approximately 10% of the world's demand for premium leather comes from India, a major manufacturer for international markets. Approximately 2.5 million people work in the leather industry, which is among the top exporters. The top three states for leather production are Uttar Pradesh, Tamil Nadu, and West Bengal.



Metal works: India uses metal to make jewellery, cookware, sculptures, and other things. India's economy benefits greatly from its metal handicrafts, which are well recognized across the globe. Hand tools are used to create metal handicrafts; no sophisticated machinery is used.

2. LITERATURE REVIEW

Veerappan, N. and Sathishkumar, D. (2016): Exploratory research on Indian small-scale industries (SSI) and the impact of industrial policy on SSI. India's small-scale industries (SSI) are vital to the country's economic growth. When it comes to industrial output in India, Tamil Nadu is among the developed states. The state's industrial development area is called Erode area. The industrial strategy for SSI determines whether the program succeeds or fails. Every year, the department of micro, small, and medium enterprises (MSME) release an industrial strategy. The industrial policy's primary goals are raising awareness and making efficient use of subsidies and incentives. However, there is a disconnect in how industrial policy is used and what it covers. Therefore, it is necessary to gauge how industrial policy affects SSI.

Mishra, R. and Singh, P. (2016) Six Sigma-Based Quality Management in Small and Medium-Sized Industries). It has been shown that Six Sigma is the most effective statistical approach for raising both the company's production and product quality. An effort has been made to bring Six Sigma to Indian SSI in the current work. This case study describes how the Six Sigma methodology was successfully implemented in the small-scale Indian sector by raising the standard of a product that was receiving a lot of rejections. The study's main goal is to demonstrate to various firms the value and advantages of using Six Sigma for raising product quality, which eventually raises competence power—a crucial resource in the modern workplace.

Singh, H., Singh, R., and Singh, T. (2015). Opportunities and difficulties in small company management: an Indian perspective. Small businesses are essential to the nation's social and economic progress. With its effective, efficient, adaptable, and creative entrepreneurial spirit, private companies likewise have a significant impact in the development of the economy, representing practically 8% of the country's Gross domestic product, 45% of assembling yield, and 40% of commodities. After agribusiness, they represent the best piece of work. It generates 1.3 million new employments annually and employs 60 million people. It manufactures over 8,000 high-quality goods for the Indian and global markets.

Mangla, S. K., Khanzode, A. G., Sarma, P. R. S., & Yuan, H. (2021) Eight obstacles to implementing Industry 4.0 for sustainable manufacturing are examined in the paper. There are causal linkages and interdependencies among these obstacles. This causal relationship is shown visually. The applied technique divides the obstacles that are taken into account for causation into two categories: "influenced" and "influencer." Additionally, it uses numerical figures to show how much one barrier influences another. This study's main contribution is to identify the influencing hurdles and allocate limited organizational resources to minimize them. Managing the

influenced issues would be made easier by mitigating the influencing obstacles. "Lack of policy frameworks" and "technological upgrading" rank as the two biggest obstacles in the study's hierarchy of priority. These obstacles are also included under the cause category. This research also shows that "non-readiness of the workforce" to implement Industry 4.0 and "difficulty in accessing credit" are "influenced" impediments. Government analysts and small company practitioners will find this research useful in assessing the obstacles to adopting Industry 4.0-based sustainable manufacturing strategies. In light of this, Indian Micro, Small, and Medium-Sized Enterprises must modernize by upskilling the workforce to prepare for the next Industry 4.0 technology revolution.

3. RESEARCH METHODOLOGY

For the purpose of achieving its descriptive goals, the research used a quantitative methodology. For the review's goals, both essential and auxiliary information have been assembled. Personal interviews with workers and entrepreneurs in the cottage sector have been used to gather the main data. A variety of sources, including the Indian Economic Review, relevant books, journals, articles, seminar papers, publications from national and international research institutions, financial institution reports, public records and statistics, and various research reports, were used to gather secondary data. Non-probability sampling strategies have included the use of judgment and purposeful sampling in sample design. Three types of cottage industries in all were chosen. Cane industry (i), Handloom industry (ii), and Pottery industry (iii) are the three cottage industries that have been chosen. The district chosen for the survey is chosen using the judgment sample technique. The questionnaire was exclusively intended for respondents who fell into one of two categories: business owners or employees of cottage industries. Three different industry groups accounted for 450 of the total responses. The minimal sample size for the current research was calculated using the following formula, which took into account the variables that were chosen.

$$n = \frac{z^2 pq}{d^2}$$

Were,

n = sample size estimate (in cases when the population is more than 10,000).

z = the 95% confidence level, or 1.96 (or more simply 2.0), is the standard normal deviation that is used.

p = the population thought to possess a certain trait. Use 50% (0.50) if there isn't a fair approximation)

q = 1-p = the likelihood of failure and

d = The required accuracy level, which is often set at 0.05 or 0.2 on occasion.

$$\begin{aligned} &= \frac{1.96^2(0.5)(0.5)}{(0.05)^2} \\ &= \frac{0.9604}{0.0025} \\ &= 384.16 \end{aligned}$$

= 385 Entrepreneurs and workers (Rounded up 450)

Upon determining the value of 0.5 for either p or q and the 95% confidence limit using z = 2 with a 5% error level, it was determined that 450 samples were needed to get an estimate. However, the 400-person sample size is insufficient, therefore



the researcher takes into account the 5% confidence level and the minimal sample size needed for cottage industry workers and entrepreneurs. The computer-based Statistical Package for Social Science (SPSS) was used to analyze all of the data. The information were all changed into mathematical codes prior to being input into the PC, and the particulars of these codes were recorded in a code book. To analyze the data, a basic statistical tool is used. Those include the mean of the frequency distribution, the standard deviation, the graphical display, etc. When doing research on human beings, ethical considerations

are crucial. Neuman (1995) asserts that the researcher's duties include upholding, directing, and monitoring people's rights. Christians (2000) outlined the minimal requirements, including correctness, privacy and secrecy, and informed permission. Every ethical guideline was adhered to in this study at every stage of the investigation. Permission from the relevant organizations was obtained prior to data collection. Every participant received assurances that the replies would remain anonymous and private.

4. DATA ANALYSIS AND INTERPRETATION OF DATA

Table-1: Age Of Respondents

Age	Frequency	Percentage
Below 30 years	183	40.1
31 – 35 years	129	28.4
36 – 40 years	61	14.1
41 – 45 years	53	10.6
46 years to above	24	6.8
Total	450	100

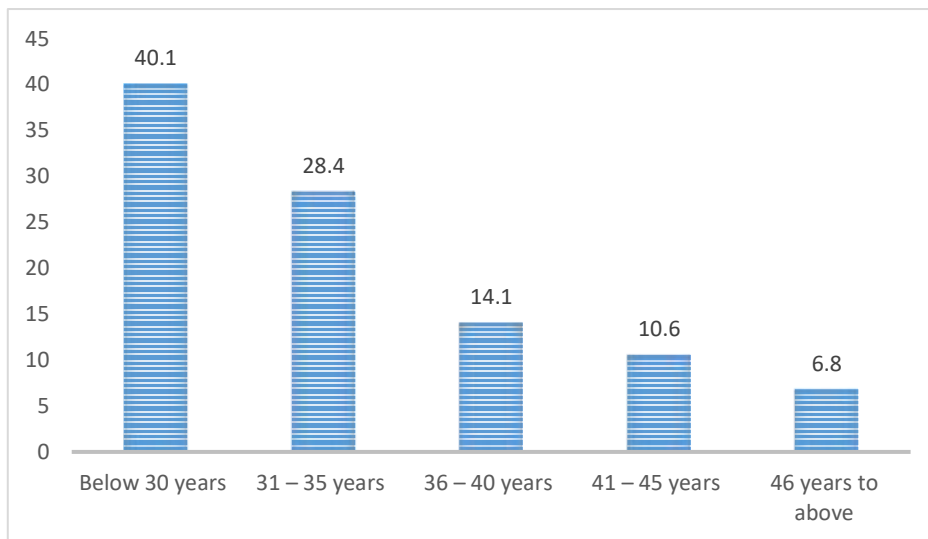


Figure 1: Age Of Respondents

The information displays the age distribution of 450 members of the sample population. Interestingly, the biggest group, or 183 people, is under 30 years old. This group makes up 40.1% of the sample. Closely following, with 129 people, is the age group of 31 to 35, which accounts for 28.4% of the population. 61 people, representing a noteworthy but lesser fraction of the sample, are between the ages of 36 and 40 (14.1%). In addition,

the age group of 41–45 represents 10.6% of the total population, consisting of 53 persons. The age group of 46 years and older makes up the lowest portion of the sample, including 24 persons or 6.8% of the total. Overall, the results show that the sample population is mostly young, and that the percentages of older age groups in the sample are trending downward as sample age grows.

Table-2: Respondent Distribution by Gender

Gender	Frequency	Percentage
Male	264	58
Female	186	42
Total	450	100

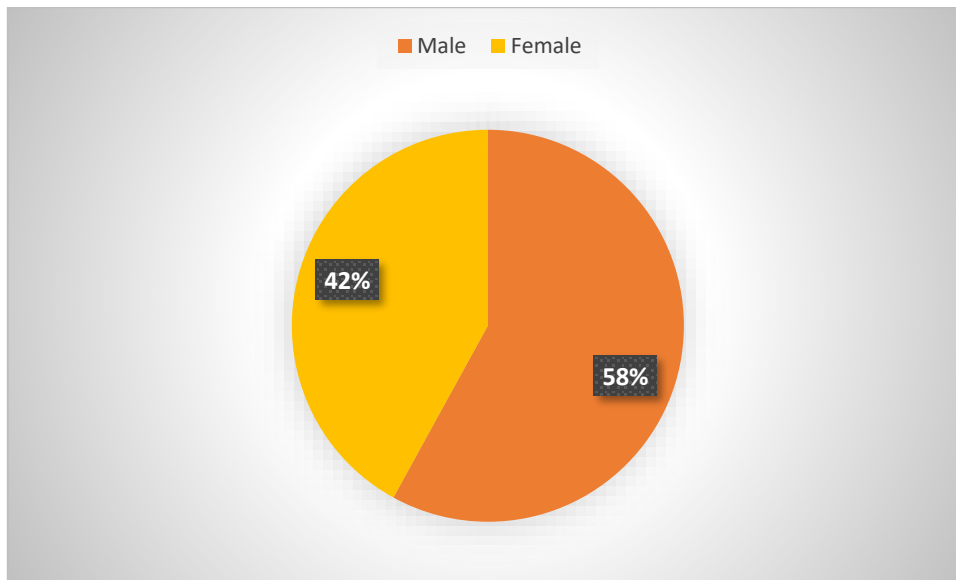


Figure 2: Respondent Distribution by Gender

The information supplied sheds light on the distribution of genders among the 450 people in the sample group. Males make up the bulk of the sample group, making up 58% of the total with 264 people. On the other hand, 186 people, or 42% of the sample, are female. This suggests that there is a clear gender gap in the sample, with more men than women represented. The difference in frequency between males and females points to possible differences in gender representation or engagement in

the setting under study. The underlying causes of this gender distribution and its consequences for the general public or the particular demography under study should be investigated in more detail. All things considered, the information emphasizes how crucial it is to take gender dynamics into account while deciphering and analysing demographic trends within the sample group.

Table-3: Respondents' Distribution by Industry

Industry	Frequency	Percentage
Pottery industry	248	54.9
Handloom industry	120	26.6
Cane industry	82	18.5
Total	450	100

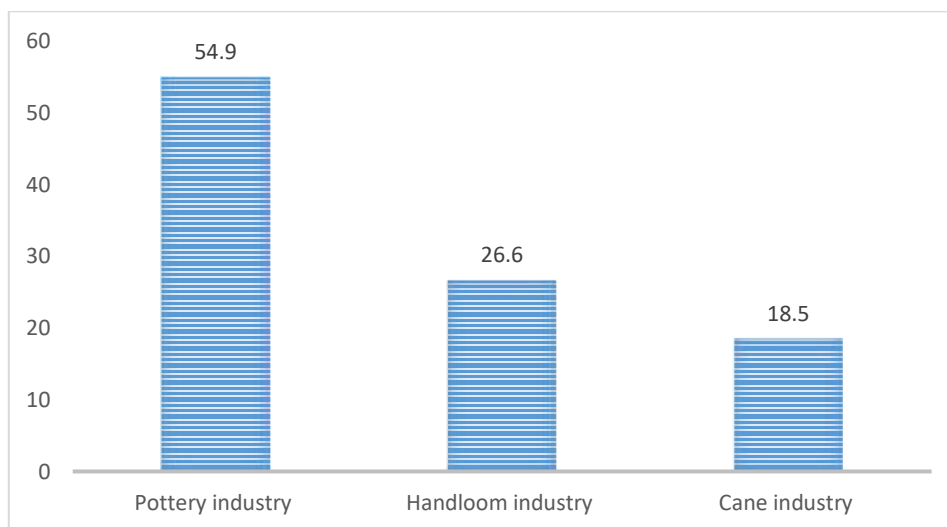


Figure 3: Respondents' Distribution by Industry

The distribution of people in various sectors within a sample population of 450 is shown by the statistics supplied. Of them, the pottery business stands out as the most prevalent, employing 248 respondents or 54.9% of the total. The handloom industry,

which employs 120 people, comes in second place and accounts for 26.6% of the sample. Finally, 82 people are employed in the cane sector, which employs 18.5% of the population. This data indicates that the sample's population is distributed differently



across various sectors, with a sizable fraction working in the pottery industry. The significance or ubiquity of the pottery industry within the community or geographic region under investigation may be indicated by its prominence. Although they make up a lesser fraction of the sample, the handloom and cane sectors nonetheless account for significant portions of it,

demonstrating the variety of jobs available to the populace. Subsequent examination may explore variables impacting the selection of an industry, financial consequences, or possible associations between the preferred industry and the demographic attributes of the representative group.

Table-4: Respondents' distribution according to maintaining household expenses from income

Capability	Frequency	Percentage
Capable	208	49.4
Non capable	242	50.6
Total	450	100

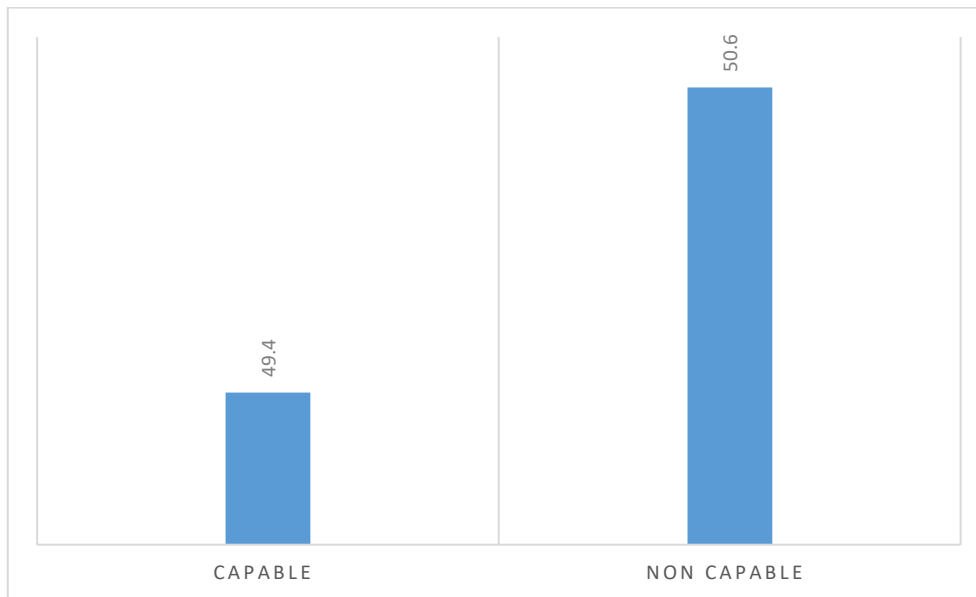


Figure 4: Respondents' distribution according to maintaining household expenses from income

The information supplied sheds light on how people in a sample of 450 people assess their own abilities. 49.4% of the responders—208 people—are categorized as competent, meaning they have the abilities or credentials required for a certain job or position. On the other hand, 242 people—or 50.6% of the total—are classified as non-capable, meaning they do not have the necessary skills or credentials. This implies that the sample population's distribution of those judged competent and unable is fairly equal. The categorization of capacity may be predicated on a number of variables, including training, work history, or specialized abilities pertinent to the research

setting. In order to evaluate workforce preparedness, pinpoint possible areas for skill development or intervention, and guide decision-making processes targeted at maximizing individual and organizational performance, it is essential to comprehend the distribution of capacity throughout the sample population. Subsequent investigation may delve into the elements that impact the categorization of capacity, plausible associations with demographic variables, and consequences for diverse consequences like job prospects, efficiency, and the general advancement of socioeconomic conditions.

Table-5: Distribution of Respondent feedback based on Source Materials

Security of raw materials	Frequency	Percentage
Yes	282	64.5
No	168	35.5
Total	450	100

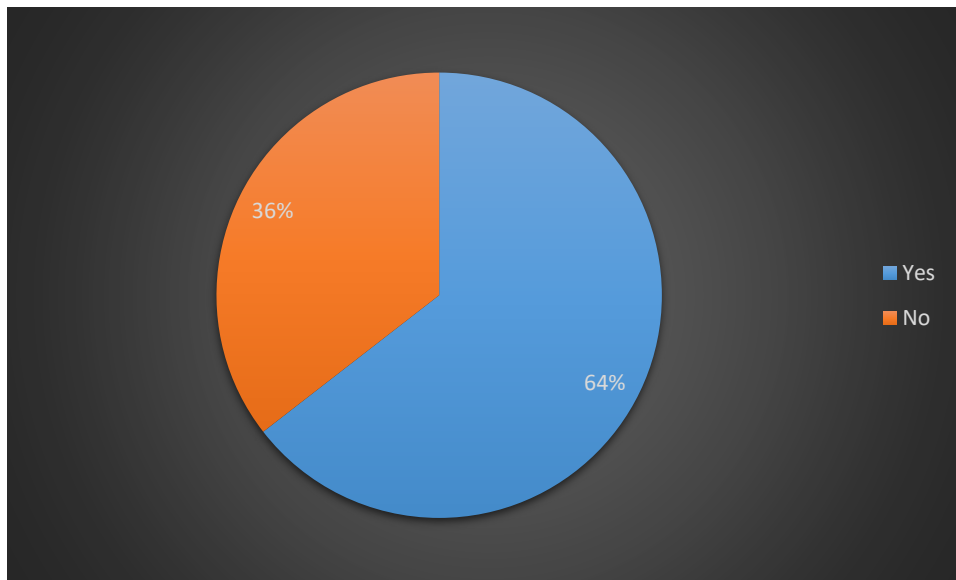


Figure 5: Distribution of Respondent feedback based on Source Materials

The information presented shows how 450 members of the sample population felt about the security of raw materials. Of the respondents, 282 people expressed trust in the availability and stability of the resources required for their various endeavours, while the majority, 64.5%, said that they believe raw material security to be satisfactory. On the other hand, out of 168 respondents, 35.5% said they felt there was insufficient or no security for raw materials. According to the findings, a sizable segment of the sample population seems to be concerned about the stability or availability of the raw materials needed for their operations. For a number of industries,

including manufacturing, agriculture, and construction, the impression of raw material security is critical since it has a direct influence on the prices, costs of production, and overall operational efficiency. Subsequent examination may go deeper into the variables impacting the way in which raw material security is seen, possible associations with certain industrial domains or geographical areas, and consequences for supply chain administration, financial stability, and environmentally conscious growth programs. For industries that depend on these resources to be resilient and competitive, it is critical to comprehend and manage raw material security issues.

Table-6: Respondents' distribution according to their future prospects in this field

Prospect	Frequency	Percentage
Good	245	54.5
Bad	123	26.7
No comment	82	18.8
Total	450	100

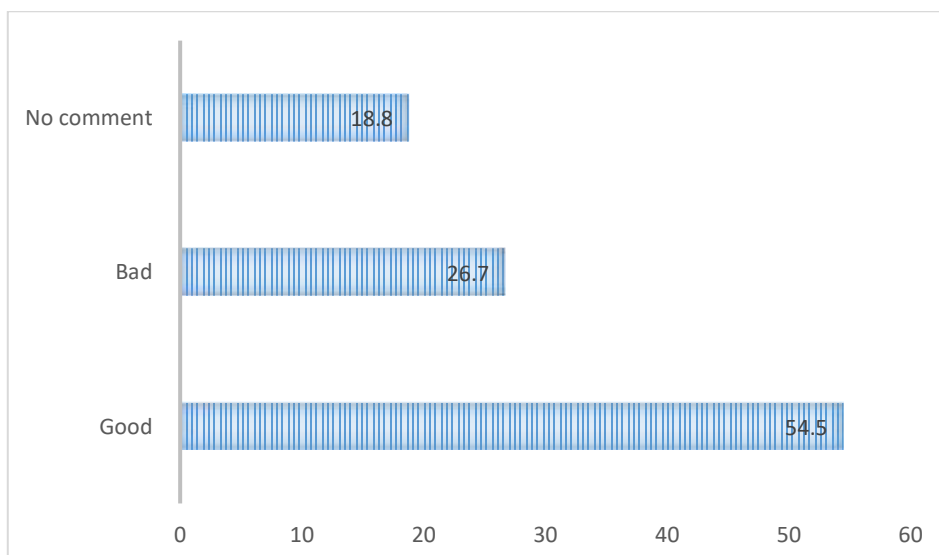


Figure 6: Respondents' distribution according to their future prospects in this field



The information supplied shows the prospects that are thought to exist for a sample of 450 people. Of those surveyed, 54.5% were upbeat about the future and described it as "good." 245 people expressed this optimistic view, predicting favourable results or advancements in the future. On the other hand, 123 respondents, or 26.7% of the total, had a negative outlook and called the prospects "bad." These people have reservations or misgivings over potential results or advancements. Furthermore, 82 respondents, or 18.8% of the total, declined to remark on prospects, presumably due to a lack of knowledge or interest in what could be possible in the future. According to the statistics, there is a wide variety of viewpoints within the sample population on what they believe will happen in the future. For strategic planning, decision-making, and risk management in a variety of fields, including business, economics, and public policy, it is essential to comprehend these perspectives on the future. Subsequent examination may go deeper into the fundamental elements impacting these viewpoints, plausible associations with demographic or socioeconomic characteristics, and consequences for personal conduct, corporate tactics, and wider social patterns. A thorough assessment and resolution of divergent perspectives on prospects may help stakeholders better foresee obstacles, seize opportunities, and cultivate resilience in the face of uncertainty.

5. CONCLUSION

A fundamental part of India's economic and cultural environment, cottage industries are essential to maintaining traditional craftsmanship and promoting equitable prosperity. Our research shed light on India's cottage industry sector's present situation, difficulties, and possible directions for development. Key demographic tendencies emerged from the data study, including a young population involved in a variety of cottage enterprises. Notwithstanding this, the industry still has a lot of obstacles to overcome, such as poor marketing plans, outdated technology, and restricted access to funding. These obstacles prevent the industry from being as dynamic and from making a complete contribution to economic growth. But despite these difficulties, there are chances for development and renewal. Our results highlight how crucial it is to implement focused interventions to remove the obstacles found. Increased capital investment, better marketing strategies, higher-quality products, and infrastructure development investments are among the recommendations. To fully realize the potential of this industry, it is essential to support and patronize the government and encourage the formation of cooperative organizations. It's clear that the cottage industry sector has a lot of potential for promoting both cultural preservation and economic progress. Stakeholders can create a thriving and resilient cottage industry sector that provides jobs and enhances India's cultural fabric by following our advice and putting strategic interventions into place. Therefore, coordinated measures are required to guarantee the success of cottage enterprises and their significant contribution to the nation's overall economic growth.

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DEVELOPMENT OF SOCIAL INTELLIGENCE PROGRAM FOR HIGHER SECONDARY LEVEL STUDENTS AND ITS EFFECTIVENESS

Ayyubi Maaz Ahmad

Research Scholar, S. J. J. T. University, Jhunjhunu, Rajasthan

ABSTRACT

Intelligence is very important in personal development. An intelligent person has a special status in society. In everyday life we decide whether a student is intelligent or not based on school progress but it may be unscientific, e.g. we call a wise person intelligent; but there is a difference between real intelligence and knowledge of the same person. Although there is a close relationship between knowledge acquisition and intelligence, the measure of knowledge is different. So it is the measure of intelligence. Different scholars from different sects of psychology have tried to define intelligence and have also given their own definitions of intelligence. According to Alfred Binet (1905), "Intelligence is the tendency of thought to take and maintain definite direction, the capacity to make adaptations for the purpose of attaining a desired end and the power of self-criticism." We often see in society that students who are considered as intelligent and successful in school life fail in real life. Many people who fail in school life not only succeed in real life but also do great work of guiding the society and revolutionizing the society. There are many examples of such great social reformers. Social intelligence is more important than higher educational attainment, tangible intelligence and quality to be successful in life and in the society. Therefore, it is important for teachers, students and parents to take this concept seriously. It can be explained by some important definitions.

KEYWORDS: Social Intelligence, Program Development, Effectiveness, Research Methodology

INTRODUCTION

According to Edward Thorndike (1920), "Social intelligence is the ability to understand others and the act of understanding human relationships."

According to Mathur S. S. (2005), "Social intelligence is the ability to accept a person as he is, the ability to deal effectively with the person, and the right way to deal with people."

Social intelligence is essential for success in life. Because tangible intelligence may cause a person to be miserable, to fail, but when tangible intelligence is combined with social intelligence, then a person may be successful. The individual is an integral part of society. The person uses the knowledge and skills and acquired in real life. Therefore, a person in the society should have the ability to think about the rules, customs, and practices and behave in a social manner. That is the real development of a person.

The concept of social intelligence was first proposed by psychologist Edward Thorndike. In 1920, he wrote an article in Harper's Monthly Magazine on the subject.

But in the late 1950's, an influential psychologist, Binet (whose work is still used to measure intelligence) rejected the concept of social intelligence. "Social intelligence is just a general intelligence that is used in social situations," he said. Social Intelligence was neglected for some time. Then the concept of social intelligence was reconsidered. Some scientists studies on neuroscience. They measured the areas of the brain that

controlled the individual relationships of the brain, almost half a century later.

The concept of social intelligence requires the study of cognitive abilities, e.g. Instead of wondering what to do if a baby cries, the nurse touches tenderly and the baby stops crying.

According to Richard Davidson (Director of the Neuroscience Laboratory at the University of Wisconsin), the social sphere and the emotional sphere in the brain are intertwined. He says all emotions are social because the emotions cannot be separated in the world of relationships. Your social interactions control your emotions.

Considering all these perspectives, the researcher has decided to carry out research work on the topic of "Development of Social Intelligence Program for Higher Secondary Level Students and its Effectiveness."

NEED AND IMPORTANCE OF RESEARCH

1. At the higher secondary level the foundation for the future life of the students laid and life takes a different turn. The process of socialization starts from secondary level. So this research is essential to get direction in this regard.
2. Although students are intellectually gifted, they are more likely to be frustrated when they fail to communicate at the social level, to establish positive social relationships, and to establish personal effect in the social sphere. This research needs to be done for ideological thinking in this regard.



3. It is important to realize the importance of having social intelligence in the present context. Adolescents in particular need to be aware of this. These children represent the future of society. So if social intelligence develops in them, they will be able to get a better personality. This research is essential to create awareness and need for it.
4. The role of society is important in all-round personal development of students. Without society, personality development and progress are of no importance. Thus a socially intelligent person is able to lead the society effectively and contribute to the formation of a progressive society. This is especially true if teenagers are aware of this. This research is important in this regard.

CONCEPTUAL DEFINITIONS IN RESEARCH

1. Social Intelligence - Intelligence is the tendency of thought to take and maintain definite direction, the capacity to make adaptations for the purpose of attaining a desired end and the power of self-criticism.

(Alfred Binet -1905)

2. Higher Secondary Students - According to the 5 + 3 + 3 + 4 Educational Structure of the National Education Policy 2020, the students studying in the last two classes of +4 (Class 11th and 12th) are higher secondary students.

(National Education Policy, 2020)

3. Program Development - Program Development is a series of time bound actions designed for planned implementation under the guidance of experts.

(David Stuart, 2014, Innovative Programs for Education, Bookshine Publications, England)

4. Effectiveness - Effectiveness is the developmental change that takes place after the implementation of an action.

(Sharlin Hes-Biber, 2017, Methodology of Qualitative Research, Sage Publications, New Delhi)

5. Study - Study means to properly analyse and draw conclusions from the information obtained through a meticulous and careful survey.

(www.wikipedia.org)

OPERATIONAL DEFINITIONS IN RESEARCH

1. **Social Intelligence** - Social Intelligence of Students of Class 12th in Malegaon City.
2. **Higher Secondary Students** - According to the 5+3+3+4 educational structure of the National Education Policy-2020, the students studying in the last class of +4 (Class 12th) in Malegaon City are higher secondary students.
3. **Program Development** - Program Creation is a series of time bound action plans planned for the development of social intelligence of students studying in Class 12th in the city of Malegaon.
4. **Effectiveness** - Effectiveness is the developmental change that has taken place in the city of Malegaon after the implementation of social intelligence development program for 12th standard students.
5. **Study** - The study is to draw conclusions by analysing properly the information obtained regarding the developmental changes that have taken place after the implementation of the program for the development of

social intelligence on the students studying in class 12th in the city of Malegaon.

OBJECTIVES OF RESEARCH

1. To study the social intelligence of students of higher secondary level.
2. To develop a program for the development of social intelligence of higher secondary level students.
3. To study the effectiveness of the program implemented for the development of social intelligence of the higher secondary level students.

RESEARCH HYPOTHESIS

Research Hypothesis - Significant changes are seen in the development of social intelligence in higher secondary students after implementation of social intelligence development program.

Null Hypothesis - No Significant changes are seen in the development of social intelligence in higher secondary students after implementation of social intelligence development program.

RESEARCH ASSUMPTIONS

1. Students' social intelligence is not found to be very developed.
2. Each student's ability to use social intelligence is different from others.
3. Students often face various problems in making social adjustments.
4. Students need training related to social intelligence to develop the capacity for proper socialization.

VARIABLES IN RESEARCH

1. **Independent Variables** - Social intelligence development program
2. **Dependant Variables** - A measurable change in the development of students' social intelligence.
3. **External Variables** - Intelligence, Age, Gender, Family Background

RESEARCH METHOD

For present research study the researcher is used Survey Research Method and Experimental Research Method.

RESEARCH DESIGN

In the present research, a single group research design is used. The control group and experimental group is same in present research. The pre-test has given first then the experimental program was implemented. After it post-test was given to same group.

RESEARCH POPULATION

For the present research, all the students studying in the higher secondary schools or Junior Colleges in the city of Malegaon will be as population. Near about 17 Junior Colleges are there in Malegaon city. In it some are government, some are private and some are private aided colleges. Approximately 3000



students are studying in those colleges. These all student are Population of this research study.

SAMPLE SELECTION

The sample was selected keeping in view the practical approach for the success of the present research work. 2 higher secondary schools in Malegaon city was selected through Lottery Method of Random Sample Selection Method. In this regard 100 students were selected for survey (50 students from each school). In addition, 50 students from one school were selected for the experimental study.

SCOPE OF RESEARCH

1. The present research work is related to higher secondary schools.
2. The present research will be related to the social intelligence of the students studying in the higher secondary schools.
3. The present research included pre-planned social intelligence development programs for students.
4. The present research related to the students of higher secondary schools in the city of Malegaon.

LIMITATIONS OF RESEARCH

1. The present research is limited to higher secondary schools in Malegaon only.
2. The present research is limited to higher secondary level students who have implemented social intelligence development programs in the city of Malegaon.
3. The findings of the present research limited to the effectiveness of social intelligence development of higher secondary level students in Malegaon only.
4. The findings of the present research based on the response of the higher secondary level students regarding the development of social intelligence.

DATA COLLECTION

For this research work, data will be collected through questionnaire to know the social intelligence of the students. After that, Dr. N. K. Chadha and Usha Ganesan's standardised Social Intelligence Scale will be used. In it, students will have to fill the Social Intelligence Scale (pre-test). After it, program for social intelligence development will be prepared and implemented. After it the post-test will be given to students and filled out by them. In this way information will be collected.

STATISTICAL TOOLS OF RESEARCH

After collecting the data required for the research work, the data analysed and interpreted through Percentile, Mean, Standard Deviation, T-Value and other necessary statistical tools.

CONCLUSION

This study contributes valuable insights into the social intelligence landscape of higher secondary students in Nashik district. The findings suggest gender-related differences in social intelligence categories, but the overall practical significance requires further exploration. The nuanced interplay between social intelligence, affective variables, and environmental factors underscores the complexity of student

development. Future research could delve deeper into qualitative aspects to enrich our understanding and inform tailored interventions for the benefit of higher secondary students in Nashik district.

The chi-squared test revealed a statistically significant association between gender and social intelligence categories. However, further examination indicated that the practical significance of this finding might be limited, as there was no significant difference in means between male and female students.

The study did not find significant relationships between social intelligence and selected affective and environmental variables. This challenges previous assumptions and emphasizes the need for a holistic understanding of the educational environment.

There were no significant differences in social intelligence scores across gender, school locale, and school management. This suggests that, statistically, these demographic factors may not play a substantial role in influencing social intelligence levels among higher secondary students in Nashik district.

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A DISCOURSE ANALYSIS ON THE WRITTEN POEMS OF GRADE 11 CREATIVE WRITING STUDENTS: LANGUAGE OF PERSUASION IN FOCUS

Hassan O. Faja; Socorro L. Neri, Ph.D.

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ABSTRACT

The purpose of this qualitative corpora-based study was to analyze the persuasive techniques used by Grade 11 creative writing students in their written poems about politics and social issues in one of the schools in the Division of Davao del Norte. The analysis on persuasive techniques were based on the study of Flower and Hayes (1983). In addition, using the Theory of Persuasion of Aristotle, it also analyzed how the students used persuasive techniques in writing their poems. The results of the study showed that rhetorical questions, alliteration, repetition, and imperative mood were some of the persuasive techniques present in written poem of the students. Moreover, it was also found out that the students used appeal to ethics, emotions, and logic in their poem to persuade readers. This study was useful and essential as study ground about writing poetry and as a basis on how schools may emphasize the language of persuasion in the written poems of the students. The study recommends that future research may venture on another analysis on another genre.

KEYWORDS: persuasive techniques, grade 11 creative writing students critical thinking, writing a poem, Division of Davao del Norte

INTRODUCTION

Words and sentences gain credibility by employing several linguistic methods, which demonstrate the immense power of language. These might be anything from the sound of a phrase to the application of rhetorical devices like metaphors. To use the language of persuasive methods, there are techniques that can be employed to influence someone to take a specific position or action. Appealing to ethics (ethos), appealing to logic (logos), appealing to emotions (pathos), positive and negative motivation, and cognitive dissonance are common persuasive strategies that can be used to influence audience members' attitudes, values, and beliefs more successfully. Although linguistic tools can be used to support any argument, marketing and advertising are the areas in which they are most commonly employed. In persuasion, it was not only about what was said; it is also about how it was said. This has been noted, and research has been done about the manner (Pogacar, et al., 2019).

Further, this study was useful and essential as study ground about writing poetry and as a basis on how schools may emphasize the language of persuasion in the written poems of the students. The study recommends that future research may venture on another analysis on another genre.

Purpose of the Study

The purpose of this qualitative study employing discourse analysis was to explore, determine, and analyze the language of persuasion used in the written free verse poem of the creative writing students in one of the schools of Davao del Norte.

Further, this study aimed to analyze and achieve the students' capabilities in parlance of literary writing.

Research Questions

1. What are the writing persuasive techniques observed in the written poems of Grade 11 creative writing students?
2. How do the Grade 11 creative writing students use the persuasive techniques in writing their poems?

Theoretical Lens

This study was gleaned through the lens of Flower and Hayes (1983), Cognitive Dissonance Theory. The theory states that writing involves a variety of distinct processes. It also used the Theory of Persuasion of Aristotle.

METHODOLOGY

This chapter presents the methodology used in this qualitative study. This includes the research design, research materials, role of the researcher, data sources, data collection procedure, data analysis, trustworthiness of the study, and its ethical consideration.

Research Material

The corpora of the study were the fifty-one written poems of the first section of Grade 11 creative writing students in one of the public secondary schools in New Corella District, Davao del Norte. The fifty-one written poems of Grade 11 creative writing students were used based on the themes of politics and social issues. The written poems were in free verse poems in which the students can relate it. It may be local, national,



international, and/or global issues written in English language.

Data Analysis

Using the linguistic frame of Flower and Hayes and the Persuasion Theory of Aristotle, the 51 poems of Grade 11 students were analyzed. Each completed transcript was reviewed for accuracy and completeness after transcribing the poetry composition. The poems which were analyzed based on their persuasive techniques and usage were arranged logically.

RESULTS

Persuasive Techniques Found on the Written Poems of Grade 11 Creative Writing Students Rhetorical Question

The lines identified as rhetorical question in the poems are those in questions forms that are not meant to be answered. They are usually used to make a point or to draw attention to something. A rhetorical question is designed to elicit a mental response from the audience, not a verbal or nonverbal one. In short, a rhetorical question makes an audience think. For example, the line from the poem that shows rhetorical question *Do we have an action in this problem?* this refer to line or lines which sounded like asking questions but did not require answers.

Alliteration

The lines in the poems categorized as an alliteration in poems. In this line, alliterations used by the students to provide an audible pulse that gives a piece of writing a lulling, lyrical, and/or emotive effect. For example, in the line *corrupt corridors conceal cunning conspiracies*. It is an alliteration because the repeated “c” of *corrupt corridors conceals cunning conspiracies* sound creates a rhythmic and memorable effect, making the phrase more engaging and memorable.

Repetition

The extracted lines from the poetry composition of Grade 11 students are categorized as repetitions of words to emphasize a feeling or idea, create rhythm, and/or develop a sense of urgency in writing. For example, in the line *A plea for change, change we must*, this line is a repetition because the word change has a definite meaning in this line. The student repeats the word change to emphasize that change is needed.

Imperative

The written poem of Grade 11 students employing an imperative in writing gives a direction, or expresses instructions of some kind. For example, in the line *Come together, let unity thrive*, this line is an imperative to come together and let unity thrive. The student is urging to readers to come together.

Manner of Using Persuasive Techniques in Writing Poems Among Grade 11 Creative Writing Appealing to Ethics

Ethical appeal is used to provide a practical basis for identifying what kinds of actions, intentions, and motives are valued. For example, in the line, *Should be a beacon guiding all kinds*, this appeal is used to emphasizes the importance of having a clear principle that serve as a moral attribute for all individuals or groups, guiding their actions and decisions towards alignment with shared values and ideals.

Appealing to Emotions

The emotional appeal is an appeal used by students to persuade

an audience by purposely evoking certain emotions to make them feel the way the writer wants them to feel. For example, in the line, *As politicians played games ignoring cries*, this appeal is used to convey political leaders who are perceived to be more concerned with their own agendas or political gamesmanship than with addressing the pressing issues facing their constituents. It highlights a disconnect between the actions of politicians and the needs of the people they are meant to serve.

Appealing to Logic

Appealing to logic is used in crafting a poem to prove an argument or persuade an audience through the use of logic, reason, data, and facts. A local appeal can be structured by making a claim, citing evidence, and then providing a warrant. For example, in the line, *As politics overshadowed the pursuit of knowledge within*, this appeal is used in this line to delve into themes of power, education, and the delicate balance between governance and learning.

DISCUSSIONS

Persuasive Techniques Found on the Written Poems of Grade 11 Creative Writing Students Rhetorical Question

The result of the study discloses that rhetorical questions are some persuasive techniques utilized by students. Rhetorical questions serve to emphasize, provoke thought, engage the readers, and can elevate a poem, leaving a lasting impact on the reader’s mind. The use of rhetorical questions in poetry is seen as a tool for enhancing students' critical thinking and reflective skills. Smith (2019) states that these questions can lead readers to contemplate the themes of a poem more deeply, as they often point to the underlying emotional or philosophical issues being addressed. According to him, a cognitive-linguistic framework for analyzing rhetorical questions in poetry that questions, engage readers cognitively by activating a search for relevance and meaning, thus fostering a deeper connection with the text. Jones (2020) adds that rhetorical questions can also serve as transitions between ideas within a poem, providing a natural progression that guides the reader through the poet's thought process. Rhetorical questions are a common feature in poetry that serve multiple functions and can be used to challenge readers, create dramatic tension, or invite self-reflection and serve as a means of bridging the gap between writer and the reader, creating a shared space for exploration.

Alliteration

The study's findings reveal that students employ alliteration as a persuasive technique utilized by students in writing a poem to get the reader's attention, make them focus on a particular line or section, and enhance the rhythm and musicality of a poem. Martinez (2019) revealed that students often use alliteration to provide an audible pulse that gives a piece of writing a lulling, lyrical, and/or emotive effect. He explores the nuanced role of alliteration in poetic composition. He posits that alliteration serves not only as an aesthetic device but also as a means of emphasizing thematic elements and enhancing the emotive power of a poem. Her research draws upon a diverse corpus of poetic works, analyzing the



frequency, placement, and impact of alliterative sequences. By repeating consonant sounds, writers create a pleasing and melodic effect that adds an element of artistry to their work. This rhythmic quality can draw readers into the writing, making it more engaging and enjoyable. Alliteration helps readers recall the content and themes of the works they read, especially when the alliterative sounds are similar throughout the text (Hopkins, 19th century).

Repetition

The result of the study reveals that repetition is one of the persuasive techniques utilized by students to invite and encourage readers to create rhythm, emphasize a word or phrase, and enhance the structure and emotional impact of a poem. Repetition serves multiple functions in modern poetry and creates a musicality in the text, making the poem more memorable and engaging. The use of repetition also makes poetry more memorable. When certain phrases or lines are repeated, they imprint themselves in the reader's mind, allowing for easier recall (Tannen, 2020). It can also serve to emphasize a particular theme or idea that the repeated use of certain words or phrases can signal their importance to the reader (Smith, 2021). He also discusses the role of repetition in engaging the reader. By creating patterns within the text, writers invite readers to actively participate in the creation of meaning. Green (2021) in 21st-century poetry has been found that such structures allow writers to explore complex themes through a simple yet powerful linguistic framework. Additionally, the resurgence of traditional forms relies heavily on repetition, indicating a renewed interest in the interplay between form and meaning.

Imperative

The result of the study reveals that imperative is one of the persuasive techniques utilized by students to connect readers to what it may express like to command or to give advice or instructions, convey emotion, create rhythm, and engage readers in writing their poems. The imperative mood is a grammatical feature used to issue commands, make requests, or offer invitations. In poetry, it serves as a powerful tool for the writer or student to establish a connection with the reader. Smith (2019) states that the imperative can transform a poem into a participatory experience, inviting readers to engage with the text on a personal level. Brown and Johnson (2021) states that the imperative mood enables the writer or student to go beyond the confines of the page, evoking a sense of urgency and immediacy that may heighten the reader's emotional reaction. Establishing an emotional connection with the reader and emphasizing the value of authenticity in poetry-based emotional communication. By employing imperatives, students can demand immediate attention and action from the reader. This urgency can be used to convey a pressing message or to emphasize the significance of the poem's subject matter. The use of imperatives can evoke a sense of responsibility in the reader, urging them to reflect upon the poem's themes and take action accordingly and often have strong and concise structure, which contributes to the overall rhythm of a poem (Johnson, 2019).

Manner of Using Persuasive Techniques in Writing Poems Among Grade 11 Creative Writing Students Appealing to Ethics

The result of the study reveals that appeal to ethics is one of the pillars for convincing arguments of Aristotle employed by students in crafting their poem when the student emphasizes his/her credibility which means that the student uses a fair, open-minded and have critical analysis about the subject matter for engaging to justify their arguments through writing their poems with themes of politics and social issues. Kim (2020) states that the use of rhetorical strategies is to persuade readers to consider their ethical viewpoints, often prompting them to reflect on their own beliefs and actions. The interplay between ethics and art has been a subject of philosophical debate for centuries. In the realm of poetry, contemporary perspective on this issue, arguing that ethical appeal in poetry is not only a matter of thematic content but also a function of the writer's approach to their craft and audience. Moreover, he suggests that readers bring their own moral frameworks to their interpretation of poems, which can lead to diverse and sometimes conflicting readings. The ethical dimension of poetry, therefore, is not only a matter of the writer's intentions but also of the reader's response.

Appealing to Emotion

The result of the study reveals that appeal to emotion is the pillars for convincing arguments introduced by Aristotle was used by students to persuade an audience by purposely evoking certain emotions to make them feel the way the writer or student wants them to feel through writing their poems. In this case, emotional appeal will be observed in their poems with themes of politics and social issues. One of the most important factors in determining how readers interact to poetry is its impact on their emotions. Moreover, the most memorable poems are those that elicit an emotional response from the reader, creating a lasting impression (Krasnow, 2018). Johnson (2020) underscores the importance of authenticity in conveying emotion, noting that readers are more likely to be moved by poems that reflect genuine feelings and personal truths. The emotional appeal in poetry is a significant aspect that contributes to the depth and resonance of a poem. The study of how emotions are invoked and portrayed through writing is a fascinating area of literary analysis and provides a comprehensive examination of the techniques of the writers used to elicit emotional responses from readers. Moreover, he focuses on the specific techniques of the writers use to appeal to readers' emotions. The research categorizes these techniques into three main areas: lexical choices, structural elements, and narrative voice.

Appealing to Logic

The result of the study revealed that appeal to logic is part of the pillars for convincing arguments of Aristotle utilized by students with clarity, logical connections between ideas, and includes the use of facts and statistics to support their claims through writing their poems with themes of politics and social issues. Furthermore, the rise of digital media and technology has influenced writers to adopt a more logical approach through writing a poem. The information age demands a level of clarity and conciseness that is well served by logical



structuring in poetry and the impact of digital communication on poetic form, noting that the brevity and directness of online discourse have seeped into contemporary poetry, fostering a logos-centric aesthetic (Orr, 2021). The function of logical appeal in poetry is multifaceted. On one hand, it serves to challenge the reader's intellect, prompting them to unravel arguments and engage with the text on a cerebral level and is a form of resistance against the passive consumption of art, encouraging active participation from the reader (Kirsch, 2019).

Implications for Teaching Practice

Understanding language of persuasion has become increasingly very necessary in today's new curriculum. It is being used for academic development in school and in community. Understanding language of persuasion helps to build a positive and concrete change in the course in the field of teaching. In case of successful understanding and development, understanding poetry writing becomes profoundly beneficial in school for academic growth. Thus, various entities in their organizational systems have implemented several programs in learning poetry writing in the new curriculum and for the enhancement of the school's academic capabilities. Lastly, learning and understanding poetry writing further enhances the skill in analyzation, writing, language analysis, strategic thinking and promotes academic ability. As a researcher and a teacher teaching English subject, I am very hands-on in my teaching by incorporating learning language specifically in writing a poem. I know that it was a little bit difficult sometimes and challenging to prepare but I learned lots of information. In learning language, this study could help in addressing the needs of an individual in learning writing a poem employing persuasive techniques. This research can also awaken the stakeholders and different sectors on the necessary actions that they need to do to address the problems of an individual in writing a poem. The result presented above shows the strategies to practice in parlance of teaching and gave more attention to cater and fill in the needs in the school and in the community.

Apparently, because everyone wants to have a meaningful learning where everyone meets the expectations, it must instill the good behavior and positivism in attaining goals in greater heights. Thus, this significant trait will lead every learner to learn and face the world having not only intelligence but positive character as a whole in today's generation.

Recommendations for Further Research

This study's main objective was to analyze the written poems of Grade 11 creative writing students using the five persuasive techniques with the theme of politics and social issues that include strengthening opinions or persuading others, expressing feelings privately, not wanting everyone to know the truth, and avoiding embarrassment. In light of this, the analysis of the written poems of Grade 11 creative writing students primarily focuses on how it affects the learners to create the poem based on their personal experiences. Hence, the researcher strongly encourages further investigation into

other sources of written poems related to politics and social issues since it would be fascinating to learn about different goals or ways affecting students' writing a poem.

Additionally, other researcher may venture on another genre analysis on poetry with different focus or semiotic where they would analyze the symbols being used in the poem.

Furthermore, this study examined the persuasive language used in a poem and its way of affecting student's writing a poem. The findings of this qualitative study, however, are only applicable to the fifty-one (51) written poems of students. It suggests that additional research be done with more participants and should cover a wider range of schools and participants who are not only Grade 11 creative students to find out if there are similarities and differences to gather more substantial answers to the questions raised in this research.

Concluding Remarks

The analysis amply demonstrated students' participation in the discussion by writing a poem with the theme of politics and social issues. A poem serves as the final impression left on the reader's mind. They provide closure and summarize the main ideas and emotions conveyed throughout the poem. A well-crafted conclusion can leave a lasting impact on the reader, enhancing their understanding and appreciation of the poem. It is through the conclusion that the student has the opportunity to leave the reader with a profound message or reflection.

In this study, the fifty-one written poems of Grade 11 students were utilized as corpora. The journey of gathering the data was very challenging. Since my participants do not belong in my class, I have to first seek their approval and their parents and cultivate their interest throughout the conduct of this study. I had to guide them, and I asked them to write a poem to be used in my study. Some students find it hard to craft their poems since there are five persuasive techniques to be employed.

Based on the study's findings, I found out that the majority of the written poems about politics and social issues of the students employed persuasive techniques. Unfortunately, some students also do not know and understand how to employ the five persuasive techniques in their written poems. Some contains words that are vague and inaccurately used to persuade.

In dealing this analysis, I am so happy, and I learned a lot about how to write a poem employing persuasive techniques. As an employee of Department of Education, this is my chance and opportunity to showcase my capabilities in teaching my students and in the community's needs. In my journey of this study, I realized that there are needs to improve especially in learning language and it help me a lot that in the future I will be able to teach someone or anyone if ever they need help or assistance. I am so lucky that I enrolled in this course though it is expensive but the learning I absorbed was so great. I would like to thank those who take part of this journey as I nearly finish my study and I am so blessed that I



continue my study and to supported myself. I know this will help me my promotion the future. I know it will be a great help for me because it adds my credibility as a teacher and professional. I know also that in the future it will help me a lot.

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ACCOUNTS OF ELEMENTARY SCHOOL TEACHERS ON MAINTAINING THE NORM OF CONDUCT IN COMMUNICATING STUDENTS: A QUALITATIVE INQUIRY

Mayvelle V. Malayan¹, Henry C. Ligan PhD²

Master of Arts in Elementary Education, St. Mary's College of Tagum, Inc.
Graduate School Department, Tagum City, Philippines

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ABSTRACT

This qualitative-phenomenological study aims to explore and investigate the lived experiences, coping mechanisms, and insights of public elementary school teachers in maintaining the norms of conduct in communicating with students. A purposive sample was utilized in selecting the participants; the study focused on the experiences of fourteen (14) public elementary school teachers where seven (7) teachers participated in a virtual in-depth interview, and seven (7) teachers participated in a focus group discussion. Data coding and thematic analysis were utilized to analyze the data gathered from the participants' responses. From the experiences of participants, six themes emerged, including some issues that appeared from the problem, namely: (1) setting rules in implementing norms of conduct, (2) balance approach in communication with students, (3) establishing appropriate time for communication in social media, (4) teachers' miscommunication with students, (5) maintaining consistency in implementation of norms of conduct, and (6) problems in using inappropriate language in communication. To address the issues, teachers mentioned various ways as their coping mechanisms and nine themes emerged: (1) having direct communication with students, (2) being role-model to students, (3) utilizing different strategies, (4) defining clear boundaries and expectations, (5) receiving guidance and assistance from colleagues, (6) knowing self-role as teacher when communicating with students, (7) emphasizing positive results, (8) exploring and discovering reasons of the problems, and (9) having authority and confidence. Five themes emerged from the insights cited by the participants that they could share with others, namely: (1) be optimistic, (2) apply empathy and consideration with students, (3) improve self and seek guidance, (4) participate in training and seminars for teachers, and (5) have passion and love for teaching. The results of this study are viewed as significant to teachers, students, parents, school administrators, and the Division of Davao de Oro as well as to the DepEd officials, and also to future researchers.

KEYWORDS: Education, Communication, Norms of Conduct, Qualitative-Phenomenological approach, Davao de Oro

INTRODUCTION

One of the ways teachers stay in touch with their pupils regarding school-related issues both inside and outside the classroom is by communicating with them. Thus, being connected with them can create problems in maintaining healthy relationships without anyone crossing the line of comfort. Moreover, these interactions are sometimes misunderstood and taken for granted, especially with the use of social media, where communication becomes more accessible. Consequently, most teachers fail and struggle to maintain boundaries with their students, feeling guilty about it and thinking it is selfish.

In Japan, teachers were forbidden from communicating with students privately on social media since this would be viewed as inappropriate behavior and result in disciplinary measures (Baseel, 2021). Moreover, in Indonesia, it has been shown that courts frequently impose extreme penalties for instructors who engage in serious misconduct, such as using their position of authority or influence to manipulate students (Utomo, 2019). Also, in Malaysia, women's rights organizations are taking action to deal with the alarming

problem of abuse and bullying that affects both students and teachers in their schools. Actions are being taken due to the distressing reality that unfortunate children experienced misconduct committed by their teachers during their time in kindergarten and primary school (Hakim, 2021).

Meanwhile, in the Philippines, DepEd Order 49, series of 2022, a recent addition to D.O. 47, s. 2022, reminded teachers to treat colleagues and students with the utmost professionalism or the promotion of Professionalism in the Implementation and Delivery of Basic Education Programs and Services. This is after several cases where teachers are involved in incidents and issues that violated the Philippine Teachers Professionalization Act of 1994 and Republic Act 6713, the Code of Conduct, and Ethical Standards for Public Officials and Employees have been reported and investigated. In the Division of Davao de Oro, teachers reported how they struggled to maintain the norm of conduct, especially in communicating with students. They have revealed that it is difficult to have a personal life that feels separate from their job since some students message them outside of school hours.



The urgency of this study arises from the involvement of teachers in different issues and cases that violate the Code of Conduct and Ethical Standards for teachers, especially involving students, which is alarmingly increasing in the country. In addition, as an elementary teacher, my curiosity and interest urge me to conduct this research. This study is a phenomenology that focuses on the experiences of elementary teachers on maintaining the norm of conduct in communicating with students.

PURPOSE OF THE STUDY

The purpose of this qualitative investigation is to investigate and comprehend the viewpoints and experiences of elementary teachers regarding maintaining the norm of conduct when communicating with students in the Division of Davao de Oro. At this stage of research, the perspective of elementary teachers on maintaining the norm of conduct in communicating with students encompasses their challenges, coping mechanisms, and insights during in-person classes.

RESEARCH QUESTION

The study aims to answer the following research questions:

1. What are the lived experiences of elementary teachers on maintaining boundaries as the norm of conduct in communicating with students?
2. How did elementary teachers cope with the challenges encountered in maintaining boundaries as the norm of conduct in communicating with students?
3. What are the insights drawn from the experiences of elementary teachers on maintaining boundaries as the norm of conduct in communicating with students that can be shared with others?

METHODS

A qualitative research design was used for this study and employed a phenomenological approach since it enables to comprehend and describe elementary teachers' actual practices and frequent experiences, specifically on the experiences in maintaining the norm of conduct in communicating with students. Also, the phenomenology approach was utilized since it aims to investigate and comprehend the significance of the participants' experiences.

This study adhered to the recommendation of Brown (2021), where the number of participants for qualitative research, usually the average range somewhere between 5 to 10 people, will result in better data. Purposive sampling was utilized to choose the most appropriate participants, samples are chosen from the total sample size based on the survey taker's or researcher's evaluation. The research participant was solely focused on 14 elementary school teachers from the Division of Davao De Oro. Seven (7) participants in focus group discussion, and seven participants for in-depth interviews.

Moreover, in this study, coding and thematic analysis were used to reveal themes in the text by evaluating word meanings and sentence structure (Medelyan, 2019). While the purpose of coding is to give a free-form data structure that may be examined in a systematic process (Bodine, 2021). Meanwhile, thematic analysis is one of the most essential frameworks for assessing qualitative data. Since qualitative

data is directly collected from primary sources, such as interviews, surveys, focus groups, etc., it must be correctly analyzed to uncover noteworthy trends and transform unprocessed data into useful information (Smith, 2020).

REVIEW OF RELATED LITERATURE

Teacher-Student Communication in the Classroom

To function as a successful teacher, one must only possess 50% knowledge and 50% communication abilities (Sword, 2020). The study of Amadi and Kufre (2017) found that student-teacher communication has significantly affected students' academic performance. Climans (2021) emphasized that students feel more comfortable participating in class discussions, answering questions, and raising problems when they feel protected, appreciated, and well-instructed. Moreover, the study by Ghasemi (2021) revealed that the primary factors impacting the quality of the teacher-student connection were thought to be the teachers' successful classroom strategies.

Roles of Elementary Teachers in Communicating Students

One of the essential roles of teachers in communicating with students is to earn their trust, and always find ways to stay connected with their students. As Konen (2017) mentioned, several strategies can assist with communication. It includes listening, studying, and knowing more about your students. On the other hand, students will develop future-ready skills through collaboration in a supportive environment, including empathy, teamwork, effective communication, leadership, and acceptance of different points of view (Kakumanu, 2021). In addition, continuous teacher training and professional development have been recommended to improve teacher effectiveness, interpersonal skills, and understanding of the variables affecting the teacher-student connection (Etekal & Shi, 2020).

Ways in Maintaining Boundaries in the Context of Communication between Students and Teachers

Some techniques for effectively communicating with students include planning to manage teacher communication and communicating relevant parts of that plan to your students, outlining how the teacher course works explicitly to help students navigate it successfully, and providing clear communication guidelines to improve the effectiveness of remote instruction (Arbizo, 2020). Moreover, Williamson (2019) mentioned that for the students' emotional growth and intellectual development, you must teach them about boundaries. Additionally, Selva (2018) stated that self-awareness is necessary to set appropriate boundaries. Likewise, Wyrick (2022) suggested that teachers should know their limits and model best behavior and be direct but empathetic when boundaries are crossed. Also, Rusnak (2021) highly recommends that boundaries are frequently checked.

Challenges in Communicating with Students in the Lens of Elementary Teachers

Conflict between students can also result through miscommunication, altercations, fighting, group rivalry, discrimination, bullying, usage of resources and places,



dating, sexual harassment, loss or damage to school property, various elections, travel, and partying (Nadar, 2022). In the study of McCarthy (2021), stating that social media can encourage children to be more assertive in voicing their opinions in ways that may threaten relationships. Moreover, this new environment is constantly shifting and can be challenging to manage, since we establish social media

boundaries and safeguard students from the potentially harmful parts of online communication (Stephens, 2019). Moreover, Hunt (2019) stated that common communication barriers in the classroom affect the effectiveness of communication includes hearing, perception, oral communication, and cultural challenges.

RESULTS AND DISCUSSIONS

Table 1

Major Themes and Core Ideas on the Lived Experiences of Elementary Teachers on Maintaining the Norm of Conduct in Communicating with Students

Major Themes	Core Ideas
Setting Rules in Implementing Norms of Conduct	<ul style="list-style-type: none"> • setting of rules to establish a clear student-teacher relationship • setting rules and standards to gain trust and respect among students and parents • differing backgrounds as barrier to maintain the set rules • having orientation and realistic expectations in setting rules
Balance Approach in Communicating with Students	<ul style="list-style-type: none"> • using a balanced approach as an effective way of teaching students their limitations and to control their actions • ensuring gaps and boundaries by using a balanced approach • using a balanced approach as an effective way to have positive communication • perceiving a balanced approach as an effective way to communicate with students as a second parent
Establishing Appropriate Time for Communication in Social Media	<ul style="list-style-type: none"> • observing oneself to respond at an appropriate time to students' messages • maintaining a professional relation with parents and guardian • reminding students about the rules and appropriate time for sending messages on social media • letting students send their messages considering appropriate situations and questions
Teachers' Miscommunication with Students	<ul style="list-style-type: none"> • experiencing miscommunication with students due to work and pressure • miscommunicating with students due to unclear and disorganized instructions • perceiving teachers' leadership and adjustment as factors to have a proper communication with students • breaking own rules and boundaries and start having casual conversations
Maintaining Consistency in Implementation of Norms of Conduct	<ul style="list-style-type: none"> • having difficulties being firm in maintaining the implementation • ensuring transparent communication between students and teacher • setting boundaries inside the classroom and stand to it at the very end • ensuring that your rules are aligned with your actions
Problems in Using Inappropriate Language in Communication	<ul style="list-style-type: none"> • encountering students' inappropriate language as a barrier to positive communication • ensuring that students will still be disciplined in communicating with others even outside the school premises • noticing students' inappropriate language when communicating with teacher • perceiving home is a factor to consider in terms of students using inappropriate language in communicating

Setting Rules in Implementing Norms of Conduct

"Setting boundaries is important for us as teachers, that is why on the first day of school we impose rules and regulations, so that the students know their limitations." FGD-04

"We should set our rules and standards inside the classroom to ensure that our students follow the norm of conduct we wanted to implement, and we must maintain those rules so that you will be able to get their trust and respect as a teacher." FGD-01



“Set and maintain the rules to make sure that their respect will always be with them towards me and that they can put their trust in us as a teacher.” IDI-01

Students feel confident and safe in their learning environment when teachers set and maintain boundaries through clear classroom rules and high expectations (Wong & Wong, 2018). Similarly, Hepburn et al. (2020) states that instead of telling students the rules, setting, and teaching the rules proactively supports students in understanding and developing the expected behaviors and moves beyond emphasizing compliance. Moreover, Abrizo (2020) emphasized that establishing and maintaining clear communication via well-defined communication channels allows students to focus on learning.

Balance Approach in Communication with Students

“I would rather use balance approach with my students, I would rather be friendly and strict teacher at the same time because sometimes we need to be strict to our students for them to know that their actions need to be controlled and have limitations.” IDI-02

“Being too strict can have negative effects on students, just as being too friendly can also lead to negative results. So, it should be balanced to have that positive communication.” FGD-01

“I try to balance my role; somehow, I am a little bit strict and a motherly outside and inside at the same time I am their second parent.” IDI-01

The result is parallel with the study of Alshuraiaan (2023) which highlights the need for a balanced approach that combines teacher communication in facilitating teacher-student interaction and its impact on language proficiency development, speaking fluency, and overall learner engagement. On the other hand, Asrar et al. (2018) stated that maintaining a standard and welcoming way of communicating with students is vital to having effective communication and will help to develop a positive student-teacher relationship.

Establishing Appropriate Time for Communication in Social Media

“I set boundaries to clearly communicate my students that after school hours may not be an appropriate time for an urgent inquiries and discussions. That is why I encourage them to respect my personal time and boundaries.” IDI-02

“During nighttime if I already got home, I cannot reply in an instant. Even during working hours because when I am having my class I cannot reply immediately. When it is beyond working hours already, I never oblige myself to reply in an instant though I reply but if I am preoccupied, I will not respond.” FGD-04

“I message them about reminders and rules that they need to be observed in our group chat.” FGD-01

Social media has become an essential element of individuals' lives, including students, in today's world of communication (Chen & Xiao, 2022). In line with this, McCarthy (2021), stated that social media can encourage children to be more assertive in voicing their opinions in ways that may threaten relationships. On the other hand, Higgin (2022), stated that letting students know what, when, and how social media in your classroom facilitates a discussion about why both the benefits of social media use and its risks.

Teachers' Miscommunication with Students

“Teachers are just human beings; we could get tired too because of work and pressure. There are instances that because of exhaustion we cannot put much attention inside the classroom and forget the rules that we have set.” IDI-02

“Of course, we are just human beings we forgot and get tired of work. That is why sometimes we are the reason why the students misbehave and crosses boundaries.” FGD-06

“You are not giving them the exact or clear instructions and besides that, you did not organize the rules that you wanted to be organized inside the classroom.” IDI-01

The teacher participants expressed their experiences of encountering challenges because of miscommunication due to some factors coming from the teachers. In the study of Kanwal et al. (2023), it was stated that teachers in the public sector often have to deal with large class sizes, heavy administrative workloads, and increasing pressure to meet performance targets. As a result, they may be overburdened with work, leading to high levels of stress and exhaustion (Rose & Sika, 2019). This can negatively impact their ability to provide quality education to their students (Hester et al., 2020).

Maintaining Consistency in Implementation of Norms of Conduct

“I always set things with a clear instruction and transparent communication, I should have a clarity with my students, and I make sure that they were reminded.” IDI-02

“It is important for me also to have those boundaries inside the classroom that is why I am setting and firm until the end of the class.” FGD-01

“In order to implement it, you need to stick to the rules and as teacher you need also to follow what you are saying.” IDI-04

Creating a framework of boundaries is extremely helpful for children because it helps everyone remember what acceptable behavior is and is not (Higgins, 2020). In the study of Semião et al. (2023), it shows that teachers' sensitivity to students' diversity issues can improve their learning. Additionally, the study of Govindharajan et al. (2017), stated that teachers impart knowledge and values to learners to create self-sufficient, articulate, socially responsible, resilient, and active citizens of the world.



Problems in Using Inappropriate Language in Communication

“There are times especially when they used cursed words, I really hate those words. In our school it was very common for students to used cursed words.” IDI-04

“In my experience inside my classroom I encountered the attitude of the students especially when it comes to using of bad words. Some of the students are fond of saying bad words.” FGD-05

“I noticed inappropriate language, the way they speak to you.” FGD-04

Simpson (2018), states that today, students are increasingly exposed to a language that is very different from what they are taught. Moreover, Younas et al. (2020), stated that home atmosphere directly and indirectly influences the students' academic capability and achievement. On the other hand, Staake (2019), mentioned on her blog that it is not necessary to punish bad language but to try to help kids see that it is not always appropriate.

Table 2
Major Themes and Core Ideas on the Coping Mechanism of Elementary Teachers in Maintaining the Norm of Conduct in Communicating with Students

Major Themes	Core Ideas
Having Direct communication with Students	<ul style="list-style-type: none"> • being direct and having clear objectives in communicating with students • considering students' feelings without embarrassment when communicating with you • ensuring clear and precise communication • listening and giving respect to students' opinion • using one-on-one communication with students • addressing the students who need assistance and talking to them • having heart-to-heart communication with students and making sure to know their backgrounds
Being a Role-Model to Students	<ul style="list-style-type: none"> • teaching students positive behavior to become their model • ensuring authority and reliability in your actions • showing the ideal behavior, you wanted them to follow • being a good example of implementing boundaries • applying own set standards to oneself • ensuring being an example and model to the students
Utilizing Different Strategies	<ul style="list-style-type: none"> • having a free day to get the students' trust • using non-communication cues to communicate with students • teaching students to communicate with manners by using “po and opo” • applying positive punishment as a consequence • ensuring a positive and inclusive classroom climate in communicating with students • having a positive approach as strategies and techniques for students to follow the norms of conduct in communication
Defining Clear Boundaries and Expectations	<ul style="list-style-type: none"> • establishing clear and consistent instructions • ensuring clear limitations and boundaries in communicating with students • encouraging the students to respect boundaries and personal time after school hours • reminding students about the boundaries and expectations you have set • establishing clear and fair expectations
Receiving Guidance and Assistance from Colleagues	<ul style="list-style-type: none"> • getting help from colleagues • seeking inputs and strategies from co-teachers • asking for help from colleagues who encountered the same situation
Setting Professional-Role as Teacher when Communicating with Students	<ul style="list-style-type: none"> • knowing your own role and scope as a teacher in communicating with the students • ensuring not go beyond the limits of your role as teacher and second parent of the students • reflecting oneself teaching practices and limitations when communicating with students • being calm and making sure not to bypass parents' role
Emphasizing Positive Results	<ul style="list-style-type: none"> • seeing students become successful someday • having possible positive results for students as motivation • engaging learnings that we want to impart to our students



	<ul style="list-style-type: none"> • perceiving love and passion as motivation for your dreams for your students
Exploring and Discovering Reasons of the Problems	<ul style="list-style-type: none"> • investigating the reason to encourage open communication • getting to the root of the matter • observing students and thinking for solution to the problem • understanding the situation and search for information
Having Authority and Confidence	<ul style="list-style-type: none"> • applying authority in giving instructions • showing authority and confidence in setting and implementing standards • perceiving authority as a factor to consider in terms of maintaining the norms of conduct in communicating with students

Having Direct Communication with Students

“Of course, I talked directly to the student and tell him that whenever we are inside the classroom, I am your teacher, you should call me teacher but if it is outside the school, it is okay to call me “Ate”. FGD-06

“I always remind them and have one-on-one conversations with the children.” FGD-05

“In my experience, I let the students go outside for 15 minutes to play. I deal with that student, I talked to him one-on-one.” IDI-01

Positive relationship between teachers and students results from better communication and contributes to an environment that supports it (Climans, 2021). Moreover, Vucicevic (2023), stated that direct communication conveys information clearly and straightforwardly; you ensure that your interlocutor receives the intended message the way you meant for it to be understood, and it leaves no room for error or confusion, and it also harbors no hidden meanings or pretences.

Being a Role-Model to Students

“We should teach them the positive behavior. As a teacher, we must serve as a model for our students.” IDI-05

“Of course, it is important to show the students the right behavior, because as a teacher you should be a role model to the students.” FGD-03

“That is why, I firmly believe that to enforce good boundaries for them to follow, we must set a good example for our students.” IDI-01

Being role models is important in teaching students to communicate appropriately, display positive behavior, and follow the rules and boundaries that teachers have set (Pandey, 2022). Likewise, the study of Gladstone and Cimpian (2021), defined role models as individuals who can positively shape the motivation of students by acting as a successful exemplar. In line with this, Koplik (2017), stated that no matter what rules you put in place for your classroom, you must be compliant with them.

Utilizing Different Strategies

“For me, I use signals and warnings when they cross over the boundaries.” FGD-01

“I always remind them to respond with manner like using "po" and "opo" when answering me or anyone else.” IDI-01

“Sometimes, I must implement positive punishment or consequences for their wrongdoings.” IDI-02

Teachers’ strategy is needed in communicating with students to create an effective learning process (Mesiono & Sahana, 2021). In line with this, teachers can opt for strategies to help them improve their communication skills and grow personally and professionally (Sharma, 2022). On the other hand, the study of Bukit et al. (2023), suggested that teachers must utilize verbal and non-verbal communication to learn and pay attention to the student's language development level.

Defining Clear Boundaries and Expectations

“In my classroom, I always provide clear instructions and ensure that my students understand them. I emphasize the need for reminders and consistency in following the rules I’ve set for my students.” IDI-02

“Set clear and fair expectations.” FGD-07

“Set clear expectations with students, like what I mentioned you must set the expectation and must be fair for all the students to maintain the norm.” IDI-03

Creating and sustaining boundaries, the physical, emotional, and mental limits we put in honor our personal needs and our role as educators helps not only avoid burnout but also prevent role confusion, build trust, ensure professionalism, foster student independence, and teach students how to respect boundaries outside the classroom (Wyrick, 2022). Moreover, Healey (2023), stated that clear expectations empower students to navigate learning, take ownership of their work, and develop accountability. Also, with clear boundaries everybody knows what and what not to do, making it possible for the teacher to manage other aspects of the environment more easily (Francis, 2022).

Receiving Guidance and Assistance from Colleagues

“My colleagues, and my close co-teachers with whom I shared my problems, and then they gave me advice, but I remain calm and composed.” IDI-05



"I usually ask for ideas from my colleagues, reaching out to collect and support. It's like asking for their thoughts on what to do." IDI-03

"I ask help from my co-teacher because they might be going through the same thing." FGD-03

A positive and supportive working environment can improve professional relationships with colleagues (Herrity, 2021). Moreover, in the study of Lee et al. (2021), it was mentioned that helping behavior among coworkers will play a significant role in promoting knowledge sharing and enhancing creativity among members. Also, asking and receiving help from colleagues can quickly, efficiently, and collaboratively help you find a solution to a problem (Lodwick, 2023).

Setting Professional Role as Teacher when Communicating with Students

"Always observe proper etiquette and be a professional teacher to the students, you need to know your role because you are the role model in the four corners of the classroom and even the outside premises of the school." FGD-02

"Never go beyond or overstep our limits, because we are only a second parent to the students, but we should not act as if we know better than the parents." IDI-03

"I need to reflect at the end of the day, evaluate my own discipline, methods, and see if I crossed my limits and boundaries." FGD-04

The communication skills of a teacher have a significant role in the student's academic success (Jakhanwal and Sinha, 2021). Moreover, when students feel comfortable expressing their thoughts, concerns, and questions, it creates an environment of trust and mutual respect (Satam, 2023). Also, in the study of Venet (2019), stated that role clarity defines the scope and goals of our relationship with students and then maintains boundaries that allow us to focus on that scope.

Emphasizing Positive Results

"I motivate myself by focusing on the positive outcomes in the future, especially in maintaining proper conduct when communicating with the students, I do this for the possible positive outcomes." FGD-01

"What motivates me in maintaining those norms of conduct in communicating with my students is the positive effects that it brings which also leads to a positive outcome, where my students and I can benefit." IDI-07

"I always think first the learnings that I really want to impart to my students that's why I always motivate myself to continue in maintaining these norms. For I know that these norms help them to improve and help them to be a better student or a person someday." IDI-02

Passionate teachers who are firmly committed to their work can make a positive difference in student achievement (Serin,

2017). In addition, passion can influence learning and teaching positively by creating excitement and action. Moreover, the result supports the idea of Selby (2023), who states that by teaching children to set and respect boundaries, we empower them with essential life skills and equip them for success in their personal and academic lives.

Exploring and Discovering Reasons of the Problems

"You must investigate if what is the reason why it happened for the students to talk too and share why and what happened." IDI-07

"First search information and understand why things occurred the way they did." IDI-02

"If necessary, understand the situation and find information. They need to be respectful, responsible when it comes to responsible communication and provide positive punishment to improve the situation." FGD-07

Conducting root cause analysis completely prevents the same or similar issues and incidents from recurring (Guevara, 2023). Once we identify the root cause, we can devise strategies to fix it and implement measures to prevent it from happening again (Timberg, 2023). Moreover, students feel valued and understood when they have opportunities to express their thoughts, concerns, and ideas (Satam, 2023).

Having Authority and Confidence

"On setting the rules inside and outside the school it must be transparent, and you must have authority for them to follow." FGD-06

"For me, it is important to have authority every time I set a standard." IDI-04

"Set authority is the first step to maintain the norms in communicating with your students." IDI-06

Authority and confidence are essential in implementing rules, specifically in student-teacher communication. In line with this, Waters (2021), stated that as a leader, you must be aware of the control you hold over your students in implementing norms with students, teachers' authority is significant. Also, Fisher and Frey (2019) mentioned that a teacher with a high degree of credibility is viewed as being believable and knowledgeable. In addition, the teachers are seen as trustworthy and reliable.



Table 3

Major Themes and Core Ideas on the Insights drawn from the Experiences of Elementary Teachers on Maintaining the Norm of Conduct in Communicating with Students

Major Themes	Core Ideas
Be Optimistic	<ul style="list-style-type: none"> • being always prepared and positive in every situation and challenge • staying optimistic despite and positive thinker • taking all the challenges in communicating with students • extending patience in imparting good values to the students • letting go of the problems you will encounter and forget the past • loving our work despite all the challenges • accepting the nature of our work and applying it despite the challenges
Apply Empathy and Consideration with Students	<ul style="list-style-type: none"> • being an open ear and listening to your students • give support to students by being there as their teacher and second parent • communicating with students in a nice way to avoid hurting their feelings • applying an empathetic approach in communicating with students • establishing positive environment for students where they are accepted and belonged • knowing students' backgrounds and problems by listening to them willingly
Improve Self and Seek Guidance	<ul style="list-style-type: none"> • research new ways to communicate with students • be creative and always think outside the box • ask for advice from colleagues, school heads, and stakeholders • take time to evaluate and reflect on oneself to improve one's prowess in teaching • evaluate and humble oneself and admit mistakes
Participate in Training and Seminars for Teachers	<ul style="list-style-type: none"> • need to have training for teachers including parents in higher grades • have training on proper communication for new teachers in the field • suggest to DepEd must provide training and awareness programs on the guidelines and responsibilities of teachers • inclusion of DepEd Order in the induction training for newly hired teachers and MPRE (Mid-Year Performance)
Passion and Love for Students	<ul style="list-style-type: none"> • push students to be their best for their own good • teach the students to respect their teachers and classmates • show respect, love, understanding, patience, and passion when communicating with students

Be Optimistic

“As teacher, you should be an optimistic and positive thinker.”

FGD-07

“Taking all the challenges that I encounter in my classroom.”

FGD-05

“Despite of the challenges, let us try to love our work because this is what we have sworn.” IDI-06

Optimistic disposition allows the teacher to get control of the barriers that affect the communication process to be effective. The study of Marcionetti and Castelli (2022), states that fostering teacher optimism is crucial to reducing the risk of burnout and increasing teacher job satisfaction. Additionally, a study revealed that optimism and resilience can be associated with a higher sense of subjective well-being and psychological health related to academic adjustment (Biber & Czech, 2020). Also, it was strengthened with the study of Sorrenti et al. (2022) about optimism and resilience, which adopt a view focused on the strengths, virtues, and positive attitudes that help recover and rebuild from adverse situations.

Apply Empathy and Consideration with Students

“Communicate with the students politely and respectfully to maintain a positive relationship and avoid hurting students feeling.” IDI-02

“Always put themselves to them or should I say be empathetic all the time.” FGD-05

“Be direct and empathetic towards the students, that is what I do in setting my boundaries.” IDI-03

The teacher participants emphasized the importance of applying empathy and consideration to students. In the study Zhang (2022), it indicates that teacher empathy leads to learner self-confidence in educational contexts. Moreover, Wang (2022), showed that positive teacher-learner rapport can inspire learning motivation and engagement. Also, Derakhshan (2021), indicates that empathetic instructors play ethical roles for their learners by helping them interact with their peers.



Improve Self and Seek Guidance

"You have to keep up with current trends and do some research to avoid being left behind." IDI-04

"Believe in your students' potential, learn everything you can. Be creative and think outside the box, be consistent and decisive. Always be up-to-date and give students the time to talk and be themselves." IDI-03

"I regularly reflect on my teaching practices and student interaction. Then, I seek feedback from my students and close colleagues to identify the for areas of improvement and adopt strategies accordingly." FGD-04

The result is aligned with the study of Herman (2020) on teachers' personal development needs, which reveals that teachers consider personal development to be beneficial for increasing professional efficiency, improving communication skills, and increasing creativity. Also, this aligns with the study of Morris (2023) that encouraging the use of skills from professional development is the chance for teachers to participate in a continuous cycle of practice, feedback, and reflection to adapt to new strategies and models appropriately.

Participate in Training and Seminars for Teachers

"They must have training and awareness program, again training and awareness program. There should be like this to ensure that both students, teachers, and stakeholders fully understand the guidelines and their responsibilities." FGD-04

"The DepEd Order must be included during the induction program for newly hired teachers, and it must be included during our MPRE the "Mid-Year Performance." FGD-07

"It would be better to include this on training to help new teachers to be more aware about the acceptable and not acceptable things." IDI-03

The responses of elementary teachers emphasized the importance of improving oneself and seeking guidance and support from others. In line with this the study of Herman (2020) on teachers' personal development needs, reveals that teachers consider personal development to be beneficial for increasing professional efficiency, improving communication skills, and increasing creativity. Also, this aligns with the study of Morris (2023) that encouraging the use of skills from professional development is the chance for teachers to participate in a continuous cycle of practice, feedback, and reflection to adapt to new strategies and models appropriately.

Passion and Love for Students

"But in the classroom, I am strict because I want my students to learn, not necessarily in a physical sense, but I push them up because I want the best for them." IDI-03

"Love, your love for your students, it's your passion, and you should keep it going because that's what motivates me.

Dream, because I also have dreams for myself and for them, so that's it, love, and dream for my pupils." FGD-04

"Just like what I said, show them your respect, love, understanding, and patience. We should always remember that we are born to teach, to guide, to love them, to extend our patience to them." IDI-01

Having the passion and love of teachers in maintaining boundaries despite all the struggles they face is significant to continuously maintain boundaries, give students opportunities, and establish effective communication and environment with students. The study by Serin (2017), stated that passionate teachers who are committed to their work can make a positive difference in student achievement. Moreover, the result is congruent with the idea of Whitbourne (2018), which emphasizes that teachers possess an inner drive to perform and have a work orientation of "calling" rather than "career."

IMPLICATION FOR TEACHING PRACTICE

Maintaining the norm of conduct in communicating with students has been difficult for elementary teachers. This study successfully uncovered elementary teachers' various views and perspectives regarding the issues of maintaining the norm of conduct in communicating with students and its effects on the communication process. The overall responses and views of the teacher participants were analyzed and encapsulated, which brings to the themes established from their varied responses. Furthermore, this study provided an opportunity for all teachers, students, parents, and education personnel to understand elementary teachers' diverse points of view on maintaining the norm of conduct in communicating with students.

CONCLUSION

In the process of establishing effective communication with students through applying norms, teachers encountered challenges that affected the implementation process. Specifically, they have stressed the difficulties in maintaining the consistency of the norms, inappropriate language on the students' factor, and miscommunication on the teachers' factor. To address these problems, teachers may define clear boundaries for students so that it would be more precise for them to know their limitations. It is also essential for teachers to act as role models in following the norms in communication.

Moreover, they may seek guidance and assistance from their colleagues to learn new ideas for developing new strategies to solve problems. It is also important for teachers to know their roles and limitations when communicating with students to establish better communication with them without the concern of crossing any boundaries. These teachers will be able to set necessary rules and limits.

Also, in resolving the problem concerning communication with students, teachers may investigate by directly communicating with students to know what causes the problem and utilize different strategies to improve the situation. Most importantly, in implementing the norms in



communication it is very significant for them to be confident in applying to have credibility and show their authority to the students. It is also imperative for teachers to embody optimism and always look for the better side and positive results in maintaining boundaries despite the struggles of the implementation.

On the other hand, the Department of Education officials may pay more attention to the alarming cases involving students and teachers in a downfall situation due to inappropriate communication and other factors that affect effective communication. They may also perform refinement and strengthen the implementation of norms of conduct in communication. Moreover, they may extend their support to the teachers by providing training, seminars, and workshops to impart the knowledge, strategies, and appropriate actions needed for successful implementation.

In addition, school heads and masters' teachers may perform seminars and school base training, particularly through learning action cell (LAC) and during teachers' Mid-Year Performance Review and Evaluation (MPRE), regarding the utilization of norms in communication by maintaining the norms of conduct and appropriate communication between student and teachers.

Moreover, the result of this study will help parents to be aware of what the appropriate communication between the students and teachers is and what is not. With this, parents could assist their children in following the norms in communication and contribute to maintaining boundaries for better and effective student-teacher communication. Similarly, the result of this study will help students be aware of what is appropriate and what is not when communicating with their teachers.

In conclusion, implementing norms in communication by maintaining the norm of conduct would be essential to effective communication with students. With this, teachers, students, parents, and administrators should work hand-in-hand and support each other for its successful implementation. Doing this would make a positive learning environment that promotes respect, safety, and responsibilities possible.

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A STUDY ON THE IMPACT OF CRIPPLING CHINESE ECONOMY ON MULTINATIONAL CORPORATIONS: INDIA'S FDI APPROACH

Ms. S. Sruthi¹, Dr. S. S. Ramya²

¹II.M.COM (CS), Department of Corporate Secretaryship, PSG College of Arts & Science, Coimbatore-641014.

²Assistant Professor, Department of Corporate Secretaryship, PSG College of Arts & Science, Coimbatore-641014.

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ABSTRACT

This project explores the multifaceted impact of a crippling Chinese economy on Multinational Corporations (MNCs) and examines their strategic responses. As disruptions in China ripple through supply chains, reshaping market dynamics, and introducing regulatory ambiguities, MNCs must skillfully navigate these challenges to uphold resilience and pursue sustained growth. Concurrently, India also emerges as a potential alternative for MNCs seeking stability and growth opportunities beyond China. This research paper delves into understanding the factors of China's economic growth over years, the cause for the downfall, and strategic measures that India can adopt to harness the potential inflow of FDI amidst the evolving global economic landscape, such as policy reforms, infrastructure development, and sector-specific incentives. The analysis section examines the major factors that determine the economy such as GDP growth rate, Population, FDI, Youth unemployment rate, GDP Per capita income and forecast of India's momentum in FY25 based on secondary data. The conclusion emphasizes the central theme of harnessing India's vast growth potential while confronting the key challenges that impede its expansion. By implementing strategic policies and precise reforms, India can sustain its robust growth trajectory, surpassing the \$5 trillion threshold.

KEYWORDS: Economic Landscape, Crippling Chinese economy, India's measures, Multinational Corporations (MNC's), FDI, Sustained growth, Strategic policies, Challenges.

INTRODUCTION

Recent years have seen significant shifts in the global economic landscape, notably with challenges emerging in the Chinese economy, posing implications for multinational corporations (MNCs) reliant on its supply chain. This project aims to explore the consequences of a weakened Chinese economy on MNCs, examining disruptions in supply chains and altered market dynamics. Additionally, it assesses India's potential as an alternative destination for Foreign Direct Investment (FDI), emphasizing its large market, strategic positioning, and ongoing economic reforms as attractive factors for investors.

In summary, the project seeks to understand the impacts of a struggling Chinese economy on MNCs while offering insights into India's potential as an FDI destination. It examines market dynamics, proposing measures such as policy reforms and infrastructure development to position India favourably amidst evolving global economic dynamics, aiding businesses and policymakers in navigating international trade and investment.

OBJECTIVES OF THE STUDY

- To study about the **resilience** of India's economy

- To understand the influence of **geopolitical changes** that may impact the decision-making of MNCs considering investments in India economy.
- To examine **FDI friendly ecosystem** in the ASEAN countries.

RESEARCH METHODOLOGY

TYPE OF RESEARCH

The present research study is referred to as a "desk-based study" or "desk research." Here the existing data is analyzed and interpreted to answer research questions and to generate new insights without conducting primary data collection.

SOURCES OF DATA

This research relies on secondary data which uses existing data sources, such as books, articles, reports, databases, and other materials that have already been collected and analyzed by others.

SECONDARY DATA

These data already exist in the journals and articles. I collected the secondary data from:

- Various Newspaper Articles,
- Magazines and publishes journals,



- Internet and Books.

Growth rate, Population, Foreign Direct Investment, Youth Unemployment Rate, GDP Per Capita Income and data of growth and inflation rate of India momentum forecasted during the year 2024 by RBI are the key areas concentrated.

AREA OF THE STUDY

The area of study was detained to a period of 4 years from 2019 to 2022 involving historical data of India and China - GDP

FINDINGS AND RESULT

1.1 TABLE SHOWING HISTORICAL GDP GROWTH RATE

YEAR	CHINA		INDIA	
	GDP GROWTH (%)	ANNUAL CHANGE	GDP GROWTH (%)	ANNUAL CHANGE
	2022	2.99	-5.46%	7.00
2021	8.45	6.21%	9.05	14.88%
2020	2.24	-3.71%	-5.83	-9.70%
2019	5.95	-0.80%	3.87	-2.58%
Average GDP Growth	4.91%	-	3.52%	-

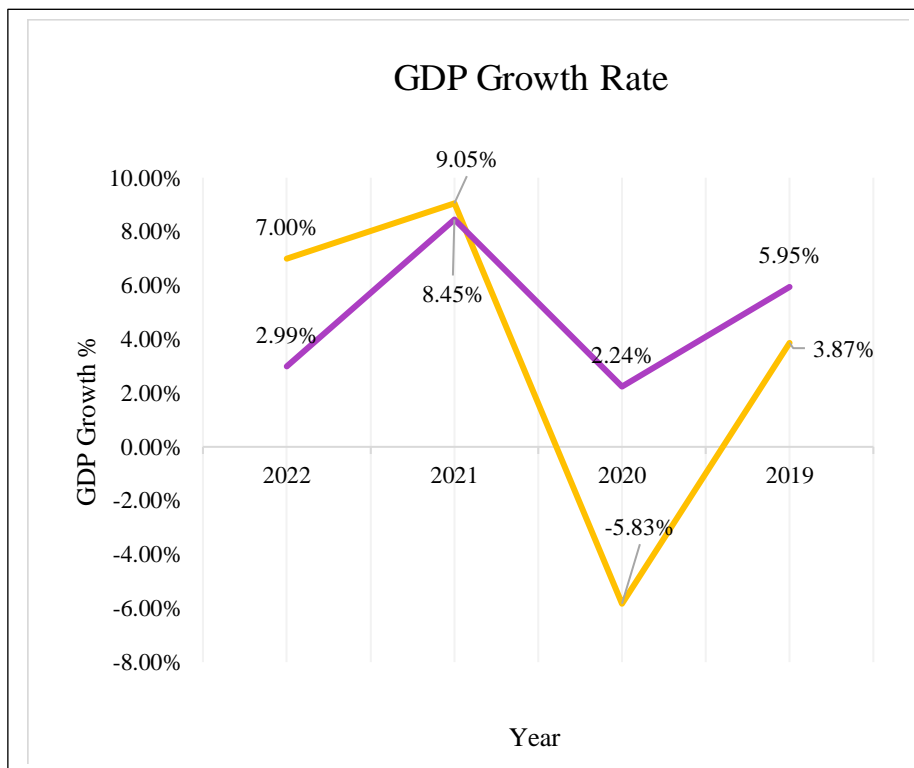
Source: World Bank

INTERPRETATION

TABLE 1.1 shows the historical GDP growth rate data of China and India for the period 2019 to 2022. During 2019 China's growth was higher compared to India with 5.95%. India and China have seen declining growth during the period 2020 due to the COVID-19. After COVID-19 both the countries India and China boosted its GDP growth to 9.05% and 8.45% respectively.

India's GDP growth rate has reached its peak during 2021 with 9.05%. During 2022 India showed higher growth than China with 7%. The average annual GDP growth of India is 3.52% and China is 4.91%. The annual change of GDP growth was positive only during the year 2021. Thus, there is a slight decline in the GDP growth during 2022 due to crippling effects in China as the Real Estate industry had seen a downfall.

2.1 EXHIBIT SHOWING HISTORICAL GDP GROWTH RATE





1.2 TABLE SHOWING HISTORICAL POPULATION DATA
HISTORICAL POPULATION DATA OF CHINA AND INDIA

YEAR	CHINA		INDIA	
	POPULATION	GROWTH RATE	POPULATION	GROWTH RATE
2022	1,425,887,337	0.00%	1,417,173,173	0.68%
2021	1,425,893,465	0.07%	1,407,563,842	0.80%
2020	1,424,929,781	0.22%	1,396,387,127	0.96%
2019	1,421,864,031	0.34%	1,383,112,050	1.03%
Average Population Growth		0.16%		0.87%

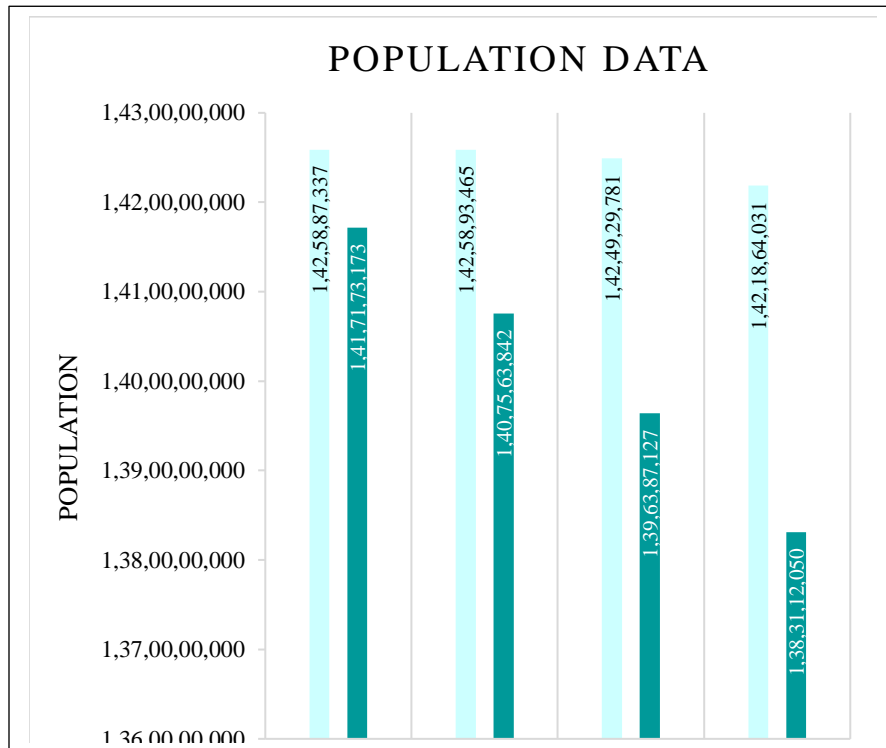
Source: United Nations - World Population Prospects

INTERPRETATION

TABLE 1.2 shows the historical population data of China and India for the period 2019 to 2022. Indian population has been increased from 1.38 billion to 1.41 billion whereas Chinese population has been increased from 1.42 billion to 1.43 billion. Both India and China's population growth rate have continuously

reduced from 1.03% to 0.68% and 0.34% to 0.00% respectively. The average annual population growth rate in China during 2019 – 2022 is 0.16%. The average annual population growth rate of India is higher than China with 0.87%. During 2022 China reached 0.00% growth in population as the policies imposed by the government in order to reduce the population.

2.2 EXHIBIT SHOWING HISTORICAL POPULATION DATA



1.3 TABLE SHOWING DATA OF FOREIGN DIRECT INVESTMENT

FOREIGN DIRECT INVESTMENT OF CHINA AND INDIA				
YEAR	CHINA		INDIA	
	INFLOWS (US \$)	% OF GDP	INFLOWS (US \$)	% OF GDP
2022	\$180.17B	1.00%	\$49.92B	1.47%
2021	\$344.07B	1.93%	\$44.73B	1.42%
2020	\$253.10B	1.72%	\$64.36B	2.41%
2019	\$187.17B	1.31%	\$50.61B	1.78%
Average Foreign direct investment		1.77%		1.49%

Source: World Bank

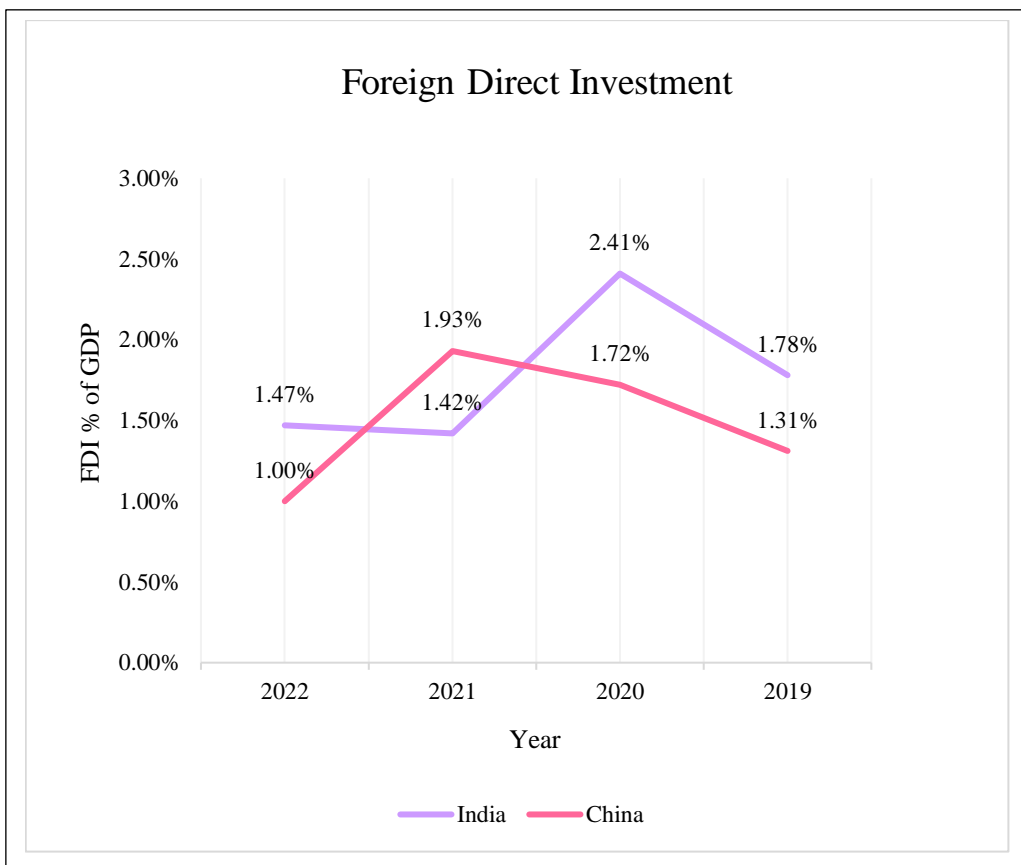


INTERPRETATION

TABLE 1.3 shows the data of foreign direct investment made in India and China for the period 2019 to 2022. There is rise and fall in the inflows of FDI in both the economies. The inflow of FDI in India has reached its highest during the year 2020 with \$64.36 whereas China has touched its highest with \$344.07 during the year 2021. After 2020 there is a downfall the % of GDP of India resulting in falling from 2.41% to 1.42%. Due to the crippling

effect in China the inflows of FDI have slowly reduced to 1% resulting in moving the investments from China to other countries like Vietnam, India, etc. The average foreign direct investment made in India is 1.49% where China is 1.77%. The inflow of China is approximately four times higher than India as it is the second largest economy contributing towards the exports and imports and also, it's the major port where most of the MNC's delve in investing for their production or business.

2.3 EXHIBIT SHOWING DATA OF FOREIGN DIRECT INVESTMENT



1.4 TABLE SHOWING DATA OF YOUTH UNEMPLOYMENT RATE

YOUTH UNEMPLOYMENT RATE OF CHINA AND INDIA				
YEAR	CHINA		INDIA	
	% of Total Labour Force Ages 15-24	Annual Change	% of Total Labour Force Ages 15-24	Annual Change
2022	13.17%	0.73%	23.22%	-0.67%
2021	12.44%	-0.25%	23.89%	-7.00%
2020	12.69%	1.96%	30.90%	8.01%
2019	10.73%	1.02%	22.89%	-3.47%
Average youth unemployment rate	12.26%	-	25.23%	-

Source: World Bank

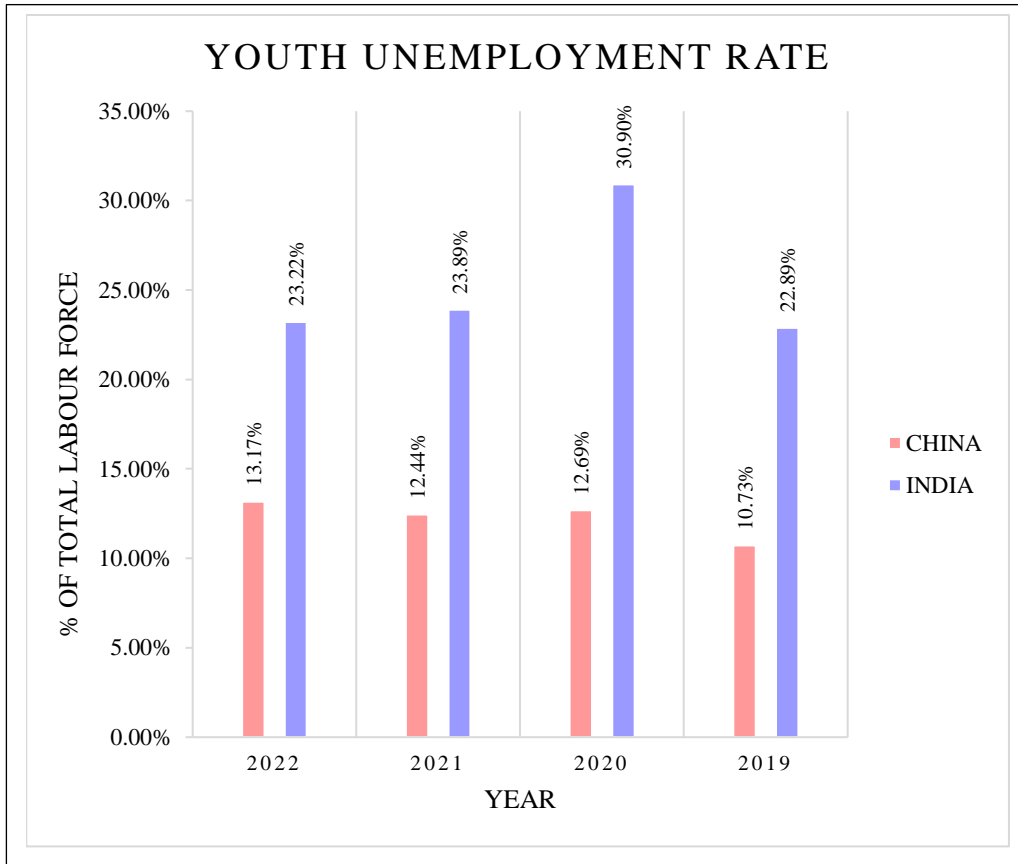


INTERPRETATION

TABLE 1.4 shows the youth unemployment rate of China and India during the period 2019 to 2022. During COVID-19 there was a huge percentage force of labours unemployed with 30.90% between age limit 15-24 in India. China labour force was highest at the year 2022 having 13.17% as there was downfall in the economy resulting in unemployment. As the factor labour is very

important for a sector, India has approximately two times larger labour force between 15-24 age limit than China which is a potential reason to attract the investments moving out of China. The average youth unemployment rate of India is 25.23% which is higher than China having 12.26%. Due to COVID-19 the unemployment rate increased leading to deployment of employees in companies and industries.

2.4 EXHIBIT SHOWING DATA OF YOUTH UNEMPLOYMENT RATE



1.5 TABLE SHOWING DATA OF GDP PER CAPITA INCOME

GDP PER CAPITA INCOME OF CHINA AND INDIA				
YEAR	CHINA		INDIA	
	GDP Per Capita (US \$)	Annual Growth Rate (%)	GDP Per Capita (US \$)	Annual Growth Rate (%)
2022	\$12,720	0.81%	\$2,389	6.72%
2021	\$12,618	21.22%	\$2,238	16.98%
2020	\$10,409	2.61%	\$1,913	-6.68%
2019	\$10,144	2.41%	\$2,050	3.84%
Average GDP per capita income		6.76%		5.22%

Source: World Bank

INTERPRETATION

TABLE 1.5 shows data of GDP per capita of China and India showing the per person value by dividing the total GDP by total population. India is approximately five times smaller than China

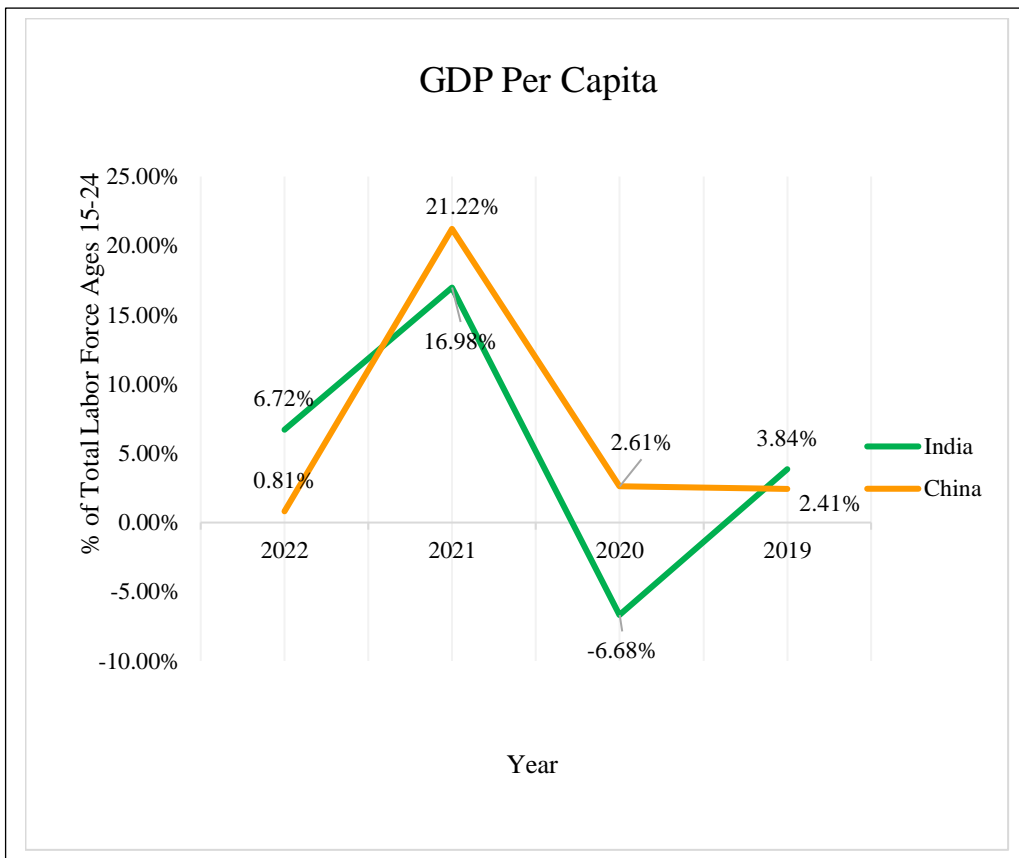
in earning GDP per capita as China has comparatively large market and economy than India. Both India and China earned the highest level of GDP per capita during the period 2021 having 16.98% and 21.22% of annual growth rate respectively. India has



reached minus growth rate having -6.68% during 2020 and boosted to 16.98% during 2021. The average GDP per capita annual growth rate of China is 6.76% whereas India's is 5.22% with a difference of 1.54%. The GDP per capita of China rises gradually every year by shifting from \$10,144 to 12,720 whereas

India also gradually grows from \$2050 to \$2389 except 2020 due to COVID-19. After 2020 there is boost in the growth of GDP per capita in both countries but in 2022 there arises a difference of growth rate having approximately 10% and 20% difference compared to 2021 in India and China respectively.

2.5 EXHIBIT SHOWING DATA OF GDP PER CAPITA INCOME



1.6 TABLE SHOWING GROWTH AND INFLATION RATE OF INDIA MOMENTUM - FY24

GROWTH AND INFLATION RATE OF INDIA MOMENTUM		
	GROWTH (%)	INFLATION (%)
HDFC	6.8	5.4
ICRA	6.5	5.4
ICICI SECURITIES	6.4	5.4
IDFC FIRST	6.7	5.4
BARCLAYS	6.7	5.4
EMKAY GLOBAL	6.6	5.4
BANK OF BARODA	7.25	5.5
PHILIP CAPITAL	6.8	5.5
KOTAK SECURITIES	6.8	5.4
DBS	6.8	5.3
CAREEDGE	6.8	5.4
MEDIAN	6.7	5.4
RBI	7	5.4

Source: ET Poll, RBI

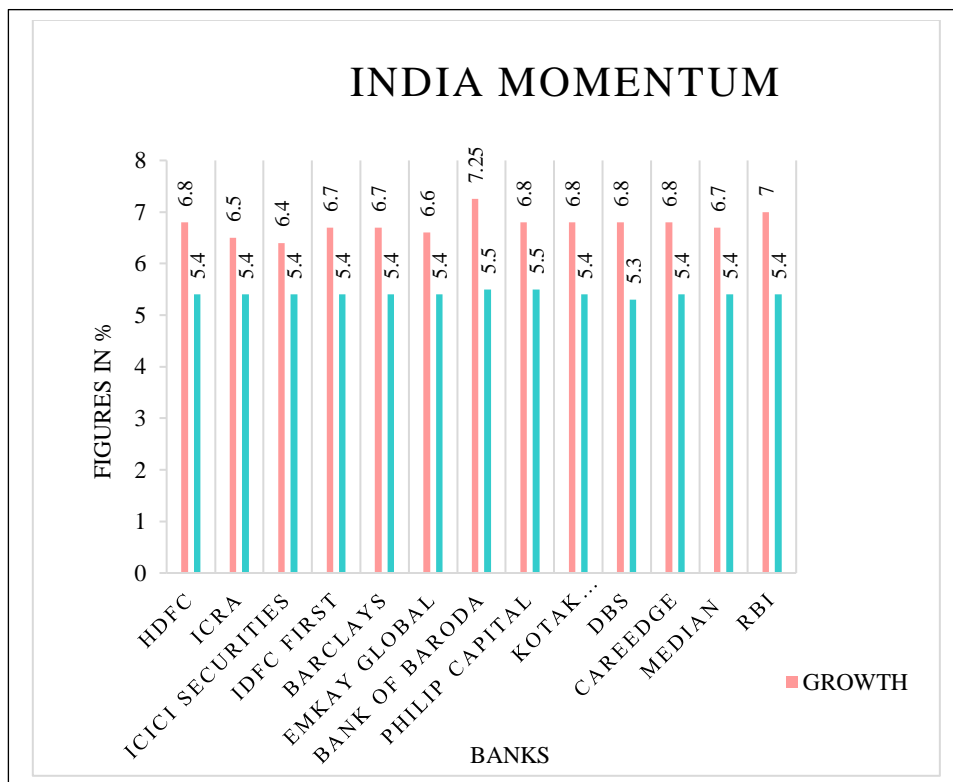


INTERPRETATION

TABLE 4.1.6 shows the Indian Momentum rate of all leading Banks showing growth and Inflation percentage in relatively recent years. The highest growth rate recorded in comparison of all banks is Bank of Baroda with 7.25%. All the Institutions shows relatively same amount of Inflation rate within the range of 5% to 6%.

rate. The table also shows that Growth rate falls into the slab of 6% to 8% with HDFC, Philip capital, Kotak Securities, DBS and Careedge all showing same growth rate of 6.8% and inflation rate of 5.4% and 5.3%. Also, except Bank of Baroda, Philip Capital and DBS all the other banks show same percentage of 5.4% inflation rate. This shows that both growth rate and Inflation rate are neither increasing nor decreasing in a higher rate.

2.6 EXHIBIT SHOWING GROWTH AND INFLATION RATE OF INDIAN MOMENTUM



CONCLUSION

India possesses tremendous opportunities with its demographic dividend of a young population. This huge workforce of nearly 900 million can be transformed into a productive asset fueling manufacturing and exports. India's domestic consumption potential remains substantial as rising incomes lift millions to the middle class every year.

Most importantly, fostering policy consistency and transparency will be pivotal to regain investor confidence. Achieving all this requires overcoming resistance from entrenched interests, summoning political will and building stakeholder consensus.

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A RESEARCH ON THE IMPACT OF MENTAL HEALTH AMONG COLLEGE STUDENTS IN THE FINAL YEAR

Dr. S. S. Ramya¹, Ms. Deepika.J.²

¹Assistant Professor, Department of Commerce, PSG College of Arts & Science, Coimbatore-14.

ORCID iD: <https://orcid.org/0000-0002-9547-1272>

²Student of II M. Com(CS), Department of Corporate Secretaryship, PSG College of Arts & Science, Coimbatore-14.

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ABSTRACT

College life is the most pressing stage in the teenagers' lives that can sometimes impose major challenges to study, play, socialize and live at the same time. Failure to manage these challenges effectively may lead to poor mental health in the teenagers. The aim of this study is to examine the prevalence and effects of depression, stress and anxiety among final year college students and to analyze the multifaceted challenges affecting their mental health and to identify the consequences faced by them and suggest targeted interventions to improve their overall mental well-being during their critical stage of their academic life. The scope of this study encompasses a comprehensive examination of the effects of mental health among final year college student within a Coimbatore city. It will focus on assessing various mental health parameters such as depression, stress, anxiety and other factors that may impact the psychological well-being of the students. Ethical considerations will be paramount, ensuring participant confidentiality, informed consent and adherence to ethical guidelines throughout the study. This study aims to provide valuable insights into the mental health challenges faced by the final year college students, with implications for counselling services, awareness initiatives, and policy recommendations to support student well-being

KEY WORDS: Mental health, depression, stress, anxiety and coping mechanism.

1.1 INTRODUCTION

Mental health refers to an individual's emotional, psychological, and social well-being, encompassing their ability to handle stress, relate to others, and make choices. It is a dynamic state that involves the presence of positive mental attributes and effective coping strategies, extending beyond the mere absence of mental disorders. Mental health to our cognitive, behavior, and emotional well-being it is all about now we think, feel, and behave. The term "mental health" is sometimes used to mean an absence of a mental disorder. Mental health can be seen as an unstable continuum, where an individual's mental health way has many different possible values. Mental wellness is generally viewed as a positive attribute, even if person does not have any diagnosed mental health condition. This definition of mental health highlights emotional well-being, the capacity to live a full and creative life, and the flexibility to deal with life's inevitable challenges.

According to WHO (World Health Organization), mental health is "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work protectively and fruitfully, and is able to make a contribution to his or her community. the WHO stresses that mental health "is not that the absence of mental disorder".

The mental health of final year college students is a critical aspect of their overall well-being as they navigate the

challenges of completing their academic journey and transitioning into the next phase of life. This period is often characterized by a unique set of stressors, including academic pressures, career uncertainties, and the prospect of significant life changes.

The mental health of final year college students is a critical aspect of their overall well-being as they navigate the challenges of completing their academic journey and transitioning into the next phase of life. This period is often characterized by a unique set of stressors, including academic pressures, career uncertainties, and the prospect of significant life changes

1.2 OBJECTIVES OF THE STUDY

- ❖ To Assess the current mental health of final year college students.
- ❖ To identify prevalence and types of mental health issues.

1.3 RESEARCH METHODOLOGY

In this study, an effect of mental health among final year college students has been analyzed and data have been obtained from final year college students in Coimbatore city.

The methodology is a guideline system for solving a problem with specific components such as phases, tasks, methods, techniques and tools by which researchers go about their work



of describing and explaining. A systematic and careful analysis of information is of primary objective in any research to obtain reliable results. It is essential to have systematic planning of data collection and employability tools for the analysis of information.

The methodology is discussed under the following heads.

Sampling Area

- The study was undertaken in Coimbatore city.

Sample Size

- A total of 106 samples were collected from the final year college students.

Sampling Method

- In this study, Convenience sampling method has been adopted.

Period of the Study:

- The study covers the period of about DECEMBER 2023- APRIL 2024.

1.4 SOURCES OF DATA

This research study aims to analyze the effects of mental health among final year college students and the data are to be collected on two basis such as Primary and Secondary data.

Instructions were given as the following questionnaire Perceived Stress Scale, Hamilton Anxiety Rating Scale (HAM-A), Depression Anxiety Stress Scale -10 (DASS- 10) and Kessler Psychological Distress Scale (k10) to all the subjects.

1.5 STATISTICAL TOOLS AND TECHNIQUES

Primary data was collected from 150 respondents. Data collected was edited and coded by using SPSS version 20.0. This helps in converting the gathered data into tabulated grouped data. The following relevant tools and techniques are applied.

1.5.1 PERCENTAGE ANALYSIS

Percentage analysis is applied to find out the distribution of frequencies between variables in this study. It is applied to find out

- Socio-economic profile of the respondents. i.e. Students of final year college students.
- Information related to mental disorders.

1.5.2 DEPRESSION ANXIETY STRESS SCALE-10(DASS)

Halford and Frost (2021) developed the DASS-10 as a shorter version of the original DASS-42 and DASS -21(Lovibond and Lovibond, 1995). The Depression Anxiety Stress Scale (DASS-10) is a brief 10 item version of the full version of the Depression Anxiety Stress Scale (DASS- 42). The DASS-10 can determine the overall level of distress as well as provide subscale scores for two symptoms clusters: Depression and Anxiety/Stress.

2.1 ANALYSIS AND INTERPRETATION

This chapter is presented in the following manner

- (i) Socioeconomic Status.
- (ii) Accessing the current mental health of final year college students.
- (iii) Identifying the types of mental health issues.

Table No.: 2.1

GENDER OF THE RESPONDENTS

GENDER	NO OF RESPONDENTS	PERCENTAGE (%)
Male	45	42.5
Female	61	57.5
TOTAL	106	100.0

Source: Primary Data

It is evident from the above table, out of 106 respondents taken for the study, 42.5% of the respondents are male and

57.5% of the respondents are female.

Table No.: 2.2

EDUCATIONAL QUALIFICATION OF THE RESPONDENTS

EDUCATIONAL QUALIFICATION	NO OF RESPONDENTS	PERCENTAGE (%)
UG	44	41.5
PG	62	58.5
TOTAL	106	100.0

Source: Primary Data

It is evident from the above table, out of 106 respondents taken for the study, 41.5% of the respondents are

Undergraduates and 58.5% of the respondents are Postgraduates.



Table No.: 2.3
BIRTH ORDER OF THE RESPONDENTS

BIRTH ORDER	NO OF RESPONDENTS	PERCENTAGE (%)
1 st Born	53	50.0
2 nd Born	39	36.8
3 rd Born	8	7.5
Others	6	5.7
TOTAL	106	100.0

Source: Primary Data

It is evident from the above table, out of 106 respondents taken for the study, 50% of the respondents are 1st born, 36.8% of the respondents are 2nd born, 7.5% of the respondents are 3rd born and 5.7% of the respondents are belongs to others.

Table No.: 2.4
AREA OF RESIDENCE OF THE RESPONDENTS

AREA OF RESIDENCE	NO OF RESPONDENTS	PERCENTAGE (%)
Rural	40	37.7
Urban	47	44.3
Semi Urban	19	17.9
TOTAL	106	100.0

Source: Primary Data

It is evident from the above table, out of 106 respondents taken for the study, 37.7% of the respondents belongs to rural area, 44.3% of the respondents belongs to urban area, 17.9% of the respondents belongs to semi urban area.

Table No.: 2.5
MONTHLY FAMILY INCOME OF THE RESPONDENTS

BIRTH ORDER	NO OF RESPONDENTS	PERCENTAGE (%)
Less than Rs.20,000	20	18.9
Rs.20,001-Rs.30,000	22	20.8
Rs.30,001-Rs.40,000	31	29.2
Above Rs.40,000	33	31.1
TOTAL	106	100.0

Source: Primary Data

It is evident from the above table, out of 106 respondents taken for the study, 18.9% of the respondents family earn less than Rs.20,000; 20.8% of the respondents family earn Rs.20,001-Rs.30,000; 29.2% of the respondents family earn Rs.30,001-Rs.40,000 and 31.1% of the respondents family earn above Rs.40,000.

Table no: 2.6

PART TIME EMPLOYEMENT	NO OF RESPONDENTS	PERCENTAGE (%)
Yes	24	22.6
No	82	77.4
TOTAL	106	100.0

Source: Primary Data

It is evident from the above table, out of 106 respondents taken for the study , 77.4% of the respondents are not engaged in part time employment and 22.6% of the respondents are engaged in part time employment.

Table No: 2.7
MEAN, MINIMUM AND MAXIMUM OF DEPRESSION, ANXIETY AND STRESS

VARIABLE	TOTAL DEPRESSION	TOTAL ANXIETY	TOTAL STRESS
Mean	13.28	11.57	14.34
Minimum	0	0	0
Maximum	30	28	30

Source: Primary Data



It is evident from the above table, out of 106 respondents

- ❖ The mean score for depression was 13.28 with scores ranging from 0 to 30.
- ❖ The mean score for anxiety was 11.57 with scores ranging from 0 to 28.
- ❖ The mean score for stress was 14.34 with scores ranging from 0 to 30.

Table No: 2.8

ASSESSING THE LEVEL OF DEPRESSION, ANXIETY AND STRESS

VARIABLE	LEVEL OF DEPRESSION	LEVEL OF ANXIETY	LEVEL OF STRESS
Mean	2.42	2.75	1.70
Standard Deviation	1.211	1.378	0.948
Variance	1.466	1.90	0.898
Minimum	1	1	1
Maximum	5	5	5

Source: Primary Data

Level of Depression

- ❖ The mean for level of depression is 2.42 with scores ranging from 1 to 5.
- ❖ The Standard Deviation of level of depression is 1.211.
- ❖ The variance of level of depression is 1.466.

Level of Anxiety

- ❖ The mean for level of anxiety is 2.75 with scores ranging from 1 to 5.
- ❖ The Standard Deviation of level of anxiety is 1.378.
- ❖ The variance of level of anxiety is 1.90.

Level of Stress

- ❖ The mean for level of stress is 1.70 with scores ranging from 1 to 5
- ❖ The Standard Deviation of level of stress is 0.948.
- ❖ The variance of level of stress is 0.898.

Table No.:2.8.1
LEVEL OF DEPRESSION

LEVEL	NO OF RESPONDENTS	PERCENTAGE(%)
NORMAL	35	33.0
MILD	14	13.2
MODERATE	40	37.7
SEVERE	11	10.4
EXTREMELY SEVERE	6	5.7
TOTAL	106	100

Source: Primary Data

It is evident from the above table, out of 106 respondents taken for the study,

- ❖ 33% of respondents reported Normal depression level.
- ❖ 13.2% of respondents reported Mild depression level.
- ❖ 37.7% of respondents reported Moderate depression level.
- ❖ 10.4% of respondents reported Severe depression level.
- ❖ 5.7% of respondents reported Extremely severe depression level.

Table No : 2.8.2
LEVEL OF ANXIETY

LEVEL	NO OF RESPONDENTS	PERCENTAGE(%)
NORMAL	30	28.3
MILD	10	9.4
MODERATE	38	35.8
SEVERE	12	11.3
EXTREMELY SEVERE	16	15.1
TOTAL	106	100

Source: Primary Data



It is evident from the above table, out of 106 respondents taken for the study,

- ❖ 28.3% of respondents reported Normal anxiety level.
- ❖ 9.4% of respondents reported Mild anxiety level.
- ❖ 35.8% of respondents reported Moderate anxiety level.
- ❖ 11.3% of respondents reported Severe anxiety level.
- ❖ 15.1% of respondents reported Extremely severe anxiety level.

Table No : 2.8.3
LEVEL OF STRESS

LEVEL	NO OF RESPONDENTS	PERCENTAGE(%)
NORMAL	62	58.5
MILD	20	18.9
MODERATE	18	17.0
SEVERE	6	5.7
EXTREMELY SEVERE	0	0
TOTAL	106	100

Source: Primary Data

It is evident from the above table, out of 106 respondents taken for the study,

- ❖ 58.5% of respondents reported Normal Stress level.
- ❖ 18.9% of respondents reported Mild Stress level.
- ❖ 17% of respondents reported Moderate Stress level.
- ❖ 5.7% of respondents reported Severe Stress level.
- ❖ 0% of respondents reported Extremely severe Stress level.

Table No .: 2.9
STUDENTS PRIORITIZING MENTAL HEALTH

STUDENTS PRIORITIZING MENTAL HEALTH	NO OF RESPONDENTS	PERCENTAGE(%)
Rarely	18	17.0
Sometimes	13	12.3
Often	54	50.9
Always	21	19.8
TOTAL	106	100

Source: Primary Data

It is evident from the above table, out of 106 respondents taken for the study, 17% of the respondents rarely prioritizing their mental health, 12.3% of the respondents sometimes prioritizing their mental health, 50.9% of the respondents often prioritizing their mental health, 19.8% of the respondents always prioritize their mental.

AWARE OF THE DIFFERENT CATEGORIES OF MENTAL DISORDERS

Table 4.10 and chart 4.10.1 depict the awareness of the different categories of mental disorders.

Table No.: 2.10
AWARE OF DIFFERENT CATEGORIES OF MENTAL HEALTH DISORDERS

AWARENESS	NO OF RESPONDENTS	PERCENTAGE(%)
Yes	51	48.1
No	55	51.9
TOTAL	106	100.0

Source: Primary Data

It is evident from the above table, out of 106 respondents, 48.1% of the respondents are aware of different categories of

the mental health and 51.9% of the respondents are not aware of different categories of mental disorders.



Table No. : 2.11
FAMILY HISTORY OF MENTAL HEALTH DISORDERS

FAMILY HISTORY OF MENTAL HEALTH DISORDER	NO OF RESPONDENTS	PERCENTAGE(%)
Yes	13	12.3
No	81	76.4
Not Sure	12	11.3
TOTAL	106	100

Source: Primary Data

It is evident from the above table, out of 106 respondents, 12.3% of the respondents have the family history of mental health disorders, 76.4% of the respondents do not have the family history of mental health disorders, 11.3% of the respondents are not sure about the family history of mental

health disorders.

The majority 76.4% of the respondents do not have the family history of mental health disorders.

Table No. : 2.12
TYPES OF MENTAL HEALTH DISORDERS

MENTAL HEALTH DISORDERS	NO OF RESPONDENTS WHO HAVE SAID YES	PERCENTAGE(%)
Sadness or low mood	20	6.7%
Panic attacks	30	10.1%
Mood swings	26	8.8%
Sleep disturbances	35	11.8%
Changes in weight	23	7.7%
Fatigue or lack of energy	29	9.8%
Irritability or anger outburst	21	7.1%
Social withdrawal or isolation	22	7.4%
Thoughts of self – harm or suicide	24	8.1%
Daydream or illusion	17	5.7%
Obsessive thoughts or compulsive behaviors	25	8.4%
Stress eating	25	8.4%
TOTAL	297	100

It is evident from the above table, out of 106 respondents, 6.7% of the respondents have the mental disorder of sadness or low mood, 10.1% of the respondents have the mental disorder of panic attacks, 8.8% of the respondents have the mental disorder of mood swings, 11.8% of the respondents have the mental disorder of sleep disturbances, 7.7% of the respondents have the mental disorder of changes in weight, 9.8% of the respondents have the mental disorder of fatigue or lack of energy, 7.1% of the respondents have the mental disorder of irritability or anger

outbursts, 7.4% of the respondents have the mental disorder of social withdrawal or isolation, 8.1% of the respondents have the mental disorder of thoughts of self harm or suicide, 5.7% of the respondents have the mental disorder of daydream or illusion, 8.4% of the respondents have the mental disorder of both obsessive thoughts or compulsive behaviors and stress eating.

The most 11.8% of the respondents have the mental disorder of sleep disturbances.

SYMPTOMS INTEREFERE WITH DAILY FUNCTIONING

Table 4.13 and chart 4.13.1 depict the symptoms interfere with daily functioning.

Table No.: 2.13
SYMPTOMS INTEFERE WITH DAILY FUNCTIONING

SYMPTOMS INTEREFERENCE	NO OF RESPONDENTS	PERCENTAGE(%)
Rarely	36	34.0
Sometimes	51	48.1
Often	16	15.1
Always	3	2.8
TOTAL	106	100



It is evident from the above table, out of 106 respondents taken for the study, 34% of respondents reported that symptoms of mental disorder rarely interfere in their daily functioning, 48.1% of the respondents reported that symptoms of mental disorder sometimes interfere in their daily functioning, 15.1% of the respondents reported that symptoms of mental disorder often interfere in their daily functioning, 2.8% of the

respondents reported that symptoms of mental disorder always interfere with daily functioning.

SOUGHT PROFESSIONAL HELP FOR MENTAL HEALTH CONCERNS

Table 4.14 and chart 4.14.1 depict the professional help for mental health concerns.

Table No.: 2.14

SOUGHT PROFESSIONAL HELP FOR MENTAL HEALTH CONCERNS

SOUGHT PROFESSIONAL HELP	NO OF RESPONDENTS	PERCENTAGE (%)
Yes	22	20.8
No	84	79.2
TOTAL	106	100

It is evident from the above table, out of 106 respondents take for the study, 20.8% of the respondents sought professional help for mental health concerns and 79.2% of the respondents do not sought professional help for mental health concerns.

The majority 79.2% of the respondents do not sought professional help for mental health concerns.

RECOMMENDATION FOR SEEKING PROFESSIONAL HELP TO SOMEONE EXPERIENCING MENTAL HEALTH SYMPTOMS

Table 4.15 and chart 4.15.1 depict the recommendation for seeking professional help to someone experiencing mental health concerns.

Table No.: 4.15

RECOMMENDATIONS FOR SEEKING PROFESSIONAL HELP

RECOMMENDATIONS	NO OF RESPONDENTS	PERCENTAGE (%)
Very likely	29	27.4
Somewhat likely	35	33.0
Not sure	31	29.2
Somewhat unlikely	5	4.7
Very unlikely	6	5.7
TOTAL	106	100

It is evident from the above table, out of 106 respondents taken for the study, 27.4% of the respondents reported that very likely they recommend for seeking professional help , 33% of the respondents reported that somewhat likely they recommend for seeking professional help, 29.2% of the respondents reported that they are not sure whether they recommend for seeking professional help, 4.7% of the respondents reported that somewhat unlikely they recommend for seeking professional help, 5.7% of the respondents reported that very unlikely they recommend for seeking professional help.

The majority 33% of the respondents are somewhat likely recommend professional help to someone experience mental health symptoms.

3. SUGGESTIONS

- ❖ Based on the factor analysis and DASS 21 scale results indicating moderate scoring on the depression, anxiety and stress among final year college students, consider implementing targeted intervention programs aimed at reducing these symptoms. These programs include cognitive- behavioral therapy(CBT) techniques, stress management workshops, and mindfulness training tailored to the unique needs of the students.

- ❖ Foster collaborative research partnerships between academic institutions, mental health organizations and the community stakeholders to address the mental health challenges of the students.
- ❖ Implement routine mental health screening programs using validated tools such as the DASS 21 scale to identify students at risk of mental health problems early on. Provide timely intervention and support services to address emerging issues and prevent escalation.
- ❖ Explore the feasibility of implementing peer support initiatives within the college settings to complement existing mental health services. Peer support programs can provide valuable social support, reduce stigma surrounding mental health and facilitate early intervention among students experiencing psychological distress.

4. CONCLUSION

In conclusion, the effects of mental health among final year college students are profound and multifaceted, impacting various aspects of their academic performance, social interactions, and overall well-being. Through the examination of mental health using tools like the DASS 21 scale and factor analysis, it has become evident that many final year students experience elevated levels of depression, anxiety, and stress,



which can significantly hinder their ability to thrive during this crucial period of transition. The prevalence of mental health challenges among final year students underscores the urgent need for targeted interventions and support services tailored to their unique needs. Addressing mental health issues on college campuses requires a comprehensive approach that encompasses not only individual-level interventions but also systemic changes to promote a culture of well-being and resilience. In conclusion, prioritizing mental health among final year college students is not only essential for their individual well-being but also contributes to a healthier, more vibrant campus community. By investing in mental health initiatives and fostering a culture of care and compassion, educational institutions can play a pivotal role in promoting the success and flourishing of their final year students now and in the future.

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PEDAGOGICAL-PSYCHOLOGICAL FEATURES OF INFLUENCING THE BEHAVIOR OF PRESCHOOL CHILDREN

Turumbetova Zamira Yusupbayevna

PhD, Associate Professor, Pedagogy and Psychology Department, Karakalpak state university named after Berdakh

ANNOTATION

The article describes the pedagogical-psychological features involved in influencing the behavior of preschool children. Drawing upon theoretical frameworks from both pedagogy and psychology, the article examines various strategies, techniques, and approaches that educators and caregivers can employ to promote positive behavior and socio-emotional development in young children. Through a comprehensive review of existing literature, this article aims to elucidate key concepts, identify effective practices, and highlight the importance of early intervention in shaping children's behavior and social skills during the critical preschool years.

KEY WORDS: *preschool children, behavior, pedagogy, psychology, socio-emotional development.*

INTRODUCTION

The preschool years represent a critical period of development during which children acquire foundational skills, attitudes, and behaviors that shape their future social and academic trajectories. Effective strategies for influencing the behavior of preschool children are therefore essential for fostering positive socio-emotional development and preparing them for success in school and life. This research article examines the pedagogical-psychological features involved in influencing preschool children's behavior, with a focus on understanding the underlying principles, identifying evidence-based practices, and exploring the implications for early childhood education.

Pedagogical Principles: Pedagogical approaches to influencing preschool children's behavior emphasize the importance of creating a supportive and nurturing learning environment that promotes positive social interactions, emotional regulation, and self-control [4]. Key pedagogical principles include providing clear and consistent expectations, setting developmentally appropriate limits, and offering opportunities for children to practice and reinforce prosocial behaviors through guided play and cooperative activities [8].

Psychological Frameworks: Psychological theories offer valuable insights into the cognitive, emotional, and social processes that underlie preschool children's behavior. Social learning theory, for example, highlights the role of modeling, reinforcement, and observational learning in shaping children's behavior [1]. Attachment theory emphasizes the importance of secure relationships with caregivers in promoting emotional well-being and adaptive behavior [2]. Moreover, theories of cognitive development, such as Piaget's theory of cognitive development [10], highlight the importance of scaffolding and guided discovery in supporting children's problem-solving skills and self-regulation.

Effective Practices: Effective practices for influencing preschool children's behavior encompass a range of strategies, techniques, and interventions that target both individual and group dynamics [9]. These may include positive reinforcement, praise, redirection, modeling appropriate behaviors, teaching social skills through storytelling and role-playing, and implementing proactive classroom management strategies [6]. Moreover, collaborative approaches involving parents, teachers, and other caregivers can enhance the consistency and effectiveness of behavior management efforts [12].

Implications for Early Childhood Education: The pedagogical-psychological features discussed in this research article have significant implications for early childhood education practice and policy. By incorporating evidence-based strategies for influencing preschool children's behavior into early childhood curricula and professional development programs, educators can create more supportive and inclusive learning environments that promote positive socio-emotional development and academic success [7]. Moreover, recognizing the importance of early intervention and prevention efforts in addressing behavioral challenges can help mitigate the risk of long-term negative outcomes and promote positive outcomes for children, families, and communities [13].

LITERATURE REVIEW.

The behavior of preschool children is influenced by a variety of factors, including their cognitive, emotional, and social development, as well as the pedagogical and psychological approaches employed by educators and caregivers. This literature review aims to explore the pedagogical-psychological features of influencing the behavior of preschool children, drawing on research and literature from the fields of education, psychology, and child development. By synthesizing findings from diverse sources, this review seeks to identify key concepts, theories, and strategies for effectively guiding and shaping the behavior of preschool-aged children.



Cognitive Development and Behavior: Preschool children undergo rapid cognitive development, which significantly impacts their behavior and interactions with the environment. Piaget's theory of cognitive development highlights the importance of schemas, assimilation, and accommodation in shaping children's understanding of the world around them [10]. Educators can leverage this understanding by providing developmentally appropriate activities and materials that stimulate children's curiosity, problem-solving skills, and creativity, thereby promoting positive behavior and engagement in learning [5].

Emotional Regulation and Behavior: Emotional regulation plays a crucial role in shaping preschool children's behavior and social interactions. Research suggests that children who are able to regulate their emotions effectively are better equipped to cope with stress, manage conflicts, and engage in prosocial behavior [14]. Educators and caregivers can support children's emotional development by providing a nurturing and supportive environment, modeling appropriate emotional responses, and teaching strategies for self-calming and problem-solving [16].

Social Development and Behavior: Preschool-aged children are also developing their social skills and learning how to navigate relationships with peers and adults. Vygotsky's sociocultural theory emphasizes the role of social interactions and cultural contexts in shaping children's development [20]. Educators can promote positive social behavior by fostering collaborative learning environments, encouraging peer interactions, and teaching communication and conflict resolution skills [18].

Behavioral Management Strategies: Effective behavioral management strategies are essential for guiding and shaping the behavior of preschool children. Positive reinforcement, such as praise, rewards, and privileges, can be used to encourage desired behaviors and motivate children to engage in learning activities [19]. Additionally, clear expectations, consistent routines, and age-appropriate consequences help establish boundaries and promote self-regulation [6].

Family and Community Involvement: The involvement of families and communities is critical for supporting the behavioral development of preschool children. Collaborative partnerships between educators, parents, and community stakeholders facilitate information sharing, goal setting, and coordinated interventions to address individual needs and challenges [15]. By working together, stakeholders can create a supportive network of resources and services that promote positive behavior and academic success for all children.

DISCUSSION.

Understanding the pedagogical and psychological aspects of influencing the behavior of preschool children is crucial for educators and caregivers to establish nurturing learning environments and foster positive growth. This discussion delves into fundamental concepts, theories, and methodologies related to shaping the behavior of young children, drawing upon insights from the fields of pedagogy, psychology, and child development research.

Educational Approaches: Various educational strategies aimed at nurturing social-emotional skills, self-regulation, and positive behavior are employed to influence preschoolers' conduct. For instance, play-based learning offers children a safe and supportive setting to explore, experiment, and engage with their surroundings, fostering empathy, cooperation, and problem-solving abilities [3]. Additionally, behavior management techniques such as positive reinforcement, clear expectations, and consistent routines are commonly utilized in preschool environments to promote desirable behavior and discourage undesirable conduct [17]. These methods cultivate a positive classroom atmosphere and assist children in acquiring appropriate social interactions with peers and adults.

Psychological Principles: Psychological principles provide valuable insights into the underlying mechanisms of preschoolers' behavior and guide effective intervention strategies. Developmental theories, such as Piaget's cognitive development theory and Vygotsky's socio-cultural theory, underscore the significance of scaffolding children's learning and providing age-appropriate challenges [10]; [20]. Understanding children's cognitive capacities and socio-emotional needs enables educators to tailor their approaches to effectively support their development. Furthermore, behaviorism theories highlight the role of reinforcement, punishment, and modeling in shaping children's conduct [19]. Positive reinforcement, such as praise or rewards, can reinforce desired behaviors, while negative reinforcement, such as timeout or loss of privileges, can deter undesirable behaviors. Applying behaviorism principles enables educators to establish structured and supportive environments that encourage positive conduct and diminish challenging behaviors.

Practical Implications: The pedagogical and psychological aspects discussed above have significant implications for practice in preschool settings. Educators and caregivers can foster nurturing learning environments by integrating play-based learning, implementing consistent behavior management strategies, and promoting socio-emotional skill development. Addressing challenging behaviors early on and promoting positive conduct sets a strong foundation for children's academic success and personal growth. Moreover, collaboration among educators, parents, and other stakeholders is vital for supporting preschoolers' behavior and development. Open communication, shared objectives, and coordinated intervention efforts enhance the effectiveness of behavior management strategies and ensure consistency across home and school environments [11].

CONCLUSION

In conclusion, the pedagogical-psychological features of influencing the behavior of preschool children encompass a range of factors, including cognitive development, emotional regulation, social skills, behavioral management strategies, and family-community involvement. By understanding and addressing these factors, educators and caregivers can create nurturing and supportive environments that promote positive behavior, social-emotional competence, and academic success for preschool-aged children. Thus, comprehending the pedagogical and psychological aspects of influencing preschool



children's behavior is essential for fostering positive development and establishing supportive learning environments. By integrating educational approaches and psychological principles, educators and caregivers can effectively support children's socio-emotional development and lay the groundwork for lifelong learning and success. This article has explored the pedagogical-psychological features of influencing the behavior of preschool children. By integrating pedagogical principles with psychological frameworks, educators and caregivers can employ effective strategies, techniques, and interventions to promote positive behavior and socio-emotional development in young children. Early childhood education programs that prioritize early intervention, evidence-based practices, and collaborative partnerships are essential for fostering positive outcomes for preschool children and laying the foundation for lifelong success.

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GLOBALIZATION OF AYURVEDA: OPPORTUNITIES & DIFFICULTIES

Dr. Oshin Sharma¹, Dr. Kumar Gaurav²

¹PG Scholar, Department of Kayachikitsa, KAHER's Shri B M Kankanawadi Ayurveda Mahavidyalaya, Shahapur, Belagavi, Karnataka, India. Pin: 590003

ORCID id – 0000-0001-6875-6814

²Assistant Professor, Department of Kayachikitsa, Dhanvantari Ayurvedic Medical College & Hospital, Bareilly, U.P., India. Pin: 243501

ORCID id – 0009-0001-7266-3247

Address Of Corresponding Author: Dr. Oshin Sharma, PG Scholar, Department of Kayachikitsa, KAHER's Shri B M Kankanawadi Ayurveda Mahavidyalaya, Shahapur, Belagavi, Karnataka, India. Pin: 590003, ORCID id – 0000-0001-6875-6814

ABSTRACT

Ayurveda, an ancient Indian system of medicine, is gaining popularity worldwide due to its holistic approach and emphasis on natural remedies. One of the key opportunities lies in the increasing acceptance of alternative medicine practices globally, opening avenues for Ayurvedic products and services. Moreover, as people seek healthier lifestyles and sustainable healthcare solutions, Ayurveda emerges as a promising option. However, several difficulties impede its global expansion. Standardization and regulation pose significant challenges, as varying practices and lack of quality control hinder credibility in international markets. Additionally, cultural adaptation and communication barriers must be addressed to make Ayurveda accessible and understandable across diverse populations. Furthermore, competition from established pharmaceutical industries and skepticism from mainstream medical communities pose formidable obstacles. In conclusion, while the globalization of Ayurveda presents promising opportunities for holistic healthcare solutions on a global scale, navigating through regulatory hurdles, cultural disparities, and market competition remains crucial for its sustained growth and acceptance worldwide.

KEYWORDS – Ayurveda, traditional medicine, AYUSH,

INTRODUCTION

Ayurveda is an ancient traditional system of medicine which has been emerged and practiced in Indian subcontinent. In recent decades, Ayurveda has transcended geographical boundaries and cultural barriers to emerge as a healing system in the mainstay of healthcare system worldwide. As the world battle with the challenges of modern lifestyles and seeks holistic approaches to well-being, Ayurveda has garnered attention for its holistic principles, safe medications, and natural remedies. Even has gained the attention for its preventive therapies and its efficacy to maintain the health of healthy Individual (स्वस्थस्य स्वास्थ्य रक्षणम्, आतुरस्य विकार प्रशमनं ||). This paper explores the factors contributing to the global spread of Ayurveda, its impact on International healthcare, and the challenges and opportunities associated with its globalization.

The globalization of Ayurveda stands as a testament to the enduring appeal and universal relevance of this ancient Indian system of medicine. The journey of Ayurveda's globalization is marked by collaborative efforts, scientific research, government initiatives, educational programs, and a burgeoning market for Ayurvedic products and services across the globe. As Ayurveda continues to bridge cultural divides and find resonance in diverse societies, its globalization not only fosters cross-cultural exchanges but also contributes to a more comprehensive and inclusive approach to global healthcare.

According to the research report conducted by the Forum on Indian Traditional Medicine (FITM) under the Research and Information System for Developing Countries (RIS), the Ayush industry's market size reached US\$ 18.1 billion (equivalent to INR 1,49,451 Crore at the current INR-Dollar rate) in 2020, a significant increase from the US\$ 2.85 billion (INR 23,532 Crore at the current INR-Dollar rate) reported in 2014-15 (Goraya and Ved).¹

To bolster the export of Ayush products and services, promote international co-operation, and enhance recognition of Ayush medicine globally, the Ministry has introduced the Central Sector Scheme for Promotion of International Co-operation in Ayush (IC Scheme).

This initiative supports Indian Ayush manufacturers and service providers, encourages international market development, fosters stakeholder interactions, establishes Ayush Academic Chairs in foreign countries, and conducts training workshops and symposiums to raise awareness about Ayush Systems of Medicine on an international scale.

In collaboration with the Ministry of Commerce and Industry, the Ministry of AYUSH has established the AYUSH Export Promotion Council, focusing on the export promotion of



Ayurveda, Homoeopathy, Siddha, Sowa Rigpa, and Unani medicines, products, and services related to AYUSH system.

Recently, Ministry of Ayush has taken the following steps to push exports globally - The Ministry has entered into various Country-to-Country Memoranda of Understanding (MoUs) to foster collaboration. Furthermore, 15 MoUs have been established with international institutes to establish AYUSH Academic Chairs in foreign nations. The Ministry of AYUSH has extended its support for the establishment of 39 AYUSH Information Cells across 35 foreign nations. The Ayush Export Promotion Council was officially registered under section 8(4) of the Companies Act 2013 on January 4, 2022, within the Ministry of AYUSH. This registration, conducted in coordination with the Ministry of Corporate Affairs, aims to address challenges related to the registration of AYUSH products abroad and to conduct market studies and research activities on a global scale.²

FACTORS CONTRIBUTING FOR GLOBALIZATION

- ❖ **Collaborations with other countries**
 The Governing bodies and healthcare organizations has seen the potential of Ayurveda and played a crucial key link in Globalization by establishing new collaboration, signing memorandums with different countries. Integration in the field of education of Indian system of medicine in the foreign healthcare courses is a way to global spread of Ayurveda. The integration of traditional medical practice with modern health care practice is a main step for globalization and equitability of Ayurveda system of medicine.
- ❖ **Rapid increase in Awareness and Interest**
 People all over the world are looking for alternatives as traditional treatments and are becoming more interested in holistic well-being and preventive healthcare. These changing health preferences are in line with Ayurveda as it emphasizes on preventive measures and maintains the health of healthier people.
- ❖ **Commercialization of Brands/ Products**
 The commercialization of Ayurvedic products and the emergence of global Ayurvedic brands have significantly contributed to its globalization. These products, ranging from herbal supplements to skin care products, are now available in international markets, further familiarizing people with Ayurveda.
- ❖ **Digital World**
 The digital era has facilitated the rapid dissemination of information. Social media, wellness blogs, online platforms have played a crucial role in spreading awareness about Ayurveda. The connection via digital consultations has helped a lot in reaching the audience throughout the globe. Individual's share their personal experience and success stories, a global community interested in Ayurveda practices has emerged.
- ❖ **Attitude of sharing Information**
 The traditional system of medicine is now open to share and provides the knowledge to the community worldwide. For that publication of data has gained a momentum hence

achieved a attention and generated a curiosity globally.

- ❖ **Consistent efforts of Ministry**
 Because of the consistent efforts of AYUSH, various countries have recognized Ayurveda and brought an era for its Globalization. For this, many achievements are bagged by AYUSH ministry.

OPPORTUNITIES AND ITS BENEFITS

The globalization of Ayurveda brings forth a myriad of benefits, impacting not only individual health and wellness but also contributing to broader societal and economic advantages. Here are some vital Opportunities and benefits with the global spread of Ayurveda.

- ❖ **Establishment of Ayurveda knowledge** - Being an Ayurveda physician its always our duty to glorify the beauty of Ayurveda to external World. This Globalization has given a wonderful opportunity to show the wonders of Ayurveda.
- ❖ **New Education system at Global level** - Due to awareness, many people are interested to learn the basic of Ayurveda which may be a revolutionary phase for the establishment the era of Ayurveda. This scope of learning will help and make the individuals independent to practice Ayurveda. Full-fledged Government Ayurveda hospitals or clinics in foreign countries may attract and create hub in the society.
- ❖ **Broaden the opportunities for NRI students** - In India, in the field of Ayurveda, their seats are limited, it can be increased. This step will be beneficial to increase the interest of an individual to learn and practice Ayurveda. Even various fellowship courses can become their courses of learning.
- ❖ **Empowerment** - Empowerment in health system is always a major contribution to the society Worldwide. Which can be provided by uniting hands to foreign health associations.
- ❖ **Career opportunity** - It gives rise to flourish and develop educational programs and training centres hence leads to increase in the surge of experts. Opens new ways to work or practice for healthcare workers such as therapists, experts and physicians. For Pharmaceutical industries it helps in building brands or commercializing their products.
- ❖ **Opportunity for skill development:** The globalization of Ayurveda creates opportunities for skill development thus, can create a workfield as a skilled workforce for Practice of traditional medicine.
- ❖ **The Economic Growth** - The commercialization of Ayurvedic products and services on a global scale opens up economic opportunities. This includes the growth of ayurvedic wellness centres, the export of Ayurvedic products and the development of a global market for Ayurvedic treatment. This can stimulate economic growth in regions with a strong tradition of Ayurveda as the global market size is very huge. In Macro- perspective, an increase in the opportunities for the market can expand economy in turn can raise the GDP.
- ❖ **Integration with Other Health care Systems:** The integration of ayurveda with other health care systems enhances the diversity of available treatments and will help to serve the society by utilizing the specialization of each



system. Collaboration between traditional Ayurvedic practitioners and modern healthcare professionals can lead to the development of integrated healthcare programs that combine the strength of both systems.

- ❖ The WHO Global Centre for Traditional Medicine is being established in Jamnagar under the Ministry of AYUSH, is the only centre established in the entire globe. The traditional medicine has been a main resource for health and wellness in various countries thus, to provide a position to AYUSH system in the globe it's a vital step.
- ❖ **Emergence of Wellness cultural tourism:** The global interest in ayurveda can drive wellness and cultural tourism. Individuals seeking authentic Ayurvedic treatments or experiences may travel to regions with a strong Ayurvedic tradition, contributing to the tourism industry and creating cultural exchange opportunities. Thus, people from diverse backgrounds are exposed to ancient Indian wisdom, creating a bridge between different cultures and promoting mutual understanding and respect.
- ❖ **Overall Holistic Healthcare Approach** – Ayurveda offers a holistic approach to health and wellness, considering the interconnectedness of body, mind and spirit. As it gains recognition globally, more individuals are likely to benefit from a healthcare system that addresses the root causes of ailments and emphasizes overall well-being.
- ❖ **Preventive Healthcare Practice:** Ayurveda strongly emphasizes on preventive healthcare through lifestyle modifications as per seasons, dietary recommendations, daily routine activities that brings an equilibrium state of vital forces of our body. The globalization of ayurveda encourages individuals to adopt proactive health measures, potentially reducing the burden on healthcare systems by preventing diseases before they manifest.
- ❖ **Promotes Natural Living** – Ayurveda relies on simple natural remedies derived from herbs and minerals that aligns with the global movement towards natural and sustained living. The use of organic and locally sourced ingredients promotes environmentally friendly practices, contributing to a more sustainable approach to healthcare.
- ❖ **Gear up the scientific researches** – The international acceptance of Ayurveda encourages scientific research and validation of its principles and practices. Collaborative efforts between Ayurveda experts and Modern researchers can lead to a better understanding of the efficacy and targets of Ayurvedic treatments which further enhances its credibility.
- ❖ **Gained popularity because of Unique way of Treatment:** The various diseases such as mental health issues, immune system-based diseases, chronic diseases and lifestyle disorders are current health issues which can be managed well with Ayurveda line of treatment is accepted worldwide.

STEPS CAN BE TAKEN FOR GLOBALIZATION

- ❖ Medical tourism – The area can be excelled more to make India as a hub or a center of destination of medical tourism. Indian government with collaboration of Institutes of India and foreign can achieve this goal.

- ❖ Need to analyze the Global demands and expectations from health care systems can keep us a step forward for globalization.
- ❖ Government E- learning platforms can be created to spread the Ayurveda.
- ❖ Expedite the Research process: There is a need to generate data and evidences for Ayurveda drugs, rapidly. We are well aware about the benefits of drugs that if they are used in proper dosage, after proper purification, for particular duration and at the correct stage of disease then they always work as nectar. But as there are many drugs which are banned in other countries, if we generate their efficacy and safety results, the entire globe will happily accept all those drugs. Hence, to put forth this knowledge in front of the entire globe, need to accelerate the research process and generate evidences. This can be achieved with the help of technology. This process can be boosted by providing scholarships to the researchers at institute levels also.
- ❖ Technology - The collaboration of old traditional knowledge with technology is a major step for innovation and expansion of Ayurveda.
- ❖ Various ground level steps can be taken with the help of media for international promotion.
- ❖ A backbone of support is Pharmacovigilance – There should be strict check on the safety and adverse reaction of the drugs which are exporting as well as circulating in Indian market. It will boost the standard practice and help the society.
- ❖ Hunger to Help Humanity – If desperately the goal of globalization of Ayurveda is - Giving prime importance to the health or for the betterment of society health, not just for the name and fame in World. Then there is no any other satisfaction achieved by this Globalization.
- ❖ Ayurveda not only a system of health for Human beings but it's also a science of healing for Animals and Plants. Hence among these three branches of Ayurveda the other two branches i.e. the Pashu Ayurveda (Healthcare system for Animals) and Vruksha Ayurveda (Healing system for Plants) is often neglected. Which can be a great opportunity in future for globalization.
- ❖ There is a need to work more and always stay with the core strength and principles (*Sidhanta*) of Ayurveda even though it's expanding overseas.
- ❖ The Governing bodies should make norms throughout the world but need to be peculiar to particular country so that it will be easy to target particular audience and provide health support to particular country.
- ❖ Some portals such as AYUSH portals can be assessable to all the people worldwide who are joined in the phase of learning Ayurveda.
- ❖ Global Ayurveda Conferences can serve as a link to unite various countries for expansion of Ayurveda.
- ❖ Can conduct Global symposiums / workshops at international level for promoting and strengthening AYUSH system.
- ❖ Foreign approach of Government funded healthcare System – Health insurance and accessibility in developed countries could be favorable thing for establishment of Ayurveda. Even the Indian government should also come



forward with the plans of freehealthcare system to all the Citizens of India.

CHALLENGES OF GLOBALIZATION OF AYURVEDA

- ❖ **Standardization and regulation:** The lack of standardized practices and regulations possess a challenge to the global acceptance of Ayurveda.
Solution: The developing international standards for education, drug production, quality control and practice will be essential to establish Ayurveda as a credible and safe healthcare option.
- ❖ **Difficult to export the Ayurveda drugs/ product:** Because the global opinion for the herbo – mineral drugs is they are unsafe to practice.
Solution: There is always an issue in getting license or approval of drugs for its exportation to foreign countries. The solution can be done by generating the safety and efficacy data of drugs by clinical research.
- ❖ **Ayurveda is deeply rooted in Indian culture and philosophy.** For globalization, there is a challenge in adapting its principles to different cultural contexts while respecting its origins is crucial for successful integration with other healthcare systems in different horizons.
Solution: Effective communication and education are essential to convey the cultural relevance and benefits of Ayurveda.
- ❖ **Lack of scientific validation:** In many countries the Ayurveda is perceived as traditional knowledge without sufficient scientific validation.
Solution: More research studies and clinical trials are needed to provide the evidence of efficacy and safety of Ayurvedic treatment.
- ❖ **Language barrier – Ayurvedic texts and terminologies** are often in Sanskrit creating a language barrier for International individuals and researchers.
Solution: Translating and simplifying the Ayurvedic knowledge in multiple languages is necessary for global accessibility.
- ❖ **Resistance to change :** Some countries, still resist to adopt other system of medicines due to their own established health care systems and cultural beliefs.
Solutions: It requires an effective communication, community engagement and by showcasing the benefits of Ayurveda will help to overcome this issue.
- ❖ **Lack of cultivation of herbs** is a challenge to meet the global needs.
Solution: To meet the global demands, the production of herbs has to be planned accordingly. The cultivation in India should be started at zonal as well as district levels. For this, there is a need of collaboration with Agricultural science to aware and guide local population for cultivation of hybrid herbs. Even memorandums can be signed to export raw drugs from other countries.
- ❖ **Limited education, awareness and resources -** Many people around the world are not familiar with Ayurveda.
Solution: Increase awareness and providing accessible education about Ayurveda principles and practices are crucial for its global acceptance.

- ❖ **Misinformation or myths related to Ayurveda practice** is also a challenge.
Solution: Addressing misconceptions and promoting transparent communication about Ayurvedic practices is essential.
- ❖ **There is challenge to accept the diagnostic approach and treatment principles of Ayurveda.**
Solution: Need to simplify the concepts in an understandable way will be a crucial step for its acceptance.

IMPACT OF GLOBALISATION OF AYURVEDA ON HEALTHCARE SYSTEM

- ❖ **Holistic Healthcare Approach:** Ayurveda's holistic approach to healthcare, addressing the root cause of ailments rather than just symptoms, has influenced how individuals perceive their well-being. Integrating Ayurvedic principles into mainstream healthcare encourages a more comprehensive and patient centric approach.
- ❖ **Natural remedies and Sustainable practices:** Ayurveda's reliance on natural ingredients and sustainable practices aligns with the global movement towards eco-friendly and sustainable living. As people seek alternatives that are both effective and environmentally conscious, Ayurveda provides a compelling option.

CONCLUSION

The globalization of Ayurveda marks a significant shift in how the world approaches healthcare. As ancient wisdom meets modern wellness, Ayurveda has the potential to offer a holistic, personalized and sustainable approach to health. While difficulties or challenges exist but the opportunities for collaboration, research and cultural adaption present a promising future for Ayurveda on the global stage. As individuals increasingly seek harmony between nature and health, Ayurveda stands as a beacon of ancient wisdom, contributing to the evolution of a more holistic and integrative approach to well-being worldwide. This globalization will boost the growth of AYUSH Industry. In conclusion, the globalization of Ayurveda represents a profound and transformative journey that transcends geographical boundaries, cultural differences, and traditional healthcare paradigms. As Ayurveda gains attention worldwide, it brings with it a holistic perspective on well-being, emphasizing the interconnectedness of mind, body, and spirit. The collaborative efforts, research initiatives, and international partnerships have not only propelled Ayurveda into the mainstream but have also contributed to a more inclusive and integrative approach to healthcare.

In essence, the globalization of Ayurveda is not just a cross-cultural exchange but a celebration of the timeless wisdom encapsulated in this ancient system of medicine. It signifies a harmonious integration of traditional practices with modern healthcare, offering a comprehensive approach to health that resonates with a global audience. As Ayurveda continues to evolve and adapt, its journey across borders serves as an inspiring model for the cross-pollination of knowledge and the enrichment of global health landscapes.



“Time to glorify the beauty of Ayurveda to External World”

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A STUDY ON THE COMPARATIVE ANALYSIS OF WORKING CAPITAL MANAGEMENT BETWEEN ITC LIMITED AND HUL LIMITED

Dr. Suresh Kumar Sharma

Professor & Director VIP Institute of Management, Bhopal

ABSTRACT

The purpose of the present study is to conduct comparative analysis between working capital of ITC Limited and HUL limited. The data for the present study was taken from the published annual report of both organizations. Total five years of data from 2019 to 2023 taken as sample. In the process of data analysis person correlation has been applied to compute current liabilities, current assets and working capital of the both companies. The findings of the study explored that there is a significant difference between current status of working capital between both companies.

INTRODUCTION

Management of working capital played a significant role for the management of entire financial system of the Organization. However, working capital management is the relationship between current assets and current liabilities of the organization. Management of working capital is most important for manage and carry day to day financial activities of the organization. Management of working capital mainly involve inventories management, account receivables, account payables and cast conversion cycle of the organization financial system. On the other hand management of working capital of concerned with the financial problem attempting to manage the current assets and current liabilities. Management of working capital deals with the management of making action is influence the usefulness of the working capital of the organization. The present study deals with the working capital of ITC Limited and working capital of HUL limited. In this process a comparative analysis has been conducted to examine the status of working capital of both companies. The comparison of working capital done on the basis of exploring the relationship between current assets and current liabilities of last five years (2019-2023). The working capital is measure as

Working Capital= Current Assets-Current Liabilities

Or

WC=CA-CL

Working Capital Strategy

Working capital strategies has become the accountability of the finance department, however today's in this changing scenario role of finance department is playing a significant role for significantly exploring the relationship between current assets and liabilities of the organization in order to find out status of the working capital. The long term success of the companies is largely depends on the properly management of its working capital. Working capital is a is the distinction between current assets and current liabilities which is the part of companies capital need to pay more attention in short as well as long terms.

Working capital management system

Development of working capital management system is most important process of the organization in order to properly management of its working capital in the form of current assets and liabilities. However an effective system must be applicable towards each and every activity of the financial activities. Apart from management of working capital this system includes management goal, business environment, management policy, and management mode and performance assessment

REVIEW OF LITERATURE

T. Chandrabai D. J., (2011), has been conducted a comparative research study on working capital between Electrical Equipment Industry and it is limited to the companies BHEL and ABB Ltd represent public and private sector enterprises respectively. The study was based on secondary data which has been obtained from yearly financial statement of the companies. Total five years of financial data has been used to explore the comparison between working capital is from 2005-06 to 2009-10. The findings of the study explore that there is need for such improvement in the policy related to debtors and debt policy. The management of various selected companies must be proper utilize the debtors in order to properly maintain the working capital

Ebenezar (2013), has been conducted a research study in order to explore the impact of working capital management on the profitability of the companies are listed with Ghana stock exchange. The study was based on secondary data which has been collected from the financial reports of the companies and data published by Ghana stock exchange. In order to explore the impact of working capital the metropolis process has been used. The findings of the study explore that working capital of the companies has significantly and positively impact the profitability of the companies

Owolabi (2010), has been conducted a research study to explore the impact of working capital management on the



liquidity and profitability of the firm with respect to Nestle Nigeria public limited company. The secondary data has been used to explore the impact. The data for present study was taken during 2004-2009 for last five years. In order to explore the direct effect of working capital management current ratio and collection days on gross profit has been taken and analysed with the help of co-efficient. The findings of the study indicate that, with the reducing of collection day profitability of the company automatically increase. Furthermore it has been recommended that firm must be more aggressive towards the management of working capital in order to improve the profitability.

Sharma M. G. (2016), has been conducted a research study to explore the working capital management of Bharti Airtel Limited. The study was based on secondary data which has been collected from yearly published report of the company during the period of 2007-08 to 2014-15, the analysis of working capital done with the help of ratio analysis. The data

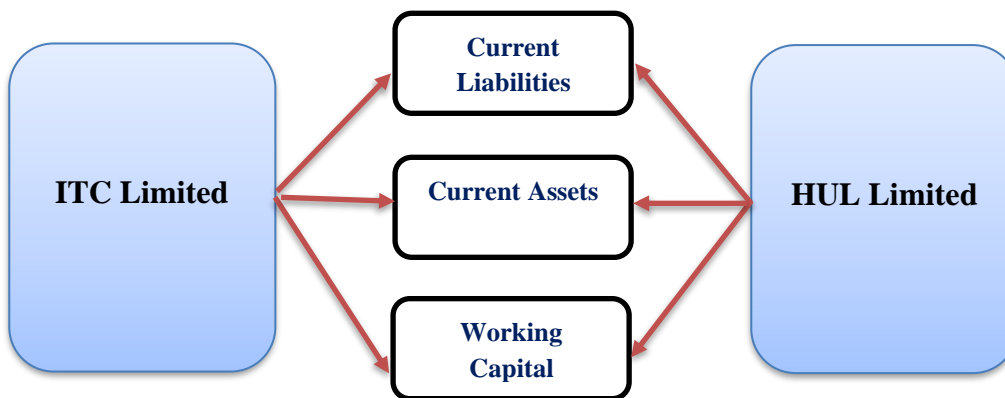
has been analysed with the help of Motaals test and it has been indicates that there is need for significant improvement towards the liquidity performance of the company because it has not been found good during selected period. Furthermore study explore that negative relationship has been exist between liquidity and profitability of the company. In the conclusive remark study explore that Bharti Airtel limited has been used optimal liquidity during this period.

Objectives of the study

The various objectives of the study are as under

1. To describe the relationship between current liabilities of ITC Limited and HUL Limited
2. To describe the relationship between current Assets of ITC Limited and HUL Limited
3. To describe the relationship between Working Capital of ITC Limited and HUL Limited

Research Framework



Formulation of Hypothesis

The hypothesis of the study are as under

H_{a1}: Current Liabilities of ITC Limited and Current liabilities of HUL Limited is positively and significantly related with each other

H_{a2}: Current Assets of ITC Limited and Current Assets of HUL Limited is positively and significantly related with each other

H_{a3}: Working Capital of ITC Limited and Working Capital of HUL Limited is positively and significantly related with each other

Research Methodology

The research methodology for present study has been designed for exploring the relationship between working capital management of ITC limited and HUL Limited. Descriptive method of research used to prepare the research framework. The study was based on secondary data which has been obtained from published financial report of both companies and different published research papers etc.

Sample Design

Sample for present study taken from published financial report for last five years that is 2019-2023. The data related to

current liabilities and current assets were taken from the report and working capital status has been calculated.

Sample Size: Last five years of data have been taken as sample size for present study

Sample Area: Sample area for the study was based on financial data related to working capital of ITC limited and hull limited

Statistical tools: Correlation and t test has been used to explore the relationship between working capital of ITC limited and testing of hypothesis

Data Analysis

Data analysis for present study has been classified in three parts such as Relationship between Current liabilities, relationship between Current assets and relationship between working capital of both companies

Testing of Hypothesis

Hypothesis First

H_{a1}: Current Liabilities of ITC Limited and Current liabilities of HUL Limited is positively and significantly related with each other



Table: 1
Comparison between Current Liabilities of ITC and HUL Limited

Year	Current Liabilities of ITC Limited	Current Liabilities of HUL Limited	r- Score	P Value	Significant	Result
2019	9,621.56	8,353.00	0.6989	0.3011	P ≤ 0.05	Not Significant
2020	9,089.41	9,104.00				
2021	10,173.95	10,841.00				
2022	11,478.09	10,944.00				
2023	12,415.62	11,627.00				

Table explore the comparison between current liabilities of ITC limited and HUL Limited. Since the r score is 0.6989 and p value is 0.3011 not significant at $P \leq 0.05$. Hence study rejected alternative hypothesis ($H_{a1} = \text{Rejected}$)

Table: 2
Comparison between Current Assets of ITC and HUL Limited

Year	Current Assets of ITC Limited	Current Assets of HUL Limited	r- Score	P Value	Significant	Result
2019	29,568.96	11,374.00	0.8591	0.1409	P ≤ 0.05	Not Significant
2020	36,506.91	11,908.00				
2021	31,815.24	13,640.00				
2022	30,942.01	14,647.00				
2023	35,203.44	16,049.00				

Table explore the comparison between current liabilities of ITC limited and HUL Limited. Since the r score is 0.8591 and p value is 0.1409 not significant at $P \leq 0.05$. Hence study rejected alternative hypothesis ($H_{a2} = \text{Rejected}$)

Table: 3
Comparison between Working Capital of ITC and HUL Limited

Year	Working Capital ITC Limited	Working Capital of HUL Limited	r -Score	P Value	Significant	Result
2019	19447.4	3021.00	-0.2133	0.79	P ≤ 0.05	Not Significant
2020	27408.5	2804.00				
2021	21641.29	2799.00				
2022	19463.92	3703.00				
2023	22787.82	4422.00				

Table explore the comparison between Working capital of ITC limited and HUL Limited. Since the r score is -0.2133 and p value is 0.79 not significant at $P \leq 0.05$. Hence study rejected alternative hypothesis ($H_{a3} = \text{Rejected}$)

3. Table 3 explore the relationship between working capital of of ITC limited and HUL Limited. The result clearly stated that the relationship between working capital between both companies is not significant. However it can be describe that working capital of ITC limited is much more different from the working capital of HUL.

FINDINGS

The various findings of the study are as under

1. Table 1 explore the relationship between current liabilities of ITC limited and HUL Limited. The result clearly stated that the relationship between current liabilities between both companies is not significant. However it can be describe that Current liabilities of ITC limited is much more different from the current liabilities status of HUL.
2. Table 2 explore the relationship between current Assets of ITC limited and HUL Limited. The result clearly stated that the relationship between current assets between both companies is not significant. However it can be describe that Current Assets of ITC limited is much more different from the current Assets of HUL.

CONCLUSIONS

The present study explore the comparative analysis of working capital management between ITC and HUL limited. Current liabilities, current assets and working capital of both companies examined with the help of Pearson correlation analysis. Findings of the study clearly reveals that there is a biggest difference between working capital of both companies because r-score is not significant at the level of significant. It means status of working capital for both the companies are different in the form of current liabilities and current assets.



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MAMMALIAN DIVERSITY AROUND THE KHANDIYA WATER BODY, JHALAWAR, RAJASTHAN

Divyanshi Khalora¹, Dr. Smriti Johari²

¹Research Scholar, School of Basic and Applied Science, Career point University, Kota, Rajasthan

²Research Supervisor, School of Basic and Applied Science, Career point University, Kota, Rajasthan

ABSTRACT

Water helps animals to digest their food. Water regulates the body temperature of animals. Animals also use water to clean their body. A mammal is an animal that breathes air, has a backbone, and grows hair at some point during its life. In addition, all female mammals have glands that can produce milk. Mammals are among the most intelligent of all living creatures. Mammals include a wide variety of animals, from cats to humans to whales. mammals are grouped based on their reproduction, anatomy and habitats.

Mammalia has the largest class in the animal kingdom Based on the reproduction, they are classified into three subclasses- Eutheria, Metatheria, Prototheria.

The studies were carried out for a period of winter season (15 Nov. To 15 Feb.).

KEY WORDS: Mammals, Diversity, winter season, families.

INTRODUCTION

Water helps animals to digest their food. Water regulates the body temperature of animals. Animals also use water to clean their body.

A mammal is an animal that breathes air, has a backbone, and grows hair at some point during its life. In addition, all female mammals have glands that can produce milk. Mammals are among the most intelligent of all living creatures. Mammals include a wide variety of animals, from cats to humans to whales. mammals are grouped based on their reproduction, anatomy and habitats.

Mammalia has the largest class in the animal kingdom Based on the reproduction, they are classified into three subclasses- Eutheria, Metatheria, Prototheria.

STUDY AREA

The area where the present study has been conducted is the Khandiya reservoir (24°34'32.2"N 76° 10' 16.9"E). Which is located at the site of enroute NH 52 in the Jhalawar district, the state of Rajasthan.

The reservoir is mainly used for irrigation and pisciculture.



Khandiya Water Body



METHODOLOGY

Method for study about animal behavior-observational(In the observational method, physically watches the subject in the study without manipulating any variables.)

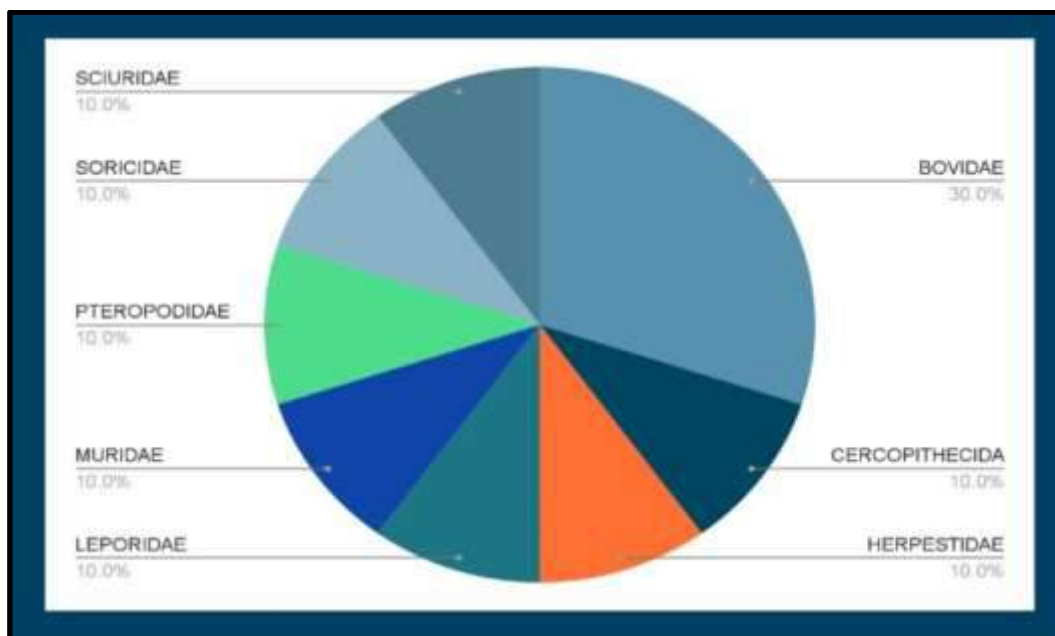
I had clicked photos of animals by using a nikon camera and identified the animals from the photos. I went to the selected sites

2 times a day to click photos, 6:00 am to 8:00 am in the morning and 5:00pm to 7:00 pm in the evening. I used to go there to visit twice a week even during night time 10:00pm to 11:00 pm because some animals move during the night time.

RESULT

Mammals found near the khandiya water body

S.NO.	Family	Common name	Scientific Name	IUCN STATUS
1	Bovidae	Malavi Cow	<i>Bos indicus</i>	-
2	Bovidae	buffalo	<i>Bubalus bubalis</i>	-
3	Bovidae	Goat	<i>Capra hircus</i>	-
4	Canidae	Common Dog	<i>Canis familiaris</i>	-
5	Cercopithecidae	Hanuman Monkey	<i>Semnopithecus entellus</i>	LC
6	Herpestidae	Indian gray Mongoose	<i>Urva edwardsii</i>	LC
7	Leporidae	Domestic Rabbit	<i>Oryctolagus cuniculus Domesticus</i>	-
8	Muridae	House mouse	<i>Mus musculus</i>	LC
9	Pteropodidae	Bat	<i>Pteropus Giganteus</i>	-
10	Soricidae	Grey musk shrew	<i>Suncus murinus</i>	LC
11	Sciuridae	Indian five striped palm Squirrel	<i>Funambulus pennantii</i>	LC



CONCLUSION

As per IUCN Red list (2012) , out of the 428 mammal species, 44 species are endemic and 4 species are extinct from India. The current conservation status of the Indian mammals of Threatened Species is enhancing day by day.

In the study period Winter season(Nov. 15 to feb. 15) A total 11 species of mammals are found in the study area. They belong to 9 families.

Human-caused changes in the landscape could affect mammals in several important ways. If food is more abundant because of



human activity, mammals may not have to travel as far, Kays says. Restricted movement could also result from habitat fragmentation as humans settle, farm and develop land.

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Common Dog - Canis Familiaris



Goat - Capra Hircus



Malavi Cow (Bos indicus)



Buffalo - Bubalus bubalis



Monkey -*Semnopithecus Entellus*



House Mouse -*Mus Musculus*



Horse-*Equus Ferus Caballus*



Indian Palm Squirrel -*Funambulus Pennantii*



PAGLAKBAY SA KARANASAN NG MGA GURO SA PAGTUTURO NG PANITIKAN AT BALARILA BATAY SA MOST ESSENTIAL LEARNING COMPETENCIES (MELCs)

Jackelyn N. Cabasan, Shirrey Ian B. Abueva

*Master of Arts in Education Major in Filipino, St. Mary's College of Tgum, Inc.
Graduate Education Department, Tagum City Philippines*

ABSTRAK

Ang layunin sa penomenolohikal na pananaliksik na ito ay mapakinggan at maunawaan ang buhay na karanasan ng mga taong nasa larangan ng pagtuturo partikular sa Junior High School na nagtuturo ng Filipino sa mga pampublikong paaralan. Upang matamo ang adhikaing ito, kwalitatibo at penomenolohikal na disenyo ng pag-aaral ang ginamit. Labing-apat (14) na mga guro mula sa Distrito ng Carmen, Dibisyon ng Davao del Norte ang napiling maging kalahok o partisipante ng pag-aaral. Ang masaganang mga tugon ng mga kalahok ay nakabuo ng sumusunod na mga pangunahing tema. Ayun sa karanasan ng mga guro sa pagtuturo ng panitikan at balarila batay sa Pinakamahalagang Kasanayang Pampagkatuto o MELCs limitaw ang apat na tema: (1) kaginhawaan sa pagtuturo, (2) kahirapan sa pagtamo sa pangangailangan ng pagtuturo, (3) kahirapan sa pagtuturo at pagkatuto ng panitikan at balarila, at (4) kakulangan sa sapat na oras sa pagtamo ng mga kasanayan. Sa diskarte ng mga guro sa pagharap sa mga hamon sa pagtuturo ng panitikan at balarila batay sa Pinakamahalagang Pampagkatuto O MELCs limitaw ang limang tema: (1) ginawang batayan ang MELCs sa pagtuturo, (2) integrasyon ng teknolohiya sa pagtuturo at pagkatuto, (3) paglalapat ng iba't ibang diskarte at teknik, (4) pagtaguyod ng gampanin bilang tagapagturo, at (5) pagtataya sa perormans ng mag-aaral. At ang mga kabatirang nahinuha ng mga guro mula sa kanilang pagtuturo ng panitikan at balarila batay sa Pinakamahalagang Kasanayang Pampagkatuto O MELCs, apat na tema ang lumabas: (1) Makabuluhang hatid ng MELCs, (2) pakikiayon sa hamong dala ng MELCs, (3) pagpapalawig sa proseso ng pagtuturo-pagkatuto, at (4) patuloy na pagtaguyod at pagpapaunlad sa MELCs. Ang resulta ng pag-aaral na ito ay bunga ng masigasig na pagtutulungan at pagtitiwala na mapabuti ang pagtuturo't pagkatuto. Tinitiyak ng mananaliksik na ang pag-aaral na ito ay lubos na kapakipakinabang sa mga guro, mag-aaral, larangan ng edukasyon at ng mga mananaliksik sa hinaharap.

MGA SUSING SALITA: *Most Essential Learning Competency (MELCs), Filipino, Balarila, panitikan, estratehiya, kwalitatibong pananaliksik, Davao del Norte.*

INTRODUKSIYON

Ang Kagawaran ng Edukasyon (DepEd), bilang pinakamataas na namamahalang ahensya sa sektor ng edukasyon, ay nagpasimula ng samot-saring pambansang patakaran upang sumunod sa mga target na layuning maipagpapatuloy ang pagpapaunlad ng kaalaman ng mga estudyante. Bunga nito ay ang paglikha ng kagawaran ng talaan ng mga pinakamahahalagang kasanayang pampagkatuto o mas palasak sa tawag na Most Essential Learning Competencies (MELCs) na ipinatupad sa taong panuruan 2020-2021. Nagsilbing gabay ito sa mga tagapagturo habang tinutugunan ang mga kakulangan sa instruksyon sa mga mag-aaral. Gayunpaman, ayon kay Ravina at Mendoza (2021) maaaring nahihirapan ang ilang guro sa pagpapasya kung anong diskarte sa pagtuturo ang dapat gamitin at ilapat sa bawat aralin upang makayanan ang timeline na nakatakda para sa paksa tulad ng nakasaad sa MELCs. Dahil dito, sinusubukan ng mga guro ang

pinakamabuting paraan ng pagtuturo sa mga kasanayang ilalapat sa pagtuturo.

Binanggit nina Cheung at Wong (2012) na ang reporma sa kurikulum sa Hong Kong ay nahaharap sa ilang mga hadlang at hamon na karaniwan sa maraming bansa, sa yugto ng pagpapatupad, tulad ng mabibigat na gawain ng mga guro, pagkakaiba-iba ng pagkatuto sa klase, at hindi sapat na pag-unawa ng mga guro sa reporma. Gayundin ang Sri Lanka sa kanilang pagpapatupad ng mga mahahalagang kasanayang pampagkatuto, ang pangunahing naging hamon na kinakaharap ng bawat guro ay walang tiyak na gabay o pamamaraan kung paano ihatid ang pag-aaral na ito na nakabatay sa kasanayan (Perukanda at Dahayanake, 2022). Samantala, sa isang pag-aaral sa Amerika naiulat na tulad ng maraming inisyatiba sa repormang pang-edukasyon, ang edukasyong nakabatay sa kasanayan ay naglalayong bawasan ang mga hindi pagkakapantay-pantay sa mga sistema ng edukasyon at mga gaps sa tagumpay sa mga mag-aaral (Evans, Graham, and Lefebvre 2019), na tukuyin at linangin ang natatanging



intelektwal, emosyonal at pisikal na kakayahan ng lahat ng indibidwal upang mamuhay ng matagumpay.

Sa Pilipinas, ang mga pinakamahahalagang kasanayang pampagkatuto o MELCs ay ipinatupad upang matugunan ang problema sa edukasyon sa panahong ng krisis. Sa paglikha ng mga MELCs, ang mga mahahalagang bahagi ay isinasaalang-alang. Ngunit sa isang pag-aaral na nailathala ni Zalun (2023), ipinakita sa resulta na ang MELCs ay lubos na nagamit sa paghanay ng aralin sa mga pamantayan ng nilalaman, pagbibigay ng mga akmang aktibidad, akmang pagpapalano ng banghay, pagbibigay ng mga angkop na mga tanong sa pagtatasa, at pagpapalano ng proseso sa pagkatuto.

Sa kabila ng mga nailathalang pag-aaral at literature kaugnay sa MELCs, wala pang pananaliksik kaugnay sa karanasan ng mga guro sa pagtuturo ng balarila at panitikan sa Filipino gamit ang MELCs bilang gabay. At saka, ang napapanahong isyung ito ay makakatulog sa kakulangan ng panitikan sa pambansa at lokal na konteksto. Ito ang nag naghimok sa mananaliksik na masuri at malaman ang mga opinyon at saloobin ng mga guro habang itinuturo ang asignaturang Filipino na naayon sa talaan ng mga pinakamahahalagang kasanayang pampagkatuto.

Layunin ng Pag-aaral

Hangarin ng penomenolohiyang pananaliksik na ito na malaman at maintindihan ang karanasan ng mga tagapaguro ng panitikan at balarila sa Filipino batay sa pinakamahahalagang kasanayang pampagkatuto o MELCs. Ito rin ay naglalayon na mapakinggan ang saloobin, pananaw at opinyon ng mga guro mula sa iilang paaralan sa Dibisyon ng Davao del Norte.

Mga Katanungan sa Pananaliksik

1. Ano-ano ang iyong mga naging karanasan bilang guro sa pagtuturo ng panitikan at balarila batay sa pinakamahahalagang kasanayang pampagkatuto o MELCs?
2. Ano ang mga diskarte ng mga guro sa pagharap sa mga hamon sa pagtuturo ng panitikan at balarila batay sa pinakamahahalagang kasanayang pampagkatuto o MELCs?
3. Anong mga kabatiran ang nahinuha ng mga guro mula sa kanilang pagtuturo ng panitikan at balarila batay sa pinakamahahalagang kasanayang pampagkatuto o MELCs?

METODOLOHIYA

Ang pagsusuring ito ay gumamit ng penomenolohikal na kwalitatibong pananaliksik. Batay kina Burns at Groove (2019), ang kwalitatibo na pananaliksik ay tumutukoy sa saklaw, pangkalahatan, subhektibo at nakatuon sa proseso na mga pamamaraan na ginagamit upang maunawaan, bigyang-kahulugan, ilarawan, at bumuo ng teorya sa isang kaganapan o tagpuan. Isa itong sistematiko, subhektibong pamamaraan para sa paglalarawan ng mga karanasan sa buhay at bigyan ang mga ito ng kahulugan.

Ang mga partisipante sa penomenolohikal na pananaliksik na ito ay labing-apat (14). Sa mga guro na kalahok, pito (7) ay sasailalim sa malalim na interbyu, at pito (7) ay sasailalim sa *focus group discussion*. Ito ay batay sa iminungkahi ni Creswell (2014) na ang pagpili ng laki ng sampol na kailangan para sa isang pag-aaral ay mahalaga. Gayundin sa isang phenomenological na pananaliksik, ang laki ng mga kalahok ay maaaring nasa pagitan ng 2 at 25. Ang pagpili ng mga kalahok na ito ay dapat sumasalamin at kinakatawan ang kaisahan na umiiral sa mga sampol.

Sa pagsuri ng mga datos gumamit ng thematic analysis na binalangkas nina Braun at Clarke (2018). Nagbalangkas sila ng anim na hakbang patungkol sa pagkakakilanlan ng tema: ito ang (1) pagiging pamilyar sa datos, (2) pagbuo ng mga paunang code, o kung ano ang ibinibilang na code; (3) paghahanap ng mga tema na may kasamang mga code at kumakatawan sa datos; (4) pagsusuri sa mga tema at kung gaano kahusay ang pagtugon nila sa tanong sa pananaliksik; (5) pagtukoy at pagbibigay ng pangalan sa mga tema; at (6) paggawa ng ulat at pagsulat tungkol sa mga tema sa paraang ipinahayag na karanasan ng mga nagtuturo ng Filipino sa pagbahagi ng karunungan sa panitikan at balarila.

MGA KAUGNAY NA LITERATURA

MELCs bilang Gabay sa Pagtuturo

Sa biglaang pagbabago sa pandaigdigang sistema ng edukasyon na dala ng pandemya na COVID-19 noong taong 2020, dumiskarte ang DepEd Philippines ng mga kongkretong alituntunin sa patakaran sa pagtiyak ng pagpapatuloy ng pagtuturo at pagkatuto sa antas ng saligan ng edukasyon sa buong bansa, at ang pagpapalabas ng Basic Education Learning Continuity Plan sa panahon ng COVID-19 ay ginawang posible (DepED, 2020). Ang Kagawaran ay sumasalamin sa paniniwala ng UNESCO na ang kalidad ng edukasyon, pag-access, at pagpapalakas ng sistema ay hindi maaaring ikompromiso sa panahon ng krisis (UNESCO, 2020), at ang paggawa ng kabaligtaran ay negatibong makakaapekto sa ating lipunan. Kaya naman, pinagtitiyag ng Kagawaran ng Edukasyon ang pangako nitong ipagpatuloy ang paghahatid ng de-kalidad, naa-access, may-katuturan, at mapagpalayang serbisyo sa batayang edukasyon sa Pilipinas na nakaangkla sa balangkas ng Sulong EduKalidad.

Mga Hamon sa Paggamit ng MELCs

Ang k-12 curriculum guide ng Departamento ng Edukasyon (DepEd) ay muling itinatag bilang Most Essential Learning Competencies ito ay bilang tugon ng departamento sa mga kahirapan sa pagtamo ng kasanayan sa panahon ng mg pagsubok, ito ay memorandum na nilililaw ang paggamit ng mga kasanayang pampagkatuto. Ipinanukala ng DepEd ang mga kasanayang ito para sa mga paaralan at mas mataas na tanggapan ng departamento bilang pangunahing sanggunian sa pagpili at pagsasabuhay ng mga teknik at istrateliya na angkop sa paghahatid ng pagkatuto na binibigyang halaga ang pagkakaiba-iba ng bawat mag-aaral na umaayon sa bagong normal na kapaligiran hatid ng coronavirus pandemic. Sa ngayon, ang mga tagapaguro ay kinakailangang talakayin ang pinakamahahalagang paksang ibinigay ng institusyon kapag gumagawa ng mga materyales sa paghahatid ng pag-aaral. (Cabello et al., 2022).



Mga Estratehiya sa Pagtuturo ng Panitikan at Balarila

Mula sa madali hanggang sa mahirap, nagtataguyod ang mga guro ng iba-ibang gawain. Nangangailangan ito ng masusing pagpili ng mga paraan at diskarte para makuha ang buong atensyon at interes sa aralin ng mga nag-aaral. Bukod dito, dapat may sapat na kasanayan, interes, at mithiin sa pagtuturo ang guro, marapat din na may malawak itong kabatiran sa mga adhikain at batayan ng kurikulum (Barberos, Gozalo at Padayogdog, 2018). Batay nga sa mga guro ng Unibersidad ng

Corcordia Portland (2017), bawat guro ay may kanya-kanyang estratehiya ng pagtuturo, tulad ng hindi matututo ng isang bagay ang mag-aaral sa parehong paraan. Gumagamit ang mga guro ng mga estilo na naka-angkla sa kanilang pilosopiya sa edukasyon, lawak at bilang ng estudyante sa loob ng kanilang sili-aralan, kung ano ang paksa, mithiin, at misyon ng paaralan.

MGA RESULTA AT PAGTALAKA

Talahanayan 1

Mga Pangunahing Tema at Ideya Tungkol sa mga Naging Karanasan Bilang Guro sa Pagtuturo ng Panitikan at Balarila Batay sa Pinakamahahalagang Kasanayang Pampagkatuto o MELCs

Mga Pangunahing Tema	Mga Pangunahing Ideya
Kaginhawaan sa Pagtuturo	<ul style="list-style-type: none"> ● Madaling naituturo ang mga aralin gamit ang MELCs dahil sa katiyakan ng mga paksa ● Mahusay na pantulong sa pagtuturo ang MELCs bilang layunin ● Malinaw at epektibo ang pagtuturo ng panitikan at balarila ● Mas kaunti ang mga kasanayan na dapat matutuhan ng mga mag-aaral ● Nababawasan ang kahirapan bilang tulong at gabay sa kabila ng kahirapan sa pagtuturo
Kahirapan sa Pagtamo sa Pangangailangan ng Pagtuturo	<ul style="list-style-type: none"> ● Nalilimitahan ang mga guro sa pagtuturo dahil sa pagkakaroon ng mga espesipikong paksa na dapat matutuhan ng mga mag-aaral ● Nahihirapan sa paghimay-himay ng mga kasanayan ● Nagsisikap na tugunan ang pangangailangan ng mga mag-aaral gamit ang MELCs bilang gabay ● Kahirapan sa pagtuturo gamit ang MELCs dahil sa lawak ng saklaw at kinakailangan paghihimay-himay nito
Kahirapan sa Pagtuturo at Pagkatuto ng Balarila	<ul style="list-style-type: none"> ● Pahapyaw ang pagtuturo ng balarila ● Higit na binibigyang-diin ang pagtuturo ng panitikan at napag-iwanan ang balarila ● Mas maraming kasanayan ang nakapukos sa panitikan ● Hindi sapat ang mga paksa na nakatuon sa balarila ● Kakulangan ng pundasyon sa pagkatuto ng mga mag-aaral ● Nakapukos sa paglalapat ng balarila ang kasanayan ngunit kulang sa beysik na kaalaman ang mag-aaral.
Kakulangan sa Sapat na Oras sa Pagtamo ng mga Kasanayan	<ul style="list-style-type: none"> ● Hindi makatotohanang mga kasanayan dahil sa kakulangan ng oras ● Mahirap ituro ang mga kasanayan dahil higit pa ito sa inaasahan ● Katunggali ang oras at mga gawain sa paaralan ● Kahirapan sa pagpapatupad at pagkuha ng mga kasanayan dahil sa hindi sapat na oras at maraming mga aktibidad ● Problema sa oras

Kaginhawaan sa Pagtuturo

“Sa pamamagitan ng MELCs natitiyak na ang mga paksa na ating ituturo, nagagabayan ng MELCs ang mga tiyak na paksa na ating tinuturo.” – IDI-01

“Ako po ay nasisiyahan sa pagtataguyod ng MELCs sapagkat, ito ay nagbigay ng malaking tulong para mapagaan ang ating pagtuturo sa mga mag-aaral.” – IDI-02

“Mas klaro kung ano iyong mga paksa na dapat pagtuonan ng pansin.” – IDI-03

Pinatunayan sa pagsisiyasat ni McClymont (2019), sinabi niya na ang gabay sa aralin sa MELCs ay nagbigay sa mga tagapagturo at mga estudyante ng may malinaw na kahulugan

at direksyon sa silid-aralan. Ang pakikipag-usap sa mga layunin ng pagkatuto sa mga mag-aaral, pagsalita man o pagsulat, ay mag-uudyok sa kanila na gumawa nang may malinaw na layunin sa isip, at ginagawang mas madali para sa mga guro at sa mga mag-aaral na manatili sa target sa buong aralin. Ito ay maihahambing sa pagsisiyasat na isinagawa ni Ravina et al. (2021) tungkol sa epekto ng mga pinakamahahalagang kasanyang pampagkatuto. Nabanggit nila na ang mapaunlad ang kalidad ng mga guro ang nasa puso ng kagawaran kung bakit ito nagsisikap na matamo ang kagalingan sa klasrum. Ito ay nagsimula nang ang struktura ng edukasyon ay dumaan sa malaking pagbabago. Sa kaalamang nakapaligid sa atin, na



makukuha kahit kailan at kahit saan, ang gampanin ng mga guro ay magiging maginhawa sa dalawampu't isang siglo.

Kahirapan sa Pagtamo sa Pangangailangan ng Pagtuturo

“Parang nalilimitahan, naging limitado siya para sa mga guro dahil yun lang talaga yung dapat mong matamo o dapat makuha.”-IDI-03

“Isa sa mga bagay na hindi ko naibigan sa MELCs ay ang malawak na kumpetensi nito.” – IDI-04

“Ako ay medyo nahihirapan, dahil sa kailangan mo pa itong himay-himayin sapagkat ito ay malawak.”-FGD-06

Sa Pilipinas, isang pag-aaral na isinagawa ni Zalun (2023) sa paggamit ng MELCs, ayon sa napagtanto ng mga kalahok, ay nahayag na ilan sa mga suliranin na kinakaharap ng mga guro sa paggamit ng MELCs ay kinabibilangan ng kawalan ng kooperasyon mula sa parehong magulang at mag-aaral, kakulangan ng mga mapagkukunang pinansyal, at kakulangan ng magagamit na mapagkukunan ng pag-aaral.

Gayundin, sa pagsisiyasat na isinagawa nina Pagana, Mutambara, at Chagwiza (2015). Binigyang diin nila na ang malaking pagkakaiba sa gitna ng nilalayon na kurikulum at pagtuturo sa silid-aralan ay isa sa pangunahing nag-aambag sa kung bakit ang mga mag-aaral ay hindi gumagana nang mahusay sa mas mataas na antas ng pag-aaral. Samakatuwid, ang pag-aaral kung paano himayin ang kurikulum, at ang proseso ng pag-uugnay sa pagitan ng nilalayon ng kurikulum at pagtuturo sa silid-aralan ay isang suliranin.

Kahirapan sa Pagtuturo at Pagkatuto ng Balarila

“Ang MELCs ay parang pahapyaw lamang po ang ating pagtuturo sa balarila na siyang higit na mas kailangan ng mga mag-aaral ngayon.” – IDI-02

“Tila ba napag-iwanan na ang pagtuturo ng balarila”-IDI-04

“Katulad sa balarila ito ay espesipiko, kaya lamang mas kaunti ang balarila kaysa sa panitikan.”-IDI-05

“Pundasyon ba, yun ang kulang. Hindi nila naiintindihan ang mga pangungusap kasi malalim.”-FGD-02

Naiulat sa pag-aaral ni Misa (2021) na ang pangangailangan ng balarila sa pagtuturo kung saan ang pagkakaroon ng kasanayan o kagalingan sa balarila ay pundasyon ng pagkakaroon ng kahusayan sa wika, mahalaga ang balarila bilang bahagi ng wika sa pagtuturo. Subalit, hindi sapat ang kahandaan at kakayahang panggramatika sa pagkatuto ng balarila ng isang mag-aaral. Sa katunayan, nagiging mahirap ang pagkatuto ng balarila para sa mga mag-aaral dahil ayon sa resulta sa pag-aaral ni Napil at San Jose (2020), ibinunyag ng mga kalahok na nahirapan silang matuto ng balarila sa Filipino dahil sa limitadong babasahin tulad ng mga libro. Dagdag pa rito, binanggit ng mga kalahok na sila ay naiinip dahil ang mga guro ay kulang sa mga estratehiya sa pagtuturo na angkop sa kanilang mga istilo ng pagkatuto.

Kakulangan sa Sapat na Oras sa Pagtamo ng mga Kasanayan

“Ang mga bagay na hindi ko naibigan sa MELCs ay masyado itong marami at hindi makatotohanan na makuha ng mga bata sa kakaunting panahon lang.”-IDI-06

“Kasi hindi masyadong napagtuonan, hindi masyadong nabigyang diin dahil hinahabol tayo ng oras – IDI-07

“Kaya nga minsan, parang nakukulangan ako. Hindi pa sapat.”-FGD-03

Sa resulta ng pagsisiyasat nila Gabriel, et al (2020) sinabi nila na ang kakulangan sa oras upang talakayin ang mga paksa na kinakailangan para sa pag-aaral ng ilan sa mga kakayahan ay kadalasang nangyayari. Pinalala nito ang mga puwang sa pagitan ng mga kakayahan at ang mga pundasyon ng mga kakayahan sa pag-aaral ay humina. Dagdag pa nila, naniniwala ang guro na ang oras at mga mapagkukunan sa pagkatuto ay ang pinakamahalagang salik sa paghahatid ng pagbabahagi ng kaalaman. Ang pagtugon sa mga puwang sa pagitan ng mga kasanayan ay magpapatibay sa kanilang pundasyon para sa pag-aaral ng mga bagong konsepto.

Talahanayan 2

Mga Pangunahing Tema at Ideya sa mga Diskarte ng mga Guro sa Pagharap sa mga Hamon sa Pagtuturo ng Panitikan at Balarila Batay sa

Pinakamahalagang Pampagkatuto o MELCs

Mga Pangunahing Tema	Mga Pangunahing Ideya
Ginawang Batayan ang MELCs sa Pagtuturo	<ul style="list-style-type: none"> ● Ginagamit bilang batayan sa mga paksang itatalakay ● Naghahanap ng mga sanggunian at dagdag kaalaman sa pamamagitan ng internet ● Paggamit ng MELCs upang magkaroon ng mga gawain na nakapokus sa mga mag-aaral ● Paggamit ng budget of work bilang sanggunian sa paggamit ng MELCs.
Integrasyon ng Teknolohiya sa Pagtuturo at Pagkatuto	<ul style="list-style-type: none"> ● Paggamit ng teknolohiya para umangkop sa pagbabago at estilo ng pagkatuto ng mga mag-aaral ● Paggamit ng teknolohiya bilang tugon sa mga hamon ng edukasyon ● Paggamit ng teknolohiya para mas madaling maitaguyod ang mga aralin ● Pakinabangan ang paggamit ng mga mag-aaral ng gadget



Paglalapat ng ibat-ibang Diskarte at Teknik	<ul style="list-style-type: none"> • Paghahanda ng banghay-aralin at mga estratehiyang aangkop sa estilo ng mga mag-aaral • Paggamit ng magkakaibang gawain sa pagtuturo at pagkatuto • Nakasentro sa mag-aaral ang mga gawain na aktuwal • Gumagamit ng mga estratehiya sa pagbasa upang maitaguyod ang pagtuturo ng panitikan
Pagtaguyod ng mga Gampanin Bilang Tagapagturo	<ul style="list-style-type: none"> • Pagsisikap na maitaguyod ang talakayan sa panitikan at balarila • Pagpapaunlad sa sariling kakayahan sa pagtuturo para umangkop sa makabagong panahon • Pag-aangkop sa sarili sa ipapatupad na aralin
Pagtataya sa Perpormans ng Mag-aaral	<ul style="list-style-type: none"> • Gumagamit ng rubrik bilang batayan sa pagtataya • Gumagamit ng pagsusulit para masukat ang kakayahan ng mga mag-aaral • Gumagamit ng performans na mga gawain upang masukat ang pagkatuto ng mga mag-aaral • Paggamit ng mga estratehiya at pagtataya tungo sa pagtamo ng mga kasanayan

Ginawang Batayan ang MELCs sa Pagtuturo

“Mapapadali kung ibabatay natin sa MELCs ang mga paksang aralin.” – IDI-01

“Ang unang ginagawa natin ay titingnan kung anong linggo na tayo sa ating aralin. Pangalawa, maghahanap tayo ng iba’t ibang sanggunian para sa ating aralin.” – IDI-02

“Mas nakapokus sa mga mag-aaral ang gawain ng isang guro upang magkaroon ng epektibong pagkatuto sa loob ng klase.” – IDI-04

Binanggit nina Sengai at Mokhele (2021), na parating ginagamit ng mga guro ang mga sanggunian para mas maging epektibo ang kanilang pagtuturo. Dagdag pa nila na ang pagiging maparaan ay makatutulong sa guro na gawing simple ang mga kakayahan at gawin itong madaling ma iproseso ng mga mag-aaral.

Sa kabilang banda binangit ni Cox (2019), na ang mga gabay sa pagtuturo ay mga pangkalahatang gabay na naglalarawan ng mga layunin na dapat matugunan ng mga estudyante sa pangkalahatang proseso ng pagtuturo. Sa paggawa ng gabay sa pagtuturo kinakailangang magtakda ng layunin, linangin ang mga estratehiya at alamin ang aangkop na kagamitang gagamitin. Ito ay dapat naglalaman ng mga tiyak na sangkap o hakbang upang mas madaling matamo ang mga layunin.

Integrasyon ng Teknolohiya sa Pagtuturo at Pagkatuto

“Siguro dahil nga sa makabagong teknolohiya, kinakailangang maiangkop mo ang iyong sarili bilang isang guro.” – IDI-03

“Paggamit ng ICT sa edukasyon. Ang mga kabataan ngayon ay tinatawag ng generation Z. Mas maganda din na gamitin ang mga videos sa pagtuturo para pwedeng balikan ito ng mga mag-aaral kapag nahihirapan sila sa aralin.” – IDI-07

“Bilang guro, ang ginagawa ko ay hinahabol ko na lamang o gagamit ng teknolohiya para sa ibang gawain” – IDI-01

Sa pag-aaral ni Gloria (2021) ipinakita na ang kalidad ng pagbibigay-kaalaman, kagustuhang mag-aral ng mga estudyante sa isang espesipikong paksa, at ang pagkakaiba-iba ng mga

kakayahan ng bawat mag-aaral ay magiging posible lamang kung ang pagpapatupad ng mga diskarte ay tunay na makakatulong sa modernong silid-aralan, kabilang ang teknolohiya. Higit pa rito, sinabi niya na ang teknolohiya ay mahalaga para sa kalidad ng edukasyon, ngunit nangangailangan ito ng mabusising paghahanda sa pag-aaral. Bilang karagdagan, malalaman nito kung paano nakikipag-ugnayan ang mga estudyante sa kanilang mga guro at kung ano-anong diskarte sa pagtuturo ang magiging epektibo, at higit sa lahat, magbibigay ito ng gabay sa mga guro sa pagtuturo sa lahat ng apat na sulok ng silid-aralan.

Paglalapat ng iba’t ibang Diskarte at Teknik

“Paghahanap ng mga epektibong estratehiya katulad na lamang ng mga iba’t ibang gawain na kung saan nakapokus sa estilo ng pagkatuto ng mga mag-aaral.” – IDI-04

“Hinahanap ko po o tinitingan ko ang pinakasimpleng aralin na naaangkop pa rin sa MELCs.” – IDI-02

“Kaya, ang ginagawa ko ay pinapartner ko sa medyo mahihina. Minsan naman, pangkatang gawain tulad ng jigsaw upang mas madali.” – IDI-05

Nabanggit ni Llego (2019) na ang mga guro ay may iba’t ibang mga kasanayan at pamamaraan na ginagamit upang mapagtagumpayan ang kanilang mga klase. Kapag ginamit, ang ilan sa mga estratehiyang ito ay gumagawa ng nilalaman na mas mahusay kaysa sa iba, depende sa kung kanino mo ginagamit ang mga ito. Ito ay nakumirma sa pag-aaral na isinagawa nina Cardino at Dela Cruz (2020) kung saan itinalakay nila na ang mga estratehiya sa pagtuturo na kanilang ginamit ay na impluwensyahan sa istilo ng pagkatuto ng mga mag-aaral. Ang pagtukoy sa kanilang mga istilo ng pag-aaral ay magiging isang malaking tulong sa mga guro sa pagdidisenyo at pagpapatupad ng isang partikular na diskarte na nababagay sa kanila.

Pagtaguyod ng mga Gampanin Bilang Tagapagturo

“Pinipilit ko po talaga na sa isang linggo makapagtalakay ako.” – IDI-02



“Kung ganoon ikaw mismo ay ang pinakamagandang estratehiya at pinakamagandang biswal sa iyong silid-aralan, kaya nasa iyo ang pagtamo ng epektibong pagtuturo.”-FGD-02
“Di ako makakapag-unpack kung hindi ko ihahanda ang sarili ko.”-FGD-03

Rogayan (2018) na ang gampanin ng mga guro ay hindi lamang sumasaklaw sa delibiri ng pang-akademikong kurikulum bagkus sakop din nito ang paglinang na mapabuti, mamulat, at mapaunlad ang sarili. Pinangangatwiran lamang na ang mga guro ay may malaking tungkulin sa sistemang napapaloob sa anumang lipunan higit lalo sa paghubog sa karunungan, kamalayan at kaasalan ng kabataan. Magsisilbing hiyas ang mga katangiang ito sa pagsuon sa hamon ng kanilang napiling karera sa hinaharap at maging epektibo sa papel na kanilang ginagampanan bilang tagapagturo ng mga kabataan

Pagtataya sa Perpormans ng Mag-aaral

“Sinisiguro natin na epektibo ang pagtuturo sa pamamagitan ng kanilang mga awtput.”-IDI-01
“Pagbibigay ng maikling pagsusulit pagkatapos ng aking pagtatalakay.”-IDI-02
“Binibigyan ko sila ng gawaing pagganap na kung saan ito ay may kaakibat na pamantayan.”-IDI-04

Ang pag-aaral ni Liwanag (2018) ay nagpapahiwatig na ang mga estudyante ay aktibong nakikibahagi sa pagtataya at maaaring gamitin ang mga lumabas na resulta para sa pansariling pag-unlad. Sa halip na paulit-ulit na pag-memorya sa mga ideya ng aralin ang mga pagtataya ay dapat na magtagumpay sa paraang paglikha. Ayon naman sa pag-aaral na isinagawa ni Black and Wiliam (2018), sinusupportahan ng pagtataya ang pag-aaral kapag nakatanggap ang mga estudyante ng feedback na nakakatulong sa pag-aaral ng mga mag-aaral.

Talahanayan 3

Mga Pangunahing Tema at Ideya sa Mga Kabatirang Nahinuha ng mga Guro Mula sa Kanilang Pagtuturo ng Panitikan at Balarila Batay sa Pinakamahalagang Kasanayang Pampagkatuto O MELCs

Mga Pangunahing Tema	Mga Pangunahing Ideya
Makabuluhang Hatid ng MELCs	<ul style="list-style-type: none"> • Kahalagahan ng MELCs tungo sa maayos na pagtuturo • Pagiging mainam sa proseso ng pagtuturo at pagkatuto • Nagbibigay ang MELCs nang malinaw na gabay sa pagtuturo at pagkatuto • Nalilalang ang literasi at kakayahan ng mag-aaral dahil sa MELCs
Pakikiayon sa Hamong Dala ng MELCs	<ul style="list-style-type: none"> • Balakid dahil sa hindi sapat na mga kagamitang panturo at mga sanggunian • Hindi makayanan ang pagpapatupad sa dami ng mga kasanayan • Pagpapahayag ng kabigatan ng ibang kasanayan para sa mga mag-aaral • Pagkumpara ng mga kasanayan sa ibang asignatura • Pagpapahayag ng damdamin sa pagpapahalaga ng balarila sa pagkatuto ng mga mag-aaral
Pagpapalawig sa Proseso ng Pagtuturo-Pagkatuto	<ul style="list-style-type: none"> • Kinakailangan ang sapat na sanggunian sa pagtuturo ng MELC • Kailangan ng nakahandang banghay-aralin, mga sanggunian, gawain, at mga kagamitang panturo • Magpatupad ng mga pagsasanay at seminar para sa mga guro • Maisaayos ang sistema ng edukasyon upang magkaroon makasabay sa pandaigdigang kompetisyon ng edukasyon • Kailangang rebisahan ang MELCs para mabigyang diin ang pinakamahalagang kasanayan
Patuloy na Pagtataguyod at Pagpapaunlad sa MELCs	<ul style="list-style-type: none"> • Magiging epektibo ang pagpapatupad ng MELCs kasabay ang mabusising pag-aaral • May kakulangan sa kabila ng mga interbensyon • Pagpapahayag ng epektibo at negatibong epekto ng MELCs • Umangkop sa mga pagbabago na ikakabuti ng mga mag-aaral • Mahalaga at kinakailangan ang pagkakaisa ng mga guro

Makabuluhang Hatid ng MELCs

“Ang MELCs ay nakapagbibigay ginhawa kasi hindi mo na kailangang sundin yung napakaraming kasanayan na ginagamit natin noon.” -IDI-01

“Iyon talaga ang nakakatulong sa akin bilang guro, malinaw kung ano ang nakasaad sa ating gabay.”-IDI-03
“Dahil sa pagbabagong ito, mas lalong tumutugon ito na malinang ng buo at ganap ang literasi ng mga mag-aaral.”-IDI-07



Ang resultang ito ay kasang-ayon sa pahayag ni Zalun (2023) na sa pamamagitan ng paggamit ng MELCs, aktibong lumalahok ang mga estudyante sa mga aktibidad sa ilalim ng patnubay at pangangasiwa ng kanilang mga guro. Tumutulong din ang MELCs sa disenyo at pagbuo ng gabay sa aralin, na magsisimula sa pamamagitan ng pagtatatag ng mga layunin dahil nagbibigay ito ng mapa ng daan sa proseso ng pagtuturo at pagkatuto. Ito ay nagsisilbing makabuluhang kasangkapan sa mga guro, na nagpapagaan ng pasanin sa mga estudyante sa pamamagitan ng pagtukoy sa kaalaman, pag-unawa, kasanayan, at mga saloobin na inaasahan nilang ipakita sa bawat aralin. Bukod dito, tinutukoy ng mga MELCs ang mga partikular na kasanayang kinakailangan para sa bawat paksa, na mahalaga para sa pagbuo ng gabay sa aralin, habang umiikot ang mga ito sa paksa na umaayon sa kurikulum.

Pakikiayon sa Hamong Dala ng MELCs

"Kailangan pa ring himay-himayin."-IDI-05

"Masaya kasi mayroong gabay na kaya madali lang."-FGD-03

"Ang baguhin nila, ilagay nila sa kurikulum na magkaroon sana sila ng balarila."-FGD-06

Inihayag nina Gratela, Dio, at Deri, (2023) na ang spiral na pag-unlad ay tinukoy bilang isang kursong larangan ng pag-aaral kung saan makikita ng mga estudyante ang parehong mga paksa sa pagtaas ng pagiging kumplikado at pagpapatibay ng nakaraang pag-aaral sa buong karera nila sa paaralan. Gayunpaman, may ilang mga puwang na naobserbahan sa pagpapatupad kung saan naranasan ang kawalan ng pagpapatuloy ng mga aralin mula kindergarten hanggang sa mas mataas na lebel o baitang. Mga salik tulad ng napakaraming nilalaman ng kurikulum, oras na tinakda, at kakulangan ng mga kinakailangang kasanayan ng mga mag-aaral na naobserbahan bago ang pandemya na makikita sa puna ng mga gurong impormante. Bukod dito, ang mga hamon na nakatagpo sa kasalukuyang pandemya na edukasyon ay nakategorya sa tatlo, ito ay ang mga sumusunod: Pag-unpack ng MELCs; Pagtuturo at Paghahatid ng Aralin; at Kakulangan ng Mga Kagamitang Panturo.

Rekomendasyon para sa Karagdagang Pananaliksik

Naging matagumpay ang pagsisiyasat na ito sa pagkamit ng mga layunin at pagkuha ng mga tugon sa mga tanong sa pamamagitan ng mga nabuong pangunahing tema na lalong mas nagbigay linaw sa umiiral na penomenon sa paghahatid at pagtamo ng kaalaman sa panitikan at balarila gamit ang MELCs bilang gabay. Inilarawan din dito ang mga hamong naranasan at kung paano ito hinarap, mga saloobin at pangkalahatang pananaw ng mga guro.

Gayunpaman, hindi maikakaila na ang pagsisiyasat na ito ay nagbigay lamang ng mga deskripsyon, saloobin, at paninindigan ng labing-apat (14) na mga tagapagturo na nauugnay sa kanilang mga karanasan sa pagtuturo gamit ang MELCs. Samakatuwid, ang mga nadiskubre ng paglalagad na

ito ay hindi pwedeng gamitin upang tingnan ito sa panlahat na karanasan ng mga nagtuturo sa Filipino. Ngunit, maaaring gamitin ito bilang pundasyon at batayan para sa mas mabigat na pangwatas sa penomena ng pag-aaral.

Sa puntong ito, iminumungkahi na may isasagawa pang katulad na pananaliksik na nakatuon sa paghahatid at pagtamo ng kaalaman sa asignaturang Filipino. Ipatupad sa mas malawak na populasyon para magkaroon ng pangkalahatan ngunit dalisay na pagpapaliwanag sa larangan ng pag-aaral. Iminumungkahi din nito na magsagawa ng pag-aaral mula sa kinatatayuan ng mga mag-aaral, upang higit na maunawaan ang suliranin sa pagkatuto ng panitikan at gramatika. Sa pamamagitan nito ang mga tagapangasiwa at tagapagpatupad ng kurikulum, kasama ang mga guro, ay makapagplano at makapaglikha ng kapakipakinabang na mga estratehiya na tutugon sa parehong mga pangangailangan sa pagtuturo at pagkatuto.

Pangwakas na Pananalita

Ang pananaliksik ay hindi isang madaling paraan sa pag-abot ng hangarin na makakuha ng kaalaman at pag-unawa sa mga umiiral na problema. Ngunit sa pagbabago ng panahon, kinakailangang makisabay at umangkop upang lalong mapaunlad ang pagtuturo ng mga guro at pagkatuto ng mga estudyante. Kaya gaano man kahirap ang pagsagawa ng isang pananaliksik, itinaguyod ito na may kasamang pag-asa at paniniwala na ito ay magpapabuti at magpapa-unlad sa proseso at sistema ng edukasyon.

Ang proseso ng paglikom ng mga datos sa paraang panayam at *focus group* na diskusyon ay hindi naging madali. Maraming inihanda ang mananaliksik upang matiyak ang maayos na talakayan sa mga respondente. Kahit na nagkaroon ng problema sa bakanteng oras ng mga guro matagumpay pa rin na naisagawa ang mga panayam at nakamit ang mga mayaman na tugon sa mga tanong na inihanda sa pananaliksik. Pagkatapos ng panayam, isinagawa ang pagsusuri ng datos sa pamamagitan ng transkripsyon, pagsasalin, at pagkuha ng mga pangunahing ideya at tema. Ang tapat na pagbabahagi ng mga kalahok ng kanilang mga karanasan ay lubusang nagbigay sa mananaliksik ng kapanatagan sa pagsasagawa ng pag-aaral na ito.

May napagtanto ang mananaliksik habang isinasagawa ang pag-aaral na ito. Ang mga taong patuloy na sumusuporta at gumagabay sa pananaliksik na ito ay mahalaga sa tagumpay nito. Bilang karagdagan, ang mananaliksik ay nakakuha ng mas malalim na pag-unawa sa mga isyu at pananaw ng mga guro kapag gumagamit ng MELCs sa pagtuturo ng panitikan at balarila.

Sa wakas, ang pag-aaral na ito ay produkto ng pagsusumikap, dedikasyon, sakripisyo, oras, at walang katapusang pagnanais na mapaunlad ang kaalaman.



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SOCIAL AND ECONOMICAL STATUS OF RURAL PEOPLE: A CASE STUDY OF LAXMIPOSI VILLAGE OF MAYURBHANJ DISTRICT

Mr. Suraj Kumar Behera

*Mr. Suraj Kumar Behera, Guest Lecturer in PG Department of Geography,
MPC Autonomous College, Takhatpur, Baripada, Odisha*

ABSTRACT

This paper is concerned with Socio-Economic background of people of Laxmiposi village. The major focus of this study is to analyze the main huddles in the way to Socio-Economic development. For this purpose multi-stage random sampling has been applied. The fundamental information has been collected by the well prepared questionnaire and some data by secondary source. An intensive study was run over 105 samples household which is consist of 463 number of population. The result was present by using tabular form and by using different diagrams. The outcome of the study reveals that Majority of the households about 91.57 % belonged to schedule tribe. It is found that most of the population of this village having tribal population. About 48.11 percentages of the households are lived in kwacha houses that means the IAY schemes and shelter related scheme has not implemented successfully in this village. We also found diversity in occupational structure in Laxmiposi village. So, as a whole it is observed from the present study that, the socio-economic condition of ST community of that village is poor, after the many years of independence also they could not get one of the basic amenities like shelter. Government should pay attention to socioeconomic backwardness and find requisite steps for sustainable development.

KEYWORDS: *Social status, Economical Status, Random sampling, Rural People, Mayurbhanj District*

INTRODUCTION

Socio economic condition is the condition of a small area which is intended to study the social aspects of a community. This deals with the social and economic condition of the people of the region. Thus the study is intended to gather information on demographic, social and economic condition of the study area and to figure out associated problems and suggest necessary measures to mitigate the problems. It provides a base for the micro level planning and implementation of different programmers for the improvement and development of the area.

Socioeconomic status is an important factor which may carry a great deal of weight in health-related research but is largely ignored in other disciplines such as marketing research. However, the fact that one's socioeconomic standing impacts their behavior and attitudes (e.g., toward greed) – and *how they think* - makes this a critical component in our research designs.

Socioeconomics" is sometimes used as an umbrella term for various areas of inquiry. The term "social economics" may refer broadly to the "use of economics in the study of society"

Socio-economic research is one of the most important areas of activity. Here we study the phenomena that lie at the intersection of the social and economic spheres of society. Moreover, while conducting socio-economic research there is a need for information about the level of socio-economic development, the population's quality of life, local problems, and the peculiarities of people's economic behavior. The main source of such information is socio economic studies.

The main objectives of the study is to know about the local area, it's past and present and various problems of Socio-Economic condition and acquainted with the past and present geography environment and to know about how much the villagers get benefit from informed education and the attitude of the parents towards the education of their children.

DATA AND METHODOLOGY

The first hand information gives more authentic result, then that of secondary data. There are various sources of data such as published and unpublished work done is related field without proper information and the data, no research can be carried out; because, in the absence of authentic data and information, no desirable conclusion may be derived. We go for primary data collection to observe the socio economic condition on Laxmiposi village of Mayurbhanj District. The studies will mainly use quantitative methods and include qualitative information and analysis wherever possible.

STUDY AREA

Mayurbhanj is a land- locked district with a total geographical area of 10,418 Sq.Km. and forms the northern boundary of the state with district Head quarter at Baripada. At the district head quarters of Baripada our study area village Laxmiposi is situated. Laxmiposi lies between 86 degree 45 minute 6 seconds north latitude to 21 degree 55 minute 56 seconds east longitude. 105 household live in this village. The village is well connected with the headquarters, Baripada by bus services and railway services. Laxmiposi village has lower agricultural land and



more open space with bamboo trees. Being away from the coastal belt, the area experiences a sub-tropical climate with a hot summer, chilling winter with good precipitation. Red-laterite category of soil dominates all over the area. Paddy is the major cultivated crop, followed by pulses and oilseeds in this village. While there has been decrease in the coverage of Kharif paddy in high lands, the area under pulses, oilseeds and other cereals has been showing an increasing trend due to diversifications of cropping pattern in such land.

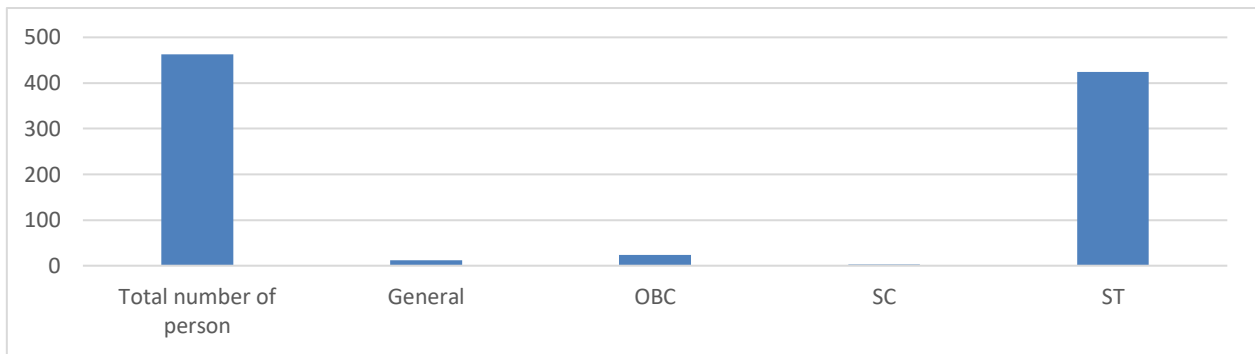
DEMOGRAPHIC STRUCTURE AND COMPOSITION

Religion

Religion wise distribution of the 105 households shown that the dominance of Hindus among the sample population. Hindus made up 100 percent of sample population. Total number of people 463 person belongs to Hindu religion.

Caste System

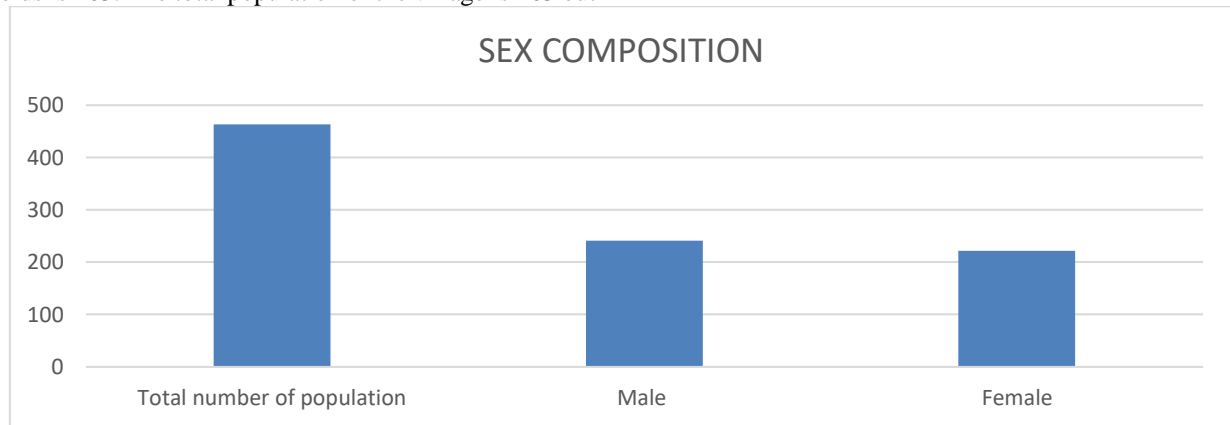
Out of 463 person 12 people are coming under General category, 24 are OBC, 03 person are schedule caste and 424 persons are schedule tribe which is the highest concentration occupies 91.57 percentage of the total population.



**Caste System
Sex Composition**

In the sample of 105 households' population of sample households is 463. The total population of the village is 463 out

of them 241 is male and 222 are female. The Female population is low in this area.

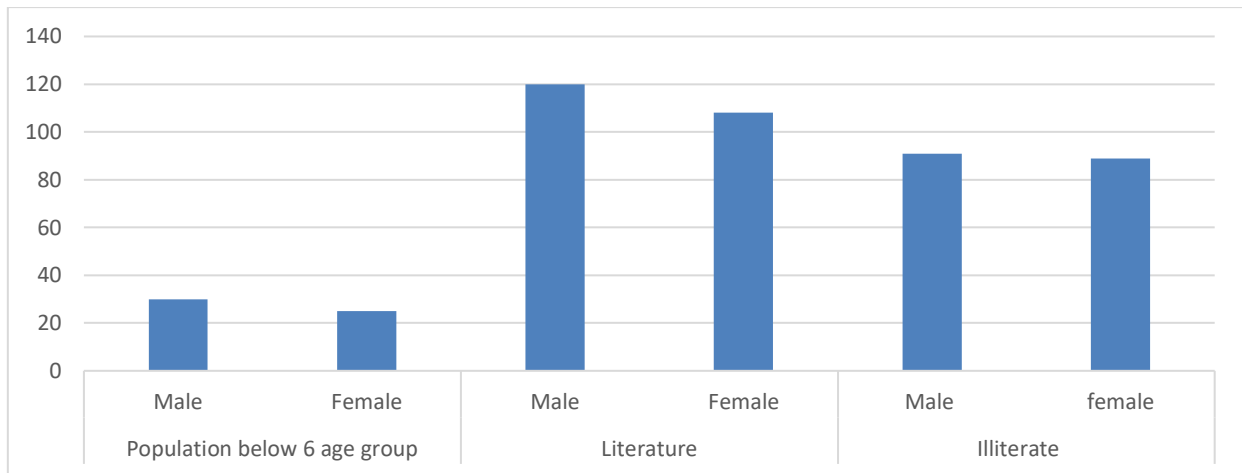


Literacy

It is found that Laxmiposi village that out of total 463 people only 55 persons are below the age group of 6 and among them

228 persons are literate and 180 people are illiterate. The Literacy rate is 49.24 %, Which is very low to State literacy rate.

Total number of population	Population below 6 age group		Literature		Illiterate	
	Male	Female	Male	Female	Male	female
463	30	25	120	108	91	89



Literacy

Nativity: It is found that out of 105 households 407 have their nativity where as 56 peoples are migrant from other region.

Female migrant is more in compare to male migrant due to marriage.

Total number of population		Own Native place		Migrant	
Male	Female	Male	Female	Male	Female
241	222	283	124	26	30
463		407		56	

Age Composition

The age and sex composition of the village Laxmiposi is shows that 30 males and 25 females belong to the age group of 0-6 years. Next under the age group of 7- 16 years, a total of 45 males and 53 females are found. In the age group between 17- 40 years, there are 78 males and 64 females. Under the age group of above 60 years, we find a total of 29 males and 32

females. On the basis of the study we found that there is maximum concentration of the age group 17- 40 which occupies 30.66 % of total population, Which is very good sign because working population group are more. We also observe that old age female population is more , which indicates Female life expectancy is more in this village.

Total Number Of Population	0-6		07-16		17-40		41-60		Above 60	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
463	30	25	45	53	78	64	59	48	29	32

Marital Status

In Laxmiposi village there are 124 peoples are married male and female, where as there are 118 peoples are unmarried male, 90 peoples unmarried female respectively. Here, We found that

there are more percentage of widow female i.e. 05 persons compare to male proportion.

Total number of population	Married		Unmarried		Widow	
	Male	Female	Male	Female	Male	Female
463	124	124	118	90	2	5

SOCIO ECONOMIC ASPECTS

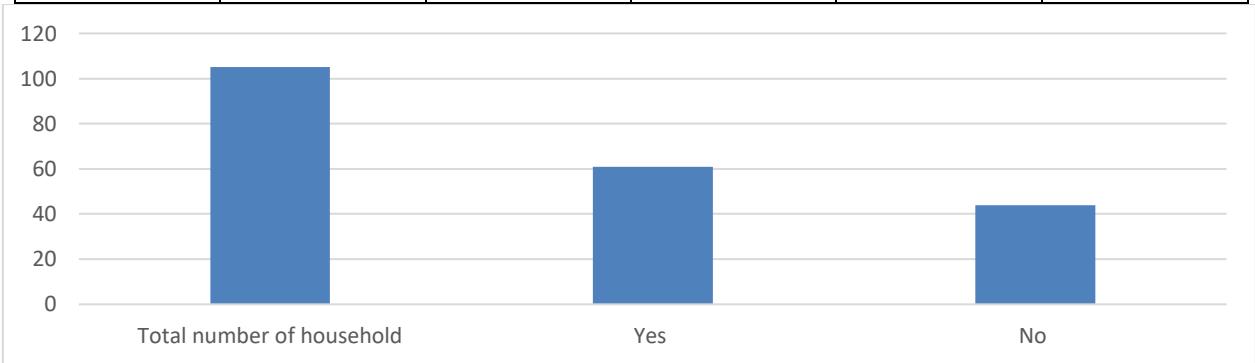
Socio economic condition of any village shows its development conditions. Infrastructure, communication, electricity, sanitation etc. are the key features. Through which we can estimate one region's socio-economic condition.

SEPARATE KITCHEN FACILITIES

Among the 105 households in Laxmiposi village only 61 household having separate kitchens whereas, 44 families does not have separate kitchen. Those who does not kitchen facilities they are using their living room, court yard, Varanda as kitchen to prepare food etc.



Total number of household	2 rooms	3 rooms	4 rooms	5 rooms	More than 5 rooms
105	60	37	3	2	3

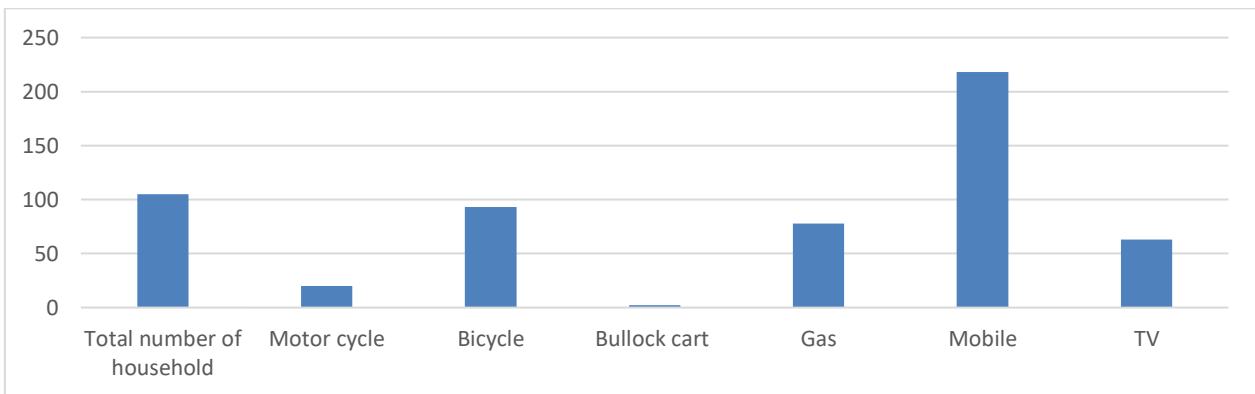


Kitchen Facilities

Household Assets:By observing Household Assets, we found that the people of this village use more numbers of mobile

phones. Number of Bicycle user is more than that of Motorcycle user.

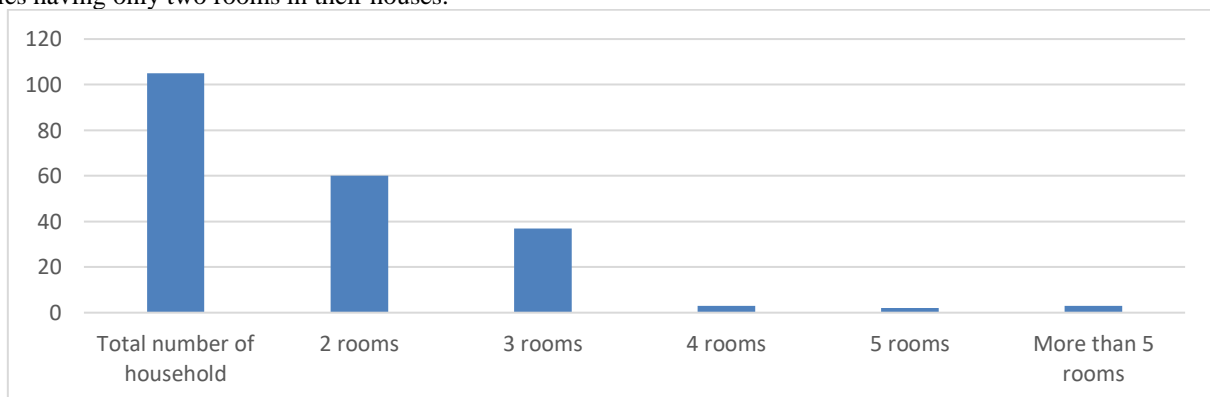
Total number of household	Motor cycle	Bicycle	Bullock cart	Gas	Mobile	TV
105	20	93	2	78	218	63



Household Assets

Rooms

We found that out of 105 households only 8 families have very comfortable spacing of rooms i.e. more than 5 rooms and 97 families having only two rooms in their houses.



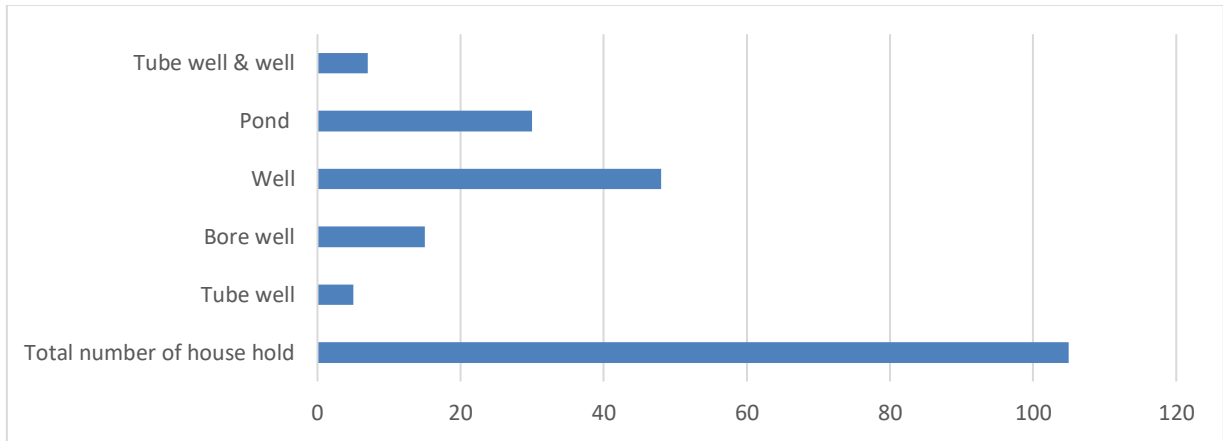


WATER FACILITIES

For their basic need of water such as bathing, drinking and washing the people of Laxmiposi village depend upon pond, well, borehole, Tube well. About 05 household depend on tube

well, 15 on bore well, 30 on pond, 48 on well and 07 peoples are depends on both tube well and well. But some house hold using water for their cooking and drinking combine from various sources of water such as 07 household depend on tube well & well water.

Total number of house hold	Tube well	Bore well	Well	Pond	Tube well & well
105	05	15	48	30	7



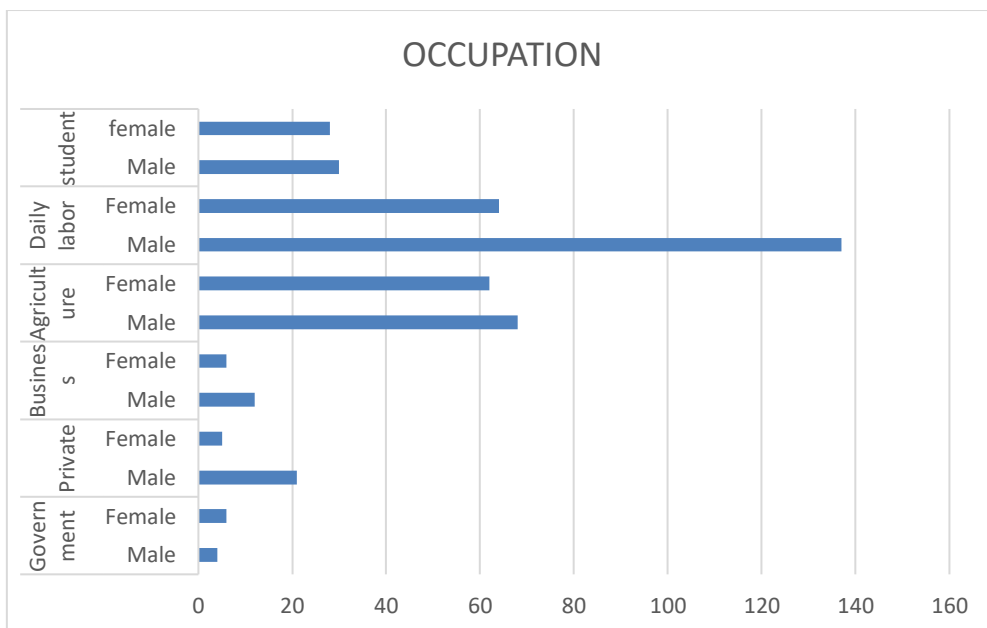
Sources of water for drinking, cooking & washing

Occupational Structure

Here, we found that from the occupational structure of the village is the engagement of students is very less number in comparison to total age composition of group present in village

from 6 to 16 age groups. Most of the People of this village working as daily labor.

Government		Private		Business		Agriculture		Daily labor		student	
Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	female
4	6	21	5	12	6	68	62	137	64	30	28



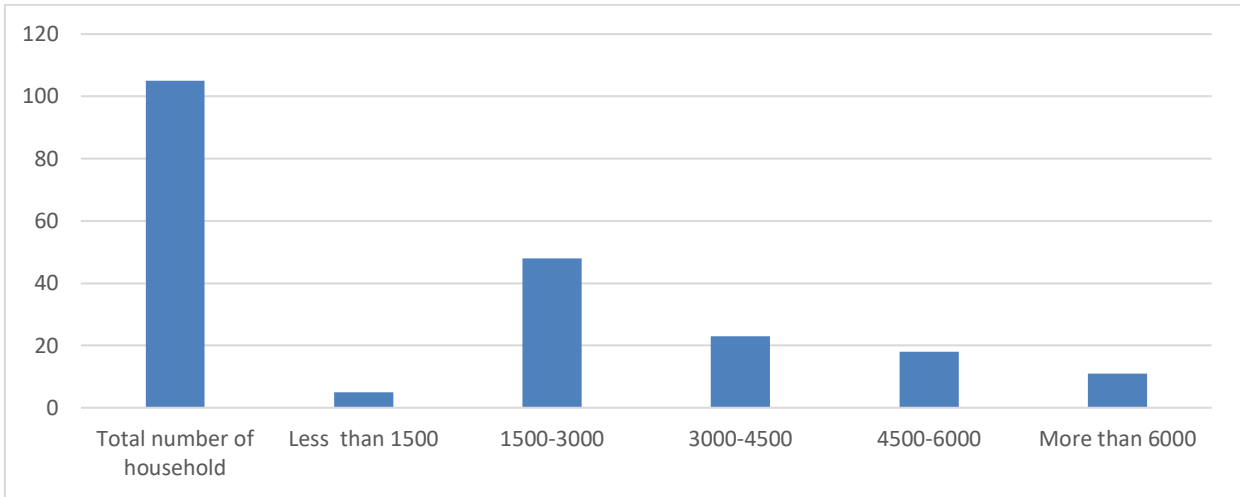
Income

The income status of the people of Laxmiposi village is not satisfactory though maximum people are engaged as daily

laborers. Out of 105 households only 05 households have earn less than 1500 there are only 11 families whose monthly income level is more than 6000 Per month.



Total number of household	Less than 1500	1500-3000	3000-4500	4500-6000	More than 6000
105	05	48	23	18	11

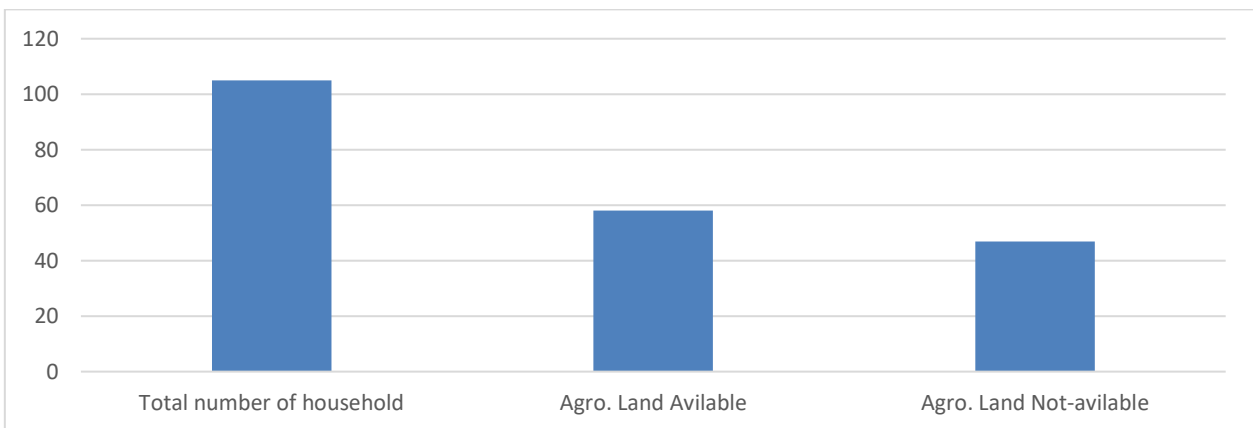


House Hold Monthly Income

AGRICULTURAL LAND

Similar to the building structure, the households of Laxmiposi village some have agriculture land and some do not have

agricultural land. Among of 105 household, the number of household having agricultural land are 58 whereas 47 household not having their own agricultural land.



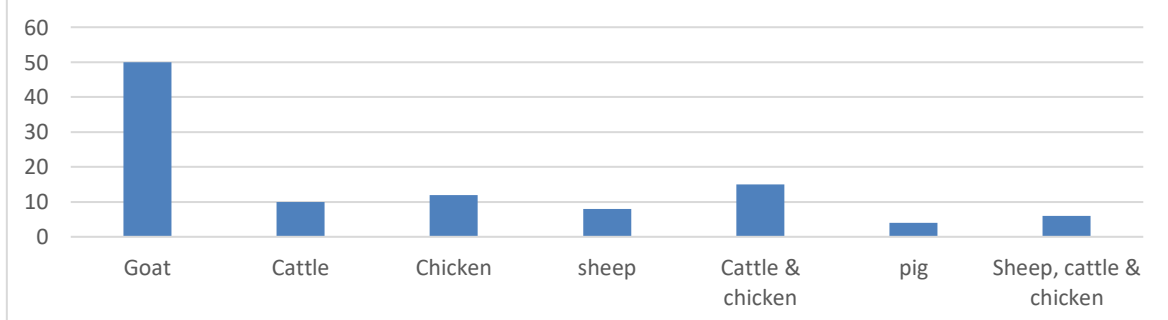
Avilability of Agricultural Land

LIVESTOCK

Among of 105 household in Laxmiposi Village, 12 household having chicken, 10 having cattle, 50 having goat, 15 having

cattle & chicken, 08 having sheep, 06 having sheep, cattle & chicken, and rest only 04 household having pigs. Majority of households have goats.

Total number of household	Goat	Cattle	Chicken	sheep	Cattle & chicken	pig	Sheep, cattle & chicken
105	50	10	12	8	15	04	06



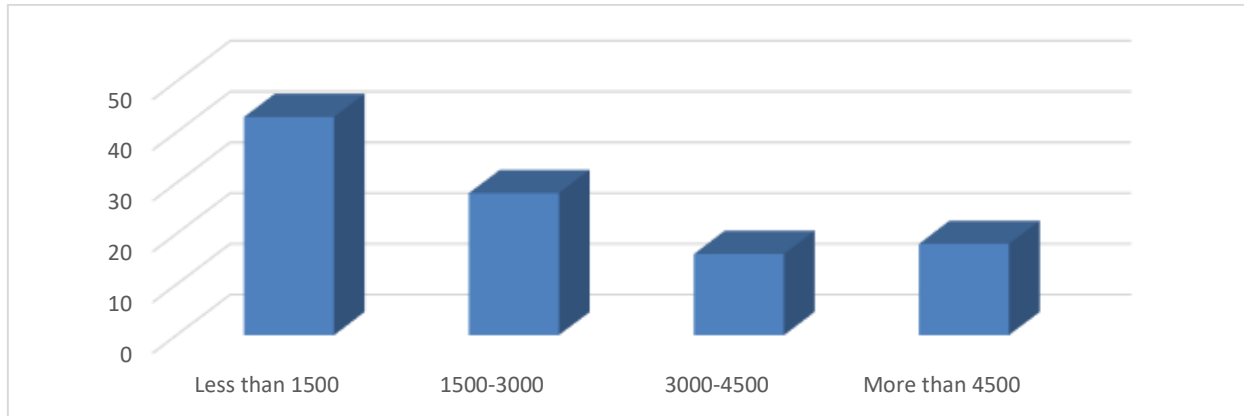
Livestock



Monthly Expenditure

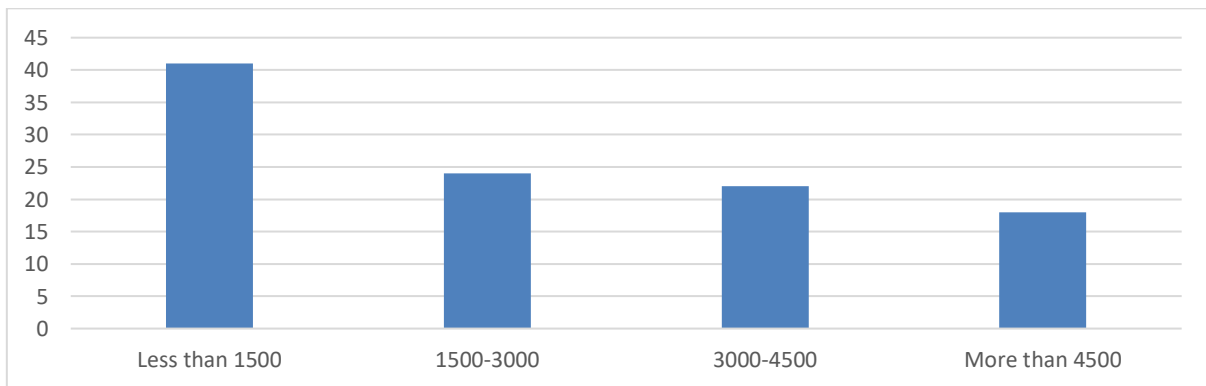
On Food

Total number of household	Less than 1500	1500-3000	3000-4500	More than 4500
105	43	28	16	18



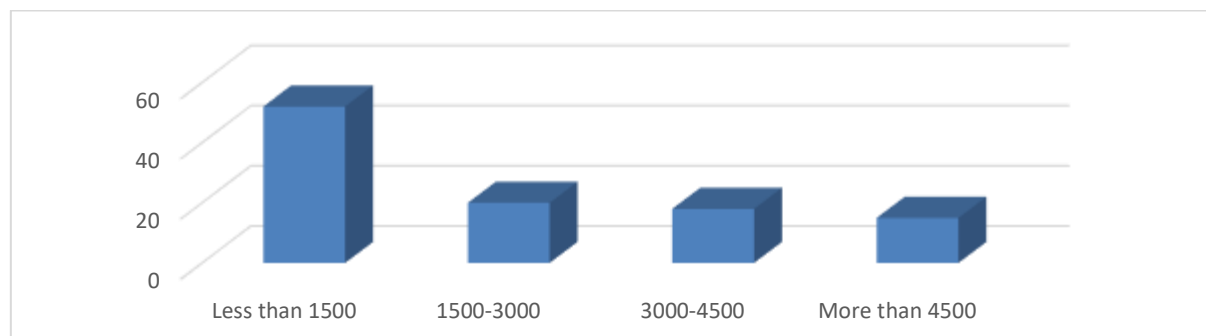
On Education

Total number of household	Less than 1500	1500-3000	3000-4500	More than 4500
105	41	24	22	18



On Health

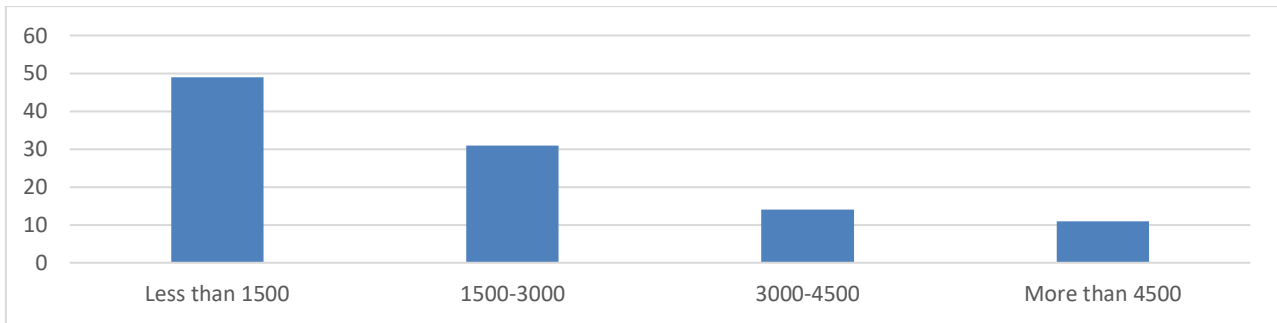
Total number of household	Less than 1500	1500-3000	3000-4500	More than 4500
105	52	20	18	15





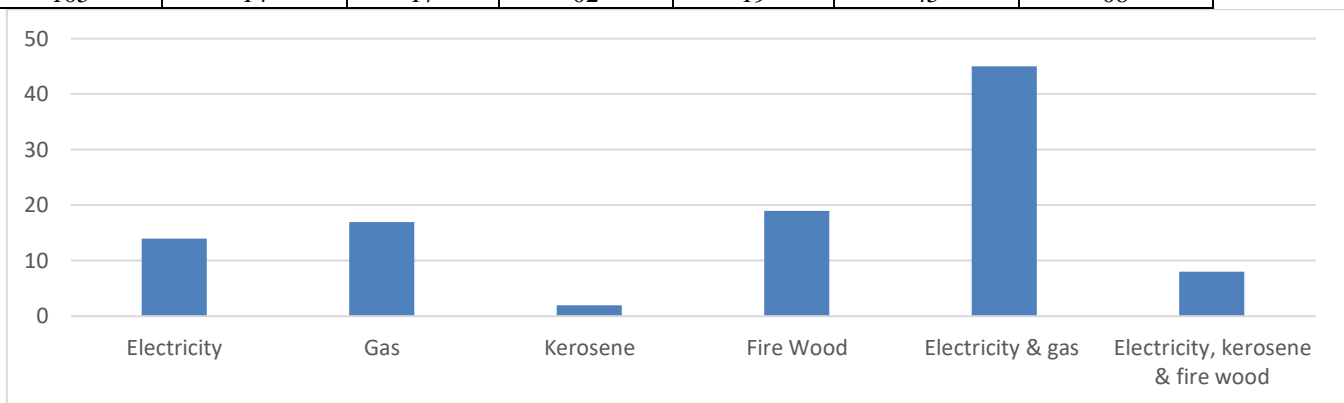
On Cloth

Total number of household	Less than 1500	1500-3000	3000-4500	More than 4500
105	49	31	14	11



On Energy source

Total number of household	Electricity	Gas	Kerosene	Fire Wood	Electricity & gas	Electricity, kerosene & fire wood
105	14	17	02	19	45	08



CONCLUSION

Socio- Economic Profile of Sample Households Primary data was collected 105 households from Laxmiposi village of Mayurbhanj. The average number of family members in the sample households was 4 to 3 members with minimum one and maximum of 8 members. From the household survey it was found that 100% of people followed Hinduism.

Majority of the households 91.57 % belonged to schedule tribe, So, Government must have to do some plan for their development.

Occupational diversity is the unique feature of Laxmiposi village. Most of the people working as daily laborer. About 44.76 % of people do not have own agriculture land. So, that majority of the households are in the second group i.e. 1500-3000 monthly income class. The highest number of households was found in the expenditure class 1500-3000. In Socio-economic development of society, nation many factors plays significant role in which per capita income is considered as an important one. But the Per capita income of this village is very low i.e. 1500-3000 and there is no savings for their future. The

reason behind low per capita income is that most of the people of this village engaged in agriculture sector and worked as a daily laborer.

The main problem of the study area is that literacy rate is low, Sex ratio is low, Students enrolment in School is also low. This region have low per capita income. So, Government have to make aware people, so that literacy rate and sex ratio will increase and government should take necessary step for their better income facility.

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THE PROGRESS IN THE RESEARCH OF MACHINE LEARNING IN SPORTS MEDICINE

Katherine Ning LI

Associate Professor, Institute of Sports science, Xi'an Physical Education University, China

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ABSTRACT

To explore the prospects and challenges of applying artificial intelligence and its machine learning subfield in sports medicine, to drive knowledge innovation in this domain. Research Content includes Applications of machine learning in sports medicine: Clustering and classifying athlete data, developing predictive models to optimize training and prevent injuries, and providing interpretable decision support for medical professionals. Challenges of machine learning in sports medicine: Issues with data availability and quality, model interpretability and transparency, as well as the integration with existing workflows. In summary, the potential of AI and machine learning in sports medicine is immense, but to fully harness their transformative value, interdisciplinary collaboration, data sharing, rigorous validation, and the establishment of ethical guidelines are essential. Only through these collective efforts can the field optimize athlete training, prevent injuries, and drive overall innovation in sports medicine.

KEYWORD: Machine Learning, Sports Medicine, Artificial intelligence, Knowledge Representation, Decision Support

A. INTRODUCTION

The term "Artificial Intelligence (AI)" was first proposed by McCarthy et al. in 1955. They defined AI as "the science and engineering of making intelligent machines" that can perform tasks previously thought to be possible only for humans, such as abstract reasoning and high-level problem-solving. AI also refers to the scientific and technological efforts to develop intelligent computers capable of performing functions usually associated with human effort. A subset of AI is known as Machine Learning (ML), which is a process of automatically generating symbolic knowledge representations from data, and acquiring meaningful representations or symbols to capture the underlying characteristics or concepts of the data. In the fields of machine learning and AI, the goal is to extract higher-level knowledge and understanding from raw data, enabling computational systems to reason, induce, and make informed decisions.

B. ADVANCEMENTS IN THE APPLICATION OF MACHINE LEARNING

1. In data representation, machine learning can help use symbolic representations to represent various dimensions of sports medicine data, such as athlete profiles, injury records, performance metrics, and training regimes. This may involve the creation of knowledge graphs or ontologies to capture the relationships and dependencies between different variables.

1.1 Clustering and classification: Machine learning can be used to cluster athletes or patients based on characteristics such as age, physical build, assessment tests, etc. By leveraging the symbolic representations of electronic medical records, training regimes, and performance metrics, machine learning models can be developed to predict the future performance of athletes

based on various training strategies. These models can consider factors such as training intensity, duration, frequency, recovery periods, and specific exercises, and recommend personalized training plans to maximize performance.

There have been studies that summarized the epidemiological characteristics of DL injury trends from 2000 to 2017[1], compiling MLB player data from 4 online baseball databases, including age, performance metrics, and injury history. A total of 84 ML algorithms were developed. The output of each algorithm reported whether a player would be injured in the next season and the anatomical location of the injury. The results showed that the machine learning models could predict the likelihood of injury in the next season with reasonable reliability, especially for defensive players.

Using machine learning techniques in the field of knee joint biomechanics data classification can help with the diagnosis of knee joint diseases. Studies have aimed to establish and validate machine learning models to diagnose patients with Generalized Joint Hypermobility (GJH) and normal individuals. Gait data and kinematic data were collected using a three-dimensional motion capture system. A deep neural network (GJHdnet) was proposed for GJH detection and evaluated in several aspects. The model achieved an accuracy of 95.77%, a specificity of 98.68%, and a recall rate of 76.84%, outperforming traditional machine learning methods. The trained model can run on cost-effective devices, assisting in the instant and accurate diagnosis of GJH[2].

1.2 Interpretability: Machine learning provides interpretable representations that allow sports medicine professionals to understand and explain the reasoning behind the decisions made by machine learning models. This transparency and



interpretability are crucial for gaining trust and acceptance in this field, as they allow practitioners to validate and refine the knowledge encoded in the symbolic representations. Machine learning models can be used to generate interpretable rules or decision trees that capture the relationships between input features and outputs. These rules can provide clear guidance on training strategies based on the athlete's characteristics.

SHAP (Shapley Additive explanations) is a method for explaining the predictions of machine learning models. It provides a framework for assigning importance values to different features or input dimensions, indicating their contribution to the model output[3]. SHAP values are based on the concepts of cooperative game theory, providing a unified approach to measure feature importance across different models. These methods can highlight the key features or input dimensions that contribute to a specific prediction or outcome. SHAP has been applied in sports medicine, where it can help identify the critical factors or input dimensions that influence an athlete's performance or injury risk. By understanding the importance of different features, coaches and sports medicine experts can make informed decisions on training strategies, injury prevention, or rehabilitation plans.

Locally Interpretable Model-Agnostic Explanations (LIME) is another technique used to explain the predictions of machine learning models[4]. It focuses on providing interpretable explanations for individual instances or data points, independent of the underlying model used. LIME approximates the behavior of the complex model with simpler, more interpretable models that are locally faithful to the original model's predictions.

Injury Risk Assessment: Using LIME, sports medicine experts can explain the factors that contribute to an athlete's risk of injury. LIME can identify which specific features (such as previous injuries, training load, or biomechanical data) have the most influence on the predicted likelihood of injury. This information helps to develop tailored injury prevention strategies for individual athletes. Studies have used pre-trained CaffeNet convolutional neural network (CNN) models to compare the accuracy of marker-based motion capture versus the average prediction of three key KJMs (knee joint moments) associated with anterior cruciate ligament (ACL) injury across three different sports-related motion types, demonstrating the feasibility of using deep learning for on-field knee injury assessment instead of laboratory-embedded force plates[5]. Other studies have validated LIME machine learning models to identify risk factors and quantify the overall risk of secondary meniscal injury in a longitudinal cohort following primary ACL reconstruction (ACLR). The results showed that machine learning models outperformed traditional prediction models and identified shorter time to return to sport, lower injury-time VAS, increased time from injury to surgery, proximal ACL tear location, and age >40 years at injury as risk factors for post-ACLR secondary meniscal tears. After detailed calculations, these models can be deployed in clinical settings to provide real-time, quantifiable risk for consultation and timely intervention.

Performance Prediction: LIME can explain the key factors driving an athlete's performance in a specific sport or event. By analyzing the local explanations provided by LIME, coaches and sports medicine experts can gain a deeper understanding of the training techniques, physiological attributes, or biomechanical factors that have the greatest impact on performance. This knowledge can guide the development of personalized training plans.

Treatment Effectiveness: LIME can be used to explain the predictors of the effectiveness of different treatment interventions or rehabilitation plans. By explaining the factors that contribute to successful outcomes, LIME can help sports medicine experts understand which therapies or exercises are most beneficial for specific athletes or injury types. This information can assist in optimizing treatment strategies and reducing rehabilitation time.

Performance Optimization: LIME can help identify the key features that contribute to poor athlete performance. By explaining the factors behind poor performance or stagnant results, coaches and sports medicine experts can make targeted adjustments to training plans, nutrition regimes, or recovery strategies. This can help athletes overcome performance barriers and fully realize their potential.

2. Decision Support Systems: Machine learning can aid in the development of sports medicine decision support systems. By encoding expert knowledge and guidelines into symbolic representations, machine learning models can assist coaches and sports medicine professionals in making informed decisions on training strategies. These systems can provide recommendations on athlete selection, load progression, recovery regimes, and injury prevention strategies based on analyses of symbolic representations and historical data.

Learning medical ontologies from unstructured data sources such as clinician notes, academic papers, and medical texts. Machine learning algorithms analyze the data to detect key concepts (e.g., injuries, treatments, risk factors) and the relationships between them. The result is an initial knowledge graph that can then be refined by subject matter experts.

Ontologies provide a formal representation of the concepts in a domain and the relationships between those concepts. In medicine, ontologies enable the standardized conceptualization of knowledge to support applications like clinical decision support systems. Traditionally, subject matter experts manually construct ontologies by defining concepts, taxonomies, and relationships based on existing knowledge. However, with the increasing availability of digital data (e.g., clinician notes, academic literature, web resources), machine learning techniques have the opportunity to automatically generate ontology drafts, which can then be refined by experts. Learning production rules that simulate clinical decision-making and standard procedures from sports medicine data. Algorithms detect patterns between attributes like symptoms, test results, diagnoses, patient profiles, and recommended treatments. These patterns are formulated as IF-THEN rules that can drive AI-based diagnostic and treatment recommendation



systems[7]. Experts are still needed to validate and refine these production rules, representing knowledge in the IF-THEN form to link clinical conditions and attributes (IF) with conclusions and recommended actions (THEN). In sports medicine, production rules can establish decision pathway models for diagnosis and management based on symptoms, test results, medical history, and other factors. For example: If knee pain + swelling + Lachman's test positive, then likely anterior cruciate ligament injury → perform MRI; If ACL tear + desire to return to cutting sports, then recommend surgical reconstruction.

2.1 Injury Risk Assessment: Machine learning can help identify the factors that increase the risk of injury for athletes. By analyzing historical injury data, training loads, and other relevant variables, machine learning models can be trained to predict the likelihood of future injuries. This information can be used to optimize training strategies by adjusting training loads, incorporating recovery periods, and modifying exercise programs to reduce the risk of injury.

2.2 Personalized Training Plans: Through machine learning, customized training plans can be developed for individual athletes. By considering the athlete's circumstances, including age, fitness level, injury history, and performance goals, machine learning models can generate training recommendations that maximize performance improvement while minimizing injury risk. These personalized plans can be adjusted over time based on the athlete's condition and objectives. Studies have used artificial intelligence (AI) methods with machine learning (ML) techniques to provide more in-depth feedback to athletes by personalizing their health status, especially considering the individual multi-factorial data used in predictive models, and conducted an athletics individual athlete ICPR risk assessment (i.e., I-REF)[8].

3. Knowledge Discovery: Machine learning can help uncover new insights and patterns from sports medicine data. By applying logical reasoning and inference techniques to the symbolic representations, hidden relationships and correlations can be discovered. This can help identify factors that contribute to improved performance, injury prevention, or rehabilitation strategies.

3.1 Semantic networks are a knowledge representation method that uses nodes to represent concepts and links to represent the relationships between these concepts. In sports medicine, semantic networks can capture the complex network of interacting factors that influence health risks and outcomes. For concussions, a semantic network could link factors such as impact forces, genetic variations, hormone levels, neck strength, previous injuries, helmet use, age, and medications.

Traditionally, subject matter experts have constructed semantic networks based on various research findings and their own experiences. However, the abundance of biomedical data now available, especially "holistic" data that links biological components to health attributes, allows machine learning algorithms to automatically generate draft semantic networks. These data-driven networks can then be validated and refined by experts to become a powerful risk landscape model. Data

sources that can be used to extract a concussion risk network include research datasets containing genetic data, blood-based biomarkers, neurocognitive test results, injury histories, and other athlete attributes. While relationships between factors can be determined, the datasets may be limited or produce spurious associations without proper analysis.

Discuss the biomedical literature on how genetics, biomarkers, impacts, and other factors relate to concussion risk, severity, and recovery. Machines can scan large text corpora to detect statistical relationships and patterns, but the networks they generate require expert review to reliably represent knowledge and elucidate contradictions or knowledge gaps in the literature.

Wearable sensor data measures head accelerations and impacts during competitions. This data can directly illustrate the relationship between impact forces and concussion probability but may be limited by the monitored sports and athlete types. It also depends on medical evaluations to confirm actual concussion outcomes.

The main benefit of using machine learning to extract semantic networks is the ability to scale and detect subtle or complex relationships that may be difficult to determine through human knowledge engineering alone. However, machine-generated networks are subject to biases and limitations in the source data and require curation to become clinically useful knowledge models. Experts must determine how to integrate machine learning networks with existing expert-authored concussion risk models while avoiding inaccuracies or logical inconsistencies.

3.2 Symbolic Representation Learning

Symbolic representation learning is a type of machine learning that refers to the process of acquiring meaningful representations or symbols to capture the underlying characteristics or concepts of data. In the fields of machine learning and artificial intelligence, symbolic representation learning aims to extract higher-level knowledge and understanding from raw data, enabling computational systems to reason, induce, and make informed decisions. Symbolic representation learning focuses on capturing the inherent structure and semantics of data through symbolic representations. These representations can take the form of symbols, rules, logical expressions, or graphs, providing a more interpretable and human-understandable way to represent and operate on knowledge. Symbolic representation learning often involves techniques such as symbolic logic, knowledge graphs, ontologies, and rule-based systems. It leverages the power of logical reasoning and inference to derive new knowledge from existing representations and perform logical deduction. By learning symbolic representations, AI can perform tasks like knowledge discovery, knowledge integration, semantic understanding, and decision-making in a more interpretable and explainable manner.

Machine learning models are trained on data to detect patterns and relationships that can be used for prediction or to gain insights. However, the features and knowledge encoded in the algorithms and parameters of the models themselves are not



inherently human-understandable. Interpretability is crucial for applications like medicine, where transparency and explainability are necessary conditions for trust and validation of the results.

One approach to improving model interpretability is to map the model's features to symbolic knowledge representations like ontologies. A machine learning model may predict the probability of an athlete's ACL injury based on features like knee swelling, instability, limited range of motion, and age[9]. The features selected by the model can be mapped to concepts and relationships in an ontology, with associated probabilities. The result is an explanation of how the model linked key factors to the predicted ACL injury risk based on trends in its training data.

C. LIMITATIONS AND CHALLENGES OF MACHINE LEARNING IN SPORTS MEDICINE

Data availability and quality are major challenges in applying machine learning to sports medicine. The sports medicine domain often lacks comprehensive and reliable datasets. Data collection methods such as wearable devices and medical imaging may have limitations, and data across different sports may be biased and inconsistent. Ensuring data quality and addressing these limitations is crucial for developing effective machine-learning models.

Another challenge is the interpretability and transparency of machine learning models. Complex models may be difficult to understand in terms of the underlying rationale behind their predictions and recommendations. This is particularly important in sports medicine, as decisions directly impact the health of athletes. Improving interpretability and transparency is key to gaining the trust of coaches, athletes, and professionals.

To drive the effective application of machine learning in sports medicine, sustained interdisciplinary collaboration, data sharing, and ethical framework development are needed in areas such as data quality, model interpretability, and privacy/security. Only then can the immense potential of machine learning be maximized in optimizing training and preventing injuries.

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SPATIO-TEMPORAL TREND ANALYSIS OF RAINFALL OF COASTAL DISTRICTS OF ODISHA

Mr. Suraj Kumar Behera

Mr. Suraj Kumar Behera, Guest Lecturer in PG Department of Geography, MPC Autonomous College, Takhatpur, Baripada, Odisha

ABSTRACT

In the recent period the most important challenge faced by researchers is to have a better knowledge about climate change at a regional level. The change in climate at local or regional level is unequal and it has a localized intensity. Therefore it is identified at a local scale. Temperature and Precipitation are the two important variables of climate, which are more responsible for climate change in local level and required to give more concerned about it. Here we take one climatic variables i.e. Rainfall for our study in the 7 Coastal districts of Odisha. The state of Odisha is located in the east coast of Indian peninsula. Most of the agricultural region of odisha is located in the coastal belt of Odisha. Agriculture plays a vital role in the economy of Odisha, which is highly influenced by rainfall. Any change in pattern of rainfall cause by climate change can adversely affect the production of crop. Therefore in the current study, an attempt has been made to observe spatio-temporal rainfall change and its trend over a period of 119 years (i.e. 1901-2019). For this study we used the non-parametric trend analysis techniques, namely Mann kendall test and Sen's slope estimator for observing the trend direction and magnitude of the change over the 7 coastal districts of odisha i.e. Balasore, Bhadrak, Ganjam, Jagatsinghpur, Kendrapada, Khorda and Puri. The observed variation in rainfall revealed that, the monsoon season has maximum contribution to annual rainfall and it does not have any strong trend over the coastal areas of Odisha in study period of time. The outcomes of the study gives information on rainfall trends and impact of climate change in coastal districts of Odisha which will be helpful for a water resources manager in the planning and management of water resources for sustainable development and particularly for the benefits of agriculture of coastal odisha.

KEYWORDS: Climate Change, Coastal Odisha, Trend Analysis, Rainfall, Regression line, Mann-Kendall (MK) Test and Sen's Estimator

INTRODUCTION

Variation in Rainfall will be one of the vital factors for determination of impacts of climate change. It is necessary to give instant and systematic attention in the variation of rainfall because it affects the agricultural production and availability of water for drinking purpose (Dore, 2005). Change in the pattern of rainfall has impact on availability of fresh water and agriculture allied sector of the region of Asia Pacific (Cruz et al., 2007). In the last few decades we observe frequently the impact of extreme events like Droughts and Floods, it is due to the result of growth of population, increased in urbanization and increased in the intensity of rainfall. To observe the effect of climate change several studies have been conducted for the analysis of spatial and temporal variations in rainfall. According to the report of the Intergovernmental Panel on Climate Change (IPCC), Precipitation is the most significant factors in the list of climatic variables, commonly used to trace the level and magnitude of climate change and variability (IPCC, 2007).

According to the report of Intergovernmental Panel on Climate change (IPCC, 2007) in the all over Asia the seasonal, annual and spatial variation in precipitation trends were observed during past few decades. It is found that precipitation has increased in the

latitudinal extension of 10° N to 30° N for few decades, it starts from the year 1900 onwards and a decrease trend has noticed after the year of 1970. A decreasing trend of rainfall was found in the latitudes of 10° N to 10° S. But the tropical and sub-tropical regions were observing increased in dry conditions due to decrease in rainfall from 1970. During summer season increasing rainfall was observed in eastern part of Australia in 1950s and this trend is continued for few decades which is observed in initial observation (Nicholls and Lavery, 1992).

Climate change has significant impact on the coastal areas population and agricultural production. According to India's National Communication (NATCOM) to the United Nations Framework Convention on Climate Change (UNFCCC) report (2004), variety of impacts are expected in the coastal areas due to climate change, it include loss of the land property, displacement of population, increased in flood condition in low-lying areas, agricultural impacts (like, loss of yield and employment) and impacts on coastal aquaculture. Change in the Climate is often a concern for the coastal Odisha of India, because every year cyclones occurs in the Bay of Bengal which affects the coastal areas of Odisha. We observed the impact of 1999 tropical super cyclones devastating power which impact on the coastal agricultural system of Odisha.



According to the Odisha state disaster management authority, Droughts are also being experienced by Odisha each year in some regions or the other. During the last 50 years, natural events have affected the state for 41 years out of which drought had hit 19 years. Abnormal rainfall is the most significant factor for severe drought condition in Odisha. The monsoon rain that comes at the end of the October and its pattern does not benefit the state's agriculture activity.

Therefore, the major aim of this research is to analyze the variability in the Rainfall of 7 coastal districts of Odisha. Annual and seasonal trends of rainfall have been studied in this research. The prime objective is to explore the trend in rainfall of 7 districts i.e.

Balasore, Bhadrak, Ganjam, Jagatsinghpur, Kendrapada, Khorda and Puri of coastal Odisha during 1901-2019 at regional level. In this study, we can get knowledge about the rainfall patterns of coastal Odisha, which will help us for better management of agriculture in coastal districts of Odisha, hydropower generation, and other water-related activities.

STUDY AREA

Odisha coastal state lies in the north-eastern part of the Indian Peninsula with 450 km long coastline. The Odisha state comprises 30 districts and covers an area of 1,55,707 sq. km, making it the 9th largest state in the country in terms of area and it is 4.87% of India's whole geographical area.

The Odisha state is coming from a tropical climate. Odisha states observed high temperature, high humidity, about 200cm rainfall varies from medium to high, and short, minor winters. The south-west monsoon comes in between 5th June and 10th June in the coastal area of Odisha. Odisha receive 1451.2 mm of normal rainfall. About 75% to 80% of rainfall is received during the Monsoon season from June to September. The part of the cropped area of Odisha under different crops has increased from 42.37% to 43.79% in 2014-15 to 2018-19, respectively. About 61 lakh hectares of irrigation potential were created in 2018-19 compared to 51.8 lakh hectares in 2014-15. In Odisha, more than 83% of the total population lives in rural areas and depends on the primary activity, i.e. agriculture. Water-consuming rice is its main crop in the coastal districts of Odisha, which needed 200cm of rainfall for cultivation.

The mean annual temperature of the state is 26.89°C with average annual maximum and minimum of 32.56°C and 21.30°C respectively. The temperature in Odisha rises to very high in the

months April and May. Warm is occurring throughout the year in the western districts with maximum temperature lies between 40-46°C. Whereas the climate in the coastal districts are highly humid and sticky. Due to tropical monsoon hydrology and change in climatic variables, the coastal region of state is facing floods, draughts and cyclones in almost every year with different intensity which is adversely affecting the agricultural production in the coastal region of Odisha.

DATA AND METHODOLOGY

Monthly rainfall data for 7 coastal districts of Odisha from 1901 to 2019 for 119 years is considered for analysis of trend, variability, and mean rainfall patterns. These data have been obtained from the India Water Portal and State Relief Commission of Odisha. The study is based upon secondary data sources which are freely available by these organizations. The monthly rainfall data were collected district-wise and categorized into four seasons such as: Winter Season (Jan-Feb), Pre-Monsoon Season (March-May), Monsoon Season (June-Sept), Post-Monsoon Season (Oct-Dec). For identification of the spatial pattern, mean rainfall, and variability, and observed trends, we have used district rainfall series and results have been brought out annually and seasonally. Statistical methods, such as regression analysis and coefficient of determination R^2 (Deshmukh, 2013) are used. The non-parametric tests such as the MK test and Sen's Slope estimator test have been used in this study for trend analysis.

DATA ANALYSIS TECHNIQUE

The MK test is a statistical non-parametric test widely used for trend analysis in climatological and hydrological time series data. This non-parametric test was suggested by Mann (1945) and has been widely used in climatological and environmental time series analysis. The two main advantages of using this non-parametric statistical test is:-the first are It is a nonparametric test, so it does not require whether the data is normally distributed or not and the second is due to inhomogeneous time series, the test has low sensitivity to abrupt breaks. The MK test is also more suitable for the outlier, censored, and missing data of the series. The magnitude of a trend in a time series can be determined using a non-parametric method known as sen's slope estimator (sen, 1968). To estimate the true slope of an existing trend, such as the amount of change per year, we use this statistical test.



RESULTS AND DISCUSSION

a. MEAN AND COEFFICIENT OF VARIATION

COASTAL DISTRICTS	ANNUAL		WINTER		PRE-MONSOON		MONSOON		POST-MONSOON	
	MEAN	CV	MEAN	CV	MEAN	CV	MEAN	CV	MEAN	CV
BALASORE	1536.2	15.6	41.7	86.4	182.1	43.1	1127.4	17.6	185	60.6
BHADRAK	1459	15	37.2	90.7	148.4	45.6	1082.7	16	190.7	57
GANJAM	1140.1	18.2	26.8	92.2	91.6	54.7	796	18.5	225.8	56.8
JAGATSINGHAPUR	1351.1	17.6	29.2	100.2	89.5	56.5	993.1	19.6	239.2	50.6
KENDRAPARA	1475.6	15.4	30.9	97.6	122.6	48.3	1098.6	17.0	223.4	53
KHORDHA	1259	18.5	32.5	100.6	91	53.8	882.1	20.3	253.4	53.7
PURI	1192.1	19.6	25.4	103.3	84.3	52.6	862.5	22.3	219.9	52.5

The table gives the rainfall statistics for the coastal districts of Odisha for the four seasons i.e. Winter season (Jan-Feb), Pre-monsoon Season(March-May), Monsoon Season (June-Sept), Post-monsoon season(Oct-Dec), and Annual. It shows the spatial pattern of the Mean and Coefficient of Variation. Higher the mean value of the district shows the district receives more rainfall and lower the mean value it shows that the district receives less rainfall. We can see that the districts viz. Balasore, Bhadrak receives the highest rainfall, and the Ganjam districts receive the lowest rainfall during the entire year (annual).

Higher the Coefficient of variation indicates the variation is least stable and lower in the CV indicates the variation is very much

stable. The coefficient of variation of rainfall is very high in Winter (values vary from 86.4-103.3). The coefficient of variations of the Pre-monsoon season is higher than the coefficient of variation of Monsoon season and Post-monsoon season, respectively. The Annual values of the coefficient of variation are very low, it varies between 15.0-19.6. From the above, we concluded that in Winter Rainfall variation is more, which means it is very much unstable in comparison to another season. But the CV is very much low in annual value, which means the annual rainfall does not fluctuate or varies more (it is stable). The district viz. Balasore, Bhadrak showing a low Annual coefficient of variation, on the other hand, Kendrapara showing high Annual CV.

b. Trend Analysis using Non-Parametric tests

COASTAL DISTRICTS	ANNUAL			WINTER			PRE-MONSOON			MONSOON			POST-MONSOON		
	P value	MK test	Sen's slope	P value	MK test	Sen's slope	P value	MK test	Sen's slope	P value	MK test	Sen's slope	P value	MK test	Sen's slope
BALASORE	0.008	2.64	1.75	0.30	-1.01	-0.06	0.26	1.11	0.29	0.12	1.55	0.75	0.06	1.82	0.51
BHADRAK	0.15	1.43	0.84	0.18	-1.33	-0.08	0.21	1.23	0.23	0.49	0.68	0.31	0.14	1.46	0.40
GANJAM	0.004	2.82	1.49	0.27	-1.09	-0.04	0.01	2.45	0.32	0.03	2.07	0.75	0.20	1.27	0.43
JAGATSINGHAPUR	0.0001	3.81	2.34	0.05	-1.95	-0.09	0.003	2.89	0.39	0.003	2.91	1.45	0.25	1.13	0.38
KENDRAPARA	0.01	2.54	1.56	0.009	-2.58	-0.13	0.34	0.95	0.15	0.09	1.69	0.90	0.06	1.82	0.54
KHORDHA	0.003	2.97	1.75	0.18	-1.31	-0.04	0.03	2.15	0.31	0.004	2.85	1.26	0.75	0.31	0.12
PURI	0.0001	4.20	2.34	0.03	-2.06	-0.07	0.06	1.81	0.23	0.0002	3.76	1.62	0.18	1.34	0.41

If we considered Annual rainfall trend, we found that Balasore, Ganjam, Jagatsinghpur, Kendrapara, Khordha, Puri districts indicates the presence of a trend in the series. The Jagatsinghpur, Kendrapara, Puri districts show the presence of a trend in the series in Winter. During the Pre-monsoon season, Ganjam, Jagatsinghpur, Khordha districts show the presence of trends in the observations. During the Monsoon season Ganjam,

Jagatsinghpur, Khordha, Puri districts show a trend in the series of observations. During the Post-monsoon season, we found that no districts showed any kind of presence of trend in the observations.

During the Annual Rainfall period, all these districts show positive trends. During, Winter Season all districts show negative



trends. Jagatsinghpur, Kendrapara, Puri districts show significant negative trends in the series. During the Pre-monsoon season, all these districts show positive trends. During the Monsoon season, all districts show significant positive trend. During the Post-monsoon season, Ganjam districts show non-significant negative trends, except all districts show positive trends.

The estimated Sen's slope has been calculated for 7 coastal districts of Odisha on an annual and four-season basis. Positive

Sen's slope value indicates the rising trends of magnitude in the series and the Negative Sen's slope value indicates the decreasing trends of magnitude in the series. During Mann-Kendall's test results, we got some districts that show negative trends, these districts show negative trends in Sen's slope test as well. Mann-Kendall trend analysis has shown a negative trend, similar negative slope has been observed for the Sen's Slope and vice versa.

B. TREND ANALYSIS BY REGRESSION METHOD

COASTAL DISTRICTS	ANNUAL		WINTER		PRE-MONSOON		MONSOON		POST-MONSOON	
	Y value	R2 value	Y value	R2 value	Y value	R2 value	Y value	R2 value	Y value	R2 value
BALASORE	1.8046x - 2000.9	0.0671	- 0.0925x + 222.96	0.0078	0.2064x - 222.37	0.0082	1.0306x - 892.61	0.0323	0.6601x - 1108.9	0.0412
BHADRAK	0.8569x - 220.61	0.0181	- 0.1225x + 277.35	0.0157	0.1897x - 223.47	0.0093	0.266x + 561.35	0.0028	0.5237x - 835.82	0.0276
GANJAM	1.6989x - 2189.8	0.0798	- 0.0773x + 178.39	0.0116	0.2478x - 394.08	0.0291	0.9441x - 1054.4	0.049	0.5844x - 919.64	0.0247
JAGATSINGHAPUR	2.4914x - 3532.1	0.1309	- 0.0956x + 216.62	0.0127	0.4316x - 756.35	0.0868	1.6877x - 2314.8	0.0898	0.4677x - 677.51	0.0178
KENDRAPARA	1.4971x - 1458.8	0.052	- 0.1498x + 324.48	0.0293	0.1265x - 125.32	0.0054	0.856x - 579.28	0.025	0.6644x - 1078.7	0.0374
KHORDHA	2.0053x - 2671.3	0.0887	- 0.0923x + 213.37	0.0095	0.2669x - 432.07	0.0353	1.672x - 2395.1	0.1033	0.1586x - 57.589	0.0016
PURI	2.8044x - 4304.5	0.1715	- 0.0799x + 181.99	0.0111	0.1814x - 271.24	0.0199	2.1688x - 3388.4	0.1509	0.534x - 826.8	0.0254

It is evident from the above tables that Annual Rainfall has increased significantly for the districts of Balasore, Bhadrak, Ganjam, Jagatsinghpur, Kendrapara, Khordha, Puri for which a very weak decrease in Rainfall is observed. If we considered Winter season rainfall, we observed that all the districts show a very weak decrease in rainfall. During the Pre-monsoon season, all districts observed an increase in rainfall. In the Monsoon season all these coastal districts of this season indicate an increase in Rainfall. During the Post-monsoon season also all district shows an increase in Rainfall.

During Annual rainfall, Puri districts show the highest increase in Rainfall (2.8044 mm). Bhadrak district observed the highest decrease in rainfall. During Winter, all districts observe a decrease in rainfall. During the Pre-monsoon season, Kendrapara

districts show the highest increase in rainfall during the last 119 years. Jagatsinghpur district observed the highest decrease in rainfall during the last 119 years. In the Monsoon season, Puri districts observed the highest increase in rainfall during the last 119 years. Ganjam district observed the highest decreased in rainfall during the last 119 years. In the Post-monsoon season, Khorda districts observed the highest increase in rainfall during the last 119 years. Kendrapara districts observed the highest decreased in rainfall during the last 119 years.

CONCLUSION

It is found that the monsoon season has a maximum contribution to annual rainfall, and it does not have any strong trend in nature over the study period. However, it was also observed that there is a great seasonal variation in rainfall trends. The trend analysis



shows that except in winter (which shows negative trends) overall trends show an increment in rainfall.

Balasore district has more rainfall in the annual and pre-monsoon season. Khordha district has high rainfall during the Post-monsoon season. Because of high rainfall in the Khordha district observes urban flood and water-logging problems occurring in this area during the monsoon season. During the Pre-monsoon season Balasore district shows very much stable rainfall.

It is observed that the year 1956 is a change point year, where high rainfall is found in all most every district of Odisha during the Annual and Monsoon season. One other changing point year is 2006, where maximum districts observed high rainfall during annual and monsoon season. Another interesting observation is that if rainfall is high during a year in a district within two years, it decreases.

The Mann-Kendall Test represents both positive and negative trends in the area although not much significant. Rainfall varies in different seasons for different years. Only during the post-monsoon season, all districts observed a non-significant trend. Sen's Slope is also indicating increasing and decreasing magnitude of slope in correspondence with the Mann-Kendall test values.

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INVESTIGATING INTO CUSTOMER PREFERENCE AND SATISFACTION REGARDING FROZEN AND INSTANT FOOD PRODUCTS

Ms. Preethi.K¹, Ms. J. Sri Keerthana., MCOM(CS)²

¹II. M.COM(CS), Department of Corporate Secretaryship, PSG College of Arts & Science, Coimbatore-641014.

²Assistant Professor, Department of Corporate Secretaryship, PSG College of Arts & Science, Coimbatore-641014.

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ABSTRACT

This study aims to explore consumer preferences and satisfaction levels regarding frozen and instant food products. The research employs a mixed-methods approach, combining quantitative surveys and qualitative interviews to gather comprehensive data. The survey will assess factors influencing purchase decisions, such as taste, convenience, price, and perceived healthiness. Additionally, interviews will delve deeper into consumer perceptions, attitudes, and experiences with frozen and instant food items. Findings from this research will provide valuable insights for food manufacturers, retailers, and marketers to better understand customer needs and enhance product offerings to meet evolving consumer demands in the frozen and instant food market segment.

KEYWORDS: Customer preference, Satisfaction, Frozen food, Instant food, Consumer behaviour, Purchase decision, Taste, Convenience, Price, Market research, Food industry.

INTRODUCTION

In today's fast-paced world, frozen and instant food products have become popular choices for consumers seeking convenience without compromising taste or nutrition. As this market continues to expand, understanding customer preferences and satisfaction is crucial for businesses. This investigation aims to explore factors like taste, convenience, health considerations, pricing, and brand loyalty driving consumer choices. Through surveys, focus groups, data analysis, and demographic profiling, we aim to understand consumer behavior in this market. By identifying key drivers influencing customer perceptions and purchasing decisions, we can inform strategies for product development and marketing initiatives, ultimately driving growth and success in the competitive landscape of frozen and instant food products.

OBJECTIVES OF THE STUDY

- 1.To assess the awareness of frozen and instant food products
- 2.to explore the factors influencing customer preferences for frozen and instant food products
- 3.to ascertain satisfaction level of frozen and instant food products
- 4.to gauge the perception of price levels of frozen and instant food products

RESEARCH METHODOLOGY

TYPE OF RESEARCH

The present type of research belongs to the category of 'Descriptive study'. Descriptive study are undertaken when the researcher is interested in knowing the characteristics of certain groups, assessing behaviour, making projections or for determining the relationship between z or more variables.

SOURCES OF DATA

The research should keep in mind two types of data while collecting data via primary data and secondary data.

PRIMARY DATA

Primary data may be described as those data that have been observed and recorded by the researcher for the first time to their knowledge. The survey method frank questionnaire with general face-to-face interaction of students. A questionnaire was prepared and with the help of which the primary data has been collected.

SECONDARY DATA

These data already exist in the magazines. I collect the secondary data from:-Various Magazines published Journals, Internet and Books.



AREA OF THE STUDY

The area of study was covered within Coimbatore City, the second largest urban center in TamilNadu.

SAMPLE SIZE

The sample size of the study is to be 104 respondents.

FINDINGS AND RESULT

TABLE: 1 GENDER

S.NO	Gender	No. Of Respondents	Percentage(%)
1	Male	45	43.3
2	Female	59	56.7
	TOTAL	104	100.0

Source: Primary data

INTERPRETATION: From above table1, it is concluded that 43.3% of the respondents were Male and 56.7% were Female

The majority of the respondents of the study were Female (56.7%).

TABLE: 2 AGE

S.NO	Age	No. Of Respondents	Percentage(%)
1	18 to 21	12	11.5
2	22 to 25	61	58.7
3	26 to 30	25	24.0
4	30 and above	6	5.8
	TOTAL	104	100.0

Source: Primary data

INTERPRETATION
From above table 2, 11.5% of the respondents were 18 to 21 years old followed by 58.7% of respondents were at the age of 22 to 25

years, 24.0% of people belong to the age group of 26 to 30 years and 5.8% of respondents were 30 and above.
The majority of the respondents belonged to the age group of 22 to 25 (58.7%).

TABLE: 3 EDUCATIONAL LEVEL

S.NO	Educational level	No. Of Respondents	Percentage(%)
1	Schooling	6	5.8
2	Under Graduate	50	48.1
3	Post Graduate	42	40.4
4	Others	6	5.8
	TOTAL	104	100.0

Source: Primary data

INTERPRETATION
From the above table 3, 5.8% of respondents has educational level of schooling, 48.1% of respondents were under graduate, 40.4%

of respondents were post graduate, 5.8% held other educational qualifications.
Majority of the respondents were under graduates (48.1).

TABLE: 4 PURCHASE FROZEN OR INSTANT FOOD PRODUCTS FOR MEAL

S.No	PURCHASE FROZEN OR INSTANT FOOD PRODUCTS FOR MEAL	No. Of respondents	Percentage(%)
1	Daily	7	6.7
2	Weekly	42	40.4
3	Occasionally	48	46.2
4	Never	7	6.7
	TOTAL	104	100.0

Source: Primary data

INTERPRETATION
From the above table 4, 6.7% of respondents purchase frozen and instant food products for meal daily, 40.4% of respondents purchase weekly, 46.2% purchase occasionally and 6.7%

respondents never purchase frozen and instant food products for meal.
Majority of the respondents purchase frozen and instant food products for meal occasionally (46.2%).



TABLE: 5 BENEFIT OF CONSUMING FROZEN AND INSTANT FOOD PRODUCTS

S.NO	BENEFIT OF CONSUMING FROZEN AND INSTANT FOOD PRODUCTS	NO. OF RESPONDENTS	PERCENTAGE (%)
1	Convince	17	16.3
2	Time consuming	42	40.4
3	Easy preparation	24	23.1
4	Cost effective	21	20.2
	TOTAL	104	100.0

Source: Primary data

INTERPRETATION

From the above table 5, 16.3% of respondents perceive convince as the benefit of consuming frozen and instant food product, 40% perceive time consuming as benefit, 23.1% of respondents

perceive easy preparation as benefit, 20.2% respondents perceive cost effective as benefit.

Majority of the respondents perceive time consuming as the benefit of consuming frozen and instant food products (40.4%).

TABLE: 6 PREPARATION OF FROZEN FOOD PRODUCTS AT HOME

S.NO	PREPARATION OF FROZEN FOOD PRODUCTS AT HOME	NO. OF RESPONDENTS	PERCENTAGE(%)
1	Microwave	14	13.5
2	oven	42	40.4
3	Stovetop	36	34.6
4	other	12	11.5
	TOTAL	104	100.0

Source: Primary data

INTERPRETATION

From the above table 6, 13.5% of respondents typically prepare frozen foods products at home by microwave, 40.4% prepare by

oven, 34.6% prepare by stovetop, 11.5% prepare frozen food products by other source.

Majority of the respondents prepare frozen food products at home by oven(40.4%).

TABLE: 7 INFLUENCE FACTORS

PURCHASE	RANK 4	RANK 3	RANK 2	RANK 1
CONVINCE	16	35	23	30
PRICE	9	26	46	23
TIME-SAVING	11	43	24	26
TASTE AND PREFERENCES	55	13	15	21

$100(R_{ij}-0.5)/N_j$	Calculated value	Garret value
$100(4-0.5)/4$	87.5	27
$100(3-0.5)/4$	62.5	44
$100(2-0.5)/4$	37.5	56
$100(1-0.5)/4$	12.5	73

S.No	Purchase	4	3	2	1	Total	Average score	rank
1	CONVINCE	432	1540	1288	2190	5448	52.38	II
2	PRICE	243	1144	2576	1679	5642	54.25	I
3	TIME-SAVING	297	1892	1344	1898	5431	52.22	III
4	TASTE AND PREFERENCES	1485	572	840	1533	4430	42.59	IV

Source: Primary data



INTERPRETATION

From the above 7, price ranked 1 for purchase of frozen and instant food products, convenience ranked 2, time saving ranked 3 and taste and preferences ranked 4.

Majority of the respondents influenced by price of the product (54.25%).

TABLE: 8 NUTRITIONAL VALUE WHEN SELECTING FROZEN OR INSTANT FOOD PRODUCTS ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Sugar content	Between Groups	1.615	3	.538	.586	.626
	Within Groups	91.914	100	.919		
	Total	93.529	103			
Protein content	Between Groups	3.834	3	1.278	1.553	.206
	Within Groups	82.320	100	.823		
	Total	86.154	103			
Calories	Between Groups	9.969	3	3.323	2.838	.042
	Within Groups	117.070	100	1.171		
	Total	127.038	103			
Fiber content	Between Groups	2.855	3	.952	.677	.568
	Within Groups	140.529	100	1.405		
	Total	143.385	103			

Source: Primary Data

INTERPRETATION

The above table 8, gives a result of the relationship between age and value when selecting frozen or instant food products using One way ANOVA.

Relationship between age and value when selecting frozen or instant food products

From the above table the significant value of association between age and value when selecting frozen or instant food products is >0.05. So, we are accepting null hypothesis and rejecting alternative hypothesis.

So, there is **no Significant association** between age and value when selecting frozen or instant food products.

Relationship between age and value when selecting frozen or instant food products:

From the above table the significant value of association between age and value when selecting frozen or instant food products is >0.05. So, we are accepting null hypothesis and rejecting alternative hypothesis

So, there is **no Significant association** between age and value when selecting frozen or instant food products.

Relationship between age and value when selecting frozen or instant food products:

From the above table the significant value of association between age and sensory cues that restaurants use to attract customers is <0.05. So, we are rejecting null hypothesis and accepting alternative hypothesis.

So, there is **Significant association** between age and value when selecting frozen or instant food products

Relationship between age and value when selecting frozen or instant food products:

From the above table the significant value of association between age and value when selecting frozen or instant food products is >0.05. So, we are accepting null hypothesis and rejecting alternative hypothesis

So, there is **no Significant association** between age and value when selecting frozen or instant food products.

TABLE: 8 - T-TEST FOR ENVIRONMENTAL OR SUSTAINABILITY FACT THAT INFLUENCED BY MARKETING OR ADVISED CAMPAIGN WHEN CHOOSING FROZEN OR INSTANT FOOD PRODUCTS



H0: There is no significant relationship between environmental or sustainability factor and marketing or advised campaign when choosing frozen or instant food products.

H1: There is a significant relationship between environmental or sustainability factor and marketing or advised campaign when choosing frozen or instant food products.

One-Sample Test

	t	df	Significance One – Sided p
Environmental or sustainability factor	24.234	103	<.001
Marketing or Advised campaign	28.346	103	<.001

Level of significance: 5% or $\alpha=0.05$

From the table 4.15, the p value of T Test is less than 0.05. So, we are rejecting the null hypothesis and accepting the alternative hypothesis. So, there is a significant relationship between

environmental or sustainability factors and marketing or advised campaigns when choosing frozen or instant food products.

TABLE: 9 -CHI-SQUARE TEST FOR COMPARING ANNUAL INCOME AND PRICE INFLUENCES THE CHOICE OF FROZEN AND INSTANT FOOD PRODUCTS

Cross tabulation for comparing annual income and price influences the choice of frozen and instant food products.

		Price influences				Total
		Strongly Influence	Has Little Influence	Neutral	Does Not Influence	
Annual Income	Less than 200000	10	10	5	2	27
	200000 to 300000	2	15	2	2	21
	300001 to 400000	3	15	7	1	26
	More than 400000	0	19	11	0	30
Total		15	59	25	5	104

Source: Primary Data

INTERPRETATION

From the above table 9, Respondents with less than 200000 income, 10 respondents has strongly influence to price, 10 respondents have little influence on price, 5 respondents have neutral influence on price and 2 respondents do not have any influence with price.

Respondents with annual income of 200000 to 300000, 2 respondents has strong Influence to price, 15 respondents has little influence in price, 2 respondents have neutral influence on price and 2 respondents does not have any influence on price

Respondents with annual income of 300001 to 400000, 3 respondents have strong influence to price, 15 has little influence on price, 7 have neutral influence on price and 1 respondent do not have any influence on price

Respondents with annual income of more than 400000, 19 respondents has little influence in price and 11 respondents have neutral influence on price.

H0: There is no significant association between annual income and price influences the choice of frozen and instant food products.

H1: There is a significant association between annual income and price influences the choice of frozen and instant food products.



Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.172 ^a	3	.760
Likelihood Ratio	1.172	3	.760

Level of significance: 5% or $\alpha = 0.05$

From the above table, p value of chi square test is less than 0.05. So, we are rejecting the null hypothesis and accepting **alternative hypothesis**. So, there is a significant association between annual income and price that influences the choice of frozen and instant food products.

CONCLUSION

Investigating customer preference and satisfaction regarding frozen and instant food products is crucial for businesses aiming to thrive in this competitive market. By employing diverse research methodologies tailored to capture various aspects of customer preferences, valuable insights can be gained. Ensuring a representative sample across different demographics is essential to accurately understand consumer behavior. Designing comprehensive surveys or discussion guides facilitates thorough data collection. Analyzing the collected data enables the identification of key insights and patterns. Interpreting findings and preparing a detailed report with actionable recommendations ensures informed decision-making. Ultimately, by understanding and responding effectively to customer needs, businesses can enhance satisfaction, drive growth, and succeed in the frozen and instant food products market.

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A STUDY ON AWARENESS OF ONLINE EMPLOYMENT SCAM

Ms. Pavithra B¹, MS. J Sri Keerthana²

¹II. M.COM (CS), Department of Corporate Secretaryship, PSG College of Arts & Science, Coimbatore-641014.

¹Assistant Professor, Department of Corporate Secretaryship, PSG College of Arts & Science, Coimbatore-641014.

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ABSTRACT

In the digital age, online employment opportunities have surged, presenting both genuine opportunities and deceptive pitfalls. This abstract explores the growing awareness of online employment scams, shedding light on their intricacies, impacts, and preventive measures. With the proliferation of remote work, individuals are increasingly vulnerable to sophisticated schemes promising lucrative jobs but delivering financial loss and emotional distress. Understanding the modus operandi of these scams, such as fake job postings, fraudulent payment requests, and identity theft, is crucial for safeguarding against them. Moreover, raising awareness through education, dissemination of information, and collaboration between stakeholders can empower individuals to discern legitimate opportunities from malicious ploys. Through proactive measures and informed decision-making, individuals can navigate the virtual employment landscape with resilience and confidence, mitigating the risks posed by online employment scams.

KEYWORDS: *Phishing, Identity theft, work from home, Upfront payment, Payment request.*

INTRODUCTION

The rise of online employment opportunities has transformed the job for individuals a convenient avenue to seek employment from the comfort of their homes. This has also given rise to a concerning a rapid increase in online employment scams . Employment fraud is the attempt to defraud people seeking employment by giving them false hope of better employment, offering better working hours, more respectable tasks, future opportunities, or higher wages. They often advertise at the same locations as genuine employers and may ask 2 for money in exchange for the opportunity to apply for a job. A job scam is a type of fraud where a company – or someone posing as a company – targets a job hunter. The sensitive information is then issued by the fraudsters in many ways, compromising the privacy and security of the job seekers. They do so in order to obtain money or free work from the individual. As technology advances, so do the tactics of fraudsters who exploit unsuspecting job seekers. Scammers offer jobs that pay well with low effort. But it's only the scammer that will make money in the end.

OBJECTIVE OF THE STUDY

- To assess the level of awareness among individuals about online employment scam
- To examine the tactics used by scammers in online employment scams
- To analyse the effectiveness of current measures in place to prevent online employment scams.
- To Explore the psychological factors that influence individuals' decision-making when it comes to online job opportunities

RESEARCH METHODOLOGY

Sample Size

The sample size of this study is 125 responses.

Area of Study

The area covered under this research is Coimbatore city.

Source of data

This study receives data from primary source of data collected through circulation of Google forms.



FINDINGS AND RESULTS

SIMPLE PERCENTAGE

TABLE NO 1 GENDER

Gender	No of respondents	Percentage
Male	42	36.8
Female	72	63.2
Total	114	100.0

Source : Primary Data

INTERPRETATION

The above table shows that out of 114 respondents,36.8% are male and 63.2% are female.

It is Inferred that the (63.4%) of the respondents are female.

TABLE NO 2 - AGE

Age	No of respondents	Percentage
18 – 21	33	28.9
22- 25	64	56.1
26 – 29	8	7.0
30 and above 30	9	7.9
Total	114	100.0

(Source : Primary Data)

INTERPRETATION

The tables shows that out of 114 respondents ,28.9% are in the age group of 18-21% age, 56.1 % are in the age group of 22-25

age, 7.0 % are in the age group of 26-29 age and 7.9% are in the age group of 30 and above 30 age.

It is inferred that the (56.1%) of the respondents are between the age group of 22-25 years.

TABLE NO 3 INCOME

Income	No of respondents	Percentage
100000-200000	63	55.3
200001-300000	20	17.5
300001-400000	14	12.3
Above 400000	17	14.9
Total	114	100.0

(Source : Primary Data)

INTERPRETATION

The above table shows that out of 114 respondents, 55.3% are 100000-200000 income,17.5% are 200001-300000

income,12.3% are 300001-400000 income and 14.9% are above 400000.

It is inferred that the (55.3%) of the respondents are between the income group of 100000-200000.

ANOVA

TABLE NO 4 - SHOWS EDUCATION AND FACTORS INFLUENCING TO TAKE DECISIONS

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Financial Depression	Between Groups	3.464	3	1.155	.811	.490
	Within Groups	156.606	110	1.424		
	Total	160.070	113			



Trustworthiness	Between Groups	.558	3	.186	.187	.905
	Within Groups	109.380	110	.994		
	Total	109.939	113			
Fear of missing out	Between Groups	5.004	3	1.668	1.292	.281
	Within Groups	142.013	110	1.291		
	Total	147.018	113			
Emphasis on salary offer	Between Groups	19.177	3	6.392	4.270	.007
	Within Groups	164.682	110	1.497		
	Total	183.860	113			
Personal validation on employment	Between Groups	21.959	3	7.320	3.053	.032
	Within Groups	263.698	110	2.397		
	Total	285.658	113			

H0: There is no significant association between education and factors influencing to take decision.

H1: There is a significant association between education and factors influencing to take decision.

(Source : Primary Data)

INTERPRETATION

The above table gives a result of relationship between education and factors influencing to take decision on online employment using one way ANOVA.

Relationship between education and financial depression

From the table the significant value of association between education and financial depression of assistance is >0.05 . So, we are accepting null hypothesis and rejecting alternative hypothesis. So, there is no significant association between education and financial depression.

Relationship between education and trust worthiness

From the table the significant value of association between education and trust worthiness of assistance is >0.05 . So, we are accepting null hypothesis and rejecting alternative hypothesis. So, there is no significant association between education and financial depression.

Relationship between education and fear of missing out

From the table the significant value of association between education and fear of missing out of assistance is >0.05 . So, we

are accepting null hypothesis and rejecting alternative hypothesis. So, there is no significant association between education and financial depression.

Relationship between education and emphasis on salary offer

From the table the significant value of association between education and emphasis on salary offer of assistance is <0.05 . So, we are rejecting null hypothesis and accepting alternative hypothesis. So, there is significant association between education and financial depression.

Relationship between education and personal validation on employment

From the table the significant value of association between education and personal validation on employment of assistance is <0.05 . So, we are rejecting null hypothesis and accepting alternative hypothesis. So, there is significant association between education and financial depression.

TABLE NO 5 - PERSONAL FACTORS AND LEARNING ABOUT ONLINE JOB SCAM

Factor	p value	Dif	sag. Value	S/NS
Occupation	22.015a	9	0.009	S
Gender	8.963a	3	0.030	s
Income	5.943a	9	0.746	NS

Note: S: Significant (p value ≤ 0.05), NS: Not Significant (p value > 0.05)

(Source : Primary Data)



INTERPRETATION

H0: There is no significant association between personal factors and learning about online employment scam

H1: There is a significant association between personal factors and learning about online employment scam

From the table, p value chi square test is less than 0.05. So, we are accepting the null hypothesis and rejecting the alternative

hypothesis and in two case p value of chi square test is greater than 0.05. So, we are rejecting null hypothesis and accepting alternative hypothesis.

It is concluded that the occupation and gender have significant associations on learning about online job scam and income have no significant association on the learning about online employment scam.

TABLE NO 6 COMPARISION OF MARTIAL STATUS AND FAMILIARITY OF COMMON ONLINE JOB SCAM

Factor	p value	Dif	sag. Valu	S/NS
Education	26.045a	9	0.002	S
Martial status	21.427a	3	<.001	S
Residential status	7.487a	6	0.278	NS

Note: S: Significant (p value <=0.05), NS: Not Significant (p value >0.05)
(Source : Primary Data)

INTERPRETATION

H0: There is no significant association between personal factors and learning about online employment scam

H1: There is a significant association between personal factors and learning about online employment scam

From the table, p value chi square test is less than 0.05. So, we are accepting the null hypothesis and rejecting the alternative hypothesis and in two case p value of chi square test is greater than 0.05. So, we are rejecting null hypothesis and accepting alternative hypothesis.

It is concluded that the education and martial status have significant association o familiarity of online employment scam and no significant association on the residential status and familiarity of online employment scam.

CONCLUSION

In conclusion, Online employment scams represent a multifaceted and evolving threat in the digital landscape. Enhancing consumer education and awareness, strengthening collaboration between industry stakeholders and law enforcement agencies, implementing more stringent verification processes on online job platforms, and developing technological solutions to detect and mitigate fraudulent activities. Awareness of online employment scams is crucial for protecting oneself from falling victim to fraudulent schemes. By educating individuals about the common tactics used by scammers, providing tips for identifying suspicious job postings, and promoting skepticism towards overly lucrative offers, we can empower people to make informed decisions and avoid becoming victims of online employment scams.

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THE EFFECT OF TAX EDUCATION, TAX AWARENESS AND TAX MORALITY ON TAX COMPLIANCE OF INDIVIDUAL TAXPAYERS

¹Dewi Widiastuti*, ²Agustin Fadjarjanie

¹Departement of Accounting, Mercu Buana University, Jakarta, Indonesia

²Departement of Accounting, Mercu Buana University, Jakarta, Indonesia

*Corresponding Author

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ABSTRACT

This study aims to examine the effect of tax education, tax awareness, and tax morality on individual taxpayer compliance. The population in this study is vocational teachers spread across DKI Jakarta, Indonesia. The reason for choosing teachers as a sample is because the role of educators is very significant to build an awareness of the paradigm of tax compliance from an early age to students. The research method used is a quantitative method, using the Structural Equation Model approach (SEM) based on Partial Least Square (PLS). The results show that tax education, tax awareness, and tax morality have a positive effect on tax compliance

KEYWORDS: Tax Education, Tax Awareness, Tax Morality, Tax Compliance

INTRODUCTION

Taxes resources are an important state revenue in funding development to achieve national welfare on developing country such as Indonesia. There are two primary revenue sources that are announced in Indonesia State Budget, namely state revenue originating from taxes and non-tax state revenue. Taxes are the main pillar of Indonesia revenue. Based on Central Bureau of Statistics data, almost 80% of the Indonesia revenue comes from taxes on the period 2016 – 2021. Furthermore, a survey conducted by OECD in Revenue Statistics 2021 report in Asia & the Pacific, Indonesia is listed as the country with the third lowest tax ratio out of twenty-four countries in Asia and Pacific. The tax ratio is the comparison between tax revenue and GDP in a certain period of time. Indonesia's tax ratio in 2019 reached 11.6%, below the average of twenty-four Asian and Pacific countries, namely 21%. The OECD also mentions that Indonesia's tax ratio is below the average of thirty African countries, which is 16.6%. The low tax ratio that does not meet world bank standards, namely 15%, shows a lack of taxpayer compliance (Rahayu, 2017).

Tax compliance is an act that is done consciously based on obedience, desire and ability to comply with tax regulations (Andreoni et al., 1998) It is not an easy thing for the government to force taxpayers to comply with their tax obligations. This is similar in any country, both developing and developed countries. Many taxpayers who have complied with the subjective and objective requirements do not comply with their tax obligations every year. Indonesia uses indicators to measure tax compliance by looking at the ratio of submission of Annual Tax Returns (SPT), where this indicator

is also used by Pricewaterhouse Coopers in measuring tax compliance in 190 countries in the world.

Education about taxes makes it possible to increase knowledge about taxes. Palil & Mustapha (2011) said that tax knowledge affects tax compliance. The better the tax knowledge, the higher the level of tax compliance. Tax knowledge can increase awareness and ethics, thereby reducing the tendency of tax non-compliance (Eriksen & Fallan, 1999). Study conducted by Ilhamsyah et al. (2016) also stated that tax knowledge can have an impact on tax compliance, and this study in line with Widiastuti et al. (2013).

Tax compliance is also closely related to the individual's basic motivation to pay taxes. Several previous studies have stated that tax morality can affect tax compliance. According to Torgler (2003) tax morality is the motivation to pay taxes. Then morality can also be defined as a moral obligation to pay taxes or a belief in the role that can be given to the social environment through paying taxes (Frey & Torgler, 2007). Others factors that can affect tax compliance is tax awareness. Various efforts that have been made by the government, for example the Tax Awareness Inclusion Program in primary and secondary education aim to increase awareness of paying taxes for students and teachers which are carried out through the integration of tax awareness materials in the curriculum. This collaboration is carried out to further increase competence in mastering the important elements of the state foundation which is taxation.

Teachers were targeted as a subject of this research because the role of teachers in tax education which provides an understanding of tax concepts. Teachers as agents of change have an important role for prospective taxpayers in providing tax awareness which is expected to increase taxpayer



compliance in accordance with applicable tax regulations, both through the national education curriculum and through various activities. The awareness of paying taxes that is instilled in education will carry over to students whether they choose to work, study or become entrepreneurs. This is also in line with the opinion of the Minister of Finance of the Republic of Indonesia who stated that education, socialization, and understanding of taxes must be carried out even from an early age.

This research aims to retest, update, and combine several variables as antecedents to tax compliance consisting of tax education, tax awareness, and tax morality. Thus, this research study will provide a comprehensive grasp on the level of individual taxpayer compliance by vocational school teachers who have a key role in providing tax education for the younger generation. Specifically, this research tried to:

1. Analyze the influence of tax education on individual taxpayer tax compliance.
2. Analyze the influence of tax awareness on individual taxpayers' tax compliance.
3. Analyze the influence of tax morality on individual taxpayers' tax compliance.

HYPOTHESIS OF THE STUDY

H0₁: There is a no significant effect of tax education on individual taxpayer tax compliance.

H0₂: There is a no significant effect of tax awareness on individual taxpayers' tax compliance.

H0₃: There is a no significant effect of tax morality on individual taxpayers' tax compliance.

REVIEW OF LITERATURE

Tax education should be obtained by all taxpayers, so that all taxpayers have a more proper knowledge of taxation. This can be interpreted if the taxpayer has obtained adequate knowledge of taxes, then compliance in carrying out tax obligations will also increase (Justicia & Theilen, 2018). Research conducted by Kasipillai et al., (2003) also found that tax education has an impact on tax compliance. Other's empirical evidence by Widia & Yasa, (2021) obtained the result that the level of education has an impact on taxpayer compliance. So, Sebele-mpofu & Chinoda (2019) argues that tax education is a factor that greatly impacts tax compliance.

Taxpayer awareness is a condition in which the taxpayer knows, understands and implements tax provisions appropriately and voluntarily. The higher the level of taxpayer awareness, the better the understanding and implementation of tax obligations so that compliance can increase (Siamena et al., 2017). Study conducted by Tanilasari & Gunarso, (2017) obtained the result that taxpayer awareness has a positive impact on taxpayer compliance. Then, Siamena et al., (2017) in line with the empirical evidence that taxpayer awareness has a positive effect on individual obligatory compliance. The same evidence, Uzunali et al. (2021) also concludes that taxpayer awareness is able to increase tax revenue.

Tax morality is most often defined as the willingness to pay taxes (Horodnik, 2018). The difference between tax awareness and tax morality is that tax awareness consists of the positive and negative perceptions of all taxpayers about taxes. Conversely, tax morality is expressed as behavior in carrying out tax obligations according to regulations. Tax morale is one of the main determinants of tax compliance. (Uzunali et al., 2021). Research conducted by Uzunali et al., (2021) concluded that the morality of the taxpayer is able to increase tax revenue. Other's empirical evidence by Okpeyo et al. (2019) concluded that tax morality has a positive impact on tax compliance. In line with the result, Tyas (2013) concludes that taxpayer morale has a positive impact on compliance with paying taxes.

METHODS

This study uses a quantitative method that testing the hypothesis using SEM PLS approach. The population in this study were vocational school teachers located in Jakarta, Indonesia. Based on data Indonesian Ministry of Education and Culture, vocational teachers in Jakarta were 11.340 person. Samples number were determined using taro Yamane formula (Sugiyono, 2018) and the total sample were 386 vocational teachers. Simple random sampling was used as a sampling technique for this research on vocational school teachers spread across five administrative city areas of Jakarta, Indonesia. The data collection procedure uses an online survey via Google Form and the time period required about fourth months.

The research instrument used a questionnaire employing a five Likert scale to measure participants' responses regarding tax education, tax awareness, tax morality, and tax compliance of individual taxpayers. Tax education measurement adopted Tologana (2015) and Widia & Yasa (2021) which consists of 4 items with 5 Likert scales. Tax awareness measurement adopted Uzunali et al. (2021) and Nurlis & Ariani (2020) which consists of 6 items with 5 likert scales. Tax morality measurement adopted Uzunali et al. (2021) and Okpeyo et al. (2019) which consists of 7 items with 5 likert scales. Tax compliance measurement adopted Uzunali et al. (2021) and Okpeyo et al. (2019) which consists of 5 items with 5 likert scales.

RESULTS AND DISCUSSIONS

Respondent Demographics

The respondents of this research were vocational school teachers who worked in Jakarta area with characteristics based on gender, namely 131 men (33.85%) and 256 women (66.15%). Characteristics of respondents based on age, 18-25 years as many as 29 individuals (7.50%), 26-35 years as many as 103 individuals (26.61%), 36-45 years as many as 103 individuals (26.61%), and 46- 60 years old as many as 152 individuals (39.28%). Characteristics of respondents based on their level of education, namely 267 individuals (68.99%) with a bachelor's degree and 120 individuals (31.01%) with a master's degree.



Descriptive Statistics

Descriptive statistics are statistics that can describe the variables. The description of this variable is a reflection of the respondent's perception as an individual taxpayer's regarding

the research variable. Respondents' perceptions will be measured through scores, where the determination of the measurement criteria can be seen in the table 1. below:

Table 1. Respondents' Perception Categories

Interval Mean	Difference	Category
1.00-1.79	0.79	Very poor
1.80-2.59	0.79	Poor
2.60-3.39	0.79	Quite good
3.40-4.19	0.79	Good
4.20-5.00	0.80	Very good

Source: Pimentel (2019)

The results of mean value of each variable can be seen in table 2 below:

Table 2. Descriptive Statistics Of All Variable's

Items	Mean	Description	Items	Mean	Description
X1.1	4.12	Good	X3.1	4.38	Very good
X1.2	4.29	Very good	X3.2	4.07	Good
X1.3	4.16	Good	X3.3	4.22	Very good
X1.4	4.27	Very good	X3.4	4.11	Good
Average	4.21	Very good	X3.5	4.08	Good
			X3.6	4.20	Very good
X2.1	4.33	Very good	X3.7	4.34	Very good
X2.2	4.03	Good	Average	4.20	Very good
X2.3	3.99	Good	Y. 1	4.65	Very good
X2.4	4.41	Very good	Y.2	4.40	Very good
X2.5	4.39	Very good	Y.3	4.37	Very good
X2.6	4.35	Very good	Y.4	4.51	Very good
Average	4.25	Very good	Y.5	4.41	Very good
			Average	4.47	Very good

Based on the table 2, total average value for the tax education variable (X1) are 4.21, which means that the majority of respondents related to tax education already have a very good understanding and knowledge about taxes. Total average value for the tax awareness variable (X2) are 4.25, which means that the majority of respondents related to tax awareness already have very good awareness about taxes. Total average value for the tax morality variable (X3) are 4.25, which means that the majority of respondents related to tax morality already have very good principles and morals to comply with all tax regulations. Total average value for the tax compliance variable (Y) are 4.47, which means that the majority of respondents related to tax compliance already have very good principles and morals to comply with all tax regulations.

Evaluation of the Measurement Model (Outer Model)

Outer model test aims to specify the relationship between latent variables and their indicators. all scales in business research and related methodological texts on scale development use a reflective approach to their measurement (Coltman et al., 2008). The series of tests for the outer model consists of:

Convergent Validity

Convergent validity relates to the principle that measures of a construct should be highly correlated. An indicator is said to be valid if its value is between 0.6 - 0.7 while the loading factor is below 0.60, so it will be discarded from the model (Hair et al., 2019).



Table 3. Structural Model after Elimination

Tax Education	Outer loadings	Tax Education	Outer loadings
X1.1	0.791		
X1.2	0.852	X2.1	0.760
X1.3	0.885	X2.4	0.884
X1.4	0.801	X2.5	0.870
Tax Morality	Outer loadings	X2.6	0.803
X3.1	0.739	Tax Education	Outer loadings
X3.2	0.782		
X3.3	0.849	Y.1	0.730
X3.4	0.773	Y.2	0.762
X3.5	0.782	Y.3	0.816
X3.6	0.799	Y.4	0.758
X3.7	0.828	Y.5	0.721

Table 3 shows the result of outer loading value after eliminating the items X2.2 (0.588) and X2.3 (0.583) because the loading factor is below 0.60. After eliminating these two items, all items have outer loading values above 0.70. So it can be concluded that all of these item variables are valid for research.

Discriminant Validity

Discriminant validity testing of measurement models with reflexive indicators can be assessed through Heterotrait-Monotrait Ratio (HTMT) value the constructs. The HTMT criteria states that if the value is less than 0.90, there are no issues related to discriminant validity (Hair et al., 2019)

Table 4. Monotrait Heterotrait Test (HTMT)

Variable	Tax Compliance	Tax Awareness	Tax Morality	Tax Education
Tax Compliance				
Tax Awareness	0.828			
Tax Morality	0.776	0.846		
Tax Education	0.700	0.710	0.811	

Table 4. shows that overall HTMT values for each variable are below 0.900 which indicates that all variable's are valid and no issues related to discriminant validity.

composite reliability and Cronbach's alpha tests. If all latent variable values have composite reliability values > 0.70 and Cronbach alpha > 0.70 this means that the construct has good reliability, or the questionnaire used as a tool in research is reliable or consistent (Hair et al., 2019).

Reliability Test

All items of questionnaire are reliable if consistent or stable over time and the test will be carried out by conducting

Table 5. Reliability Test

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Tax Compliance	0.814	0.816	0.871	0.575
Tax Awareness	0.849	0.851	0.899	0.690
Tax Morality	0.902	0.906	0.923	0.630
Tax Education	0.852	0.854	0.900	0.694

Table 5. are the results of construct reliability test, it shows that the variables of Tax Education, Tax Awareness, Tax Morality as well as Taxpayer Compliance have an acceptable level of reliability because cronbach's alpha value is above 0.700 and composite reliability value also above 0.700. From the table 5. above, it shows an Average Variance Extracted

(AVE) value above 0.500 which indicates that the construct can explain 50% or more of the item variation and passed convergent validity issues (Hair et al., 2019).



Collinearity Test

Collinearity test was carried out by looking at Variance Inflation Factor (VIF) value on the inner collinearity. VIF value of 5 or more indicates a collinearity problem between

predictor constructs (Hair et al., 2019). The results of statistical calculations of inner collinearity values are as follows:

Table 6. Inner collinearity

Variable's	Tax Compliance
Tax Awareness	2,312
Tax Morality	2,996
Tax Education	2.108

Table 6 shows the results of the inner collinearity test where all variables show VIF values below 5.00, so it can be concluded that there are no collinearity issues between variables.

Structural Model Evaluation (Inner Model) f Square

This test is carried out to see effect sizes which can show the level of contribution of each exogenous variable to the endogenous variable. The effect sizes criteria are divided into three categories, *first*, small category if the f Square value is 0.02 – 0.14. Then, medium category if the f Square value is 0.15 – 0.34, and strong category if the f Square value is above 0.35 (Hair et al., 2019). The following are the effect size values for each model and their interpretation:

Table 7. f Square

	F Square	Result
Tax Awareness -> Tax Compliance	0.153	Medium
Tax Morality -> Tax Compliance	0.050	Small
Tax Education -> Tax Compliance	0.025	Small

R Square

The R Square value is between 0 and 1, if the value = 0.25 – 0.49 is considered weak, 0.50 – 0.74 is moderate, and if the

value more than 0.75 is considered strong. The research model created has one equation that can be measured and the following are the results and its interpretation:

Table 8. R Square

Construct	R Square	Result
Tax Compliance	0.544	moderate

Hypothesis Testing

The significance value to determine the influence between variables can be obtained using bootstrapping or jackknifing procedures. If the t-count value > t-table (1.96) at the

significance level ($\alpha = 5\%$) then the estimated value of the path coefficient is significant. The results of calculating the estimated path coefficient are as follows:

Table 9. Hypothesis Testing

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ((O/STDEV)	P values
Tax Awareness -> Tax Compliance	0.401	0.405	0.057	6,993	0.000
Tax Morality -> Tax Compliance	0.261	0.262	0.068	3,853	0.000
Tax Education -> Tax Compliance	0.156	0.155	0.065	2,410	0.016

The effect tax education on taxpayer compliance

Table 9, show that tax education has a significant impact on taxpayer compliance (t value = 6.993; p value = 0.000) and positive direction (Original sample = 0.401) related relationship between tax education and taxpayer compliance so that H1 is accepted. The results are in line with Susanti et al. (2020) who concluded that the level of education affects a person's compliance with paying their taxes. These results are

also in line with Nurlis & Ariani (2020), Tyas (2013) and Albert & Fadjarenie (2022) who say that knowledge and tax education have an influence on tax compliance.

Teachers as an educator have an important role to increase taxpayer compliance. Teachers are expected to continue to provide knowledge and material regarding tax education to students at school. Without these efforts, students as future



generations of the nation will not have a sense of obedience to tax regulations. This is supported based on the results of hypothesis 1, which states that tax education has a positive effect on taxpayer compliance. The teacher is a tax frontliner so that he can explain to students the importance of taxes on state development. The way and language taught by teachers to students can be more easily understood regarding the importance of paying taxes in creating a more advanced Indonesia.

The effect tax awareness on taxpayer compliance

Table 9. show that tax awareness has a significant impact on taxpayer compliance (t value = 3.853; p value = 0.000) and positive direction (Original sample = 0.261) related relationship between tax awareness and taxpayer compliance so that H2 is accepted. The results are in line with Tanilasari & Gunarso (2017) and Siamena et al. (2017) who concluded that the higher the level of tax awareness that a taxpayer has, the higher the level of taxpayer compliance.

Teachers have an important role in increasing tax awareness among students. Before giving tax awareness to students, each teacher should also have a high level of tax awareness so that they can be an example for students. Teachers who have a high level of tax awareness are expected to understand the importance of tax nationally. Increasing tax awareness especially for teachers is carried out so that the Indonesian people understand the function and use of taxes for society as well as benefits for themselves and understand how to carry out their tax obligations. The teacher's tax awareness has a goal so that an understanding of taxes has been owned from the start and can be disseminated to students who are potential taxpayers.

The effect tax morality on taxpayer compliance

Table 9. show that tax morality has a significant impact on taxpayer compliance (t value = 2.410; p value = 0.016) and positive direction (Original sample = 0.156) related relationship between tax morality and taxpayer compliance so that H3 is accepted. The results are in line with Okpeyo et al. (2019), Widia & Yasa (2021), and Tyas (2013) who concluded that the high morale of taxpayers will play a major role in high taxpayer compliance. Teachers are expected to have high morality in taxation. Without motivation within each teacher, they will not have a sense of compliance with tax regulations. The bad impact is that they will not motivate students to comply with tax regulations. The motivation to voluntarily comply with tax regulations has an important role for each teacher. A teacher will not be moved to pay taxes without motivation, both intrinsic and extrinsic.

CONCLUSION

Based on the results, it can be concluded that *first*, tax education has a positive effect on taxpayer compliance. This can be interpreted that through education, people can understand the importance of understanding the tax law which explains that if you do not comply with tax regulations, you will be subject to sanctions. Teachers as educators can be change agents in providing knowledge and insight related to

tax regulations to their students so that with good knowledge and insight, the younger generation can be more compliant with their tax obligations.

Second, tax awareness has a positive effect on taxpayer compliance. The role of teachers is very important in increasing the generation's awareness of taxes. Teachers can be a catalyst for increasing the younger generation's awareness of taxes where high awareness of young generation, they will increase compliance with their tax obligations voluntarily even though they do not get compensation from the state directly. *Third*, tax morality has a positive effect on taxpayer compliance. Teachers can be a motivator for the younger generation to have a high moral attitude towards taxes. Tax morality is the basic motivation that can increase an individual's sense of compliance with tax regulations.

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STUDENTS' LEVEL OF RISK FACTORS AFFECTING DELINQUENCY IN QUEZON BUKIDNON COMPREHENSIVE NATIONAL HIGH SCHOOL

Roel O Susas, Lpt, Cst, Mscrim.

Graduate Education, Researcher, Master of Science in Criminal Justice at Cagayan De Oro College PHINMA Education Network, Philippines; Working as Instructor II at Don Carlos Polytechnic College at Don Carlos Norte, Bukidnon, Philippines.

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ABSTRACT

This study aimed to assess the levels of risk factors such as alcoholism, bullying, gambling, gang involvement, and truancy. The study explores how these factors impact both delinquent behaviors and academic performance among at-risk students.

The research uses a quantitative approach and utilizes a survey methodology with a self-made questionnaire. The questionnaire undergoes rigorous validity and reliability testing. The investigation focuses on 179 at-risk students to understand the dynamics of delinquent behavior. The data-gathering procedure includes obtaining permission, conducting pilot testing, and administering the questionnaire with strict privacy measures. Scoring is done using a 5-point Likert scale. The analysis of the collected data is guided by the statistical tools, such as weighted mean, ANOVA, and Pearson correlation.

The findings of the study revealed the significant impact of risk factors on at-risk students' behavior, particularly the role of truancy in influencing delinquency. It also establishes correlations between respondents' age and alcoholism, gambling, and gang involvement. Additionally, it identifies associations between parents' educational attainment and bullying behaviors, as well as the marital status of respondents' parents and truancy. The study suggests a collaborative approach involving educators, parents, and stakeholders to develop customized interventions based on the identified risk factors. By customizing strategies based on the challenges elucidated in this study, stakeholders can contribute to creating a safer and more supportive educational environment for at-risk students, addressing juvenile delinquency comprehensively.

KEYWORDS: Risk Factors, Juvenile Delinquency, Academic Performance. At-risk students

I. INTRODUCTION

Juvenile delinquency posed significant societal challenges in recent years in the Philippines, with notable increases in minor offenses and serious criminal acts among adolescents and young adults. Factors contributing to delinquency, including family environment, socioeconomic status, and technology, were extensively studied. A study conducted by Mwangangi (2019) identified family-related and external factors impacting delinquency, while Anjaswarni (2019) highlighted the influence of technology among six key variables. A study conducted by Karatoprak and Ayaz (2023) found differences in socioeconomic status and family background between juvenile delinquents and control groups, suggesting predictors like school dropout rates and family involvement in criminal activities. Despite extensive research, a critical gap existed in understanding and addressing delinquency factors at the local school level, such as Quezon Bukidnon Comprehensive National High School (QBCHS). Rising cases of alcoholism, bullying, gang involvement, gambling, smoking, and truancy prompted a study to investigate and mitigate these issues. The study aimed to understand

delinquency among QBCHS students, examining risk factors like alcoholism, bullying, gambling, gang involvement, and truancy, correlating them with academic performance during the 2022-2023 school years. It sought to identify demographics and risk factors to inform inclusive interventions.

II. REVIEW OF RELATED LITERATURE AND STUDIES

This chapter provided a comprehensive review of related literature and studies pertaining to the research topic.

Juvenile delinquency poses a complex societal challenge, encompassing behaviors among minors that contravene legal norms and societal standards. Understanding the multifaceted nature of juvenile delinquency is pivotal for formulating effective preventive strategies and interventions to mitigate its impact on at-risk youth. This review synthesizes pertinent studies exploring risk factors associated with juvenile delinquency, their impact on



academic performance, and intervention strategies to address these challenges.

Juvenile Delinquency and Risk Factors

The study conducted by Lo et al. (2021) investigated the impact of grade level and school atmosphere on delinquency rates, emphasizing the importance of a supportive school environment. Pinquart (2024) delineated the trajectory of alcohol consumption among young individuals, while Patr6-Hernández et al. (2020) underscored the correlation between adherence to gender norms and alcohol consumption. Pisinger et al. (2023) highlighted the association between parental alcohol problems and academic outcomes, while Skrzynski and Creswell (2020) explored solitary drinking's implications on alcohol-related behaviors. Galabo (2019) examined bullying in senior high schools, revealing various victimization forms and coping mechanisms. Additionally, Abuhammad et al. (2020) studied parental education's correlation with bullying, elucidating its intricate nature.

Kryszajtyts (2018) identified a strong correlation between problem gambling and delinquent behavior, stressing the need for comprehensive prevention strategies. Walters (2019) highlighted the global concern surrounding gang involvement and its contribution to delinquency. Mwansa (2021) and Modiba (2022) shed light on truancy prevalence and contributing factors, emphasizing its detrimental effects on academic performance. Sanchez et al. (2022) explored protective factors against truancy, particularly within single-parent households.

Impact on Academic Performance

A study conducted by Obindah (2023) revealed the adverse relationship between juvenile delinquency and academic performance, emphasizing the influence of home, school, and peer environments. Jung Chen (2019) identified cumulative family risk's association with delinquency and academic performance, with parental alcoholism being a significant factor. Rustholz et al. (2021) demonstrated the detrimental effects of bullying on academic competencies, highlighting its pervasive impact across academic achievement levels.

Intervention Strategies

A study conducted by Aazami et al. (2023) emphasized the role of family dynamics and community environments in mitigating delinquent behavior, advocating for holistic intervention approaches. Ramirez et al. (2024) highlighted the efficacy of school-based interventions, such as implementing anti-bullying laws and enhancing teacher and counselor involvement, in reducing bullying incidents.

Statement of the Problem

Generally, this study sought to find answers on the student's level of risk factors affecting delinquency in Quezon Bukidnon Comprehensive National High School. Specifically, it aimed to answer the following questions:

1. What are the characteristics of the respondents in terms of:

- a. age;
 - b. sex;
 - c. grade level
 - d. parents' educational attainment; and
 - e. parents' marital status?
2. What are the levels of risk factors affecting delinquency in Quezon Bukidnon Comprehensive National High School in terms of:
- a. alcoholism;
 - b. bullying;
 - c. gambling;
 - d. gang; and
 - e. truancy?
3. What are the academic performances of the students involved in delinquency for the school year 2022-2023?
4. Are there a significant difference between the respondent's characteristics and the risks factors affecting juvenile delinquency?
5. Are there a significant relationship between the risk factors affecting delinquency and academic performance of At-Risk students?

II. RESEARCH METHODOLOGY

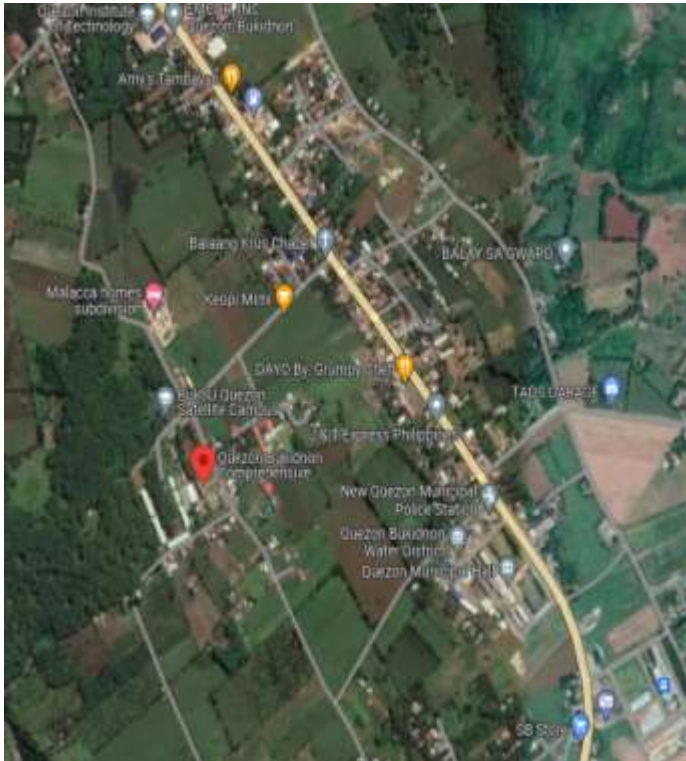
This chapter explained the research design employed, the locale of the study, the respondents and sampling procedures, the data gathering procedure, the validity and reliability of the instrument, the scoring procedure, and the statistical treatment of the data.

Research Design

The study employed a quantitative research approach to explore the presence of risk factors associated with delinquent behavior among students at Quezon Bukidnon Comprehensive National High School. The research relied on a survey methodology, utilizing questionnaires as the primary tool for data collection. In essence, quantitative descriptive research offered a systematic and structured framework for gathering, analyzing, and interpreting numerical data to depict and summarize research phenomena. This approach was frequently employed to investigate relationships, patterns, and trends within extensive datasets.

Research Setting

This study was conducted at Quezon Bukidnon Comprehensive National High School (QBCNHS), Mibando, Quezon, Bukidnon, adjacent to the Bukidnon State University Satellite Campus.



Locale of the Study

Respondents of the Study

The respondents to this study were the one hundred seventy-nine (179) At-Risk students who were reported to the disciplinarian and guidance office for the period of school year 2021–2023. A Slovin formula was used to determine the total number of student respondents. The Slovin's Formula was given as follows: $n = N/(1 + Ne^2)$, where n was the sample size, N was the population size, and e was the margin of error. Out of the 326 recorded incidents of delinquency problems documented in the guidance and disciplinarian office, a total of 179 respondents were selected.

Sampling Procedure

This study employed simple random sampling, ensuring equal chances of selection for all population members. It aims to represent the entire group objectively by randomly choosing a subset. This method involves assigning sequential values to each population item and then randomly selecting corresponding values to form the sample. Despite its simplicity, there's a risk of sampling error if the sample doesn't accurately reflect broader population characteristics. Simple random sampling stands out for its emphasis on equal probability for each member, distinguishing it from other sampling methods like systematic, stratified, or cluster sampling.

Research Instruments

The research instrument was a self-made questionnaire that underwent pilot testing to assess its reliability and validity

Instrument Validity and Reliability

The instruments underwent consultation with DepEd personnel in the Division of Bukidnon. Pilot testing showed strong internal consistency, with Cronbach's alphas for key variables ranging from 0.785 to 0.897. Overall, the instrument demonstrated high reliability, with a Cronbach's alpha of 0.921.

Data-Gathering Procedure

The researcher created a self-made questionnaire as a research tool to collect data for the study. Before starting the survey, the researcher wrote a transmittal letter and sent it to the principal of Quezon Bukidnon Comprehensive National High School in Bukidnon. Upon receiving the letter, the principal of QBCNHS recommended addressing it to the School Division Superintendent of the Division of Bukidnon with new guidelines for conducting thesis studies for a master's degree.

Statistical Treatment

The following statistical tools were utilized for the analysis and treatment of the data: frequency counts and percentages were employed to examine the demographic profile of the respondents. A weighted mean was used to analyze the risk factors that impact delinquency. Frequency counts and percentages were also utilized to analyze the academic performance of the students. Analysis of variance (ANOVA) was employed as the statistical tool to identify significant differences in the respondent's characteristics and risk factors associated with delinquency among the students. Finally, Pearson product-moment correlation was used to determine the significant relationship between the risk factors influencing delinquency and academic performance among students at Quezon Bukidnon Comprehensive National High School.

IV. PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA (SUMMARY)

Distribution of summary of respondents' responses regarding the risk factors affecting delinquency among at-risk students.

Risk Factors affecting Delinquency Among At-Risk Students at QBCNHS	Mean	SD	Description
Alcoholism	4.03	0.39	Large
Bullying	4.14	0.37	Large
Gambling	4.20	0.44	Large
Gang	4.20	0.47	Large
Truancy	4.22	0.38	Large
Overall mean	4.16	0.21	Large

The table indicated a high mean of 4.16 (SD=0.21), categorized as "large," across various delinquency factors like alcoholism, bullying, gambling, gang involvement, and truancy at QBCNHS. This highlighted the pressing need for holistic interventions. Insights revealed significant vulnerability among at-risk students, emphasizing proactive strategies involving collaboration among school stakeholders. Related studies by Skrzynski and Creswell (2020), Nazim (2019), Kryszajtyts (2018), Walters (2019), and



Modiba (2022) supported the complex nature of delinquency factors and the necessity for comprehensive interventions. Truancy stood out with the highest mean score of 4.22 (SD=0.38), underlining its impact on academic performance. Collaboration among educators and parents was crucial in addressing truancy effectively. The findings aligned with Mwansa's (2021) study, emphasizing the prevalence of truancy and its negative impact on academic performance. Although alcoholism had a relatively lower mean score of 4.03 (SD=0.39), it still warranted attention. Initiatives involving orientations and counseling sessions aimed to raise awareness about alcohol-related risks. Ongoing monitoring and addressing of alcoholism were crucial for maintaining a positive trend. The study by Pisinger et al. (2023) supported the influence of parental alcohol problems on school outcomes, emphasizing the need for continued intervention.

Summary of the significant differences in the risk factors of delinquency based on respondents' characteristics.

Risk Factors on Delinquency	Variables	f-value	p-value	Test on Significance
Alcoholism	Age	5.27	0.002	Significant
Gambling		4.25	0.006	Significant
Gang Involvement		4.12	0.007	Significant
Alcoholism	Sex	0.84	0.35	Not Significant
bullying		0.47	0.49	Not Significant
Gambling		1.19	0.27	Not Significant
Gang Involvement		3.28	0.07	Not Significant
Truancy		0.15	0.69	Not Significant
Gang Involvement	Grade level	7.45	0.000	Significant
Bullying	Parents Educational Attainment	2.54	0.03	Significant
Truancy	Parents Marital Status	2.68	0.04	Significant

The study revealed significant associations between delinquency variables and various factors, including alcoholism, gambling, gang involvement, truancy, age, grade level, parent's educational attainment, and parent's marital status. These associations rejected the hypothesis and emphasized the influence of respondent characteristics on risky behaviors. For instance, the relationships between alcoholism, gambling, and age underscored

age as a critical factor influencing these behaviors. Similarly, connections between gang involvement and grade level, as well as bullying and parents' educational attainment, highlighted the impact of the school environment and family dynamics on delinquency. Understanding these associations allowed for targeted interventions, such as freshman orientation programs and family-oriented interventions. The study findings were supported by research conducted by Pinquart (2024) and Hollén, Dörner, Griffiths, and Emond (2020), which highlighted correlations between alcohol consumption and age, as well as gambling behaviors across different age groups. Additionally, insights from Widdowson, Garduno, & Fisher (2021) emphasized the initiation of gang involvement during high school years. The influence of parental education on bullying was echoed in the study by Abuhammad, Alnatour, & Howard (2020). However, contrasting perspectives on gender-specific variations in alcohol consumption and responses to gang exposure were presented by Patró-Hernández, Nieto Robles, & Limñana-Gras (2020) and Krakowski (2022), respectively.

Results of the Pearson correlation analysis on the relationship between the risk factors of delinquency towards academic performance of the respondents.

Delinquency Variables	Performance		
	r-value	p-value	Interpretation
Alcoholism	-.021	.777	Not Significant
Bullying	-.006	.938	Not Significant
Gambling	-.046	.543	Not Significant
Gang	.018	.808	Not Significant
Truancy	.038	.617	Not Significant

The study found no significant relationship between delinquency variables and academic performance among respondents, supporting the hypothesis. Despite passing grades due to teacher remediation efforts, many respondents continue to face challenges meeting subject requirements, indicating broader academic struggles beyond delinquency factors. This suggests a need for holistic approaches tailored to individual needs to improve academic outcomes. These findings contrast with studies by Jung Chen (2019) on family risk and academic performance, Rusteholz, Mediavilla, & Jiménez (2021) on bullying's impact, Alimi, Aderoju, Falade, & Atanda (2019) on online gambling, and Isah & Tijani (2023) on truancy's negative effect on academic performance, suggesting varied factors influencing academic success. Recommendations include parental involvement and awareness of truancy's consequences.

IV. SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter provides an overview of the key findings and implications derived from the extensive analysis conducted in this study. This chapter aims to synthesize the main outcomes, draw primary conclusions, initiate a critical discussion on the



significance of the results, and propose pertinent recommendations for future research and practical applications.

Summary of Findings

The following findings are shown based on the data provided:

Problem No.1

Based on the characteristics of the respondents, it was revealed that most respondents were 17 years of age. Majority of those engaged in delinquency were male, and the highest number involved in the risk factors of delinquency were in grade 11, as they had already been exposed to different types of delinquency. Moreover, most of the respondent's parents had an elementary level of education. Lastly, majority respondents' parents were married, which was vital to their behavior development.

Problem No. 2

Based on the level of risk factors for delinquency, it was revealed that most respondents affirmed that the level of risk factors could influence delinquency, with an overall mean of 4.16 (SD = 0.21), with a qualitative description of large. It was also revealed that among the levels of risk factors for delinquency, truancy emerged as the highest, with a mean of 4.22 (SD = 0.38), with a qualitative description of large.

Problem No. 3

Based on the respondents' academic performance, it was revealed that most respondents had passing grades in all subjects for the school year 2022-2023, with a fairly satisfactory description since all of them were given passing grades after the remediation program.

Problem No. 4

Based on the significant differences, it was revealed that age had a significant impact on alcoholism, gambling, and gang involvement. Moreover, grade level showed a significant relationship with gambling and gang involvement. Furthermore, parents' educational attainment had a significant impact on bullying, and finally, parents' marital status had a significant effect on gambling and truancy risk factors for delinquency.

Problem No. 5

Based on the examination of significant relationships between delinquency risk factors and the respondents' academic performance, it was revealed that none of the risk factors for delinquency had a notable impact on academic performance.

Conclusions

Based on the findings of this study, the following conclusions were drawn:

In conclusion, the study underscores age as a key factor in delinquency risk among high school students, with males exhibiting greater propensity for delinquent behavior driven by aggression and impulsivity. Advancing grades correlate with increased engagement in delinquent behaviors due to experience, self-confidence, and peer influence. Socio-economic factors, like parental education, highlight the need for community-based

initiatives to address educational disparities and reduce delinquency. Family stability plays a crucial role, influencing adolescent values and mitigating delinquent behavior.

Truancy emerges as the predominant risk factor for delinquency, correlating strongly with engagement in delinquent behaviors. This emphasizes truancy's pivotal role as a potential precursor or indicator of delinquency, possibly due to the absence of a fully enclosed school environment. Socio-economic status also influences the likelihood of skipping classes.

The analysis reveals that respondents achieved passing grades in all subjects largely due to a remediation program's implementation. Challenges hindering some respondents from fully meeting program requirements indicate the necessity for further investigation to refine academic support programs' effectiveness.

Correlations between respondents' personal information and engagement in risky behaviors are identified, emphasizing the impact of age, grade level, parents' education, and marital status on participation in activities like drinking, gambling, bullying, gang involvement, and skipping school. Customized prevention strategies are crucial.

No significant relationships between delinquency risk factors and respondents' academic performance were found, suggesting the effectiveness of the remediation program. Ongoing efforts are needed to improve engagement and ensure full compliance with program requirements.

Recommendations

Based on the conclusions, the following recommendations are drawn:

School Administrator: Advise the guidance counselor for early orientations for at-risk students, focusing on alcoholism. Monitor alcohol sales near the school and report cases to LGU officials. Prioritize infrastructure projects like constructing a school fence to deter alcohol-related incidents and improve academic focus.

Teachers: Design programs to address impulsivity and aggression in male students, promoting positive behavior. Enhance engagement strategies considering peer influence and confidence. Continuously improve the remediation program to provide effective academic support.

Parents: Recognize the importance of family stability and community involvement in supporting adolescents. Foster open communication with teenagers to address challenges effectively.

Students: Engage in remediation programs and comply with requirements. Be aware of age-related influences and seek support from teachers, counselors, and parents when needed.

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A STUDY ON AWARENESS ANN IMPACT OF ONLINE LEARNING PLATORM

Ms Sathiyapriya R¹, Ms. J Sri Keerthana²

¹II. M.COM(CS), Department of Corporate Secretaryship, PSG College of Arts & Science, Coimbatore-641014.

²Assistant Professor, Department of Corporate Secretaryship, PSG College of Arts & Science, Coimbatore-641014.

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ABSTRACT

This study investigates the awareness and impact of online learning platforms among students in India. The research aims to understand the extent of students' knowledge about various online learning platforms, their usage patterns, and the perceived benefits and challenges associated with these platforms. A mixed-methods approach was employed, including surveys and interviews with students from different educational backgrounds. The findings reveal that while there is a high level of awareness about online learning platforms, usage varies significantly among students. The study also identifies several factors influencing the adoption of online learning, such as access to technology, internet connectivity, and the perceived quality of online courses. The results suggest that online learning has the potential to complement traditional education methods but also highlight the need for addressing barriers to access and enhancing the overall quality of online learning experiences.

KEYWORDS: Online learning platforms, Awareness, Access to education, Online courses, User experience, Learning outcomes, Student engagement, Teacher effectiveness

INTRODUCTION

Online learning platforms have revolutionized education, providing unparalleled accessibility and flexibility. They offer a vast array of courses spanning academic disciplines to practical skills, enabling learners to study anytime, anywhere. These platforms are cost-effective, often eliminating the need for traditional expenses like commuting and accommodation. They employ interactive tools such as videos, quizzes, and forums to enhance learning, and many offer live sessions for real-time engagement. Online courses focus on practical skills relevant to the job market, with certifications that can boost resumes. They also foster community and networking, connecting learners with peers, instructors, and industry experts. With personalized recommendations and self-paced learning, online platforms cater to diverse learning styles and goals. They empower continuous learning, keeping individuals updated with industry trends and advancements. Online learning platforms have democratized education, offering a diverse range of courses that cater to individual learning styles and goals. These platforms provide access to high-quality educational content from top universities and experts around the world, allowing learners to acquire new skills and knowledge at their own pace. By leveraging technology, online learning platforms offer interactive and engaging learning experiences through videos, simulations, and virtual labs. They also provide opportunities for collaboration and networking through discussion forums and group projects,

enabling learners to connect with peers and experts from diverse backgrounds. Additionally, many platforms offer career services and job placement assistance, helping learners apply their newly acquired skills in the workforce. Online learning platforms have revolutionized education by making it more accessible, flexible, and engaging for learners worldwide. Overall, online learning platforms provide a dynamic, accessible, and personalized educational experience, transforming how people learn and grow.

OBJECTIVES OF THE STUDY

- To Study the level of awareness on online learning platforms.
- To analysis factor influence to choose online learning platforms.
- To figure out the problem faced in online learning platforms.
- To find out the outcome of online learning platforms.

RESEARCH METHODOLOGY

SOURCES OF DATA

The research should keep in mind two types of data while collecting data via primary data and secondary data.

PRIMARY DATA

Primary data may be described as those data that have been observed and recorded by the researcher for the first time to their



knowledge. The survey method frank questionnaire with general face-to-face interaction of students. A questionnaire was prepared and with the help of which the primary data has been collected.

SAMPLE SIZE

The sample size of the study is to be 108 respondents.

FINDINGS AND RESULT

TABLE NO 1 AGE

SNO	AGE (in years)	NO OF RESPONDENTS	PERCENTAGE
1	18 – 21	54	50%
2	22 – 25	49	45.4%
3	26 – 29	2	1.9%
4	30 and above	3	2.8%
TOTAL		108	100%

(Source: Primary Data)

INTERPRETATION

The above table shows that out of 108 respondents, 50% are in the age group of 18-21 years, 45.4% are in the age group of 22 -

25 years, 1.9% are in the age group of 26 – 29 years and 2.8% are in the age group of above years.

TABLE NO .2 GENDER

SNO	GENDER	NO OF RESPONDENTS	PERCENTAGE
1	MALE	39	36.1%
2	FEMALE	69	63.9%
TOTAL		108	100%

(Source: Primary Data)

INTERPRETATION

The above table shows that out of 108 respondents, 36.1% are male and 63.9 % are female.

TABLE NO 3 INCOME

SNO	INCOME (per annum)	NO OF RESPONDENTS	PERCENTAGE
1	Rs 1,00,000 – 2,00,000	66	61.1%
2	Rs 2,00,001 – 3,00,000	22	20.4%
3	Rs 3,00,001 – 4,00,000	9	8.3%
4	Rs 4,00,001 Above	11	10.2%
TOTAL		108	100%

(Source: Primary Data)

INTERPRETATION: The above table shows that out of 108 respondents, 61.1% earns 1,00,000 – 2,00,000, 20.4% earns Rs

2,00,001 – 3,00,000, 8.3% earns Rs 3,00,001 – 4,00,000 and 10.2% earns above Rs 4,00,001.

ANOVA

TABLE NO 4

		ANOVA					
		Sum of Squares	df	Mean Square	F	Sig.	
Technical issues (e.g., connectivity problems, software glitches)	Between Groups	.906	2	.453	.404	.669	
	Within Groups	117.641	105	1.120			
	Total	118.546	107				
Lack of real-time interaction with instructors and peers	Between Groups	.147	2	.073	.105	.901	
	Within Groups	73.511	105	.700			
	Total	73.657	107				
Difficulty staying motivated and focused	Between Groups	1.344	2	.672	.719	.490	
	Within Groups	98.175	105	.935			
	Total	99.519	107				
		Between Groups	5.767	2	2.884	2.114	.126



Insufficient feedback on assignments or assessments	Within Groups	143.196	105	1.364		
	Total	148.963	107			
Limited access to supplementary resources or support services	Between Groups	14.098	2	7.049	4.659	.012
	Within Groups	158.865	105	1.513		
	Total	172.963	107			
User interface/navigation issues	Between Groups	4.345	2	2.172	1.880	.158
	Within Groups	121.322	105	1.155		
	Total	125.667	107			
Inadequate customization for diverse learning preferences	Between Groups	8.903	2	4.452	3.254	.043
	Within Groups	143.643	105	1.368		
	Total	152.546	107			

(Source Primary Data)

INTERPRETATION

The above table gives a result of relationship between occupation and challenges faced by respondents in online learning platforms by using one way ANOVA.

Relationship between area of resident and technical issues

From the above table the significant value association between occupation and technical issues is >0.05 so, we are accepting null hypothesis and rejecting alternative hypothesis. So, there is no significant association between occupation and technical issues.

Relationship between area of resident and Lack of real-time interaction with instructors and peers

From the above table the significant value association between occupation and Lack of real-time interaction with instructors and peers is >0.05 so, we are accepting null hypothesis and rejecting alternative hypothesis. So, there is no significant association between occupation and Lack of real-time interaction with instructors and peers.

Relationship between area of resident and Difficulty staying motivated and focused

From the above table the significant value association between occupation and Difficulty staying motivated and focused is >0.05 so, we are accepting null hypothesis and rejecting alternative hypothesis. So, there is no significant association between occupation and Difficulty staying motivated and focused.

Relationship between area of resident and Insufficient feedback on assignments or assessments

From the above table the significant value association between occupation and Insufficient feedback on assignments or

assessments is <0.05 so, we are accepting null hypothesis and rejecting alternative hypothesis. So, there is no significant association between occupation and Insufficient feedback on assignments or assessments.

Relationship between area of resident and Limited access to supplementary resources or support services

From the above table the significant value association between occupation and Limited access to supplementary resources or support services is <0.05 so, we are accepting null hypothesis and rejecting alternative hypothesis. So, there is significant association between occupation and Limited access to supplementary resources or support services.

Relationship between area of resident and User interface/navigation issues

From the above table the significant value association between occupation and User interface/navigation issues is <0.05 so, we are accepting null hypothesis and rejecting alternative hypothesis. So, there no is significant association between occupation and User interface/navigation issues.

Relationship between area of resident and Inadequate customization for diverse learning preferences:

From the above table the significant value association between occupation and Inadequate customization for diverse learning preferences is <0.05 so, we are accepting null hypothesis and rejecting alternative hypothesis. So, there is significant association between occupation and Inadequate customization for diverse learning preferences.

CHI SQUARE

TABLE NO 5 COMPARISON OF PERSONAL FACTOR AND HOW THE RESPONDENTS FIRST CAME TO KNOW ABOUT ONLINE LEARNING PLATFORM

FACTOR	P VALUE	DF	SIG.VAL	S/NS
Age	14.168 a	9	.116	Ns
Gender	7.691 a	3	.053	S
Area of resident	14.751 a	6	.022	S

(Source Primary Data)

Level of significance: 5% or $\alpha = 0.05$



INTERPRETATION

H0: There is no significant association between personal factors and how the respondents came to know about online learning platform.

H1: There is significant association between personal factors and how the respondents came to know about online learning platform.

From the above table, the P value of chi square test is less 0.05. so, we are rejecting the null hypothesis and accepting the alternative hypothesis and in one case the p value of chi square test is greater than 0.05 so, we are rejecting null hypothesis and accepting alternative hypothesis.

It is concluded that the gender and area of resident have significant association on how the respondents came to know about online learning platform and age have no significant on how the respondents came to know about online learning platform.

CONCLUSION

This study has shed light on the current awareness levels and the impact of online learning platforms. It is evident that these platforms have significantly increased access to education and provided learners with flexibility in their learning journeys. Despite these benefits, there are challenges such as ensuring quality education and addressing technical issues. To enhance the effectiveness of online learning platforms, there is a need for continuous improvement in content quality, user engagement strategies, and accessibility features. Additionally, policymakers and educators should collaborate to integrate online learning into mainstream education systems and promote digital skills development.

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A PHENOMENOLOGICAL INQUIRY ON THE EFFECTS OF SOCIAL MEDIA TO VOCABULARY ADEPTNESS OF STUDENTS

Sharlene Joyce B. Nerves; Lucena O. Asidoy, EdD

ABSTRACT

The purpose of this phenomenological inquiry is to explore the influence of social media on the vocabulary adeptness of second-year Bachelor of Secondary Education (BSED) major in English students enrolled in private and local colleges within Davao de Oro Province. The study examines the effects of social media on vocabulary adeptness, encompassing aspects such as spelling, grammar, syntax, and vocabulary usage, guided by three research questions. Thematic analysis reveals the diverse strategies employed by fourteen (14) BSED English students to navigate the linguistic influences of social media, emphasizing intentional efforts, peer collaboration, and a discerning approach to online content. The findings underscore the active role of students in enhancing their vocabulary amid the informal communication style of social media, highlighting the need for educators to recognize these platforms as dynamic resources for vocabulary acquisition. Integrating social media into instructional approaches is suggested to create more relevant and engaging language learning environments, aligning with the digital and linguistic realities of contemporary students. Embracing the positive aspects of social media in vocabulary instruction holds the potential to contribute to more effective and student-centered language learning environments.

KEYWORDS: Vocabulary adeptness, social media, linguistic influences, spelling, grammar, syntax, phenomenological inquiry, thematic analysis, Davao de Oro Province

INTRODUCTION

Social media always make people's lives different in many ways, such as how they communicate, share information, do business, and learn. However, social media affect individuals' lives, especially students, on how they will utilize social media as an immediate partner in learning and widening their vocabulary. O'Brien (2012), as cited by Lau (2017), surmised that social media has the potential to involve students in educational activities, gain insight into their thoughts during instruction, facilitate the formation of study groups, and enhance the functionality of e-textbooks by integrating social tools to facilitate collaborative purposes.

Thus, social media has become a fundamental component of students' daily existence, often leading them to prioritize it over productive learning activities. This has raised concerns about its detrimental effects on students' vocabulary adeptness. In India, where social media heavily influences youth (Akram & Kumar, 2017), students tend to engage in negative social media behaviors, such as posting irrelevant content on Facebook, mindlessly scrolling through TikTok, and seeking attention on various platforms, which detract from language learning opportunities. Similarly, in Ghana, students allocate more time to social media usage than to academic pursuits (Kolan & Dzandza, 2018), the lack of adequate preparation for exams (Osharive, 2015) and excessive social media use hinder their vocabulary development and overall language proficiency. Malaysian students are also grappling with the adverse effects of social media on their study time, grammar, and spelling proficiency, which subsequently affects their vocabulary skills (Ndaku, 2013). These findings indicate that the excessive use of social media

significantly impacts students' vocabulary adeptness, posing challenges to their language development and academic success.

Meanwhile, in the Philippines, a study conducted by Capulong in 2017 found that a considerable number of students rely on social media platforms and the internet in general to find solutions, indicating a decreased emphasis on acquiring and retaining knowledge. Students who engage in multitasking by browsing social media sites while studying has been shown to have a detrimental impact on academic performance. The interruptions caused by platforms such as YouTube, Facebook, or Twitter significantly impair students' ability to concentrate on their studies. Additionally, when students spend more time on social networking sites, they devote less time to focusing and concentrating on academic-related activities and projects.

Also, based on first-hand observation in Davao de Oro, most students use Facebook to establish friendships and conduct online conversations. The majority of students had negative experiences, such as having less time to study and wasting time on social media networks. Also, there was a significant degree of addiction to the use of social media networks among the student population (Maitem et al. 2017). Excessive use of social media among young people can result in addiction, which can cause them to divert their attention from other critical tasks, such as learning and gaining new knowledge. People become so preoccupied that they become disconnected from society and harm their personal lives.



Furthermore, a review of the existing literature indicates the presence of comparable studies on the impact of social media. For instance, a study conducted by Samari et al. in 2022 revealed that students often experience distractions while studying and tend to allocate their time to engaging with social media platforms instead. In addition, according to Almojuela et al. 2019, students addicted to social media harm their ability to learn and retain academic material. Students who devote more time to social media than to review the topics they've studied in school may develop terrible habits and receive low scores, causing them to feel incapable of achieving their career aspirations. Nevertheless, the researcher was unable to find any study examining how social media affects students' vocabulary adeptness. Furthermore, the scarcity of relevant literature at national and local levels is due to the relatively new issue. Consequently, the researcher is more motivated to conduct the investigation.

In addition, this study carried out as soon as possible because there is a growing problem with their vocabulary adeptness, which contradicts what is anticipated of language learners. Moreover, the outcomes of this study hold considerable importance, as they will serve as fundamental information for improving and evaluating the learning of students and addressing their vocabulary proficiency. The findings of this study will aid universities and colleges in language teaching programs by providing them with valuable, up-to-date, and relevant data to assist in comprehending the phenomenon. Finally, this research study will be showcased at research conferences and undergo rigorous reviews, with the aspiration of publication to reach a wider audience.

Purpose of the Study

This phenomenological inquiry aims to investigate and understand the impact of social media to the vocabulary adeptness of second-year Bachelor of Secondary Education major in English students in one of the schools in Davao de Oro. Further, this will give light on how these college students deal with the challenges of achieving vocabulary adeptness.

In this phenomenon, the effects of social media on vocabulary adeptness refers to social media's impact on a person's ability to use language effectively and accurately. This can include spelling, grammar, syntax, and vocabulary changes due to the informal nature of social media communication.

Research Questions

1. What are the experiences of BSED students on the effects of social media to their vocabulary adeptness?
2. How do the BSED students cope with the challenges they encountered on the effects of social media to their vocabulary adeptness?
3. What are the insights of BSED students on the effects of social media to their vocabulary adeptness?

Theoretical Lens

The research exploration is founded on George Siemens's connectivism learning theory, which is a learning approach that can help learners understand the decisions that are dependent on fast-changing and integrate new theories such as the theory of turbulence, systems analysis, and personality (Siemens, 2004).

Furthermore, connectivism combines historical and contemporary data to provide new interpretations and meanings (Siemens, 2004). Siemens' connectivism learning theory emphasizes the significance of online peer networks, including social media sites and online forums, in facilitating online learning. These platforms enable students to learn through social interaction and collaboration, as well as by gaining insights and perspectives from their peers' personal experiences and viewpoints (Pappas, 2021).

With this, the connectivism learning theory will be utilized in this study's context to unveil and analyze the real-world experiences of students as to the contributing factors and the effects of social media to their vocabulary adeptness. Moreover, connectivism learning theory will also set the path to highlight the abilities and underlying motivation of language learners in confronting the obstacles in acquiring social media-appropriate vocabulary.

Furthermore, this study is also gleaned through Frederic Bartlett's schema theory of vocabulary learning and acquisition. Bartlett's (1932) theory suggests that comprehension occurs when readers integrate their existing knowledge with the information presented in the text. Moreover, a learner's previous knowledge and experiences act as a foundation to assimilate new information from a particular text. This process is known as scaffolding, which supports learners in acquiring new knowledge and skills by connecting them with their pre-existing knowledge. Also, the research carried out by McVee et al. (2005) states that when it comes to the acquisition of new vocabulary, the absence of schema as a result of restricted reading and exposure to the English language presents a significant obstacle for students who are attempting to develop their English vocabulary.

Within the framework of this study, the schema theory serves as a foundation for identifying students' issues in vocabulary acquisition and learning, as well as examining their ability to handle the challenges they face. Also, this theory will be used to explain how these coping strategies help students as they experience new words and how their vocabularies grow, and how they use the words in different contexts. To add, this theory offers essential perspectives on how exposure to social media interaction broadens learners' acquisition and utilization of English language vocabulary in different communication.

Connectivist learning environments provide learners with opportunities to collaboratively construct and share knowledge and can facilitate the development of schema-based mental frameworks, leading to deeper and more meaningful learning experiences (Lai & Law, 2017). This proposition suggests that the integration of connectivist learning methods and schema theory can lead to more effective learning outcomes by leveraging the collective intelligence of a networked community of learners. Lai and Law (2017) argue that connectivist learning environments, which emphasize the creation and sharing of knowledge through participatory media and online networks, can facilitate the construction of mental schemas that are more closely aligned with real-world contexts and experiences. This



can lead to deeper and more meaningful learning experiences that are better retained over time.

METHODOLOGY

The chosen methodology for this study is qualitative, specifically using a phenomenological approach, which aims to investigate and comprehend the personal experiences, coping strategies, and perspectives of the participants regarding the impact of social media on their vocabulary adeptness. Qualitative research involves an inquiry process aimed at understanding a social phenomenon through developing a complex and complete picture with words (Creswell, 1994). Exploring and comprehending how individuals and communities relate to a social or human situation can be facilitated by qualitative research (Creswell & Creswell, 2018). Mohajan (2018) suggested that qualitative research involves the collection and analysis of data that is not in numerical form and aims to understand social phenomena by examining a particular group and interpreting their context.

This design is applicable to this study since it clarifies experiences, human situations, and challenges. Also, it is the most typical way to acquire information through interviews. All data will be retrieved from the participants' locations. Moreover, this study is qualitative since it will seek to examine and comprehend the experiences of the research participants regarding how social media affects their vocabulary adeptness.

Moreover, this research will utilize a phenomenological approach, a methodology designed to investigate the firsthand experiences of individuals regarding a particular phenomenon (Teherani et al., 2015). In addition, Creswell (2013) explained that the phenomenological approach is a form of qualitative research with the objective of describing the nature of a specific phenomenon. Additionally, Rodriguez and Smith (2018) noted that this approach is effective in comprehending subjective experiences and gaining an understanding of people's motivations and actions. Creswell (2013) also added that this approach is suitable in collecting data (thoughts, opinions, or experiences) among small groups of people.

This study employs a qualitative phenomenological methodology to investigate participants' lived experiences, coping mechanisms, and insights through in-depth interviews. It utilizes numerous scenarios to explore similar experiences from different perspectives, emphasizing unique situations and commonalities. The data collected were contributed to the understanding of how social media affects vocabulary adeptness.

In summary, the selected research methodology for this study is a qualitative approach, specifically employing a phenomenological approach. Qualitative research seeks to comprehend social phenomena by examining a particular group and interpreting their context, using data that is not in numerical form. The qualitative phenomenological approach will be used to investigate participants' lived experiences, coping mechanisms, and insights through in-depth interviews. The study employs purposive sampling to select participants who meet specific criteria, and data will be collected through the conduct of Focus Group Discussions (FGDs) and In-Depth Interviews (IDIs).

Thematic analysis was employed to examine and interpret the collected data. Measures such as member checking were ensured the study's trustworthiness and ethical considerations were consistently addressed throughout the entire research process. Overall, this methodology allows for a comprehensive exploration and understanding of how social media affects vocabulary adeptness, and capturing diverse perspectives among the participants.

Research Participants

In this study, there were fourteen participants who are second-year English major students from the college institutions in the Province of Davao de Oro. The research involves 14 students, 7 individuals participated in a Focus Group Discussion, while others engaged in In-Depth Interviews. The study adheres to Creswell's (2013) suggestion, as cited in Alase's (2017) work, that phenomenological research should employ data collection methods such as in-depth interviews and focus group discussions. The study's participant count was determined by data saturation, signifying that data collection will persist until no new insights emerge from the interviews or focus group discussions. Therefore, the exact number of participants cannot be predetermined, but the study aimed to ensure that data saturation is achieved through thorough sampling and recruitment of participants.

To conceal the participants' identities, coding in the form of pseudonyms were utilized. Each interviewee was coded and assigned a pseudonym depending on their personality and conduct during the activity. Purposive sampling was employed to select the participants. As per Crossman (2020), this sampling technique is a non-probability approach, where individuals are chosen tailored on the specific characteristics of a population and the research objectives. The researcher chooses the participants for this study to gather pieces of information about the experiences, challenges, and insights of the research participants. To perform the in-depth interview, the researcher integrates a virtual interview using online flat forms such as Google Meet, Zoom, and in-person interview.

The subsequent standards were employed for participant selection for this study: (1) participants must be college students enrolled in a college institution in the Province of Davao de Oro; (2) participants must possess and utilize gadgets such as cell phones and have an active presence or account on social media platforms, and (3) participants must be officially enrolled as second-year English major students.

The study employs specific criteria to select participants, resulting in the exclusion of individuals who do not meet these requirements. Exclusions includes (1) individuals who are not currently enrolled in a local college in the Province of Davao de Oro; (2) those who lack the necessary gadgets or social media presence; and (3) participants who are not officially enrolled as second-year English major students. By establishing clear criteria, the study aims to focus on a particular set of participants who fulfill the defined requirements while acknowledging the potential exclusions.



Data Analysis

After the collection of participants' responses during the in-depth and focus group discussion interviews for the qualitative study, the researcher commences the analysis process. Coding is an important step in the qualitative data processing process. The data is broken down into digestible components during qualitative analysis, which the researcher/analyst then reconstructs to create a view of reality. Reviewing the interview transcripts, observational notes, and any other relevant materials can aid in developing preliminary notes, which can be utilized to develop initial themes.

In addition, the gathered data were examined using thematic analysis. Thematic analysis is a valuable method for providing more comprehensive data. It can gather information about the respondents' experiences in a methodical manner. According to Braun and Clarke (2013), thematic analysis is a flexible method employed by qualitative researchers to discern and elaborate on themes derived from interview data. The researcher will employ this method to achieve the study's objectives.

Furthermore, because some replies may be in vernacular or Filipino, the researcher transcribed them into English. Following data transcription, the researcher identifies the generated data

for the study. Participants' identities were strictly kept and confidential by employing name coding or a pseudonym.

The analyst begins analyzing the collected data. Finally, the researcher collects the themes the data analyst developed to further examine and evaluate the generated themes and categories. Additionally, to enhance the data's reliability, the researcher engaged the assistance of a data analyst who is knowledgeable in the subject matter and seek feedback from other researchers. The data analyst reviews and verifies the themes that were initially developed.

RESULTS

Experiences of BSED Students on the Effects of Social Media to their Vocabulary Adeptness

The Table 1 presents the identified fundamental themes that resulted from a comprehensive analysis. Following an in-depth analysis of the effects of social media on students' adeptness in vocabulary, six prominent themes surfaced: (1) Development of Vocabulary, (2) Acquisition of New Terms and Creative Concepts, (3) Familiarization of New Words, (4) Provision of Accessibility to Educational Materials, (5) Exposure to Informal Language, and (6) Experiencing Difficulty in Vocabulary Learning.

Table 1

Major Themes and Core Ideas on the Experiences of BSED Students on the Effects of Social Media to their Vocabulary Adeptness

Major Themes	Core Ideas
Development of Vocabulary	<ul style="list-style-type: none"> • use new words featured in literary arts into written works • strengthen vocabulary by being exposed to a range of linguistic styles • assist in learning, broadening and improving vocabulary • aid in coming up with some novel terms • cover a wide range of interesting vocabulary lessons • easily understood content commonly exhibited in settings
Acquisition of New Terms and Creative Concepts	<ul style="list-style-type: none"> • acquired new vocabulary and expressions • learned key concepts and usage of contracted and abbreviated words • learned the exact meaning and formation of new words • interacted with experts in the creation of their works • gained knowledge and grasp on popular trending terms • looked up the definitions of new words
Familiarization of New Words	<ul style="list-style-type: none"> • learn new and unfamiliar words and phrases • become familiar with specialized terminology • elaborate new vocabulary words and reading comprehension techniques • introduce novel terms that can be utilized to prompt essay discussions • help to get familiar with different concepts in word usage • understand various linguistic contexts and modify language usage accordingly
Provision of Accessibility to Educational Materials	<ul style="list-style-type: none"> • expose to authentic English platforms and classroom resources • access to a vast array of resources with an immense range of contents • access online materials that content creators used • expose to language use in real world conversation • provide practical example of how words are used in different contexts • engage in language related contents on some instructional videos
Exposure to Informal Language	<ul style="list-style-type: none"> • overuse of shortened word forms informal contractions on social media • employ social media created non-credible english information



	<ul style="list-style-type: none"> • use colloquial language that is inappropriate in an academic setting. • learn things that are meaningless, absurd, or even unworthy. • utilizes slang or conyo terms to make others laugh, and some unintentionally adopt it • impede the development of formal vocabulary due to overexposure to informal language
<p>Experiencing Difficulty in Vocabulary Learning</p>	<ul style="list-style-type: none"> • difficulty balancing the use of official and casual English • difficulty to grasp high sounding and unfamiliar words • challenged to find the proper vocabulary out of these internet slang, acronyms, and abbreviated language • challenged to maintain a formal and precise vocabulary • difficulty to discern the accuracy and reliability of information • experienced lack of learning focus due to social media addiction

Development of Vocabulary

The first theme identified that social media is a significant tool for vocabulary enhancement, offering diverse linguistic content and opportunities for collaborative learning. By providing access to new words and encouraging active language use, social media platforms contribute positively to language acquisition. This challenges the perception of social media's negative impact, highlighting its value in fostering linguistic growth and community engagement among learners.

Acquisition of New Terms and Creative Concepts

The second theme that emerged is acquisition of new terms. Students turn to social media as a vital resource for mastering new expressions, styles, and vocabulary. This platform not only introduces them to the latest linguistic trends but also aids in understanding and applying new terms accurately. Through social media, learners expand their vocabulary and navigate the nuances of contemporary language use, blending formal and informal expressions to enhance their linguistic proficiency.

Familiarization of New Words

The third theme conveyed is familiarization of new words. The journey of familiarizing oneself with new words transcends traditional boundaries through the dynamic and interactive platforms of social media. Social media platforms not only serve as gateways to encountering diverse and specialized terminology but also foster a deeper understanding and application of language in real-world contexts.

Provision of Accessibility to Educational Materials

The fourth theme that emerged is provision of accessibility to educational materials. The experiences shared by participants highlight social media's pivotal role in language acquisition, offering a holistic approach to learning that encompasses exposure to authentic platforms, diverse content, and practical usage examples. Through social media, learners gain invaluable insights into the nuances of language employed in everyday conversations and the creative expression of ideas. This dynamic environment fosters a deeper understanding of language mechanics, encouraging active engagement with content that not only informs but also inspires. As we navigate this digital age,

social media stands out as a versatile and impactful resource in the quest for linguistic proficiency and cultural literacy.

Exposure to Informal Language

The fifth theme that was conveyed was exposure to informal language. The participants pinned that the widespread exposure to informal language on social media platforms presents a double-edged sword. On one hand, it reflects the dynamic and evolving nature of language, fostering a sense of community and relatability among users. On the other hand, it poses challenges to developing a formal vocabulary, as the pervasive use of slang, contractions, and colloquial language can detract from the ability to communicate effectively in more structured environments. Recognizing and navigating the balance between informal and formal language use is essential for learners to harness the benefits of social media while mitigating its limitations on language development.

Experiencing Difficulty in Vocabulary Learning

The sixth theme was experiencing difficulty in vocabulary learning. The statements given by the participants are proof that social media has both positive and negative effects on their vocabulary adeptness. With this, it might be safe to conclude that students should always be careful in using social media platforms. While users are mesmerized by the usefulness it could give, chances are they will also experience undesirable circumstances in the long run.

Coping Strategies of Students in Facing the Challenges Encountered on the Effects of Social Media to their Vocabulary Adeptness

The table 2 presents the identified themes and core ideas that resulted from a thematic analysis. After going through the experiences of BSED students on the effects of Social Media on their Vocabulary Adeptness, five (5) themes were developed: (1) Ascertained Context of Words and Grammar Usage, (2) Adaption of Strategies for Vocabulary Improvement, (3) Active Engagement on Activities for Vocabulary Enhancement, (4) Contemplate the material thoroughly and distinctively, and (5) Consideration of Credible Sources of Information.



Table 2

Major Themes and Core Ideas on the Coping Strategies of Students in Facing the Challenges they Encountered on the Effects of Social Media to their Vocabulary Adeptness

Major Themes	Core Ideas
Ascertained Context of Words and Grammar Usage	<ul style="list-style-type: none"> • browsed over the internet to figure out word usage and fact check • googled up unknown terms from videos on a digital dictionary • exposed to written contents and scholarly papers • searched the true meaning of unfamiliar words • learned to modify specialized, slang or colloquial terms • checked terms and expressions used in different contexts
Adaption of Strategies for Vocabulary Improvement	<ul style="list-style-type: none"> • applied conceptual usage and word changes • spelling out correctly abbreviated words • used the newly learned words in written outputs • created vocabulary list of key words when watching videos • utilized distinct vocabulary in speech, oral recitation and interesting discussions • being vigilant of the potential biases on social media sites
Active Engagement on Activities for Vocabulary Enhancement	<ul style="list-style-type: none"> • engaging in online discussion and language challenge activities • writing and posting articles and vlogs • consulting language forums for vocabulary enhancement • understanding the context and meaning of the words • utilized media platforms to share, interact and teach fellow internet users • engaging in conversations, debates, and linguistic interactive exercises
Contemplate the material thoroughly and distinctively	<ul style="list-style-type: none"> • adapting the new things encountered on social media • doing background research and navigating varied posts • examining the content for trustworthy information • critically identifying correct choices of word • figuring out the accuracy of newly acquired vocabulary • employing variety of sources and technological tools
Consideration of Credible Sources of Information	<ul style="list-style-type: none"> • using critical thinking and precautions when relying on sources • selecting knowledgeable or influential entities in the relevant field • examining content's creator credentials and history • confirming the knowledge and reputation of writers • working with trustworthy vocabulary sources online • being selective in social media that aligned with language learning goals

Ascertained Context of Words and Grammar Usage

The first theme that was identified is ascertained context of words and grammar usage. BSED second-year English students utilize social media to deepen their understanding of language, using it to discover new terms and verify their meanings through digital dictionaries and reliable online sources. Their journey highlights the importance of social media in providing personalized and diverse learning experiences, enabling them to apply language in various contexts effectively. This approach to learning showcases the potential of digital platforms to enhance vocabulary and grammar skills in an accessible and engaging manner.

Adaption of Strategies for Vocabulary Improvement

The second theme that was adaption of strategies for vocabulary improvement. Relative to participant's responses, the adaptation of various strategies for vocabulary improvement marks a significant shift in how learners engage with language

in the digital age. From the meticulous application of newly acquired words in writing to the strategic creation of vocabulary lists and the thoughtful incorporation of diverse terms in speech, students are effectively broadening their linguistic repertoire. Additionally, their vigilance towards the biases present on social media platforms exemplifies a mature approach to digital literacy. These practices not only enhance vocabulary but also equip learners with the skills necessary to critically assess and utilize information in an increasingly connected world.

Active Engagement on Activities for Vocabulary Enhancement

The third theme that was specified is the active engagement on activities for vocabulary enhancement. The digital realm offers a plethora of opportunities for learners to employ coping mechanisms in vocabulary enhancement. Through active engagement in online activities, consulting with peers, and embracing interactive exercises, students overcome challenges in language acquisition. This proactive approach not only broadens their



lexical repository but also equips them with the resilience and adaptability needed in mastering new linguistic territories.

Contemplate the material thoroughly and distinctively

The fourth theme that was pointed out is contemplate the material thoroughly and distinctively. The approach of thoroughly and distinctively contemplating material encountered on social media reflects a sophisticated learning process. By assessing the trustworthiness of content, verifying the accuracy of new vocabulary, and judiciously selecting resources, learners are not only enhancing their language skills but also developing critical thinking capabilities essential for navigating the digital age.

Consideration of Credible Sources of Information

The fifth theme that was revealed is consideration of credible sources of information. In the quest for credible information sources, participants emphasize the importance of critical thinking and selectivity in using social media for language learning. IDI 06 warns against biases and misinformation, advocating for careful evaluation of content and its creators. BSED second-

year English students highlighted the significance of adapting learning strategies and verifying the reliability of sources to enhance vocabulary. FGD 01 adds that being selective in following social media pages aligned with educational goals is crucial. Together, these mechanisms underscore the need for a discerning approach to online resources, ensuring they contribute positively to language acquisition.

Insights Drawn from the Experiences of Students on the Effects of Social Media on their Vocabulary Adeptness

The table 3 presents identified themes and core ideas that resulted from a thematic analysis. After going through the coping strategies of students in facing the challenges encountered on the effects of Social Media to their Vocabulary Adeptness, four (4) themes were developed: (1) Exposure to useful resources and materials to speed up vocabulary acquisition, (2) Gain an immense quantity of new phrases and words, (3) Provide direction on proper vocabulary and grammar usage, and (4) Strategically Harnessing Social Media for Enhanced Language Learning and Vocabulary Building.

Table 3

Major Themes and Core Ideas on the Insights Drawn from the Experiences of Students on the Effects of Social Media to their Vocabulary Adeptness

Major Themes	Core Ideas
Exposure to Useful Resources and Materials to Speed up Vocabulary Acquisition	<ul style="list-style-type: none"> • Tailoring Social Media Experiences for Academic Growth • Perceiving Social Media as an Opportunity for Language Proficiency • Recognizing Social Media as a Valid Source of Learning Inputs • Diversifying Social Media Feeds for Language Exposure • Engaging with Content that Expands Vocabulary • Understanding Linguistic and Cultural Contexts • Balancing Engagement with Meaningful Content
Gain an Immense Quantity of New Phrases and Words	<ul style="list-style-type: none"> • Access to a Diverse Range of Terminology • Embracing Slang, Acronyms, and Informal Language. • Keeping Up with Language Trends • Becoming Adept in Utilizing New Vocabulary • Creating Personalized Vocabulary Resources
Provide Direction On Proper Vocabulary and Grammar Usage	<ul style="list-style-type: none"> • Adaptability to New Linguistic Expressions • Intentional Learning Mindset • Mindfulness in Language Usage • Goal-Oriented Vocabulary Enhancement • Experiential Learning Through Practice
Strategically Harnessing Social Media for Enhanced Language Learning and Vocabulary Building	<ul style="list-style-type: none"> • Disciplined Social Media Use for Focused Learning • Active Engagement with Educational Content • Practical Use of Social Media for Language Skills Improvement • Engagement in Academic Conversations Online • Understanding and Navigating Language Contexts

Exposure to Useful Resources and Materials to Speed up Vocabulary Acquisition

The first theme that emerged is Exposure to Useful Resources and Materials to Speed up Vocabulary Acquisition. This theme entails on the deliberate use of social media and other digital

resources to fast-track language acquisition. By customizing social media interactions for educational purposes, learners can transform these platforms into arenas for academic enhancement, recognizing them as valuable sources of diverse and meaningful language input. This approach not only expands



one's vocabulary but also ensures the practical application of new words, showcasing the effective role of social media in fostering language mastery and enhancing everyday communication.

Gain an Immense Quantity of New Phrases and Words

The second theme that was provided is Gain an Immense Quantity of New Phrases and Words. Exploring social media provides a vast spectrum of new vocabulary and expressions, as described by participants. While these platforms are treasure troves of linguistic diversity, offering access to idioms, slang, and educational content, they also challenge users with the prevalence of informal language. Nevertheless, the strategic use of social media for news, information, and reading, as highlighted, underscores its value in broadening one's vocabulary and enhancing language proficiency amidst the digital era's complexities.

Provide Direction On Proper Vocabulary and Grammar Usage

The third theme that emerged is Provide Direction On Proper Vocabulary and Grammar Usage. With the collective insights from participants, they underscore the necessity of deliberate engagement with social media as a means to enhance vocabulary and grammar. By setting specific learning objectives, embracing a variety of educational resources, and maintaining awareness of language use, learners can navigate social media effectively to bolster their linguistic skills. This strategic approach not only fosters language proficiency but also ensures that social media serves as a valuable ally in the pursuit of academic and linguistic excellence.

Strategically Harnessing Social Media for Enhanced Language Learning and Vocabulary Building

The fourth theme that emerged is to Strategically Harnessing Social Media for Enhanced Language Learning and Vocabulary Building. Adopting social media for language development and vocabulary enhancement demands a thoughtful and methodical strategy. Insights from participants reveal the necessity of judiciously curating educational content and exercising discipline in social media use, underscoring its potential as a beneficial tool in both academic and personal language learning journeys. For instance, the emphasis on scrutinizing the reliability and educational value of content, as highlighted by participants, showcases the importance of quality over quantity in digital learning resources. This strategic engagement with social media, combined with an awareness of balancing informal online language with the formal linguistic competencies crucial for academic success, forms an integrated approach to language and vocabulary building. This collective perspective underscores the importance of a mindful and strategic use of social media as a dynamic resource for enhancing vocabulary and language proficiency.

DISCUSSIONS

The objective of this phenomenological study is to delve into the lived experiences of Second-Year BSED English major students, exploring their coping mechanisms and gain understanding the impacts of social media on their proficiency in vocabulary. Also, this study aimed to unveil the experiences of English

major students on the effects of social media on the vocabulary adeptness from the college institutions in the Province of Davao de Oro.

Experiences of BSED Students on the Effects of Social Media to their Vocabulary Adeptness

The thematic analysis of BSED students' experiences regarding the effects of social media on their vocabulary adeptness has revealed six overarching themes: (1) Development of Vocabulary, (2) Acquisition of New Terms and Creative Concepts, (3) Familiarization of New Words, (4) Provision of Accessibility to Educational Materials, (5) Exposure to Informal Language, and (6) Experiencing Difficulty in Vocabulary Learning.

Development of Vocabulary

The thematic analysis indicates that BSED students perceive social media as a significant contributor to the development of their vocabulary. They report encountering a variety of new words and phrases across social media platforms, which they believe has broadened their lexicon and enhanced their linguistic capabilities. This exposure is particularly noted in discussions and content that are rich in literary and academic language.

Graves (2017) underscores the importance of a rich vocabulary in fostering reading comprehension and overall language proficiency. This aligns with the participants' experiences, suggesting that social media can act as a vibrant source of linguistic input, contributing to vocabulary growth in a manner that resonates with the academic literature on language acquisition.

In addition, Coxhead (2018) emphasizes the role of vocabulary adeptness in language acquisition, noting its impact on various aspects of linguistic competence. The breadth of vocabulary encountered by students on social media platforms supports Coxhead's assertion, highlighting social media as an integral tool in the modern vocabulary learning process.

In line with the findings from the thematic analysis, Nation (2019) points out that individuals with a broad vocabulary tend to excel in both academic and professional settings. The participants' acknowledgment of social media as a platform for encountering diverse and advanced vocabulary corroborates Nation's perspective on the pivotal role of vocabulary in effective communication and academic success.

Acquisition of New Terms and Creative Concepts

Participants highlighted social media's role in facilitating the acquisition of new terms and creative concepts, particularly those not covered in traditional educational settings. They appreciate the informal learning environment social media provides, where they can explore linguistic creativity and contemporary usage.

Schmitt (2020) discusses the dynamic nature of vocabulary acquisition, where learners are exposed to new words in varying contexts. This dynamic is reflected in the participants' experiences with social media, where they encounter and learn new terms organically, reinforcing Schmitt's observations.



Additionally, Folse (2021) argues that strategic word learning behaviors, such as engaging with new terms in context, significantly contribute to vocabulary development. The participants' engagement with creative content on social media platforms exemplifies these behaviors, suggesting a practical application of Folse's theoretical framework.

Furthermore, Milton (2022) emphasizes the importance of making meaningful connections between new words and existing knowledge. The thematic analysis shows that BSED students use social media to make these connections, particularly when encountering creative concepts, aligning with Milton's findings on effective vocabulary learning strategies.

Familiarization of New Words

The analysis reveals that BSED students use social media as a tool for familiarizing themselves with new words, often seeking out definitions and contexts to understand and integrate these terms into their vocabulary. This process of familiarization goes beyond mere exposure, involving active engagement with the language.

Moreover, Laufer & Nation (2019) highlight the importance of both receptive and productive vocabulary skills in language learning. The students' approach to familiarizing themselves with new words through social media mirrors this dual focus, supporting the idea that active engagement with vocabulary enhances learning outcomes.

Further, The work of Boers et al. (2017) on the benefits of encountering vocabulary in context supports the students' strategy of using social media for language learning. By engaging with words in varied contexts, students can better grasp the nuances of language, a method advocated by Boers and his colleagues.

Lastly, Anggrarini (2018) points out that effective vocabulary acquisition often involves repetitive exposure and active use. The thematic analysis reflects this, as students not only encounter new words on social media but also engage with these terms repeatedly, facilitating deeper learning and retention.

Provision of Accessibility to Educational Materials

The findings highlight that BSED students value social media for its accessibility to a wide array of educational materials. Platforms like Facebook, YouTube, and specialized language learning apps have become indispensable tools, providing resources that complement traditional learning environments and cater to individual learning preferences.

In relation to that, Dincer (2020) underscores the role of online platforms in enhancing vocabulary learning, offering avenues for students to engage with educational content beyond the classroom. This perspective aligns with participants' experiences, as they utilize social media to access diverse linguistic resources, demonstrating the practical benefits of Dincer's observations.

Additionally, Mahdi (2018) emphasizes the effectiveness of digital resources in fostering language acquisition. The thematic analysis corroborates this, showing how BSED students

leverage social media as a repository of educational materials, which not only aids vocabulary development but also enriches their overall learning experience.

Also, Shamsan et al. (2021) discuss the importance of educators recognizing the value of digital platforms in language teaching. The participants' reliance on social media for accessing educational materials reflects a broader trend of integrating digital resources into the learning process, echoing Shamsan et al.'s recommendations for educational practice.

Exposure to Informal Language

Participants noted their exposure to informal language on social media, including slang, acronyms, and non-standard grammatical forms. While this exposure is seen as reflective of real-life language use, concerns were raised about its potential impact on formal language skills and academic writing.

Vannestal (2020) discusses the challenges that digital distractions and the prevalence of informal language online pose to language learning. The thematic analysis reveals similar concerns among BSED students, who navigate the influence of social media's informal language on their formal language use, highlighting the relevance of Vannestal's research.

Also, Lam (2017) raises concerns about the erosion of formal writing skills due to the dominance of informal language on social media. This concern resonates with the students' experiences, as they grapple with maintaining academic language standards amid pervasive exposure to informal language, underscoring Lam's cautionary stance.

Similarly, Arend (2019) presents a nuanced view of social media's impact on language skills, suggesting that its effects are not uniformly negative. The thematic analysis supports this complexity, with students acknowledging both the challenges and benefits of engaging with informal language on social media, reflecting the balanced perspective offered by Arend.

Experiencing Difficulty in Vocabulary Learning

The analysis underscores the difficulties BSED students face in vocabulary learning due to the vast and often overwhelming nature of information available on social media. Challenges include discerning the reliability of sources, overcoming the distraction of non-educational content, and integrating new vocabulary effectively.

In fact, Smith (2019) and Johnson et al. (2020) discuss the barriers to effective vocabulary acquisition, including resource constraints and information overload. The thematic analysis echoes these challenges, highlighting the difficulties students encounter in navigating the abundance of information on social media for vocabulary learning.

In addition, Wagner et al. (2018) examine the impact of inadequate vocabulary knowledge on academic performance. The participants' experiences of vocabulary learning difficulties reflect this impact, illustrating how challenges in acquiring vocabulary can hinder comprehension and expression in academic contexts.



Moreover, Fancourt et al. (2022) emphasize the need for targeted vocabulary instruction to mitigate the long-term negative outcomes of vocabulary deficits. The thematic analysis reveals students' struggles with vocabulary learning on social media, underscoring the importance of effective strategies and interventions to support vocabulary development, in line with Fancourt et al.'s recommendations.

Coping Strategies of Students in Facing the Challenges Encountered on the Effects of Social Media to their Vocabulary Adeptness

The exploration of coping strategies employed by students to face challenges encountered in the effects of social media on their vocabulary adeptness has identified five (5) key themes: (1) Ascertained Context of Words and Grammar Usage, (2) Adaption of Strategies for Vocabulary Improvement, (3) Active Engagement on Activities for Vocabulary Enhancement, (4) Contemplate the material thoroughly and distinctively, and (5) Consideration of Credible Sources of Information.

Ascertained Context of Words and Grammar Usage

Students have recognized the importance of understanding the context and grammatical usage of words encountered on social media, actively seeking out definitions and applications to enhance their comprehension. This strategy not only aids in vocabulary acquisition but also in applying this knowledge in real-world communication scenarios.

Specifically, Graves (2017) underscores the foundational importance of vocabulary adeptness in language proficiency. He argues that grasping the context and usage of words empowers learners to navigate through complex linguistic terrains, mirroring the students' utilization of social media as a rich resource for contextual learning.

In addition, Coxhead (2018) further explores the integral role of vocabulary in language acquisition, suggesting that a vast lexical repository is crucial for effective communication across diverse domains. This insight supports the practice among students of leveraging digital tools to ensure accurate word usage, reflecting a targeted approach to enhancing linguistic competence.

Moreover, Nation (2019) posits that a nuanced understanding of vocabulary is key to proficient language use, impacting reading comprehension and oral communication. This principle is evident in students' strategies for contextualizing new words through digital resources, exemplifying the potential of social media in fostering advanced language skills.

Adaption of Strategies for Vocabulary Improvement

In their journey toward vocabulary enhancement, students have embraced innovative strategies that extend beyond conventional learning methods. These include the strategic use of social media to encounter and practice new vocabulary, reflecting a nuanced understanding of the dynamic nature of language learning in the digital age.

On the other hand, Schmitt (2020) emphasizes strategic learning behaviors such as the use of mnemonic techniques and extensive reading as pivotal to vocabulary acquisition. This notion aligns with how students utilize social media platforms to immerse themselves in text-rich environments conducive to learning and remembering new words.

Moreover, Folse (2021) discusses the precision and sophistication in language production among proficient vocabulary users, achieved through practices akin to students' engagement with varied and contextually rich digital content. This engagement facilitates a deeper lexical understanding and application.

Further, Milton (2022) highlights the importance of making meaningful connections between new words and existing knowledge. The students' adaptive strategies on social media—such as curating vocabulary-rich feeds and participating in language-based interactions—mirror this approach, showcasing the effective use of digital environments for comprehensive language development.

Active Engagement on Activities for Vocabulary Enhancement

Students actively engage in various online activities to enhance their vocabulary, utilizing social media as a platform for linguistic exploration and growth. This involvement ranges from participating in discussions to creating content, showcasing a proactive approach to language learning.

Laufer & Nation (2019) stress the significance of active engagement in language practice for vocabulary acquisition. They advocate for immersive experiences that mimic students' interactive use of social media, thereby facilitating deeper linguistic absorption and retention.

According to Nation (2019), the practical application of new vocabulary through writing and speaking activities strengthens language skills. This practice is mirrored in students' engagement with social media, where they actively apply newly learned words in various communicative contexts.

Additionally, Schmitt (2020) posits that varied exposure to language, through activities such as reading and interaction, significantly contributes to vocabulary development. Students' participation in social media discussions and content creation exemplifies this exposure, reinforcing their vocabulary growth through active use.

Contemplate the Material Thoroughly and Distinctively

In navigating the vast information available on social media, students critically assess and deeply contemplate the material, applying rigorous standards to ensure the accuracy and relevance of the vocabulary they learn. This careful approach underscores the importance of discernment in digital language learning.

Coxhead (2018) underscores the necessity of engaging with content critically to enhance language comprehension and acquisition. This reflects students' practices of scrutinizing social media content for vocabulary learning, ensuring that their sources are reliable and educationally valuable.



Additionally, Graves (2017) highlights the importance of integrating new vocabulary with existing knowledge, a process that requires thoughtful consideration of each new word's meaning and usage. This is akin to students' deliberate approach to engaging with social media content, where they seek to understand and internalize new vocabulary deeply.

Furthermore, Milton (2022) discusses the role of strategic behaviors in effective vocabulary learning, such as the critical evaluation of materials. Students' practices of selectively engaging with content and verifying information align with this approach, showcasing the critical thinking involved in their vocabulary enhancement efforts.

Consideration of Credible Sources of Information

Recognizing the challenge of misinformation, students emphasize the importance of consulting credible sources when learning new vocabulary through social media. This discerning approach ensures the reliability and academic value of the information they consume.

In addition, Folse (2021) points out that the precision in language use stems from engaging with accurate and authoritative resources. This principle guides students in their selective engagement with credible social media content, highlighting the critical role of source quality in effective vocabulary learning.

Further, Laufer & Nation (2019) stress the necessity of accessing reliable lexical resources for meaningful language acquisition. Students' emphasis on credible sources mirrors this insight, indicating a sophisticated approach to filtering and utilizing digital content for vocabulary enhancement.

Also, according to Nation (2019), effective vocabulary acquisition involves the strategic selection of learning materials. This aligns with students' efforts to identify and engage with reputable social media platforms and content creators, showcasing their commitment to high-quality, reliable language learning experiences.

Insights Drawn from the Experiences of Students on the Effects of Social Media to their Vocabulary Adeptness

These insights drawn from the experiences of students on the effects of social media on their vocabulary adeptness reveal valuable themes and core ideas, providing insight into the complex nature of this phenomenon. The four major themes - Exposure to useful resources and materials to speed up vocabulary acquisition, Gain an immense quantity of new phrases and words, Provide direction on proper vocabulary and grammar usage, and Strategically Harnessing Social Media for Enhanced Language Learning and Vocabulary Building - offer a thorough insight into the challenges and opportunities posed by social media in the context of language learning.

The strategic insights for accelerated vocabulary growth among second-year BSED students underscore the potential of social media as a catalyst for enhanced language learning. This detailed analysis draws on the experiences and coping strategies

of students navigating the multifaceted landscape of social media, highlighting the deliberate efforts to harness digital platforms for optimal language acquisition.

Exposure to Useful Resources and Materials to Speed Up Vocabulary Acquisition

The accessibility of educational materials through social media significantly accelerates the vocabulary acquisition process. This theme highlights how students exploit digital platforms to access diverse and enriching linguistic resources, enhancing their vocabulary development efficiently.

Graves (2017) emphasizes the pivotal role of accessible educational resources in language learning. He suggests that the abundance of materials available via social media can dramatically enhance learners' exposure to new vocabulary, thereby facilitating rapid vocabulary growth.

Furthermore, Coxhead (2018) notes that the variety and accessibility of digital resources empower learners to tailor their vocabulary learning experience. This personalized approach ensures that students engage with content that is most relevant and beneficial to their linguistic development.

Additionally, Nation (2019) highlights the impact of exposure to a broad lexical range on vocabulary acquisition. Social media platforms, by providing easy access to a wide array of resources, enable learners to encounter and learn new words and phrases within diverse contexts, significantly enriching their vocabulary.

Gain an Immense Quantity of New Phrases and Words

Social media platforms serve as a vast repository of language, offering learners exposure to an extensive array of new phrases and words. This exposure is instrumental in broadening learners' lexical repertoire and enhancing their linguistic proficiency.

Schmitt (2020) illustrates how digital environments, including social media, can introduce learners to a wide variety of language expressions. This diversity in linguistic exposure is key to acquiring a robust vocabulary, as learners encounter terms and phrases beyond their immediate learning materials or environments.

Folse (2021) further elaborates on the benefits of encountering new vocabulary in context. Social media, with its dynamic and real-world language use, provides a unique setting for learners to understand how new words function within sentences and conversations, thus enhancing comprehension and retention.

Lastly, Milton (2022) discusses the role of extensive reading and interaction in vocabulary acquisition. Social media, by virtue of its interactive nature, facilitates both these activities, allowing learners to not only discover new words but also to see them applied in a range of contexts, thereby deepening their understanding and usage.

Provide Direction on Proper Vocabulary and Grammar Usage

Through careful analysis, it has become clear that social media not only facilitates the discovery of new words but also provides guidance on their proper usage and grammatical context.



This dual role assists learners in refining both their written and oral language skills, demonstrating the multifaceted benefits of digital platforms for linguistic development.

Accordingly, Laufer & Nation (2019) stress the significance of understanding the correct usage and grammatical rules surrounding new vocabulary. They argue that true mastery of language goes beyond mere word recognition to encompass the ability to employ words correctly in various contexts. Social media, with its diverse content, serves as a rich resource for encountering words used in real-life scenarios, thereby enhancing learning.

Furthermore, Nation (2019) expands on this notion by highlighting the impact of contextual learning on vocabulary acquisition. He posits that exposure to language in its natural environment significantly aids in grasping the nuanced meanings and appropriate usage of new vocabulary. Thus, the dynamic nature of social media, teeming with authentic linguistic exchanges, aligns perfectly with this pedagogical approach.

Moreover, Schmitt (2020) delves into the cognitive aspects of language learning, suggesting that active engagement with diverse language inputs—such as those provided by social media—enhances understanding and retention of vocabulary. This engagement not only includes reading and listening but also the active application of new words in speaking and writing, further solidified by the interactive opportunities that social media platforms afford.

Strategically Harnessing Social Media for Enhanced Language Learning and Vocabulary Building

The incorporation of social media into educational practices has revolutionized the approach to vocabulary building, making it a more dynamic and interactive process. Students have harnessed the power of digital platforms to enhance their linguistic capabilities, demonstrating that social media can serve as an effective tool for both introducing new vocabulary and reinforcing existing knowledge. The diverse range of content available on these platforms allows for exposure to a wide array of words and phrases, used in various contexts, thereby enriching the students' vocabulary adeptness and overall language proficiency.

Graves (2017) asserts the importance of repeated exposure and active engagement in the development of a rich vocabulary. He suggests that the interactive nature of social media—characterized by constant updates and a plethora of user-generated content—creates an optimal environment for vocabulary learning. This continuous stream of new and varied linguistic information encourages learners to engage with new vocabulary regularly, fostering both acquisition and long-term retention.

Expanding on this, Coxhead (2018) notes the significance of context in the effective comprehension and memorization of new vocabulary. The authentic and diverse contexts offered by social media content—from informal chats to more structured posts—provide learners with practical insights into the usage of words in real-life scenarios. This exposure not only aids in understanding the nuanced meanings of words but also in grasping

their appropriate application, thereby enhancing cognitive linguistic processing.

Nation (2019) elaborates on the complexity of vocabulary learning, emphasizing that mastery goes beyond mere word recognition to include understanding its varied uses across different contexts. Social media, with its rich tapestry of linguistic expressions ranging from casual dialogues to formal articles, presents a unique opportunity for learners. They can delve into the multifaceted nature of language, exploring colloquialisms, dialects, and formal expressions. This varied exposure not only augments their vocabulary but also equips them with the ability to discern and adapt to different linguistic registers, significantly enriching their communicative competence.

Implications for Teaching Practice

On the Experiences of BSED Students on the Effects of Social Media to their Vocabulary Adeptness. The experiences of BSED students regarding the effects of social media on their vocabulary adeptness highlight significant implications for teaching practices. Educators from various programs should recognize the potential of social media as a dynamic and authentic source for vocabulary acquisition. Integrating specific activities or assignments that involve the use of social media platforms can enhance language learning experiences. Instructors should guide students in purposefully navigating online content, developing critical thinking skills to discern reliable information, and promoting responsible language use.

On the Coping Strategies of Students in Facing the Challenges Encountered on the Effects of Social Media to their Vocabulary Adeptness. The Coping Strategies of BSED students in facing challenges related to the effects of social media on their vocabulary adeptness necessitate thoughtful implications for teaching practices. Based on the results, students often encounter unfamiliar words and phrases on social media contents. As a coping strategy, they look it up on the internet to know their definitions and grammar use to they could apply it to their own linguistic expressions. Hence, educators should emphasize the importance of metacognitive strategies, encouraging students to actively engage with language through deliberate reading, exploration of diverse content, and collaborative learning experiences on social media. Incorporating these coping strategies into instructional approaches can enhance vocabulary acquisition and comprehension skills. Additionally, educators should guide students in discerning credible sources, navigating informal language usage, and maintaining a balance between formal and informal vocabularies.

Recommendations for Further Research

Since the nature of any research emphasizes replicability, this qualitative study using phenomenology approach proposes a further look at other aspects of the effects of social media on the vocabulary adeptness of students. The research is only limited to the experiences of second-year BSED English majors of the institutions in Davao de Oro. Thus, it is recommended to conduct this study in a new approach such as interpretative phenomenological analysis that will enhance the understanding of the experiences of the BSED English major students.



In addition, the study has given us good information about how students handle challenges with social media affecting their vocabulary. However, future researchers may delve more into looking at some other important aspects such as how social media affects vocabulary in the long run, like over many months or years. From the study conducted, the length of time was not specified and it would be even more specific if the impact of social media on the vocabulary adeptness of students can have a lasting effect.

Furthermore, the research is so general that it did not cater to all the needed resources that must be included because of time and resource constraints. Hence, future researchers can expand its location to not just in the province of Davao de Oro but can be in Region XI.

Lastly, considering the role of social media literacy interventions in educational settings and their impact on vocabulary enhancement could be a promising area for future research. This would provide practical implications for educators aiming to leverage social media positively in language learning environments.

Concluding Remarks

This study has provided valuable insights into the coping strategies and experiences of BSED students in dealing with the challenges posed by social media on their vocabulary adeptness. The identified themes shed light on the multifaceted approaches students employ to navigate the linguistic landscape of social media. It is evident that students actively seek ways to enhance their vocabulary through intentional efforts, collaboration with peers, and a discerning approach to online content.

Furthermore, the implications for vocabulary instructional approaches highlight the need for educators to recognize social media as a dynamic and legitimate source for vocabulary acquisition. Integrating specific activities or assignments that involve the use of social media platforms can provide students with opportunities to explore new words, phrases, and linguistic trends. By incorporating social media into lesson plans, educators can leverage this powerful tool to create engaging and relevant learning experiences, aligning with the digital and linguistic realities of today's students. As we move forward, understanding and embracing the positive aspects of social media in vocabulary instruction can contribute to more effective and student-centered language learning environments.

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DALIT POETRY: A SOCIAL DISCOURSE

Dr. Milind Abhimanyu Pathade

*Assistant Professor, Department of English, N H College, Bramahpuri,
Dist-Chandrapur*

ABSTRACT

Poetry touches to the heart and its effect is everlasting in the mind. Dalit poetry is the product against the hunger, discrimination, humiliation and exploitation. Marathi poem is different than the stream of Marathi literature. Dalit literature aims to produce new literature which exposes inhuman bondage formed to humiliate human by human. Dalit literature originated from the thoughts and works of Dr. Babasaheb Ambedkar. Dalit Poetry receives extreme responses and winning awards in the field of literature. Dalit literature expresses social, educational, scientific awareness in illiterate and oppressed society.

KEY WORDS: Dalit, hunger, discrimination, humiliation

INTRODUCTION

Poetry becomes the popular and interesting form of Dalit literature. Poetry reveals many individual and social aspects. Poetry becomes the form of sensible and emotional nature. Early composed ballads are religious generally. It tells the Mythological stories. India is the country of the great kings and their history. There are wandering singing groups who reached villages early in the morning and singing ballads, brave stories of god and goddess, kings and queens, knights and soldiers.

Dalit poetry is flourished with Dr. Babasaheb Ambedkar's social movement in innumerable ways. Poetry is the powerful medium to escape from the pain for the Dalit poets. They have used poetry as their strength to endure the curse they had. It was inhuman and humiliating but only one man of our community has given life to the oppressed, he is Dr. Babasaheb Ambedkar. Dalit writers realized that there was no point in merely writing provocative poetry against injustice.

Dalit literature established to make a change in society. They had many issues, even the problem of managing one time food was difficult before the class. They hardly managed to eat for him and family. In such cases how they will come into the stream of struggle against the subjugation, humiliation and atrocities. It is the poetry which give them strength and consciousness to change their life with education and thought of Dr. Babasaheb Ambedkar. Dalit particularly "Mahar" take education to change social and economical condition. According to Dr. Babasaheb Ambedkar, purpose of education is to moralize and socialize people. Students should learn to distinguish between what may fairly be called matter of fact and what is certainly mere matter of opinion. He should be accustomed to distinguish issues, and to look at bearings on some cherished theory.

Dalit Poetry expresses suffering, worries, poverty and exploitation behind casteist mentality. Dr. Babasaheb Ambedkar gives more value to character in life. Dalit Poetry stands against the rooted value which is based on discrimination. Dalit literature tries to enhance the individual

and social status with the help of educational opportunity of people. People belonged to untouchable community, they started migration from village to urban area where they could manage their food and started taking education. Dalit Poetry is unique in the poetical pattern; it expresses different and unusual experience and expression than customized Marathi poetry.

Dalit Poetry transforms the theme of isolation, alienation, protest, revolt, struggle for survival, freedom from all sorts of bondage and exploitation, apathy, estrangement and uprootedness, a search for new identity, and a longing for human dignity. It is thus poetry of protest, voicing its opposition to all is orthodox, traditional and conventional. It is as much empathetic as evocative and addresses itself a new to its reader in terms of startling images and symbols, differently moulded myths and metaphors. (Page, 60, *literature of Marginality*)

Wamandada Kardak, prominent poet composed poems on Dr. Babasaheb Ambedkar and his work, He is an emancipator of oppressed class and become source of inspiration for poets and musicians. Wamandad's work in the Dalit poetry is extremely sensational. He extended gratitude and honoured Dr. Babasaheb Ambedkar for his contribution in the development of the oppressed class. Wamandada Kardak's poetry reached to the small village and small hut of the downtrodden and inspired them to follow the path of education and science. He composed poems on the birth, work, contribution and devotion of Dr. Babasaheb Ambedkar.

Wamandada's poem,
Send my boy to school
Lord and Master
I tell you
Send my boy to school
We may be terribly poor
Famine may knock at the door
I'll see that he gets to school
Send my boy to school, etc.

The need of education to my community is more important than my hunger. His poetry touches to the heart and motivates people



to struggle and be passionate for education and moral. His experience of caste discrimination mainly expresses in the form of poetry.

Keshav Meshram, poet, critic, novelist, story writer of Dalit literature. He has used literature for awareness in community. His literature has different subjects as poverty, inequality and frustration mainly in creating new life. His poems are extremely emotional for the first generation of social movements. Social and economical barrier in the development is presented in the poems.

In our colony...

Reforms get confused

Paths are bruised, schemes stumble

Now--only now have boys started learning.

They write poems-stories-Indian literature

The axes of words fall upon the trees of tradition,

The warm, experience hailstone

Strange realities rain

On the dreams of literature....

Jyoti Lanjewar's poem titled 'Caves' expresses issue of human discrimination on the basis of caste. The inhuman experience of caste faced in every step of life. Everyone who was born in lower caste had bitter experience of treating him as lower than animal.

Their inhuman atrocities have carved caves

In the rock of my heart

I must tread this forest with wary steps

Eyes fixed on the changing times

The tables have turned now

Protests spark

Now here

Now there.....

She expresses struggle, protest, and writing against humiliation in poems.

The Dalit writers had also become familiar with the Black literature and movement. The result was that the youth Namdeo Dhasal, Arjun Dangale and J V Pawar took the initiative and established the political movement called the Dalit Panthers in Bombay in 1972. Thus a way of writing describing experience in provocative language swept Marathi literature. This probably the first time in India that creative writers became politically active and formed an organization. (Page-XII, *Poisoned Bread*).

In the modern period Dalit literature has changed way of writing; poetry becomes new in terms of experience, emotion and expression. Dalit poet has selected new phrases, structure and style. Poem expresses realistic, faithful than the traditional form of writing. K. Satchidanandan rightly pointed out Dalit writers as "created an alternative poetics that throws overboard classical values like propriety, balance, restraint and understatement. They also often use a deliberately subversive diction that challenges middle-class notions of decency".(Page-10, K. Satchidanandan)

Namdeo Dhasal's *Golpitha* is world famous collection of poems. It has given new identity to the Dalit poetry. Vijay Tendulkar, Marathi renowned writer wrote introduction in

Golpitha. He remarks: "The Marathi language so softly and delicately nurtured by the white -collared class, so rich in its splendor, Namdeo turns and twist "like mistress". He shatters it to pieces: he fills it, adding indecent expressions, with deliberate distortions. He justifies it as being warranted by the semantic content of his poem".(P-25, *Vidrohi Kaviata*)

Namdeo Dhasal's poem "Hunger" is the painful expression who have experienced self-consuming, other- inflicted hunger know what it means, how painful and incapacitating the state is, something beyond the reach of the middle class sensibility. Hunger is seen here as a multiple poetic reality and the poet toys with it on physical, mental and emotional levels.

Hunger, tell us your game, your strategy

If we can muster guts enough

We'll fight you to the finish

Can't crawl and grovel on your stomachs

Too long with you

How much can we wash the grime off hunger?

How much wash the dust off years?

Namdeo Dhasal's poems expresses painful condition of extremely hungry man whose hunger on physical level is an awesome, hateful calamity bringing in its wake emotional devastation, but the poet keeps his attitude towards it deliberately frivolous despite all seriousness, e.g. (P-63, *Literature of Marginality*)

Here's our manhood before you now

Let's see who wins this round

You are we?

Namdeo Dhasal's writing style is unique. He has used diction which is attached to his life. He could write in a decorative and ornamental language but used local language to express his nuisance in effective and simple way. Language never be a barrier in expressing pain, it must come from the self experience.

Dalit Poetry gained popularity after autobiography, novel and drama criticism. Dalit poetry emerged as a new platform to express pain and suffering due to casteist social system. Well-known Dalit poets are Namdeo Dhasal, Keshav Meshram, Arjun Dangle, Yashwant Manohar, Trymbak Sapkal, Arun Kamble, Mina Gajbhiya, Hira Bansod, Jyoti Lanjewar, Mallika Amar Sheikh, Pardnya Lokhande.

Conclusion:

Dalit poetry effectively used to change society. It is useful to awake people who are neglected, physically and mentally exploited. Dalit Poetry covers aspects from birth to death, darkness to light, bondage to liberty, discrimination to equality and inhuman to human.

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GROSS NATIONAL HAPPINESS (GNH): A WAY FROM NATIONAL HAPPINESS TO GLOBAL HAPPINESS

Dr. Jayanta Kumar Dash

Lecturer In Political Science, Astarang College Astarang, Puri

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ABSTRACT

Chasing happiness has become a global agenda in today's unrest life where everyone is helpless before stressful living standard, unsustainable environment, unknown pandemics, ill physical, mental and emotional health, poor psychological wellbeing, pervasive influence of technology, relentless search of self-interest at any cost and so on. Globalising development with happiness is the cry of the Earth today. From the core of Himalayan mountain range, Bhutan, a land-locked country, in a state of peace, good will, natural preservation and promotion of culture, Environmental Conservation, Good Governance and Sustainable and equitable socio-economic development, concerted on Gross National Happiness (GNH), endorsing GNP and GDP as unsustainable measures of development with happiness. The operationalization of the methods and tools of GNH is also improving the quality of the living standard of the people of Bhutan as per the GNH survey 2022. Against this background, the paper is an attempt to generalise the GNH model of happiness in Bhutan in particular and over the globe in general.

KEY WORDS: Gross National Happiness, Sustainable Development, Global Happiness, Environmental conservation, Good Governance,

INTRODUCTION: HAPPINESS TO GNH

Happiness is the ultimate goal of life. A life without happiness is like a life without success. Life is not all about earning money, building palatial and multi-storeyed house cubes, using luxurious vehicles, being rich and sophisticated, enjoying all covetous requirements and necessities and so on. It is necessary to have materialistic needs for maintaining well-appointed life but the real and successful life can be free from it and lead towards a life of spirituality. From a long distance over 2000 years ago in the perception of "Eudaimonia as a concept of virtue" believed happiness as the sole purpose of life, the complete objective and culmination of human existence". **Laura Mousikanski et.al. (2024)**. Happiness is a harmonious relationship among our thoughts, our speeches and our duties (Karma). In kabir Doha, happiness is something "Beyond Yourself" meaning feeling a sense of eternal truth of selflessness. Individuals can be happy with "Buddhist Panchsheel" such as Non-violence referring refraining from taking life of others; Non-theft or not to take any which is not for him; Non-indulgence or free from sensual misconduct; Adherence to truth; Non-addiction refers free from intoxication; **Gauba, O.P (2017)**. Happiness may be classified as 'satvic' means substantive, 'Rajasic' means sensory needs, and 'Tamasic' based in misleading oneself in the Bhagavat Gita but the real goal of life is taking 'salvation or freedom through renunciations' (Bhagavat Gita: 18:36). Further, Life should be organised, calm, simple, holistic, peaceful, generosity, constructive, futuristic, sustainable, natural and loving to all. Happiness in life is an eternal feeling for all, which refers a sense of joy, comfort, secure, satisfaction, a sense of pious feeling. In the same way, being a land locked country, from the

small Himalayan core, Bhutan, interpreted a great sense of spiritual and holistic happiness by introducing the everlasting concept of Gross National Happiness (GNH). From His majesty King Jigme Khesar Namgyel Wangchuck "I believe that while gross National Happiness is inherently Bhutanese, its ideas may have a positive relevance to any nation, peoples or communities- wherever it may be". Rabgyel, K.(2023). GNH is the brain child of the fourth king of Bhutan, Jigme Singye Wangchuck, where the king introduced the non-economic means of progress and wellbeing which leads to sustainable development and global happiness. In the late 1960s, a period during which Bhutan's development policy is generally considered to have followed conventional patterns of rapid modernization, Late King Jigme Dorji Wangchuck expressed his view on the goal of development as making "the people prosperous and happy." Similarly, the prominence of "prosperity and happiness" is highlighted in the king's address on the occasion of Bhutan's admission to the UN in 1971, one of the most important events in the country's recent history. This vision, first articulated by the late king was elaborated by the present king, Jigme Singye Wangchuck, who declared in the first years of his reign that "our country's policy is to consolidate our sovereignty to achieve economic self-reliance, prosperity and happiness for our country and people." While the emphasis is placed on both, prosperity and happiness, the latter is considered of more significance. For Bhutan "Gross National Happiness is more important than Gross National Product" The yardstick of Bhutanese development has always been emotional well-being rather than mere economic progress, this section explores the influencing and determining factors of the concept. (**Wangchuk, 2008**)



GNH: A BHUTANESE CONCEPT

Gross National Happiness (GNH) is the philosophy of the government of Bhutan which was found as a reaction against the adverse impact of economic development and the unsustainable growth on the society and environment. Bhutan, a small Himalayan kingdom, has a new sustainable method of development as well as happiness. **Mohapatra A.K. (2008)**. It is an alternative to today's means of development such as Gross National Product (GNP) and Gross Domestic Product (GDP), what Bhutan thinks. GNH is based on four pillars and nine domains.

The **four pillars** are

1. Sustainable and equitable socio-economic development.
2. Environmental conservation
3. Preservation and promotion of culture
4. Good Governance

The **Nine domains** are

1. Psychological wellbeing
2. Health
3. Time use
4. Education
5. Cultural diversity and resilience
6. Good Governance
7. Community Vitality
8. Ecological diversity and resilience
9. Living Standards

Further it also works on 72 indicators in its operationalization in the country. The Bhutanese Gross National Happiness Commission (GNHC) is a legal institution that promotes the happiness environment, development towards happiness to all Bhutanese people. It also works for long-term sustainable socio-economic development and strategies and guides policy formulation.

GNH: A BUDDHIST APPROACH

Bhutan is a land of rich and distinctive traditional inheritance. It has a strong Buddhist history of progress and wellbeing. Gross National Happiness (GNH) emphasized on to building an economy that would work Bhutan's incomparable culture initiated by Buddhist spiritual values and ideas which coincides that nothing in life is permanent, everything is temporary and changeable; happiness in life does not lie with the things one possess and one does not find the eternal, unchanging soul and "self-realization" which is just an accumulation of dynamic features and dimension. One can find Buddhist rituals such as Idolatry or reverence towards Buddhas, Bodhisattva, Buddhist teachings and sacred objects such as bowing, chanting, protective rights, life cycle rights, money wheels, pilgrimage grooming among the Buddhists culture. There is a strong sense of Buddhist education including Theravada, Mahayana, and Vajrayana schools in Bhutan. The people believe that these three schools of thoughts are the three mediums to cross the ocean of materialistic world or samsara towards the bound of eternal happiness and living enlightenment. The four notable thoughts are the statement of suffering, the fact of the grounds of suffering, the actuality of the end of suffering, and the absolute right path towards the end of suffering, are the basic idea behind the educational success of the country.

GNH: AS NATIONAL HAPPINESS

GNH has been operational with the tools and indicators like the pillars, domains in the small Himalayan kingdom of Bhutan. The recent GNH Index focuses on the individual level of wealthiest and wellbeing by applying the 33 GNH conditions with 66% of the 33 adjusted indicators and domains. The study finds the percentage of people who are happy with the level of happiness attained by those who are going to be happy with the measuring scale of 0 to 1, where if one goes towards 0 then it is low GNH and the reverse is high and successful GNH.

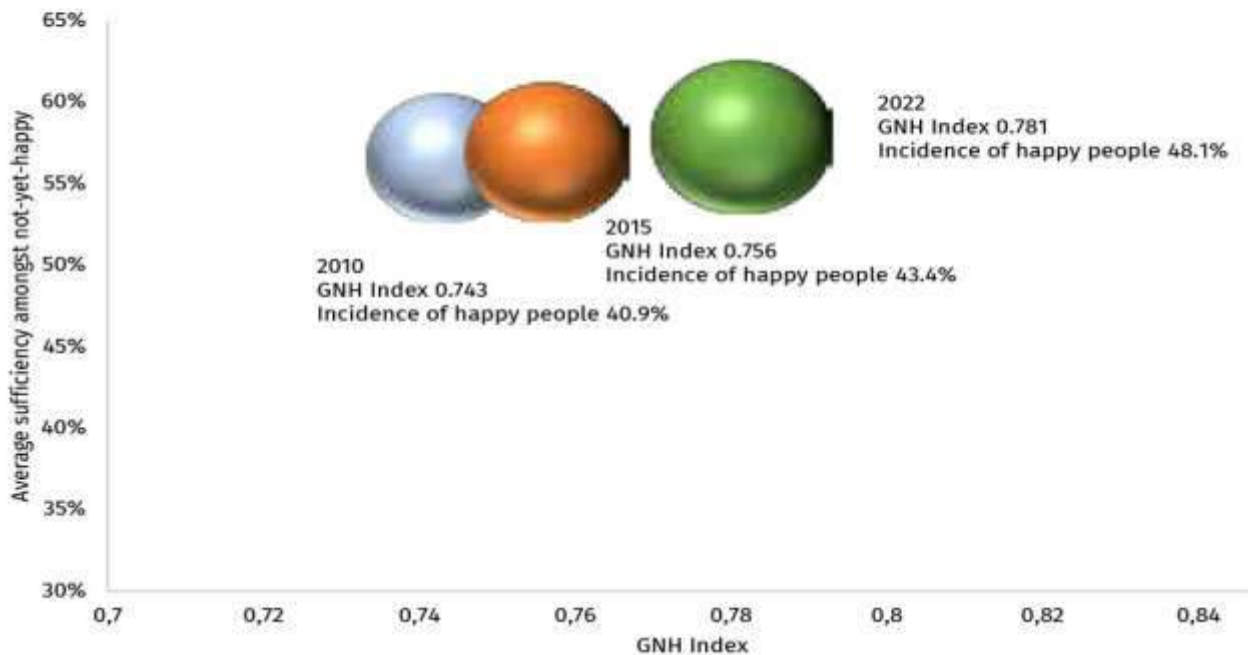


Figure-1

As per the 2022 GNH survey report, GNH index was conducted by taking a sample of 11000 people of Bhutan crosswise dominion, age cohorts, genders, occupations as well as its movements, plan of actions and entails. It is found that people from many occupations and walks of life does not need all the domains to have the grounds and circumstances of wellbeing and happiness. Further, the happiest people also lack healthiness in index changing from negative feeling to literacy to income with a mass of other achievements. So far as the monetary inputs to various degrees are concerned GNH visualizes a several patterns of human flourishing and prospering. The GNH Index 2022 indicates that 48.1% of those aged 15 years and above were classified as happy. From 2010 to 2022 the percentage of happy people has been increased over time, from 40.9% in 2010 to 48.1% in 2022 (Figure 2). Further, The GNH Scale of measurement criterion enhanced importantly from 0.743 in 2010 to 0.781 in 2022. The growing graph of happiness index signifies the nation's contentedness in developing an surrounding that promotes well-being and happiness from the national point of view. Further the remaining 51.9% of people of Bhutan are under the happiness guidelines, because of several reasons like lack of sleep, low mental health, ignorance about cultural preservation, lack of

participation in cultural activities, less political participation and so on. From the growing development of happiest people shows that Bhutan needs the strict implementation of the future GNH policies and programme for a grand success. There is a remarkable progress in improving the living standards of people in Bhutan in housing. It is found that one-third of Bhutanese have witnessed an transformation by appropriate roofing substantial, accumulated comfort station with superior, and developed room. So far as cultural participation is concerned, Cultural heritage has a significant role in determining the geographical identity, cultural uniqueness and development of community interconnection and social bonding. The GNH ways to construct a happy, healthy culture needs more participation and contribution aiming a global happiness model. In the context of political participation, political leaders are trying to create an atmosphere of trust, transparency, accountability, cohesiveness and inclusiveness. By Promoting a culture of participative citizenship and easing the voting behaviour, one can endow people in the form of nation building. **Alkire. S OPHI Director, and Zangmo.T, Researcher at OPHI, (2023)**

Figure 2. National GNH Index and share of happy people, 2010–22¹



1 Size of the bubble represents the incidence of happy people.

Source: <https://www.mppn.org/beyond-gdp-bhutans-gnh-index-unveiling-the-path-to-human-flourishing/>

GNH AS A MODEL OF GLOBAL HAPPINESS

Today's Development in the ocean of desertification, misery, pollution, unexpected pandemics, stress, deprives people a from the life of happiness and inner wellbeing. The yardstick models of Gross Domestic Product (GDP) and the Gross National Product (GNP) have somewhere failed while visualising the life satisfaction perception of the richest people today. The GNH model has promised the happiness of the people rather than the traditional models of wellbeing. Development with environment, in a humanistic face, with sustainability, natural protection, living without encroaching the conditions of nature, self and voluntary participation of the people in a eco-friendly way, by enjoying the almighty's creation with a cementing promise 'not to harm, but to help' in a compulsory action and so on has become the major agenda of the GNH model of happiness by the Gross National Happiness Commission (GNHC) today. In order to create a natural environment, conservation of the gorgeous bio-diversity, eradication and prevention of all kinds of environmental degradation measures, Article-5 of the constitution of Bhutan, emphasises on the vigilant and all active role of each and every citizen in this context. The GNH model could be a global model of development with happiness if the vitality of all the proposals and tolls would be tested in matter and spirit across the globe. The values and implementation of GNH could be acclaimed relevant, easy understanding, based on unity and integrity, humanity and ethics, mental satisfaction, community vitality, in comparison with GDP and GNP. Looking towards the concept "what is next to GNP and GDP ?", Bhutan's GNH method in

proceeding the global conversation on measuring wellbeing serves as a key illustration of an alternative model of development with sustainability aiming towards a holistic wellbeing and economic progress. The global forums need to implement the GNH model for global happiness by accuracy in implementing the multidimensional indicators to measure welfare by inculcating a global policy index process in a more holistic way with the required economic needs. James Foster from George Washington University has pioneered by viewing "GNH will lead to increased interest in its application to policymaking beyond Bhutan's borders", coincides the global forum of GNH.

Being spirited with GNH index in Bhutan's official acceptance as a guiding policy code and principal measure of growth, the countries around the globe are exploring it as an alteration to GDP and GNP. In this approach the UN, endorsed by 68 countries have considered Bhutan's GNH model can be simulated transversely as a global model of sustainability. The means life satisfaction, happiness and well-being in UK, the commission for the consideration of economic metrics beyond GDP and GNP by well-being and environmental indicators of prosperity in France, regular investigations on the well-being and happiness of citizens in Canada, GNH conference 2010, held in Italy, the ecological indicators of well-being by the Dutch government of Netherland are the few visionary steps for the global happiness.



GNH AND SUSTAINABLE HUMAN DEVELOPMENT: A PATH TO THE GLOBAL HAPPINESS:

Sustainable Development in a human face presumes to meet the needs of the present, with an un-compromising, everlasting, ever reaching Earth with all kinds of assets for future generations. GNH, being a sustainable model would encompass for the global happiness. From all walks of life of the total ecosystem, happiness is the ultimate end, refers to a clean environment, peaceful social life, balanced surroundings, nonviolent economic development, spirituality with cultural sustainability, strength protection, compensated time inedible, bendable work options, enhanced teaching and development openings are influential in people's happiness, health and productive capacity in the development of the social capitals. In GNH model practices, social and environmental responsibility, with sustainable and eco-friendly platforms, at individual level are the mainstream agendas of global wellbeing. For sustainable human development, GNH should be one-dimensional and wide ranging measure offering a more realistic assessment of even material prosperity and the mixture of moral and cultural values into the core of economic policy perspectives. Further the social offerings such as art strides, recitals, sharecroppers' arcades and ethnic merriments with parks, community centres and museums by policies, zoning laws for the grassroots development; Openness of practical opportunities at the government level and preservation and awareness raising campaigns around the globe. One may focus on perception of happiness of each individual for achieving the goal of global happiness which may include:

- Individual personal peace
- Social happiness
- Economic satisfaction
- Social Cohesiveness
- Eco-friendly environment
- Spiritual satisfaction
- Cultural integration
- Political life
- Religious toleration
- One earth- one common future.

CONCLUSION: RETHINKING AND REVITALISING TOWARDS GLOBAL HAPPINESS

Continuing from the above, still now GNH has been adopted as a path to holistic, spiritual, realizing the social, material as well as physical needs in a balanced society, promises to achieve development and happiness for ever. In the agenda of happiness, different countries of the world have Accepted, Adopted and Accelerated (A-A-A) several measures but Bhutan as the first country which has officially adopted GNH as a model of happiness as well as development by pointing towards global happiness. Unlike different global conferences on Sustainable Development, Earth Summit, world Environmental Summits, United Nations Conferences on Human Environment, Convention on Climate change, Convention on Biological Diversity, GNH may advocate with widespread approach from official level, marching towards the global happiness as well as development. The cry of the hour is

to develop global tools of happiness by 'Rethinking and Revitalising towards Global Happiness' from the grassroots to global level.

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THE RELATIONSHIP BETWEEN AUTISM SPECTRUM DISORDER TRAITS AND EXCEPTIONAL ABILITIES: INSIGHTS INTO THE SAVANT SYNDROME

Eunice Meng Yin Tan (PhD), Singapore

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AUTISM SPECTRUM DISORDER (ASD) AND SAVANT SKILLS

Individuals with ASD feature extensively in discussions on savant syndrome and seem to be the most prevalent group among the savant population (Bennett & Heaton, 2017; Clark, 2001; Skuse, 2011). It is important to understand the relationship between ASD and the savant syndrome as the two are closely connected (Boso et al., 2010; Clark, 2001). A 'special ability' according to Soulieres et al. (2010), consists of a peak in cognitive abilities that contrast differently from the measured overall intelligence of that person, usually with a diagnosis of ASD. The term savant is derived from the French word meaning to know and was first used by J. Langdon Down in 1887 to describe individuals with intellectual disabilities who possessed an exceptional ability (Crane et al., 2011; Howlin et al., 2009; Rodger, 2011; Treffert & Wallace, 2006; Treffert, 2014). Down coined the term idiot savant to refer to individuals with severe intellectual disability who possessed extraordinary skills (Treffert, 1998). However, this term of idiot savant is no longer used as it is considered offensive. The term idiot savant has been replaced with the term autistic savant or individuals with ASD who display savant skills. Goodman coined autistic savant in 1972 (Clark, 2001). The term autistic savant is used to refer to individuals with ASD with differing degrees of intelligence who display exceptional (gifted) abilities and experience subtest scores on standardized intelligence tests that is within the gifted range (Donnelly & Altman, 1994).

Down characterised savants with autism as aloof persons who speak in the third person, have rhythmical movements and appear less responsive towards friends. Today, this condition is known as ASD (Darius, 2010; Treffert, 2014). In 1973, the American Association of Mental Retardation (AAMR) described a savant as an individual with low intelligence who possesses a high ability in certain tasks such as mental calculations (Grossman, 1983). Therefore, a savant is classified as an individual who demonstrates exceptional skills despite having an overall low level of general functioning (Finocchiaro, 2015; Treffert, 2009; Treffert, 2014; Young, 2001).

EXTRAORDINARY TALENTS OR ABILITIES

Extraordinary abilities or savant skills have been reported in individuals with ASD in various domains such as fast

mathematical calculations (Bennett & Heaton, 2017; Hiniker et al., 2016; Hughes, 2012; Rieznik & Sigman, 2017). There are more reported cases of savant skills amongst individuals with ASD as compared to other developmental disabilities (Bennett & Heaton, 2017; Finocchiaro, 2015; Hiniker & Renard, 2015). Studies frequently link ASD to the savant syndrome (Bennett & Heaton, 2017; De Marco, Iavarone, Santoro, & Carlomagno, 2016; Hiniker et al., 2016; Hughes, 2010). Much of the collected data and published studies demonstrate a strong link between ASD and the emergence of special skills (Bennett & Heaton, 2017; Hiniker et al., 2016; Meilleur et al., 2015; Quirici, 2015).

NARROW NATURE OF TALENTS

Individuals with ASD who have savant skills are most often identified by the very narrow nature of their talents (Hughes et al., 2017; Treffert, 2014). Beate Hermelin (2001), a professor in Goldsmith College in London, has been studying splinter skills among such individuals. She was one of the first researchers to study groups of individuals with ASD who possessed different skills domains, while earlier studies focused on one individual or on a singular skill (Hermelin, 2001). It was noted that some individuals with low intelligence display incredible ability in the memory domain, which includes musical ability, mathematical calculations, calendar calculations, art and mechanical skills (Bennett & Heaton, 2017; Meilleur et al., 2015; Treffert, 2009). Other talents, including prodigious language (poly-glot) facility, and unusual sensory discrimination in the areas of touch, smell and vision, have been reported but to a much lesser degree. Other skills include neurophysiology, statistics and navigation (Treffert, 2009). In their domains of expertise, these individuals resemble child prodigies, exhibiting a voracious appetite to learn and refine their skills in their area of interest and talent (Winner, 2006).

The various skills exhibited by individuals with ASD who display savant skills fall into a narrow range. However, considering the many skills that human beings possess, the degree of abilities involved in executing these skills is extensive and can range from limited (restrictive) to prodigious (Bennett & Heaton, 2017; Meilleur et al., 2015; Treffert, 2014). The savant skills that individuals with ASD display often occur in one of the following domains: calendar calculation; music –



almost exclusively to the piano; rapid calculation and solving of mathematical problems; art – painting, drawing, or sculpting; prodigious memory (mnemonism); or very unusual sensory discrimination – smell, touch or extrasensory perception (Hollander & Uzunova, 2017; Hughes et al., 2017; Prochnow, 2014; Puente et al., 2016).

Individuals with ASD who display savant skills

Individuals with ASD who display savant skills have much in common with cases of unevenly gifted children. Similar to highly gifted children who possess strong mathematical or artistic abilities, individuals with ASD who display savant skills tend to show a highly developed visual-spatial ability in conjunction with severe or profound language challenges (Happe & Frith, 2009; Hughes, 2012; Jaworski & Eigsti, 2017; Jeon, 2016; Treffert, 2014). Individuals with ASD who display savant skills can either have a singular skill or multiple skills. Individuals with ASD who display savant skills may have specialized skills or talents that are concrete, non-symbolic, right hemisphere skills and highly reliant on memory (Bennett & Heaton, 2017; Shuqin, 2013; Sinha, 2014). Although there are professionals and caregivers in the field of ASD who do not agree with some of Treffert's terminology, such as the classification of early infantile autism as a mental illness, his definition of the savant syndrome incorporating levels of savant ability is widely accepted.

There are cases of spatial or mathematical talents that coexist with verbal deficits that are found in individuals with ASD who display savant skills. The majority of individuals with ASD who display savant skills have IQs of below 70. Some individuals with ASD who display savant skills will exhibit one skill at a normal level whilst others will display one or multiple skills that may be comparable to a prodigious level (Finocchiaro, 2015; Treffert, 2016)

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PHILOSOPHY OF GANDHIAN MANAGEMENT

Prof. (Dr.) Gurudutta Japee

SD School of Commerce, Gujarat University, Ahmedabad

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ABSTRACT

The guiding ideals of Mahatma Gandhi's management style are simplicity, humility, nonviolence, welfare for everyone, and the truth. He uses consensus-building, dialogue, empowerment, and self-discipline in his procedures, and he places a strong emphasis on ethics, integrity, service leadership, and respect for diversity. The article focuses on important management concepts from a Gandhian perspective.

KEYWORDS: Service leadership, Ethics, Satyagraha, Sarvodaya, Philosophy

INTRODUCTION

Mahatma Gandhi's management principles were largely rooted in his philosophy of nonviolent resistance, known as Satyagraha. His approach emphasized the importance of moral leadership, empathy, and consensus-building. Gandhi believed in leading by example and empowering others through dialogue and persuasion rather than coercion. His management style focused on fostering cooperation, fostering trust, and promoting self-discipline among followers. Additionally, Gandhi stressed the significance of integrity, humility, and simplicity in leadership, advocating for a servant-leadership model. Overall, his management philosophy centred on ethical leadership, effective communication, and the pursuit of justice and social change. In essence, Gandhi's management philosophy is characterized by a blend of moral principles, nonviolent practices, and ethical conduct, all aimed at promoting justice, harmony, and human dignity in society.

If we look objectively at the gestalts of Gandhian management, dispelling contempt for the past and dispersing with the hubris of the present, the world can still learn very valuable lessons to prevent errors and avert crises and catastrophes in the future.

Before deciding on strategies and tactics to achieve the objective, he researched the origins of issues, the ground truths, and the legal ramifications. By implementing checks and balances to adjust to the changes without compromising his rock-solid ideology, he was constantly reinventing both himself and his surroundings. His approach for managing man, machine, materials, and methods were not derived from any legislation or fright but were the distillate of humanitarianism and an outcome of self-actualization and introspection sustained by inner force and inner discipline.

PHILOSOPHY OF GANDHIAN MANAGEMENT

Satyagraha-Mass Mobilization

As much curiosity is sparked by Gandhi's ability to organise large-scale protests and mass movements while minimising

collateral damage. According to Gandhi, the goal of civil disobedience is not to destroy individuals but rather to dismantle institutions or systems that are inimical to human values and humanity.

All of us are aware of his widespread "Satyagraha" civil disobedience campaign against the salt law in the provinces of Natal and Transvaal, as well as here in India. When he arrived at Dandi Sea Port on April 5, 1930, he broke the law by stealing a handful of salt off the shore. This marked the start of the countdown to the collapse of Indian British colonial rule.

He was aware that there would always be inequality because of disparities in money and wisdom, but he was also certain that, with enough sacrifice and commitment, it would be possible to bring people together to form a cohesive group that would be prepared to stand up for the defence of human rights and dignity.

Human capital

Gandhi emphasised the importance of each person's comprehensive and integrated development, followed by the growth of the community and welfare state. He thought that there should be no labour that is not done with dignity, and that the only way to make one's life and work dignified is to work with dignity. He came to see that as people are the foundation of all activity, management needs to develop people-centric policies, and the government needs to support initiatives that improve the quality of human existence. He depended on the inherent value of human resources.

Self help

He thought that the first step in preparing oneself to serve society is self-help. How can we help others if we are unable to complete our own tasks? He didn't comb his hair or wash his clothing because he was too independent, but rather because he didn't want to be dependent on anybody else. He voluntarily cleaned the loo in the colonies of lone, esteemed residents.



If one attempts to become self-restrained and self-reliant, which requires moral uprightness, intellectual self-assurance, emotional maturity, and physical health, one learns to throw off the crutches of dependency on others.

HR Services-Sarvodaya

He opposed the mechanistic view that views people as interchangeable parts of a machine, hence he was deeply concerned about the issues facing labourers and the working class. He believed that in order to increase employees' efficiency and, thus, production at work, workers needed to be trained and disciplined.

Regarding employee engagement in decision-making, he was adamant that, given that employees have a stake in the success or failure of the company, management should ask for their input on all issues that directly or indirectly affect them.

Truth

All science is the pursuit for the truth. truth exists not just in the physical world but also in the domains of behaviour, psychology, logic, and so forth. An organization's business must be managed by a manager free from ego, pride, prejudice, envy, hatred, compulsion, undue influence, fear, etc. The development of SMART goals would be jeopardised by the absence of love and truth under any circumstances, as well as by the existence of violence in any form and interference with PESTAL and SWOT analyses. He was an unrivalled and unassailable leader who dominated the minds of millions of individuals from every stratum of society for nearly fifty years despite holding no formal position or authority.

Mahatma Gandhi's management philosophy encompasses various principles, processes, and ethics, which are deeply rooted in his broader philosophy of life. Here are some key elements:

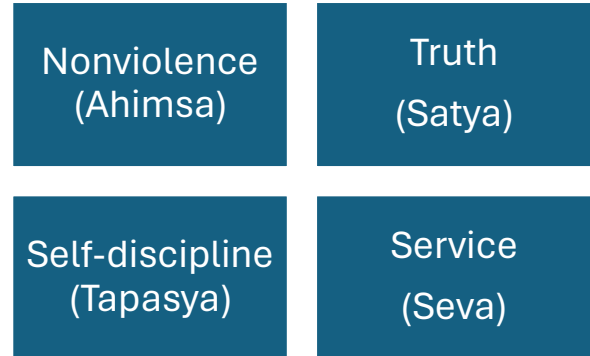


Figure1-Principles of Gandhian management Principles

- **Nonviolence (Ahimsa):** Gandhi believed in resolving conflicts through nonviolent means, emphasizing the power of love and truth.
- **Truth (Satya):** He advocated for truthfulness and honesty in all actions and communications, considering it essential for building trust and integrity.
- **Self-discipline (Tapasya):** Gandhi emphasized self-control and self-discipline as crucial for personal growth and effective leadership.
- **Service (Seva):** He promoted the idea of serving others selflessly, viewing service as the highest form of human endeavor.

Gandhian Management Functions

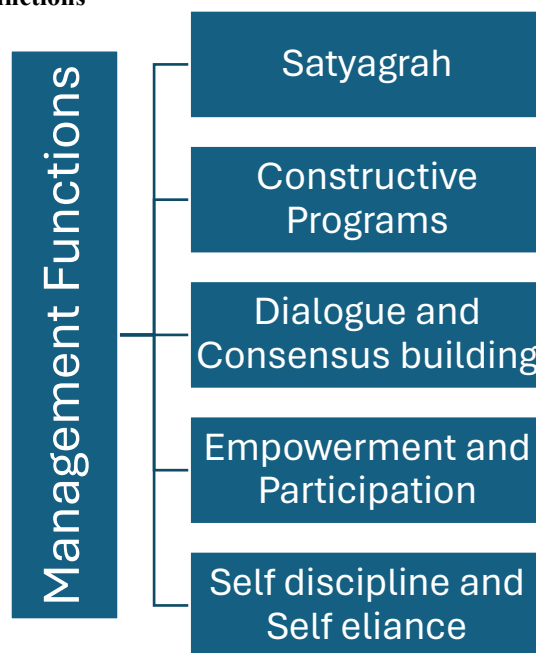


Figure 2 – Principles of Gandhian Management



- **Satyagraha:** Gandhi's method of nonviolent resistance involved passive resistance, civil disobedience, and non-cooperation as means to achieve social and political change.
- **Constructive Program:** He emphasized the importance of constructive activities such as education, community development, and self-reliance alongside protests, to build a stronger society. Gandhi believed in implementing constructive programs such as education, sanitation, and economic development to address social issues and empower communities
- **Dialogue and Consensus-building:** Gandhi believed in the power of dialogue and negotiation to resolve conflicts and reach mutually beneficial agreement. Gandhi emphasized the importance of dialogue and negotiation to resolve conflicts and reach consensus peacefully.
- **Empowerment and Participation:** He encouraged the empowerment of individuals and communities, promoting participatory decision-making processes.
- **Self-discipline and Self-reliance:** Gandhi promoted self-discipline and self-reliance among individuals and communities, encouraging them to take responsibility for their actions and well-being.

consider the needs and perspectives of all stakeholders.

- **Service Leadership:** He advocated for servant leadership, where leaders prioritize serving others and working for the common good.
- **Respect for Diversity:** Gandhi respected diversity and advocated for tolerance and understanding among people of different backgrounds, religions, and cultures.
- **Ethical Conduct:** He upheld ethical conduct and moral values, emphasizing the need for individuals to align their actions with their principles and beliefs.

TO SUM UP

In addition to not killing, attacking, or injuring others, being nonviolent also entails being devoid of unfavourable and negative feelings such as pride, ego, envy, anger, and enmity, given that these components have the potential to incite violence against oneself or other people.

In essence, truth, nonviolence, welfare for everyone, simplicity, and humility are the cornerstones of Mahatma Gandhi's management philosophy. He uses consensus-building, dialogue, empowerment, and self-discipline in his procedures, and he places a strong emphasis on ethics, integrity, service leadership, and respect for diversity.

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Management Ethics

Mahatma Gandhi has always kept humanity in the centre. He has always focused on key principles of ethics such as integrity, simplicity, empathy, service leadership, respect for diversity and moral conduct. Below figure shows the key dimensions of the Gandhian ethical principles.



Figure 3 – Management Ethics

- **Integrity:** Gandhi emphasized the importance of integrity in leadership, encouraging leaders to align their actions with their principles and values. Gandhi stressed the importance of integrity and honesty in all aspects of life and leadership.
- **Humility:** He valued humility as a virtue, urging leaders to remain grounded and empathetic towards others.
- **Simplicity:** Gandhi lived a simple lifestyle and believed in the principle of simple living and high thinking, advocating for minimalism and frugality.
- **Empathy:** He stressed the importance of empathy and understanding towards others, encouraging leaders to



A SEMIOTIC ANALYSIS OF VISUAL ELEMENTS ON SLIDE PRESENTATIONS USED IN COLLEGE ENGLISH CLASS

Joyce R. Moldez; Donita May C. Valera, Phd.

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ABSTRACT

The purpose of this study is to establish that visual elements found in slide presentation used in College English Class convey meaning by its interpretation through semiotic analysis. Using the semiotic analysis, fifty-one (51) visual elements were identified and underwent in-depth analysis and interpretation. The study's findings revealed that the visual elements carry meaning and can be interpreted in various ways. The study obtained significant information that helped derive the semiotic features of the visual elements based on their signifier, signified, denotative meaning, connotative meaning, and myth. Moreover, the signifier interpretation of the visual images provided information on how each visual element were classified into- icon, symbol, and index. It was also discussed in the study the detailed description of the signified meanings of each visual element. Additionally, the relevance to the social context of the college English class were examined intensively by analyzing its denotations, connotations, and myths. Indeed, visual elements carry meaning; thus, there is a need for close monitoring and evaluation of the visual elements used in slide presentations as it could affect the learning of the students. Ultimately, the study suggests that the incorporation of visual elements in instructional materials should be carefully considered because this may affect how students learn and perceive the subject matter and discussion in class.

KEYWORDS: Semiotic Analysis, visual elements, slide presentations, signifier, signified, denotation, connotation, myth, Davao de Oro

INTRODUCTION

In 21st- century education, the integration of technology and media in classroom discussion has become an integral part of effective learning. Among many educational tools used by teachers, slide presentation is one of the most engaging support tools in instruction (Lynch, 2022).

In Indonesia, Elmiana (2019) found that visual images in their EFL textbooks include gender bias and stereotypes as males were more frequently portrayed than females (66% for males and 34% for females). In the Philippines, one of DepEd's learning modules, Calipjo-Go as cited by Sadongdong and Colina (2019) reported that a copy of a module contained a creature in Filipino folklore that was mistakenly described as a sex-crazed creature. This pose danger among Filipino students because they will have a misconception of something that is supposed to be culture related.

Considering the concerns discussed, I was urged to dwell on the analysis of the visual elements present in the slide presentation used in college English class to understand its implications and to effectively draw out reflections and realizations. I was propelled to conduct this study to analyze the semiotic construction and collect organized interpretations of the signs and symbols which would lead to a critical understanding of the impact of these visual elements on the achievement of effective learning among college students.

Purpose of the Study

The purpose of this semiotic analysis is to analyze and interpret the meaning behind the visual elements found in the slide presentations used in college English class and the underlying relevance of the symbolism in a social context.

Research Questions

1. What are the semiotic features present in the visual elements on the slide presentations used in college English class?
2. What are the underlying connections of the symbolisms found in the visual elements on slide presentations used in college English class in the social context?

Theoretical Lens

This study was gleaned through the Semiotics Theory advanced by Ferdinand de Saussure in 1916 which asserts that language is a system of signs and symbols. Mambrol (2019) discussed that each sign is composed of a signifier (visual pattern) and a signified (concept). This study was also anchored on the Order of Signification by Barthes (1957). Chandler (2019) stated that in this process, there are different orders of signification namely: first order of signification which is the denotation, the second order of signification which is the connotation, and these two would combine to form an ideology which is described as myth- the third order of signification. Additionally, symbolic interaction theory of Mead and Weber (1920) has become one of the basis for analysis. The key concept of symbolic interactionism is that people attach meaning to elements in the

environment. According to Blumer (1969) as cited by Nickerson (2021) social interaction theory follows the principle that interaction happens in a social and cultural context where objects, people, and situations must be defined in accordance with the individual's subjective meaning.

METHODOLOGY

The study employed qualitative research utilizing semiotic analysis. A qualitative research approach involves the collection and analysis of non-numerical data to understand the concepts and experiences. This approach is used to obtain insights from a natural setting and generate new ideas for research (Bhandari, 2022).




Next, semiotic analysis was utilized to provide detailed and enriched understanding of the signs and symbols in visual elements. According to Franz (2021) semiotic analysis provides framework on the investigation on how humans make meaning out of signs and symbols.

Moreover, the study was also based on Barthes' Order of Signification in 1957 which entailed the analysis of the denotative and connotative meaning of the signs, explanation of the myths present in a visual element.


RESULTS

Table 1


The Semiotic Features present in the Visual Elements on Slide Presentation used in College English Class

VISUAL ELEMENTS	SEMIOTIC FEATURES	
	SIGNIFIER	SIGNIFIED
<p>VESP 01</p> 	<ul style="list-style-type: none"> -An image of notepad, notebook, and pens. - Pink and orange background and black color font text. 	<p>The images found is used as materials for recording information and is commonly used by students in studying and for people to remember details of an information. The pink and orange background are bright colors that can stimulate student's attention.</p>
ICON		
<p>VESP 04</p> 		<p>VESP 04 is comprised of two-wooden chairs placed side by side and a flower and a rainbow on each corner. These chairs are usually used by people to sit and relax. The position of the chairs gives an idea that there is communication that occurs between two people. The decorative icons of flowers and rainbow adds life and creativity to the slide presentation.</p>
SYMBOL		
<p>VESP 36</p> 		<p>The slide presentation did not use images however, it uses bright colors (red, orange, yellow, green, and blue) to emphasize the subject matter being discussed. These colors represent fun and bright feeling which evoke feelings of happiness and excitement.</p>


INDEX


<p>VESP 19</p>		<p>VESP 19 shows argumentation of different people with opposing ideas in an informal set-up. Their gestures and facial expressions imply that they have their own ideas and they want to express their arguments. The mood is full of tension, however, there are still elements that will make the environment calm and soft, and it is represented by the beige-colored background, quotation mark, star, random pattern, and flower.</p>
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SOCIAL CONTEXT OF THE VISUAL ELEMENTS

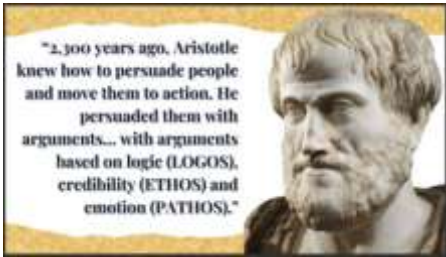
VISUAL ELEMENTS	SOCIAL CONTEXT OF THE VISUAL ELEMENTS		
	DENOTATIVE MEANING	CONNOTATIVE MEANING	MYTH (Underlying Connection to the Social Context of English Class)
<p>VESP 24</p> 	<p>There is an image of jeepney with two Philippines flags and words “Pilipinas” and “MNL” in front. It also has images of three palm trees lined up on the border of the dark blue pavement and blue green sea. It has a golden colored sky, white clouds, and orange circle sun.</p>	<p>The image of Philippine jeepney represents Filipino identity of being a social person and being resilient and flexible. A Philippine jeepney is cramped with different people, when one person wants to leave, everybody says “para po”. It is a manifestation of how Filipinos care for one another despite not knowing each other. The images of palm trees manifests the tropical weather of the Philippines and the clear sky and orange sun represents the hot and dry weather of the country. The blue and mint colored road and sea is a representation of how Filipino people can make someone comfortable and relaxed despite the hot weather.</p>	<p>The images used in this slide presentation is essential in identifying the original location where the author lived. It is important to know the hometown of the author as it can help in establishing an appropriate mental picture of the setting of a literary piece so that reading comprehension can be achieved.</p>


LITERAL- IDEOLOGICAL

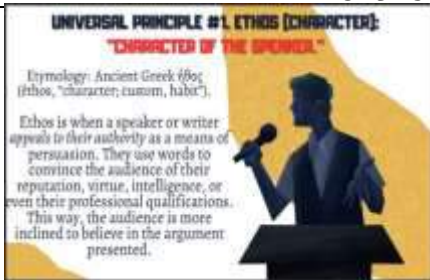
<p>VESP 01</p>		<p>VESP 01 is categorized as literal in its denotative meaning as it can only be interpreted as notebook and pen used to record an information. Its connotative meaning falls under ideological aspect because it can directly connote learning and education. The utilization of these visual elements could help the teacher in making his/her students become more interested in the lesson. With this, it can furthermore imply that an image of materials usually used in studying can aid in motivating students to be prepared and motivated to listen and learn new concepts or topics.</p>
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LITERAL- EMOTIONAL	
<p>VESP 48</p> 	<p>The image portrays different facial expression based on variety of emotions. With this, VESP 48 is considered to contain a literal denotation because people can directly understand the emotions these images convey based on their facial expression. Also, it has an emotional connotation because the image contains different emotions which people can relate to. These faces are representations of how people express different kinds of emotions how it affects the overall appearance of a person. Furthermore, the image was used to provide representation of different emotions since the topic is “expressions” in the aspect of speech delivery.</p>

LITERAL- SUBJECTIVE	
<p>VESP 29</p> 	<p>The images used in the slide presentation consist of two hands holding a musical instrument known as gong. VESP 29 has a literal denotation and a subjective connotation because it stems an idea of culture and artistic identity of certain group of people especially of those indigenous group. All of the symbolisms in this visual element relate to the concept of preservation and maintenance of culture. With this, the use these images enhance the discussion of culture-related subject matter such as literature or art. The use of these images in the discussion of literature can help widen students’ perception of the subject by having a mental representation of their culture and tradition.</p>

OBJECTIVE- IDEOLOGICAL	
<p>VESP 08</p> 	<p>VESP 08 objective denotative interpretation because a statue does not only show the image of a person but also commemorates a person’s contribution. It has also an ideological connotative meaning since it conveys an idea of a profound knowledge. The image of the statue of an old man represents knowledge and wisdom. Furthermore, since the statue is made of stone, it implies that the knowledge is solid and that it can be made as a foundation for a more refined knowledge. And since it has been used to the slide presentation, it means that the concept is credible and has passed through the test of time.</p>

OBJECTIVE- EMOTIONAL	
<p>VESP 14</p> 	<p>VESP 14 is categorized as objective in its denotative meaning as it portrays an argumentation between two people. It also falls under emotional aspect in its connotative meaning since beyond its surface view, it can be determined that the image displays what seems to be an argument between two people. The image, as used in the slide presentation, effectively portrays its subject matter which is debate wherein two or more people discuss a certain topic with opposing views and opinions. The image enhances students concept visualization of what a debate setting looks like.</p>

OBJECTIVE- SUBJECTIVE	
<p>VESP 10</p> 	<p>VESP 10 has an objective denotative meaning because the image can be interpreted in various ways. It also holds a subjective connotative interpretation because the image can be interpreted through the subjective perspective of people. The photo consisting of text and image of a man’s silhouette speaking over a microphone depicts confidence and competence that a speaker must possess to gain the empathy of the audience. Public speaking is primarily used to convince the audience that what you said must be heard and one way of doing it is to pose with proper body language and provide a certain level of qualifications to make yourself believable.</p>



DISCUSSIONS

The Semiotic Features Present in the Visual Elements on Slide Presentation Used in College English Class

Signifier

The signifier in this study was categorized in three- icon, symbol, and index. Icons, in its most basic function, was created in order to deliver a message in its most schematic form or in its most compressed form like in image or a picture (Munoz, 2019). Icons are deemed effective in the scaffolding of learning among students since it assists students' comprehension of the subject matter, it enables students to see connection of the subject matter with their prior knowledge, and for promoting active learning as implicated in the study of Legg (2016).

Moreover, one of the categories of a signifier is a symbol. Symbols are used in teaching to aid in picking out key concepts of the topic through images which may help students with comprehension difficulties get a grasp of the lesson (Ryves and Thompson, 2024). They also added that symbols support the explanations of lesson which helps teachers discuss the lesson with ease.

Lastly, another category of a signifier is an index. In a semiotic study conducted by Sakinah et al. (2020) indices were identified based on its ability to provide a cause-and-effect relationship between the image or a picture and its representation. This means that when analyzing the index of an image, it is necessary to look at the background, function, purpose, and even cultural indications of that image in order to identify the cause and give implications to its effect.

Signified

According to Dawson (2020) signified refers to the meaning or idea expressed by the sign which is distinct from its physical form. Signified reveals how an image brings out meaning to people as well as reflects how people attaches meaning towards an image or an object. This notion is similar to the claims of Abramjee (2024) in which she mentioned that images tend to engage the cognitive processes of the students which makes them remember and recall the visual stimuli presented to them.

Furthermore, as observed in the slide presentations, images also depict emotions and feelings. Alpuim and Ehrenberg (2023) suggested that when people look at an image, it is not just the visual faculty of the brain that worked, but also the emotional processing of the brain was also activated.

Relevance of the Symbolisms found in the Visual Elements on Slide Presentations used in College English Class in the Social Context

Denotation

In denotation, it is necessary to look only on the surface and describe and define what has been observed. This supports the claims laid out by the study of Wijayanto and Iswari (2021) in which they discussed that denotative marking serves as the first representation of an image that provides literal meaning which serves as the natural and surface character of a particular image. With this, denotation aims to give literal and objective description of the thing that would become a platform in providing deeper interpretation beyond what was observed.

In the analysis conducted on the visual elements of the slide presentations, the visual elements were identified as a literal denotation when it can be interpreted directly and can be understood and interpreted at first glance. This is similar to the study of Nadira (2018) which implies that denotation is definitional and is described as the literal, obvious, and common-sense knowledge of a sign.

Objective denotation involves not only the physical description of the image, but it also provides the background information of the image. According to Yamasaki (2023) objective denotation refers to making interpretations without the influence of personal feelings and an approach that is based only on facts and evidence.

Connotation

In the process of making a connotation out of a word or image, it is important that it should be described as how it should be understood (Kramer, 2023). Moreover, connotation discusses the ideological, emotional, and subjective description of images or texts (Ackerley, 2019).

In ideological connotation, the meaning is based on the concepts, ideas, and abstract notions about a certain text or image. As mentioned in the study of Han et al. (2020) ideological connotation includes any system of ideas, such as economics, politics, law, morals, religion, philosophy, art, theory, etc. which is a result of people's abstract knowledge of those related concepts.

Additionally, emotional connotation considers how an image evokes emotions and how it influences their understanding of the image. According to the study of Wicken et al. (2021) human cognition includes mental imagery which impacts the emotions of people allowing them to associate themselves with the image and aids in the act of interpretation of those images.

Furthermore, there were visual elements that were interpreted based on subjective connotation. This is because as explained in the study of Ishar and Irwan (2022) connotations of images leads to the discussion of social and personal associations.

Myth

The third order of signification is myth. Myth considers the interpretation of complex concept and the explanation of the shared values and ideologies of a particular culture or group. This supports the claims of Bouzida (2015) which explains that myth reflects the way people think and conceptualize that is based on their culture and normative judgement.

Implications for Teaching Practice

The integration of visual elements into the educational process aids in improving students' visual literacy. Therefore, the results of the analyses of the semiotic features of the visual images in slide presentations, as well as the symbolisms revealed in relation to the social context of English class, may provide a basis in making an effective instructional materials for teaching students as they embark on their journey to become critical thinkers of the twenty-first century education.



This study provides relevant information for the teacher to properly and appropriately utilize visual elements in their instructional materials. They would be able to know that proper selection, placement, and arrangement of these visual elements are crucial in the process of meaning-making of the students. Thus, the study provided more knowledge to the teachers in considering what visual elements to choose and how it would be placed on the instructional materials.

Recommendations for Further Research

There are several applications for semiotic analysis in social norms, people's culture, brand analysis, image appropriateness, and applications (Arora, 2021). This type of research looks at the relationship between signs and how individuals use them to interpret things on a daily basis.

In addition, to fully comprehend the significance of signs or symbols employed in communication, it is essential to investigate semiotics in a variety of contexts, including music, film, and media. Therefore, this study recommends that future researchers explore other communication platforms and domains such as posts and images in social media, political or advertising posters, popular music, short-content creations etc., where signs and symbols are common and essential for conveying meaning to the intended audience.

Furthermore, it is suggested that semiotics be applied to other areas such as in advertisements, films, artwork, and other scenarios. The results of the recommended studies may provide basis for policy making and guidelines for creators and may even serve as an anchor in the formulation of local laws, rules, and regulation in using visual elements or images that will be displayed in the public.

Concluding Remarks

As an English teacher of 21st-century students, it is critical to ensure that teachers and students acquire the four macro-skills in the target language, which were initially reading, writing, listening, and speaking abilities. I realized that these fundamental skills is now added with the viewing skill, the ability to decipher and create meaning from visual images. In order to successfully assess and evaluate the effectiveness of incorporating visual in any instructional resources employed by the teacher, teachers and students must know how to properly interpret images. This became the main subject of my research inquiry, which looks into the interpretation of visual images.

The findings of this study provided me with new information because I also create slide presentation for my class discussions that include visual components. I can attest from my experience that when visual aids are not integrated, students struggle to comprehend concepts, particularly in English-related courses. In the conduct of this study, I was able to understand deeply the underlying relationships of the visual elements to social context as well as the meanings and symbolisms of the visual elements used in college English class slide presentations.

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DETERMINANTS AND IMPACT OF PUBLIC EXPENDITURE IN ODISHA

Dr. Sunita Mishra

Lecturer in Economics, Municipal College, Rourkela (Sundargarh), Odisha-768019, India

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ABSTRACT

The theoretical framework and rationale of the study assess the most important fiscal parameter of the state of Odisha i.e., Expenditure parameter. As we know, aggregate of the expenditure of the state consists of Revenue expenditure and Capital expenditure, among which the largest share is contributed by Revenue expenditure. The paper highlights the responsiveness of expenditure to the automatic change in NSDP Elasticity approach, position of Odisha among the 18 major non-special category states in terms of infrastructural development, bank credit, factory employment, level of urbanisation etc. and also examine the causative relationship between GDP and different expenditure variables in Odisha. The study is based on secondary source of data for the State from different government publications, Budget documents, Finance Accounts etc. The paper used different methodologies for analysis, which includes simple statistical techniques such as, ratio, percentage, and also Regression Analysis to estimate growth. In this regard models like, semi log, multiple regression, correlation, VAR models are used to analyse the time series data from 1980-81 to 2014-15 on revenue and capital expenditure of state finances. Apart from that to show the response of revenue expenditure to the automatic change in NSDP, Elasticity approach is utilized. The major results of the study are that higher growth in total expenditure in period $t-1$ leads to higher growth of GDP in period t . The same result holds only in case of growth of Total Non-Plan Expenditure. The results of VAR Granger Casualty Test are similar to the VAR Model excepting that Total Non-Plan Expenditure is found independent of GDP and there is also independence of GDP from Total Non-Plan Expenditure.

KEY WORDS: budget, capital, elasticity, finance, grants, growth, NSDP, expenditure, VAR

1. INTRODUCTION

In the context of nature of growth profile of the revenues of the state & pattern of expenditure one observes continuance of deficits though relatively of a lower magnitude as a result of FRBM Act. There is also continuance of debt position of the state particularly to finance developmental activities in the absence of declining role of central assistance to the state in the later years. In the interest of developing a sound fiscal system, it is pertinent to fulfill the requirement of enhancement of revenue base and on the other hand to control the growth of non-plan revenue expenditure and to enhance the growth of plan capital expenditures in spite of the structural bottlenecks manifested in the absence and/or imperfections in the market structures. It is therefore pertinent to examine the determinants of revenues as well as expenditures in the state of Orissa. In the following attempts has been made to identify the interrelationships of expenditure with other relevant explanatory variables which contribute towards variations in the expenditure variables.

1. REVIEW OF LITERATURE

Under the Receipts account, according to **Bhattacharya (1984)**, examines the macro economic impact of public expenditure on

economic growth. **Gupta (1980)** tries to access its impact on income distribution, **Premchand (1966)** evaluates the Control System relating to public expenditure, **Ready et al (1984)** provides a factual account of the growth of Government in India. **Shame, Sen and Gopal Krishnan (1996)** pointed out that the expenditure trends on the capital account is stagnant. It shows a fast rising revenue expenditure in India, despite the lack of adequate infrastructure facilities within the country. **Jagannath Mallick(2013)** The Fiscal Responsibility and Budget Management (FRBM) Act 2003 was introduced in India in order to reduce revenue deficit by curtailing revenue expenditure. This paper examines the impact of public expenditure by type and nature on the income by constructing new data on combined capital expenditure and combined revenue expenditure of Centre and State governments of 15 major States during the period 1993—94 to 2004—05. This paper finds that, though public expenditure crowds-out private investment, public expenditure of all types and nature positively contributes to state income due to the inclusion of some productive expenditure in the revenue account. **Antra Bhatt, Claudio Sardon(2016)** in their paper deals with the analysis of the relationship between public spending and growth as well as the dynamics of the ratio public



debt/GDP. They shows that a composition of public spending that favours productive expenditures, i.e. those with a direct positive effect on the economy's rate of growth, can determine a situation in which the ratio of the public debt to GDP is stable, even though the government runs primary deficits.

2. DATABASE & METHODOLOGY

The study is based on secondary source of data for the State from RBI Bulletins and CSO publications. The different methodologies for analysis, which includes simple statistical techniques such as, ratio, percentage have been used to show changes in fiscal parameters, the Regression Analysis used to estimate growth. In this regard models like, Linear, semi-log, multiple regression, VAR models are used to analyse the time series data on state finances of the economy.

1.1. POSITION OF ODISHA AMONG 18 MAJOR NON-SPECIAL CATEGORY STATE

The importance of growth of infrastructure in the state is a reflection of development or its absence as it creates and generates conditions for the expansion of market institutions. The

position of the state of Orissa among the 18 major non-special category states can be examined from Table-1.1 presented below.

It is observed from the Table that there exist variations across the states in terms of level of development. The Coefficients of variation seems to be very high in case of Bank credit, factory employment and per capita income. Orissa as in 2014-15 continues to have the lowest per capita income next only to Bihar, Jharkhand and Uttar Pradesh. Lowest non-primary income is registered by Andhra Pradesh, Chattisgarh, Rajasthan, Uttar Pradesh and Orissa. The level of Urbanisation is lowest for the state of Orissa next only to Bihar. Orissa's position in terms of literacy is moderately high compared to lower literacy states like Andhra Pradesh, Bihar, Jharkhand, Madhya Pradesh, Rajasthan and Uttar Pradesh. Factory employment in the state is also found one of the lowest next only to Bihar, Madhya Pradesh and Uttar Pradesh. In terms of Per capita Bank Credit Orissa's position is better than only states of Bihar, Jharkhand and Uttar Pradesh. Thus in terms of level of development Orissa continues to remain as one of the most backward states of the Indian Union.

Table-1.1 Indicators of development in Non-special category of states, 2014-15

States	Per-capita income	%non-primary	%urbanisation	%literacy	Factory emp/lk popln	Per-capita bank credit
AP	90517	69.46	33.36	67.02	595	50604
Bihar	36143	77.35	11.29	61.8	112	4580
Chattisgarh	64442	68.43	23.24	70.28	678	16723
Gujrat	106831	76.49	42.6	78.03	2256	41664
Haryana	147076	80.53	34.88	75.55	2235	49143
Jharkhand	52147	71.47	24.05	66.41	570	9733
Karnataka	101594	81.03	38.67	75.36	1411	52655
Kerla	103820	86.20	47.7	94	1139	50943
MP	59770	59.38	27.63	69.32	416	15371
Maharastra	129235	89.39	45.22	82.34	1588	136154
Odisha	59229	70.55	16.69	72.87	628	15395
Punjab	99578	71.79	37.48	75.84	2103	57150
Rajasthan	72156	67.29	24.87	66.11	646	22883
Tamilnadu	128366	87.43	48.4	80.09	2724	73892
Uttarakhand	115632	84.08	38.23	78.82	3324	22086
UP	40373	69.21	22.27	67.68	413	10852
Wb	78903	74.43	31.87	76.26	719	28792
Cof of Var.	37.58	10.94	33.71	10.43	74.49	83.27

2. DETERMINANTS OF EXPENDITURE

The major components of Expenditure of the state being Revenue and Capital expenditure, it was observed earlier that there has been greater role for the reduction in Non-plan component of Revenue expenditure and enhancement of Plan component of Capital expenditure. Orissa has recorded higher percapita aggregate receipts compared to aggregate expenditure in 2014-15 among the few states having such characteristics as noticed earlier

though the level of percapita aggregate expenditure remains one of the lowest next only to Bihar, Jharkhand, MP, UP and WB. Same pattern was also observed in case of Non-plan revenue expenditure. The state also registered higher per capita Plan Capital expenditure next only to Gujarat, Karnataka, Uttarakhand and Tamilnadu.

The inter-relationship of expenditure and the indicators of development can be examined from Table-2.1 presented in the correlation matrix below.

**Table-2.1 Correlation matrix of expenditure variables and development indicators**

Vraiables	Per-Capita Income	%Non-Primary	%Urbanisation	%Literacy	Factory Emp/Lk Popln	Per-Capita Bank Credit
PCAGE	0.404	0.215	0.503	0.341	0.264	0.342
PCRE	0.467	0.276	0.534	0.396	0.281	0.404
PCNPRES	0.514	0.338	0.612	0.481	0.296	0.503
PCCE	-0.109	-0.185	0.074	-0.103	0.036	-0.132
PCPCE	-0.170	-0.130	-0.107	-0.228	0.028	-0.272

It is interesting to observe that all the expenditure variables in per capita terms have low level of association with different indicators of development. In fact the Total Capital expenditure and Plan Capital expenditure are negatively correlated with most indicators of development though the coefficients are very low. Relatively higher positive correlations of revenue expenditure and total expenditure are found in case of % of urbanization.

The importance of indicators of development can also be examined in the following using multiple regression analysis to study the interrelationships of expenditure variables with tax base proxy NSDP, structural variable represented by non-primary income and the other indicators of development. The results of the Multiple regression analysis on state-wise data for the year 20145-15 are presented in Table-2.2 presented below.

Table 2.2 Results of multiple regression analysis

Dependent Variables	A	B1	B2	B3	B4	B5	B6	R2
PCAGE	5.788	-0.490	-0.137	0.358	-0.376	0.117	0.210	0.414
		(-0.778)	(-0.144)	(0.703)	(-0.281)	(0.544)	(0.911)	
PCRE	5.183	-0.439	-0.068	0.291	-0.341	0.111	0.252	0.417
		(-0.617)	(-0.063)	(0.506)	(-0.226)	(0.458)	(0.964)	
PCNPRES	4.324	-0.475	0.072	0.470	-0.234	0.029	0.343	0.549
		(-0.615)	(0.062)	(0.753)	(-0.143)	(0.111)	(1.211)	
PCCE	8.239	-0.850	-0.192	0.618	-1.086	0.216	0.060	0.302
		(-1.276)	(-0.192)	(1.147)	(-0.768)	(0.949)	(0.245)	
PCPCE	8.239	-0.850	-0.192	0.618	-1.086	0.216	0.060	0.250
		(-0.788)	(0.575)	(0.562)	(-1.211)	(1.058)	(-0.193)	

PCAGE- Per capita Aggregate Expenditure, **PCRE-** Per capita Revenue Expenditure, **PCNPRES-** Per capita Non-Plan Revenue Expenditure, **PCCE-** Per capita Capital Expenditure, **PCPCE-** Per capita Plan Capital Expenditure

Explanatory Variables: 1. Per capita income 2. % Non-primary Income, 3 % Urbanisation, 4. % Literacy, 5. Factory employment per lakh of population 6. Per capita Bank Credit

Source: 1. RBI Bulletin 2. Economic Survey of Karnataka, 2015-16

It is observed from the Table that all the equations have a low value of R^2 excepting PCNPRES. The expenditure variables in general have a negative relationship with Per capita Income, non-primary income and literacy, though these are not statistically significant. The positive coefficients observed in case of Urbanisation, Factory employment and Bank credit also are not statistically significant. These confirm the earlier observations from correlation analysis that expenditure variables are independent of indicators of development.

The analysis of dependence of expenditure variables on NSDP has been carried out with a double log model including NSDP and %Non-primary income as independent variables and including a dummy for FRBM Act. It is possible to examine the determining role of NSDP and the coefficient of SDP representing Income elasticity of expenditure. It can also enable to obtain the addition to elasticity due to FRBM Act.

Table-2.2 Regression Results of Double Log Dummy Variable Model

Dependent Variables	A	B1	B2	B3	B4	B5
PCAGE	-3.567	0.924*	-0.702	0.147**	1.802*	0.998
		(27.888)		(2.467)	(7.167)	
PCRE	-3.662	1.015*	-0.182	0.025	1.594*	0.998
		(29.176)		(0.407)	(6.039)*	
PCNPRES	-3.903	1.080*	1.098	-0.268*	1.524*	0.996



		(25.599)		(-3.540)	(4.761)	
PCCE	-4.303	0.648*	-2.617	0.586*	2.445*	0.967
		(6.045)		(3.048)	(3.007)	
PCPCE	-2.742	0.440*	-5.596	1.287*	1.876**	0.970
		(4.526)		(7.377)	(2.543)	

It is observed from the Table that all the equations having very high values of R^2 indicate that GDP and % Non-primary income are appropriate determinants for the variations in expenditure variables. B_1 representing the income elasticity is found to be high during PRE-FRBM period only in case of Per capita revenue expenditure and Per capita non-plan revenue expenditure. However, the increment to the slope coefficient during Post FRBM is found positive and statistically significant in case of Aggregate expenditure, which is contributed due to positive and significant increment in case of Per capita capital expenditure and Per capita Plan capital expenditure indicating that FRBM period has made Capital expenditure more responsive to changes in income. It is also noticed that increment coefficient of Revenue expenditure though positive is statistically not significant. In fact the increment to slope coefficient is negative in case of Per capita Non-plan revenue expenditure, which also is statistically significant. Thus it turns out that FRBM Act has made revenue expenditure and particularly non-plan revenue expenditure less responsive possibly an outcome of state intervention. It is also interesting to note that growth of non-primary income contributes

towards higher expenditure for Total, revenue as well as capital as the coefficients are positive and statistically significant.

The use of elasticity approach can be made to capture the impact of growth of income on expenditure. However, in such an approach the reverse causation from expenditure to income cannot be tested. The limitation can be taken care of by VAR (Vector Autoregressive Model) and Granger Causality Model. The results of the VAR Model to examine the causative relationship between GDP and different Expenditure variables are presented in the Table-2.3 below. It is observed that higher growth in Total Expenditure in period t-1 leads to higher growth of GDP in period t. This is revealed by statistical significance of computed 't' for estimated coefficient of LSDP. The same result holds only in case of growth of Total Non-plan Expenditure. However, none other estimated coefficients appear to be statistically significant in any of the equations. Similarly, higher growth in GDP in period t-1 leads to higher growth of all the Expenditure variables excepting Total Plan Expenditure, Non-plan expenditure in General services and Total expenditure in General Services.

Table-2.3 Results of VAR Model

Independent	Dependent-LSDP)		Independent	Dependent-LTE	
LTE(-1)	0.2854* (2.646)		LSDP(-1)	0.4370* (3.274)	
	Dependent-LSDP			Dependent-LTPE	
LTPE(-1)	0.0411 (0.666)		LSDP(-1)	0.1200 (1.199)	
	Dependent-LSDP			Dependent-LTNPE	
LTNPE(-1)	0.1495* (1.989)		LSDP(-1)	0.3448* (2.361)	
	Dependent-LSDP			Dependent-LPESS	
LPESS(-1)	0.0320 (0.5999)		LSDP(-1)	0.5236* (3.087)	
	Dependent-LSDP			Dependent-LNPESS	
LNPESS(-1)	0.1032 (1.273)		LSDP(-1)	0.9022* (5.145)	
	Dependent-LSDP			Dependent-LTESS	
LTESS(-1)	0.1436 (1.553)		LSDP(-1)	0.8190* (4.745)	
	Dependent-LSDP			Dependent-LPESS	
LPESS(-1)	0.0447		LSDP(-1)	0.5363*	



	(1.351)			(3.455)	
	Dependent-LSDP			Dependent-LNPESS	
LNPESS(-1)	0.0315 (0.456)		LSDP(-1)	0.4212* (2.788)	
	Dependent-LSDP			Dependent-LTEES	
LTEES(-1)	0.0599 (1.330)		LSDP(-1)	0.5382* (3.449)	
	Dependent-LSDP			Dependent-LPEGS	
LPEGS(-1)	-0.0063 (-0.291)		LSDP(-1)	0.1599* (1.788)	
	Dependent-LSDP			Dependent-LNPEGS	
LNPEGS(-1)	0.0597 (1.116)		LSDP(-1)	0.0632 (0.842)	
	Dependent-LSDP			Dependent-LTEGS	
LTEGS(-1)	0.0648 (1.1496)		LSDP(-1)	0.0736 (0.951)	

- **Figures in the parentheses give t-values**
(For a large sample $n \geq 30$ the critical t-value at 5% significance level becomes ≥ 1.697 (in one-tailed test)

In the following an attempt also has been made to examine the direction of causality between expenditure variables and SDP. The results of the VAR Granger Causality Test are presented in Table-2.4 below.

Table-2.4 Results of VAR Granger Causality Test

Excluded	Dependent	LSDP	P	Dependent	LTE	Df	P
LTE	X ²	Df	P	Excluded	X ²	Df	P
LTE	7.0029	1	0.0081	LSDP	10.719	1	0.0011
LTPE	0.4438	1	0.5053	LSDP	1.4383	1	0.2304
LTNPE	0.0156	1	0.9004	LSDP	2.6668	1	0.1025
LPES	0.3544	1	0.5488	LSDP	9.5309	1	0.0020
LNPESS	1.6208	1	0.2030	LSDP	11.9385	1	0.0000
LTESS	2.4125	1	0.1204	LSDP	22.5163	1	0.0000
LPEES	1.8243	1	0.1768	LSDP	11.9385	1	0.0005
LNPEES	0.2085	1	0.6479	LSDP	7.7739	1	0.0053
LTEES	1.7696	1	0.1834	LSDP	11.8975	1	0.0006
LPEGS	0.0847	1	0.7710	LSDP	3.1984	1	0.0737
LNPEGS	1.2461	1	0.2643	LSDP	0.7091	1	0.3997
LTEGS	1.3217	1	0.2503	LSDP	0.9039	1	0.3417



The following conclusions follow from the Results of Causality Test. The p values presented in the Table are used to draw conclusion drawn regarding direction of causality between variables. The p-value for the computed X² statistic when found

exceeding 0.10 (p>0.10), leads to acceptance of the Null Hypothesis of absence of Granger causality in the VAR Model.

- LTE Granger cause LSDP
- LTPE does not Granger cause LSDP
- LTNPE does not Granger cause LSDP
- LPESS does not Granger cause LSDP
- LNEESS does not Granger cause LSDP
- LTESS does not Granger cause LSDP
- LPEES does not Granger cause LSDP
- LNPEES does not Granger cause LSDP
- LTEES does not Granger cause LSDP
- LPEGS does not Granger cause LSDP
- LNPEGS does not Granger cause LSDP
- LTEGS does not Granger cause LSDP

- LSDP Granger Cause LTE
- LSDP does not Granger Cause LTPE
- LSDP does not Granger Cause DLTNPE
- LSDP Granger Cause LPESS
- LSDP Granger Cause LNPESS
- LSDP Granger Cause LNPESS
- LSDP Granger Cause LPEES
- LSDP Granger Cause LNPEES
- LSDP Granger Cause LTPEES
- LSDP Granger Cause LPEGS
- LSDP does not Granger Cause LNPEGS
- LSDP does not Granger Cause LTEGS

The results so obtained are similar to the one obtained in case of VAR Model excepting that Total Non-plan Expenditure is found independent of SDP and that there is also independence of SDP from Total Non-plan expenditure. Thus it may be inferred that there is a bidirectional causality Total expenditure and SDP and that there is unidirectional causality running from SDP to all the expenditure variables excepting Total plan expenditure, Total Non-plan expenditure, Non-plan expenditure on General service and Total expenditure on General services. Thus broadly Wagner’s law is supported by Granger test.

experienced by many countries. In the following an attempt has been made to examine the causal relationship between total receipts and total expenditure. The variables selected for this analysis are Total Receipts (TR) and Total Expenditure (TE). The causality test has been carried out at a disaggregated level also for Plan and Non-plan expenditure. The expenditure variables taken are Revenue Plan Expenditure (RPE), Revenue Non-plan expenditure (RNPE), Capital Plan expenditure (CPE), Capital Non-plan expenditure (CNPE), Total Plan expenditure (TPE), Total Non-plan expenditure (TNPE) and Total Expenditure (TE). The same procedure adopted in case of causality test between SDP ad expenditure variables has been utilized. Table-2.5 and Table-2.6 present respectively the Results of VAR Model and Results of Granger Causality .

The inter-relationship between revenue and expenditure has been discussed by many studies in the context of fiscal imbalance

Table-2.5 Results of VAR Model

Independent	Dependent-LTR		Independent	Dependent-LRNPE	
LRNPE(-1)	0.2891 (1.624)		LTR(-1)	0.4415* (2.300)	
	Dependent-LTR			Dependent-LCNPE	
LCNPE(-1)	-0.0044 (-0.1557)		LTR(-1)	1.0612* (5.052)	
	Dependent-LTR			Dependent-LTNPE	
LTNPE(-1)	0.0629 (0.3834)		LTR(-1)	0.5914* (2.565)	
	Dependent-LTR			Dependent-LTE	
LTE(-1)	0.8385 (2.962)		LTR(-1)	0.4053 (1.2906)	

The following conclusions follow from the Results of Causality Test. The p values presented in the Table are used to draw conclusion drawn regarding direction of causality between variables. The p-value for the computed X² statistic when found

exceeding 0.10 (p>0.10), leads to acceptance of the Null Hypothesis of absence of Granger causality in the VAR Model.

- LTE Granger cause LSDP
- LSDP Granger Cause LTE
- LTPE does not Granger cause LSDP
- LTNPE does not Granger cause LSDP
- LPESS does not Granger cause LSDP

- LSDP does not Granger Cause LTPE
- LSDP does not Granger Cause DLTNPE
- LSDP Granger Cause LPESS



LNEESS does not Granger cause LSDP
 LTESS does not Granger cause LSDP
 LPEES does not Granger cause LSDP
 LNPEES does not Granger cause LSDP
 LTEES does not Granger cause LSDP
 LPEGS does not Granger cause LSDP
 LNPEGS does not Granger cause LSDP
 LTEGS does not Granger cause LSDP

LSDP Granger Cause LNPESS
 LSDP Granger Cause LNPESS
 LSDP Granger Cause LPEES
 LSDP Granger Cause LNPEES
 LSDP Granger Cause LTPEES
 LSDP Granger Cause LPEGS
 LSDP does not Granger Cause LNPEGS
 LSDP does not Granger Cause LTEGS

The results so obtained are similar to the one obtained in case of VAR Model excepting that Total Non-plan Expenditure is found independent of SDP and that there is also independence of SDP from Total Non-plan expenditure. Thus it may be inferred that there is a bidirectional causality Total expenditure and SDP and that there is unidirectional causality running from SDP to all the expenditure variables excepting Total plan expenditure, Total Non-plan expenditure, Non-plan expenditure on General service and Total expenditure on General services. Thus broadly Wagner's law is supported by Granger test.

The inter-relationship between revenue and expenditure has been discussed by many studies in the context of fiscal imbalance experienced by many countries. In the following an attempt has

been made to examine the causal relationship between total receipts and total expenditure. The variables selected for this analysis are Total Receipts (TR) and Total Expenditure (TE). The causality test has been carried out at a disaggregated level also for Plan and Non-plan expenditure. The expenditure variables taken are Revenue Plan Expenditure (RPE), Revenue Non-plan expenditure (RNPE), Capital Plan expenditure (CPE), Capital Non-plan expenditure (CNPE), Total Plan expenditure (TPE), Total Non-plan expenditure (TNPE) and Total Expenditure (TE). The same procedure adopted in case of causality test between SDP and expenditure variables has been utilized. Table-2.5 and Table-2.6 present respectively the Results of VAR Model and Results of Granger Causality .

Table-2.5 Results of VAR Model

Independent	Dependent-LTR		Independent	Dependent-LRNPE	
LRNPE(-1)	0.2891 (1.624)		LTR(-1)	0.4415* (2.300)	
	Dependent-LTR			Dependent-LCNPE	
LCNPE(-1)	-0.0044 (-0.1557)		LTR(-1)	1.0612* (5.052)	
	Dependent-LTR			Dependent-LTNPE	
LTNPE(-1)	0.0629 (0.3834)		LTR(-1)	0.5914* (2.565)	
	Dependent-LTR			Dependent-LTE	
LTE(-1)	0.8385 (2.962)		LTR(-1)	0.4053 (1.2906)	

- **Figures in the parentheses give t-values**

It is observed that estimated coefficients of all the components of Expenditure appear to be statistically not significant in any of the equations towards changes in Total Receipts making Expenditure independent of Revenue excepting Total expenditure. In the latter case higher growth in Total Expenditure in period t-1 leads to higher growth in Total Receipts. However, higher growth in Total Receipts in period t-1 leads to higher growth of Revenue

Non-plan expenditure, Capital Non-plan expenditure, and Total Plan expenditure. But the coefficients of Plan expenditures are found statistically not significant.

In the following an attempt also has been made to examine the direction of causality between expenditure variables and Total Receipts. The results of the VAR Granger Causality Test are presented in Table-8.8 below.



Table-2.6 Results of VAR Granger Causality Test

	Dependent	LTR		Dependent	LRNPE		
Excluded	X ²	Df	P	Excluded	X ²	Df	P
LRNPE	2.6372	1	0.1044	LTR	5.2926	1	0.0214
					LCNPE		
LCNPE	0.0242	1	0.8762	LTR	25.5322	1	0.0000
					LTNPE		
LTNPE	0.1470	1	0.7014	LTR	6.5801	1	0.0103
					LTE		
LTE	8.7745	1	0.0031	LTR	1.6658	1	0.1968
					LRPE		
LRPE	2.3745	1	0.1233	LTR	0.0606	1	0.8054
					LCPE		
LCPE	2.2637	1	0.1234	LTR	1.2534	1	0.2629
					LTPE		
LTPE	2.5555	1	0.1099	LTR	0.0007	1	0.978

The following conclusions follow from the Results of Causality Test. The p values presented in the Table are used to draw conclusion drawn regarding direction of causality between variables. The p-value for the computed X² statistic when found

exceeding 0.10 (p>0.10), leads to acceptance of the Null Hypothesis of absence of Granger causality in the VAR Model.

LRNPE does not Granger cause LTR
 LCNPE does not Granger cause LTR
 LTNPE does not Granger cause LTR
 LTE Granger cause LTR
 LRPE does not Granger cause LTR
 LCPE does not Granger cause LTR
 LTPE does not Granger cause LTR

LTR Granger Cause LRNPE
 LTR Granger Cause LCNPE
 LTR Granger Cause LTNPE
 LTR does not Granger Cause LTE
 LTR does not Granger Cause LRPE
 LTR does not Granger Cause LCPE
 LTR does not Granger Cause LTPE

The results so obtained are similar to the one obtained in case of VAR Model. Thus it may be inferred that there is uni-directional causality between Total expenditure and Total receipts. Similarly there is unidirectional causality running from Total receipts to all the expenditure variables excepting Total expenditure and all the Plan expenditure variables.

4. SUMMARY & CONCLUSION

In sum, the State finances of the state have undergone important changes over the last 38 years. Orissa's position in terms of literacy is moderately high compared to lower literacy states like Andhra Pradesh, Bihar, Jharkhand, Madhya Pradesh, Rajasthan and Uttar Pradesh. Factory employment in the state is also found one of the lowest next only to Bihar, Madhya Pradesh and Uttar Pradesh. Orissa as in 2014-15 continues to have the lowest per capita income next only to Bihar, Jharkhand and Uttar Pradesh. Thus in terms of level of development Orissa continues to remain as one of the most backward states of the Indian Union.

The analysis of dependence of revenue parameters on NSDP through double log model including NSDP and %Non-primary income as independent variables and including a dummy for FRBM Act shows that all the equations having very high values of R² indicate that SDP and % Non-primary income are appropriate determinants for the variations in revenue parameters.

B₁ representing the income elasticity is found to be high during PRE-FRBM period in case of all revenue parameters excepting Revenue Receipts and Non-tax revenue. Similar result is obtained in case of expenditure variables. B₁ representing the income elasticity is found to be high during PRE-FRBM period only in case of Per-capita revenue expenditure and Per-capita non-plan revenue expenditure. However, the increment to the slope coefficient during Post FRBM is found positive and statistically significant in case of Aggregate expenditure, which is contributed due to positive and significant increment in case of Per-capita capital expenditure and Per-capita Plan capital expenditure indicating that FRBM period has made Capital expenditure more responsive to changes in income.

The results of the VAR Model to examine the causative relationship between SDP and different Expenditure variables shows that higher growth in Total Expenditure in period t-1 leads to higher growth of SDP in period t. This is revealed by statistical significance of computed 't' for estimated coefficient of LS DP. The same result holds only in case of growth of Total Non-plan Expenditure However, none other estimated coefficients appear to be statistically significant in any of the equations. Similarly, higher growth in SDP in period t-1 leads to higher growth of all the Expenditure variables excepting Total Plan Expenditure, Non-



plan expenditure in General services and Total expenditure in General Services.

The results of the VAR Granger Causality Test are similar to the VAR Model excepting that Total Non-plan Expenditure is found independent of SDP and that there is also independence of SDP from Total Non-plan expenditure. Thus it may be inferred that there is a bidirectional causality Total expenditure and SDP and that there is unidirectional causality running from SDP to all the expenditure variables excepting Total plan expenditure, Total Non-plan expenditure, Non-plan expenditure on General services and Total expenditure on General services.

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AN REVIEW ON TOPICAL DELIVERY SYSTEM

Kardile Pooja*, Snehal lad, Dr.Sanjay Garje , Dr.Gaffar. Sayyed
SAJVPM'S College Of Pharmaceutical Science And Research Centre, Kada (Beed), Maharashtra, India

*Corresponding Author; Kardile Pooja

ABSTRACT

Topical drug delivery (TDD) is a method of administering medication that produces a localized effect to treat skin conditions such as eczema by allowing the topical formulation to be dispersed throughout the skin upon application. Topical medication formulations fall into four categories: corticosteroids, antibiotics, antiseptics, and antifungals. The drug's skin-based metabolism and diffusion are part of the topical delivery method. In 3000 BCE, topical medication delivery became the first method of drug delivery to people in ancient Egypt and Babylonia. Topical treatments such as ointments and potions were applied topically in these ancient cities because topical medication distribution involves passing through several layers of skin and pharmacokinetics, factors including cutaneous illnesses reduce the bioavailability of the topical medications. Topical drug delivery is improving as a result of the widespread usage of topical medications. Through the application of chemical and physical agents, these developments improve the delivery of topical drugs to the skin. To improve topical drug absorption for chemical agents, carriers such as liposomes and nanotechnologies are employed. However, physical agents such as microneedles are a further strategy for improving absorption. The efficiency of topical formulation is governed by elements such as pH, lipophilicity, and drug molecule size, in addition to the use of carriers.

KEYWORDS: Hypodermis, dermis, depilatory, exfoliating, antiperspirant, abrasive, antipruritic

INTRODUCTION

Pharmaceutical formulation scientists are now exploring non-oral/parenteral methods for the efficient and effective administration of drugs to the target site, thanks to advancements in pharmaceutical technologies. The optimal distribution of treatments at the site of action within the allotted time frame is included in effective medication administration. For the purpose of treating localized illnesses, the topical delivery system is a technique in which the formulation is given topically to locations including the skin, eyes, nose, and vagina. When a medicine is applied topically, it avoids the first pass metabolism in the liver, changes in gastric pH, and fluctuations in plasma levels, which are often associated with oral drug administration.

The other advantages associated with the topical drug delivery system include the following

- ❖ Patient compliance and acceptance
- ❖ simplicity and ease of application
- ❖ painless and noninvasive approach
- ❖ enhanced drug absorption
- ❖ improved physiological and pharmacological response
- ❖ minimal systemic toxicity
- ❖ and medication exposure to non-infectious tissue/sites are all important considerations.

Developing a topical delivery system is a difficult undertaking that necessitates careful consideration of both the active ingredient and the delivery method, as the obstacles connected to these routes may restrict the drug's availability at the site of effectiveness

The primary barrier preventing foreign particles from penetrating the skin is the stratum corneum. Within minutes of topical administration, 95% of medicines are removed from the surface of the eye. Conventional vaginal compositions' low efficacy stems from the efficaciousness of traditional vaginal formulations is restricted due to their poor distribution over the vaginal tissues and brief residence period. These drawbacks highlight the necessity for in-depth study to create novel and creative delivery systems by altering the constituents of the formulation or the ways in which they are administered. Figure 1 shows the several formulations that are presently being investigated for topical medication delivery. The most current research on topical medication delivery methods The United States (US) and World Intellectual Property Organization (WIPO) registered patents issued between 2012 and 2015 were found using the Espacenet and PatentScope databases of the WIPO. These patents revealed innovative topical delivery formulation strategies. An attempt has been made to review all of the new formulation technologies with illustrative examples in this article.

Topical drug delivery system

The skin, vagina, eyes, and nose are the main routes for topical delivery that have been extensively studied. This section offers a basic overview of the physiology of diverse pathways, the protective barriers that go along with them, and the most current patent applications and approvals for neoteric compositions applied topically.



Factors Affect Topical Absorption

Only the topical drug's physicochemical characteristics have an impact on how many molecules of the medication are transported to the skin. The medication molecule's weight is the first consideration. The rate at which a medicine diffuses and absorbs into the skin increases with decreasing drug molecular weight or particle size. Given how lipophilic the three absorption channels are, the second element is the lipophilicity of the drug molecules. In contrast to hydrophilic drug molecules, it is easier for this type of medicine to be absorbed due to its increased lipophilicity. The skin's pH level is the third parameter. Since the skin's layers have a basic pH, basic topicals will absorb more readily than acidic ones topical medications. These elements are essential in determining the topical drug delivery system's permeability

The factors that affect the topical absorption are as follows

1. Physiological factors:

- ❖ Lipid content.
- ❖ Density of hair follicles.
- ❖ Density of sweat glands.
- ❖ Skin pH.
- ❖ Blood flow.
- ❖ Hydration of skin.
- ❖ Inflammation of skin.

2. Physicochemical factors.

- ❖ Molecular weight
- ❖ Partition coefficient.

Purpose of Topical Preparation

The intended objective must be taken into account while creating a topical medication that is both effective and efficient. This immediately relates to the intended outcome of the preparation as well as the site of action.

Topical treatments can be applied to:

- i) Surface effects: antibacterial (lower risk of infection), cosmetic (improvement of look), protective (avoid moisture loss, sunscreen), and cleansing (removal of dirt and germs).
- ii) Effects on the stratum corneum: keratolytic (a skin sloughing that helps treat psoriasis), hydrating, and protective (such as sunscreens that penetrate this layer).
- iii) Effects on the epidermis and dermis that are viable: a number of medication classes, including anti-inflammatory, anesthetic, antipruritic, and antihistamine ones, may permeate these layers. Drugs find it challenging to enter the stratum corneum, yet once they have the ability to permeate into the bloodstream in the dermis. Creating a medication that has a localized effect without being absorbed by the bloodstream is challenging.
- iv) Systemic effects: Some medications, including estradiol, nitroglycerin, scopolamine, and clonidine, have been designed to have systemic effects.
- v) Appendage effects: Certain drug classes (depilatory, exfoliating, antibacterial, and antiperspirant) are designed to act on certain areas of the skin

Skin Drug Delivery

The skin, which has a surface area of 1.5 to 2 m², is the biggest organ in the human body and serves as the most intricate barrier separating the biological system from the outside world. It is a

three-layered structure with an outer layer that is between 50 and 150 μm thick (the biological barrier), 250 μm the innermost subcutaneous fatty tissue (a mechanical cushion) and the thick dermis (a heat barrier) The epidermal region is made up of the stratum corneum's superficial layers, whose distinct cellular architecture acts as a barrier to the passage of molecules larger than 500 Da, offering physical defense against microbial invasion.

Millions of people suffer from skin problems every day. The conditions that fall under this category are classified as autoimmune (scleroderma, psoriasis), fungal (sporotrichosis, chromomycosis, blastomycosis), viral (herpes simplex virus, eczema), and bacterial (impetigo, cellulitis). Drugs that are applied topically to the skin's surface are always being researched for the local treatment of various illnesses. The majority of exogenous compounds (drugs/active moiety) exhibit resistance to permeability, which poses a significant difficulty in the design of topical drug delivery systems. Furthermore, creating an effective topical administration method is challenging due to changes in the skin's barrier qualities and permeability associated with the disease.

Skin-Related Bases

Topical treatments intended for local or systemic effects are typically categorized as:

Solids – Dusting powder

Semi-solids – Creams, Gel, Ointments, Paste and other

Liquids – Solution, Emulsion, Liniments, Suspension, Soaps, Shakes, Collidons, Lotion, Paints and other.

These semi-solid formulations are more promising than solid and liquid ones because of their ability to adhere to the application surface for a suitable amount of time before wearing off.

Pharmaceutical semi-solid formulations consist of gel, cream emulsions, pastes, ointments, and stiff forms.

Benefits of Topical Medication Delivery Methods

1. Avoiding the metabolism of the first pass.
2. Practical and simple to use.
3. Avoidance of the dangers and difficulties associated with intravenous therapy as well as various absorption conditions such as changes in pH
4. The presence of enzymes and the duration of gastric emptying.
5. Terminating the drugs is simple when necessary.
6. More carefully deliver the medication to a targeted area.
7. Avoiding the incompatibility with the stomach.
8. Enabling the use of medications having a brief biological half-life and a limited window of therapeutic use.
9. Increased adherence from patients.
10. Assist with appropriate self-medication.
11. Drug input continuously allows for the achievement of efficacy with a reduced total daily dose of the medication.

12. Prevents medication level fluctuations as well as intra- and inter-patient variability.
13. A quite large area of application in comparison with buccal cavity. Ability to deliver drugs more selectively to a specific site

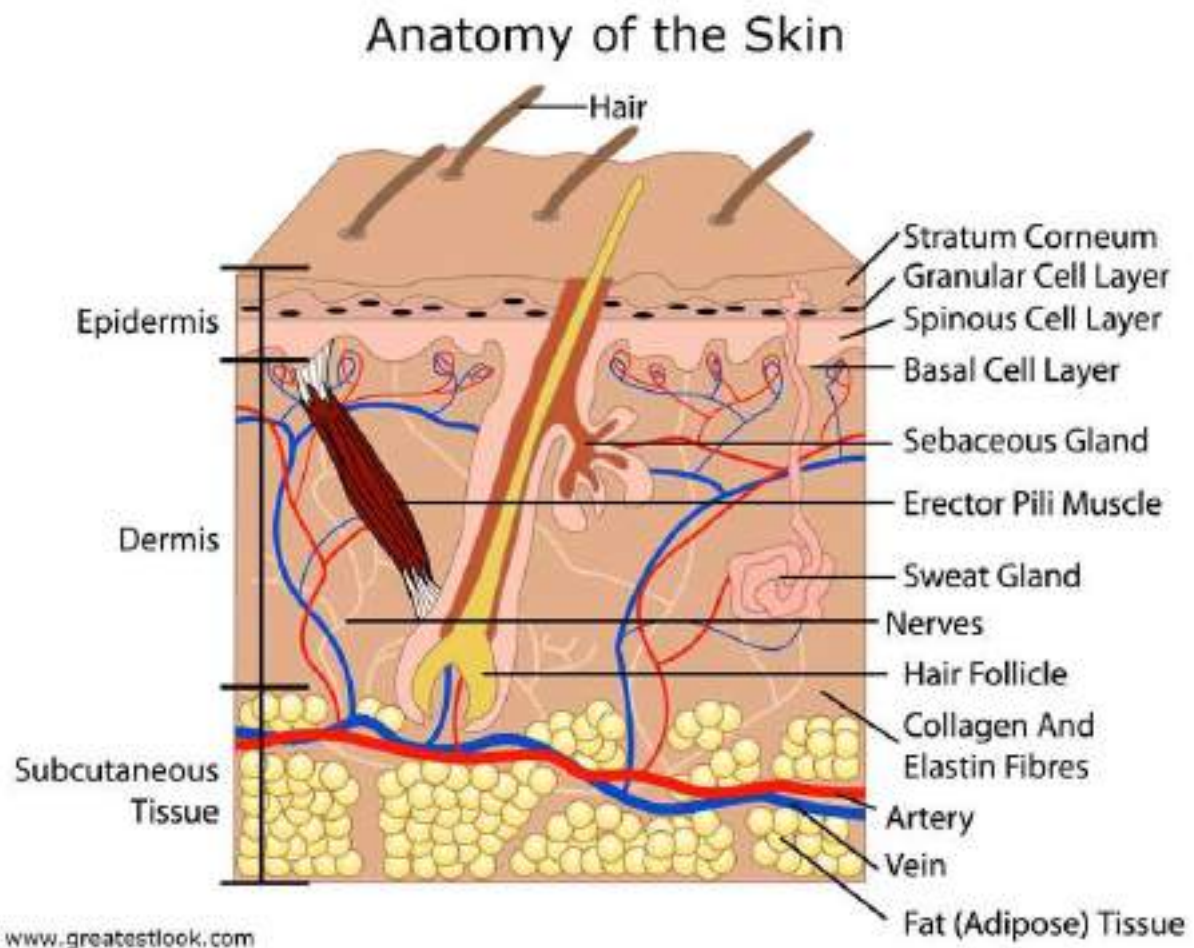
4. likelihood of allergic responses.
Can only be applied to medications whose actions depend on extremely low plasma concentrations
5. Drugs that cause skin irritation or hypersensitivity should not be taken via this route

Topical medication Delivery Techniques' Drawbacks

1. The medication or its ingredients may cause dermatitis or skin irritation.
2. Certain medications don't pass through the skin well.
3. Greater particle size drugs are more difficult to absorb via the skin.

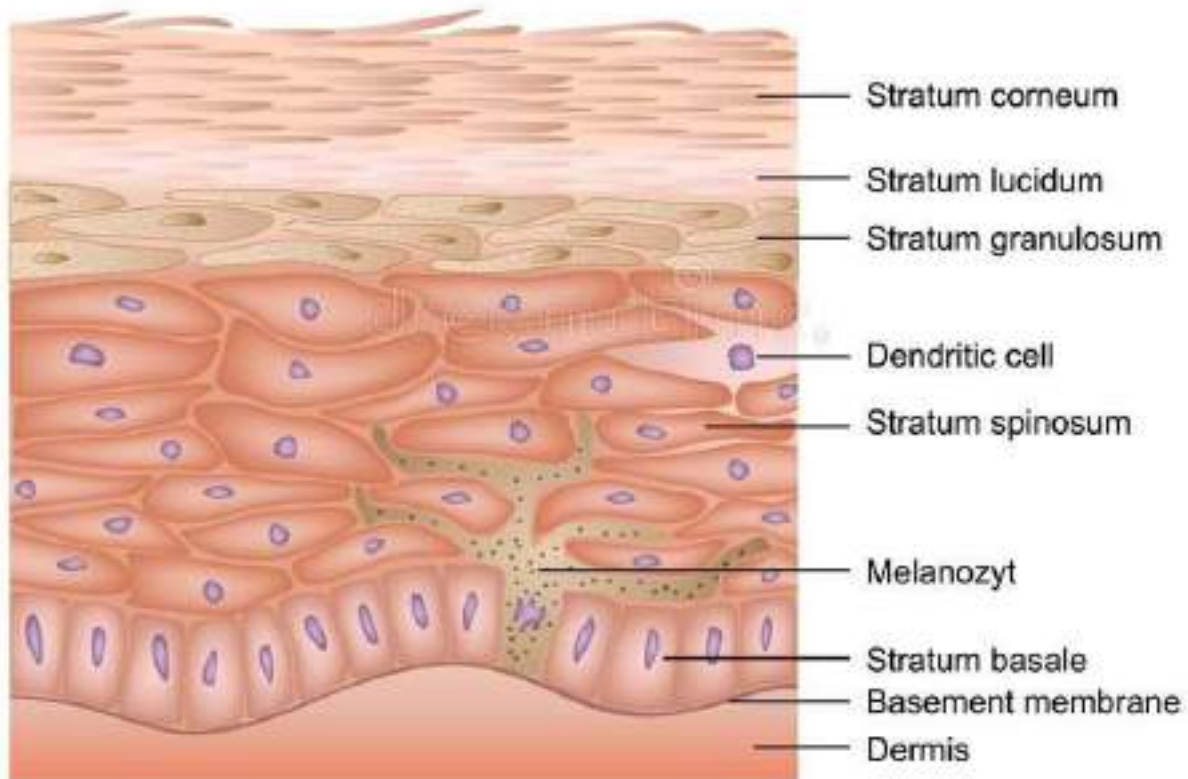
Skin Anatomy

The human skin is composed of three interdependent tissues: The cellular, stratified layer known as the "epidermis" lies beneath the dermis of connective tissues the hypodermis.



❖ Epidermis

Structure of the Epidermis

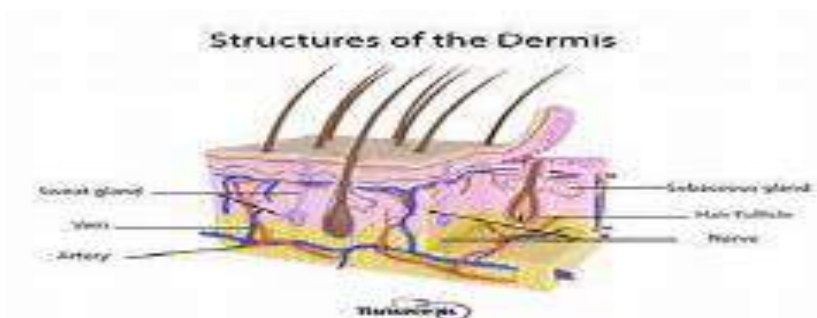


The epidermis of the skin is formed by stratified epithelium, which is made up of 5 layers:

1. Stratum corneum.
2. Stratum lucidum
3. Stratum granulosum
4. Stratum spinosum and
5. Stratum germinativum

The absence of blood vessels in the epidermis is its most significant characteristic. The dermal capillaries supply the nourishment. The uppermost layer of skin is called the epidermis, and it is a stratified, squamous, keratinizing epithelium. The keratinocyte count, which determines the skin's barrier properties, is greater than 90%.

❖ Dermis

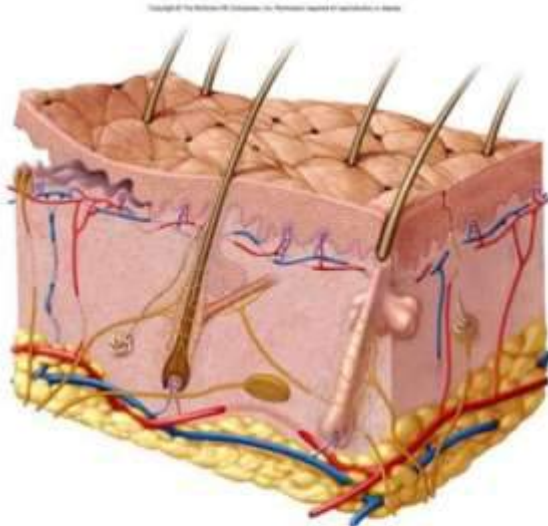


Its flexibility and strength are derived mostly from a thick layer of fibrous and elastic tissue called the dermis, which is composed primarily of collagen, elastin, and fibrillin. Blood veins, sweat glands, oil glands, nerve endings, and hair follicles

are all found in the dermis⁹. The dermis is a vascularized connective tissue rich in collagen that contains mucopolysaccharides, also referred to as the ground material.

❖ Hypodermis

§ Hypodermis



1. Other names--
Subcutaneous tissue;
superficial fascia
2. Mostly adipose tissue;
Uniformly distributed?; **8%
thicker in women**
3. Functions
 - energy reservoir
 - thermal insulation
4. Hypodermic injections
(to subcutaneous tissue)
 - highly vascular; **absorb
drugs easily**

6-31

The epidermis is the skin's innermost layer. It is the layer of tissue that comes into contact with the body's underlying tissues, including the muscles and bones. Although they originate in the dermis, sweat glands, sebaceous glands, and hair follicles are encased in the epidermis.

A diluted salt solution is released onto the skin's surface via sweat glands. Skin cools down as a result of this diluted salt solution evaporating, which is crucial for controlling body and skin temperature. The body is covered in sweat glands. The amount of heat producing skeletal muscle activity, the temperature of the surrounding environment, and a variety of emotional elements all affect how many dilutions (sweat) are created. Sebum is an oily liquid that is secreted into hair follicles and then lands on the epidermis. Sebum prevents drying out of the skin and hair and offers a waterproof layer

Evaluation of Ointments

Penetration

EVALUATION OF TOPICAL DOSAGE
FORM

EVALUATION OF TOPICAL DOSAGE
FORM

There have been some very basic experiments suggested for determining the penetration. For a specified amount of time, specific skin areas are treated with weighed volumes of the ointments. After that, the ointment that hasn't been absorbed is removed from the skin and weighed. Roughly speaking, the difference between the two weights indicates the amount absorbed.

Irritant Effect

Generally speaking, no ointment should irritate the skin, mucous membranes, or the skin itself. The skin of rats or the eyes and skin of rabbits can be used for irritancy testing. At 24, 48, 72, and 96 hour intervals, reactions are recorded.

Evaluation of Cream

Rheology

Since that these lotions are sold in tubes or other containers, rheology is crucial. The viscosity or rheology ought to stay unchanged. Viscosimeters designed for such liquids can be used to test the viscosity of these items because they are typically non-Newtonian in nature.

Sensitivity

The usage of different kinds of compounds along with the sporadic use of hormones, antiseptics, etc., might cause skin sensitization or photosensitization. This needs to be evaluated first. This test is often performed on skin using an open or occlusive patch test. After a while, the test sample and a common market product are applied in various locations, and the results are compared. testing with biological agents

Phase Separation

By storing a specific amount in a graduated cylinder and measuring the volume of separated phase after predetermined time intervals, one may easily ascertain the pace and degree of phase separation in an emulsion. Globule coalescence or creaming may cause the phase separation. Centrifugation can



be used to speed up the phase separation test at low to moderate speeds. At most, one can anticipate a mixture of creamed and solidified particles, and accurate interpretations could be challenging in such a scenario.

Effect of Thermal Stresses

It is usual to evaluate the stability of an emulsion by subjecting it to high and low temperatures in alternating cycles. The samples are first exposed to 60 C for a few hours and then to 0 to 40 C. Such exposures are repeated a number of times and emulsion stability assessed after each cycle. It is usual to evaluate the stability of an emulsion by subjecting it to high and low temperatures in alternating cycles. The samples are first exposed to 60 C for a few hours and then to 0 to 40 C. Such exposures are repeated a number of times and emulsion stability assessed after each cycle. An emulsion's stability is often assessed by submitting it to alternating cycles of high and low temperatures. After a few hours at 60 C, the samples are then exposed to 40 C. These exposures are conducted repeatedly, with each cycle ending with an evaluation of the emulsion's stability.

Evaluation of Paste

Abrasiveness

Pastes or powders were mechanically brushed onto the teeth, and the results were examined through mechanical observation or other methods. Particle size often determined the abrasive nature.

Particle Size

This can be determined by microscopic study of the particles or other means.

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Cleansing property

This is investigated by evaluating how brushing with a dental cleaner (paste or powder) alters the reflectance nature of a lacquer coating on a polyester film. Additionally, an in vivo test has been proposed in which teeth were brushed for two weeks and the state of the teeth was evaluated using photos both before and after use.

Consistency

For the paste to be able to press out of the container, it is crucial that the paste maintain its consistency. Viscosity research is crucial for these powders straight out of the container.

PH of the product

A pH meter is used to measure the pH of the 10% product dispersion in water

Character Foaming

For dental pastes or tooth powders that create foam, this test is particularly necessary. A particular quantity of product can be combined with a predetermined amount of water and shaken. Studies are conducted on the nature, stability, and washability of the resulting foam.

Evaluation on powder

Shade Control and Lighting

This is to monitor and assess the color shade variation across batches, and with the standard, appropriate testing must be carried out to avoid in colors. Comparing the appearance of the powder's body when it is spread out and flattened on a white paper background to a standard is one way to do this. Comparing the sample's skin tone or undertone to the standard is the other evaluation technique. The same puff that is used for the finished pack should be used to apply powders.

Dispersion of colour

This is to monitor and assess the color shade variation across batches, and with the standard, appropriate testing must be carried out to avoid in colors. Comparing the appearance of the powder's body when it is spread out and flattened on a white paper background to a standard is one way to do this. Comparing the sample's skin tone or undertone to the standard is the other evaluation technique. The same puff that is used for the finished pack should be used to apply powders.

Pressure Testing

The compact powder should be subjected to uniform pressure so that a penetrometer can measure its hardness. The compact tablet's hardness is measured at multiple spots to ensure that the hardness is consistent.

Breakage Test

This is accomplished by repeatedly dropping the little powder tablet from a height of 8 to 10 inches onto a hardwood surface, then observing the breakage or clipping of the resistance against regular handling and travel.

Flow Property

This is crucial, especially for body powders, which should be easy to apply and simply come out of the container. This can be investigated by measuring the height and radius of the heap that forms, as well as the angle of repose of the powder product when it is allowed to descend from a funnel onto a plate.

Evaluation on Suspension

Sedimentation of volume

Determining the volume of sedimentation and how easy it is to redisperse from the most popular fundamental evaluation techniques. Sedimentation volume is a straightforward idea. To put it briefly, it takes into account the ratio of the sediment's ultimate height (Hu) to the suspension's starting height (Ho) as the suspension settles in a cylinder under typical circumstances. The better the suspendability, the higher this proportion. To plot the Hu/Ho ratios as ordinates with time as the abscissa, first determine the ratios. Keep in mind that even though the height at any one time. The plot that was just described will begin at time zero, or 1.0, and the curve will either be horizontal or gradually slope downhill to the right over time. By comparing several formulas, one can determine which is best by looking at the lines; the better formulations will definitely produce lines.



Evaluation of Lotion

Antiseptic property

Since these preparations contain antiseptics, an in-vitro test is required to assess their antiseptic properties.

Determination of alcohol content

Since these preparations contain alcohol, it is important to estimate the alcohol concentration, which can be done using any appropriate method.

Evaluation of Gel

Drug Content

A 50 ml volumetric flask containing 1 g of gel was precisely weighed, and 20 ml of filtered water was added while the flask was continuously shaken. Water and a mixture of 10% methanol were used to modify the volume. Similar procedures were also applied to plain bases in order to determine blanks. Using a UV spectrophotometer, the absorbance of the solution containing the blank was measured at 360 nm.

Homogeneity of drug content

Six tubes were chosen at random and their contents were assayed as previously mentioned in order to ensure uniformity of the drug content. Research were conducted in triplicate, and data analysis was done using mean values.

Spreadability

To assess spreadability, a modified apparatus with two glass slides with gel between them the upper one hooked to a balance and the lower one fastened to a wooden plate was utilized.

Extrudability

A straightforward technique was used to calculate the weight in grams needed to extrude a 0.5 cm gel ribbon from the collapsible tube in 10 seconds, indicating extrudability.

Evaluation of Suppository

Melting range test

This test, also known as the macro melting range test, determines how long it takes for the complete suppository to melt in a water bath kept at a constant temperature of 37 degrees Celsius.

Liquefaction or softening time test

It's made up of a U-tube that's partially immersed in a water bath that stays at a steady temperature. The suppository is held in place in the tube by a constriction on one side.

The "softening time" is measured by placing a glass rod on top of the suppository and timing how long it takes the rod to pass through to the constriction.

Dissolution Test

It has always been challenging to test for the rate of drug material release from suppositories in vitro because of dispersion, melting, and distortion in the dissolution medium. In the beginning, testing was done as simple as placing in a beaker with a medium inside. Many strategies, such as separating the sample chamber from the reservoir with a

membrane or a wire mesh basket, have been used in an attempt to control the variance in the mass/medium interface. Studies have also been conducted on samples that are enclosed in dialysis tubes or natural membranes. The material has been held in place by flow cell apparatus using wire screening, cotton, and, most recently, glass beads.

Topical drug delivery refers to the process of treating local infections by applying a medication topically to the skin or mucous membrane.

Because of its noninvasiveness, excellent patient compliance, and lack of systemic toxicity, stomach

CONCLUSION

1. Topical distribution is a favored administration method over alternative delivery systems because it reduces irritation or exposure of secondary tissues to the relevant substance.

2. Topical delivery faces several obstacles, such as the tight connection found in the stratum corneum and the rapid turnover of tissue fluids in areas like the nose, eyes, and vagina.

3. These barriers cause a medicine or foreign moiety to have less access to its target site, have shorter residence times, or cause a formulation to wash out of the application site more quickly.

4. To enhance the effectiveness of treatment, some novel formulations, like hydrogels, In published patents, bioadhesive patches, rings, lenses, masks, lipid-based carriers, and microneedles have all been shown. These technologies are still being investigated.

5. Developing innovative technologies and modifying formulation excipients can result in the creation of topical drug delivery systems that are safe, effective, and feasible for industry use.

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PERCEIVED PROFESSIONAL DEVELOPMENT NEEDS AND EMOTIONAL INTELLIGENCE AS PREDICTORS OF MATHEMATICS TEACHING ANXIETY AMONG MATHEMATICS PRE-SERVICE TEACHERS

Tom Paulie M. Tongol¹

¹Faculty, University of Mindanao Tagum College, Tagum City, Philippines

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ABSTRACT

The primary purpose of this study was to determine whether perceived professional development needs and emotional intelligence predicts mathematics teaching anxiety among mathematics pre-service teacher. This study employed descriptive and correlational designs. Using the stratified random sampling, 103 mathematics pre-service teachers were selected as participants from Davao del Norte's seven higher education institutions during the school year 2021–2022. Moreover, this study utilized three adapted and validated survey questionnaires to gather data, which were treated using mean, Pearson-r, and regression analysis. The findings suggested that pre-service teachers' perceived professional development needs are highly addressed, and emotional intelligence is manifested most of the time. Furthermore, the mathematics teaching anxiety of mathematics pre-service teachers is less evident. Findings also revealed that both perceived professional development needs and emotional intelligence exhibit a significant negative correlation with mathematics teaching anxiety. In addition, only perceived professional development needs to predict mathematics teaching anxiety among mathematics pre-service teachers. Future researchers may consider the study's findings which may help them uncover other factors that might improve the conduct of perceived professional development needs and emotional intelligence in relation to mathematics teaching anxiety among mathematics pre-service teachers. With these, teachers and school administrators are encouraged to address professional development needs and assess and boost emotional intelligence to help eliminate mathematics teaching anxiety among mathematics pre-service teachers.

KEYWORDS: mathematics education, perceived professional development needs, emotional intelligence, mathematics teaching anxiety, pre-service teachers, descriptive and correlational designs, regression analysis, Philippines

INTRODUCTION

Pre-service teachers frequently experience anxiety when teaching mathematics due to the actual or perceived knowledge gaps in mathematical subjects, mathematics teaching skills, and recollections of prior math failures and anxiety. Many teachers with mathematics teaching anxiety were found to induce anxiety in their students when it comes to learning and completing mathematical tasks. The way abstract ideas are taught or presented to students is significantly influenced by anxiety in mathematics teaching (Alkan, 2019). Moreover, anxious mathematics educators often experience uneasiness and struggle to concentrate in class. Math anxiety can make it difficult to develop mathematical abilities that are necessary in today's world, such as effectively teaching mathematics (Peker & Ulu, 2018).

In UAE, the number of qualified mathematics educators is in short supply, and mathematics teaching anxiety is high among pre-service teachers, which has been a rising concern. This issue causes pre-service teachers to portray negative attitudes toward

mathematics, making it difficult for students to grasp any topic they teach (McMinn & Aldridge, 2020). In addition, Oslon and Stoehr (2019) found that 21 percent of their respondents have experienced poor performance in teaching mathematics due to a high level of mathematics teaching anxiety indicated by their low level of self-confidence and inability to teach mathematical concepts during their field-based practicum in Turkey appropriately. Furthermore, Tinh et al. (2021) found that while Vietnamese pre-service teachers were effectively taught in terms of mathematical content knowledge, they lacked in terms of mathematical teaching pedagogies and how to deal with mathematics teaching anxiety.

In the Philippines, a study conducted by Gillo (2021) in Tacloban City revealed that 35 percent of the respondents got a high level of mathematics teaching anxiety due to their below satisfactory teaching performance during their pre-service teaching period. Further, it was disclosed that students might develop negative thoughts about mathematics due to the teacher's anxiousness, preventing them from increasing their performance or gaining efficiency from the course (Subia et al., 2018). Moreover, in Mati



City, teachers' anxiousness and mathematics teaching anxiety have a negative impact on the learners. The findings indicated that when students ask questions about the strategy or when students formulate a solution that they did not teach, these teachers feel distressed (Alico et al., 2017).

Furthermore, pre-service teachers in Tagum City were found to have a high level of mathematics teaching anxiety. The study by Candido (2019) explained that mathematics teaching anxiety is influenced by characteristics such as mathematics anxiety and self-efficacy. More importantly, the survey disclosed that most pre-service teachers evaluated themselves as having mathematics teaching anxiety in terms of procedural knowledge, conceptual knowledge, attitude toward mathematics, and self-confidence. Candido (2019) further highlighted that pre-service teachers experience mathematics teaching anxiety because they don't know how to stimulate students' interest and encourage them to acquire procedural knowledge in learning mathematics. The same author added that these pre-service teachers with mathematics teaching anxiety have difficulty figuring out math equations on the board in front of a group of students and fail to acknowledge students who want to solve a math problem in a method other than the one presented in class.

Anxiety among pre-service teachers about teaching mathematics may impede their student's academic success or foster indifference toward mathematics. The concern of adopting mathematical instructional approaches that are critical for student comprehension makes pre-service teachers more hesitant to use them. In addition, research suggests that unfavorable perceptions about mathematics and a refusal to recognize their professional development requirements are the influential factors of pre-service teachers' mathematics teaching anxiety (Setiana & Nuryadi, 2020).

The researcher has conducted a literature review similar on this topic to the works of Ertekin (2019), who used phenomenology to describe how secondary pre-service teachers struggle to instruct their students due to mathematics teaching anxiety, and Peker and Ulu (2018), who investigated the association between pre-service teacher's perceptions about mathematics teaching anxiety and their attitude towards teaching and learning mathematics. However, the researcher did not encounter similar studies which talked about perceived professional development needs, emotional intelligence, and mathematics teaching anxiety in one study, especially in the national and local setting. This urges the researcher to research whether perceived professional development needs and emotional intelligence predict mathematics teaching anxiety among pre-service secondary school teachers of higher education institutions in Davao del Norte.

Statement of the Problem

The main objective of this study was to determine whether perceived professional development needs and emotional intelligence significantly predict mathematics teaching anxiety

among mathematics pre-service teachers. Furthermore, this study sought to answer the following objectives:

1. What is the level of perceived professional development needs among mathematics pre-service teachers in terms of:
 - 1.1. conceptual understanding;
 - 1.2. procedural fluency;
 - 1.3. strategic competence;
 - 1.4. adaptive reasoning; and
 - 1.5. productive disposition?
2. What is the extent of emotional intelligence among mathematics pre-service teachers in terms of:
 - 2.1. self-awareness;
 - 2.2. self-management;
 - 2.3. social awareness; and
 - 2.4. relationship management?
3. What is the level of mathematics teaching anxiety among mathematics pre-service teachers in terms of:
 - 3.1. content knowledge;
 - 3.2. pedagogical knowledge;
 - 3.3. attitude towards mathematics; and
 - 3.4. self-confidence?
4. Is there a significant relationship between:
 - 4.1. perceived professional development needs and mathematics teaching anxiety among mathematics pre-service teachers; and
 - 4.2. emotional intelligence and mathematics teaching anxiety among mathematics pre-service teachers?
5. Do perceived professional development needs and emotional intelligence significantly predict mathematics teaching anxiety among mathematics pre-service teachers?

Hypotheses

The following hypotheses were tested at a 0.05 level of significance, stating that:

1. There is no significant relationship between perceived professional development needs and mathematics teaching anxiety among mathematics pre-service teachers.
2. There is no significant relationship between emotional intelligence and mathematics teaching anxiety among mathematics pre-service teachers.
3. Perceived professional development needs and emotional intelligence do not significantly predict mathematics teaching anxiety among mathematics pre-service teachers.

Theoretical and Conceptual Framework

This study was based on Barham's (2020) findings, which revealed that pre-service mathematics teachers' perceived professional development needs exert influence on anxiety in teaching mathematics in the classroom. Similarly, Stoehr (2017) highlighted the necessity of providing professional development programs for mathematics pre-service teachers to avoid



REVIEW OF RELATED LITERATURE

Mathematics Teaching Anxiety

Many pre-service teachers are anxious about teaching mathematics. Real or perceived uncertainties in mathematical subjects, teaching skills, and recollection of previous math failures or fear could all be factors. Anxiety related to instructional practices, such as planning and conducting classroom activities, is described as teaching anxiety. Professors at postsecondary institutions seem to be concerned about anxiety in the classroom in large numbers (Thomas & Sari, 2019). Additionally, a unique issue is the dread of teaching mathematics. Pre-service teachers with mathematics teaching anxiety experience difficulties figuring out math equations on the board in front of the students and fail to acknowledge students who wanted to solve math problems using methods other than the one presented in the class (Syuhada & Retnawati, 2020).

Mathematical teaching anxiety refers to a pre-service teacher's nervousness and concerns about teaching math concepts, theories, formulas, and problem-solving. Severe anxiety, poor concentration, self-criticism, getting easily distracted by interruptions, inability to hear the students clearly, and sweaty palms are just a few of the symptoms of mathematics teaching anxiety (Sanders et al., 2019).

Perceived Professional Development Needs

The term need can be interpreted as a gap, an acknowledged issue, and a demand for extra service. In today's fast-paced world, mathematics pre-service teachers must participate in professional development to promote a good learning environment and prepare learners for their future careers. With this, pre-service teachers should stay abreast of the latest knowledge and competencies in order to be effective educators in the future (Haemer et al., 2017). In addition, professional advancement is in demand for every profession to qualify in all aspects of a global industry. Professional development in the teaching profession serves the needs of educators by extending subject knowledge, developing curricula, and promoting guiding principles in instructional and managerial practices, which leads to the student's success (Karlberg & Bezzina, 2020).

Mathematics teachers must strive to improve professionally to establish an effective educational experience to help equip students with the necessary knowledge to adapt and succeed in today's rapidly changing world. An efficient educator must not only acquire the skills needed for effective teaching but also be willing to be on par with the evolving knowledge and abilities required of a globally-competent teacher. As a result, attending seminars and development programs to keep math teachers' knowledge and skills up to date is essential (Herro & Quigley, 2017). Moreover, in order to influence reform and improve the quality of education and learning, an administrator will make a purposeful endeavor to engage in the professional development of educators. A comprehensive teacher evaluation system that provided feedback and was tied to professional development was

required to improve effective educational practices (Parrish et al., 2020).

Emotional Intelligence

Emotional intelligence is founded on the idea that emotions and cognitions are intertwined. Teachers' emotions may have a greater influence on how they think, solve problems, and build self-efficacy beliefs than their student's behavior. To put it in another way, emotional intelligence has the potential to influence teaching beliefs and, as a result, effective teaching and student learning (Turner & Stough, 2020). Moreover, teachers must be able to identify and respond to their students' emotions. Expression of feelings, empathy, independence, orienting, problem-solving, benignity, tolerance and respect are all core emotional attributes that can only be attained with great emotional intelligence (Garcia-Martinez et al., 2021).

To offset the negative impacts of stress on students' health, various stress-modulating factors were identified as "buffers." Academic tutoring could be one of these buffers, which, when coupled with rising EI levels, can help people regulate their emotions and manage stress effectively (Shirvani, 2019). Moreover, numerous studies have shown the value of academic mentoring in supporting and nurturing efficient professional and personal growth in the first option. According to Altunkaya (2021), Emotional Intelligence (EI) has emerged as a desirable talent to cultivate and a valuable indicator of physical and psychosocial well-being. It is described as a person's ability to recognize, explain, understand, and govern their own and others' emotions. Although this may be, Emotional Intelligence is difficult to assess.

METHODOLOGY

Research Design

This study is quantitative research that employed a descriptive and correlational design. A quantitative research design is a process of gathering and evaluating quantifiable data. It is commonly used in statistical analysis like cause-and-effect relationships, averages, patterns, and predictions between the variables (Bhandari, 2020). On the other hand, a descriptive approach is a research method that describes the features of the population under investigation (McCombes, 2020). Furthermore, the correlational technique involves gathering information to establish the extent to which the two or more quantitative factors are related (Gay et al., 2011). The researcher used this design to test and determine the relationship of the variables of this study.

Research Participants

The research respondents of this study were the mathematics pre-service teachers coming from the seven different higher education institutions offering BSED Mathematics courses in Davao del Norte. Stratified random sampling was used in the selection of the respondents. The researcher determined the number of respondents using the Online Raosoft Sample size calculator with a confidence level of 95% and a margin of error of 5%. The entire population of the participating higher education institutions is



139. Along with this, a sample size of 103 respondents was obtained based on the computation of the Online Raosoft Sample size calculator. There are 3 students in School A, 21 in School B, 25 in School C, 3 in School D, 7 in School E, 18 in School F, and 26 in School G.

Statistical Tools

The data from each instrument utilized in this study were tallied and recorded appropriately. It was evaluated and interpreted using mean, Pearson-r and multiple regression analysis as statistical tools in light of the study's purpose. Mean was used to determine the level of perceived professional development needs, the extent of emotional intelligence, and level of mathematics teaching anxiety among pre-service teachers in Mathematics. Meanwhile, Pearson-r was used to determine the significance of the relationship between perceived professional development needs, emotional intelligence, and mathematics teaching anxiety among pre-service teachers in Mathematics. In addition, Multiple Regression Analysis was used to determine if perceived professional development and emotional intelligence significantly influence mathematics teaching anxiety among pre-service teachers in mathematics.

Table 1. Level of Perceived Professional Development Needs

Indicators	Mean	SD	Description
Conceptual Knowledge	4.15	0.48	High
Procedural Fluency	4.08	0.54	High
Strategic Competence	4.19	0.55	High
Adaptive Reasoning	4.05	0.54	High
Productive Disposition	4.10	0.63	High
Category Mean	4.12	0.49	High

The results indicated that mathematics pre-service teachers can identify mathematical concepts, teach problem-solving techniques, and build a positive attitude toward mathematics which refers to the need to help equip students with the necessary knowledge to learn mathematics. These results are in consonance with the claim of Haemer et al. (2017), which stated that mathematics pre-service teachers must take part in professional development in order to promote a good learning environment and prepare learners for their future careers. With this, pre-service teachers should stay abreast of the latest knowledge and competencies in order to be effective educators in the future. In addition, Karlberg and Bezzina (2020) stated that professional development in the teaching profession serves the needs of educators by extending subject knowledge, developing curricula, and promoting guiding principles in instructional and managerial practices, which leads to the student's success.

RESULTS AND DISCUSSIONS

Level of Perceived Professional Development Needs

Table 1 presents the level of perceived professional development needs of mathematics pre-service teachers. Among the indicators, strategic competence got the highest mean of 4.19 and is followed by conceptual understanding with a mean of 4.15. On the other hand, adaptive reasoning got the lowest mean of 4.05. The abovementioned indicators have a descriptive equivalent of high which means that they are highly addressed.

Additionally, it has an overall mean of 4.12 with a descriptive equivalent of high, which means that the level of perceived professional development needs of mathematics pre-service teachers is highly addressed. The dispersion of perceived professional development needs based on the responses of the mathematics pre-service teachers revealed that the SD is 0.49. This indicates that most of the respondents have similar responses. This also implies that their perceived professional development needs are more likely close to the mean.

Extent of Emotional Intelligence

Table 2 shows the extent of emotional intelligence of mathematics pre-service teachers. Among the indicators, self-awareness got the highest mean of 4.24 with a descriptive equivalent of very highly extensive, which means it is manifested at all times. This is followed by self-management, obtaining a mean of 4.17 with a descriptive equivalent of highly extensive, which means that it is manifested most of the time. On the other hand, social awareness got the lowest mean of 4.15 with a descriptive equivalent of highly extensive, which also means that it is manifested most of the time.

Additionally, it has an overall mean of 4.18 with a descriptive equivalent of high, which means that the extent of emotional intelligence of mathematics pre-service teachers is highly addressed. The dispersion of emotional intelligence based on the responses of the mathematics pre-service teachers revealed that the SD is 0.47. This indicates that most of the respondents have similar responses. Moreover, this implies that their emotional intelligence is more likely close to the mean.



Table 2. Extent of Emotional Intelligence

Indicators	Mean	SD	Description
Self-awareness	4.24	0.54	Very Highly Extensive
Self-management	4.17	0.56	Highly Extensive
Social Awareness	4.15	0.53	Highly Extensive
Relationship Management	4.16	0.55	Highly Extensive
Category Mean	4.18	0.47	Highly Extensive

The results revealed that mathematics pre-service teachers are aware of their physical reactions, show empathy to others, and deal calmly, sensitively, and proactively with the emotional displays of others. These results support the claim of Turner and Stough (2020), who stated that in comparison to students' conduct, teachers' emotions might have a stronger impact on how they reason, solve issues and develop self-efficacy beliefs. To put it another way, emotional intelligence may have an impact on teaching philosophies, which will then have an impact on successful instruction and student learning. Moreover, Garcia-Martinez et al. (2021) also highlighted that educators must be able to recognize and address students' emotions. Wu et al. (2019) further emphasized that the capacity to understand other people's emotions, motivate oneself, and effectively manage our and other people's emotions is known as emotional intelligence. Exploring this concept's educational implications is especially important since, as was just said, teaching and learning processes and the word "teacher," are all connected to emotional and cognitive abilities.

Level of Mathematics Teaching Anxiety

Presented in table 3 the level of mathematics teaching anxiety of mathematics pre-service teachers. Among the indicators, content knowledge got the highest mean of 2.64 with a descriptive equivalent of moderate, which means their mathematics teaching anxiety in terms of content knowledge is moderately evident. This is followed by self-confidence, obtaining a mean of 2.18 with a descriptive equivalent of low, which means that their mathematics teaching anxiety in terms of self-confidence is less evident. On the other hand, attitude towards math got the lowest mean of 1.91 with a descriptive equivalent of low, which also means that their mathematics teaching anxiety in terms of attitude towards math is less evident.

Furthermore, it has an overall mean of 2.38 with a descriptive equivalent of low, which means that the level of mathematics teaching anxiety of mathematics pre-service teachers is less evident. Moreover, it has an SD of 0.62. The dispersion of mathematics teaching anxiety based on the responses of the mathematics pre-service teachers revealed that the SD is 0.62. This indicates that most of the respondents have similar responses. In addition, this implies that their mathematics teaching anxiety is more likely close to the mean.

Table 3. Level of Mathematics Teaching Anxiety

Indicators	Mean	SD	Description
Content Knowledge	2.64	1.10	Moderate
Pedagogical Knowledge	2.06	0.77	Low
Attitude Towards Math	1.91	0.84	Low
Self-confidence	2.18	0.76	Low
Category Mean	2.38	0.62	Low

The results showed that mathematics pre-service teachers' mathematics teaching anxiety is less evident in using their knowledge and skills related to special teaching strategies when teaching mathematics. They also enjoy teaching mathematics and feel capable of solving math problems in teaching, which conforms to the result that their anxiety in teaching mathematics is less evident. These results were supported by Karunakaran (2020) that pre-service teachers with high confidence in their ability to teach mathematics can effectively teach it. It is also emphasized by their idea that mathematical self-confidence is strong among pre-service teachers who are extremely collected in their abilities to teach mathematics.

Moreover, Peker (2016) highlighted that strong self-confidence in math education also makes teachers more open to new ideas, less

stressed in their students' ability to learn, and more aware of students who are not as good at math. However, the results of this study contrast with the proposition of Syuhada and Retnawati (2020), who stated that mathematics teaching anxiety makes it hard for pre-service teachers to figure out how to write math equations on the board in front of the students. Since the level of Mathematics Teaching Anxiety of the respondents of this study is low, therefore they were not bothered by the overwhelming feeling when they taught the subject matter to their students.

Relationship Between Perceived Professional Development Needs and Emotional Intelligence towards Mathematics Teaching Anxiety

Presented in table 4 is the relationship between perceived professional development needs and emotional intelligence



towards mathematics teaching anxiety. The study results revealed that the independent variables significantly negatively correlate with the dependent variable. It shows that there is a significant negative correlation between perceived professional development needs and mathematics teaching anxiety ($p < 0.05$). The r-value of -0.417 implies a negative correlation between the

abovementioned variables. This means that when the perceived professional development needs among mathematics pre-service teachers are high, their anxiety about teaching mathematics is low. Conversely, when their perceived professional development needs are low, their mathematics teaching anxiety is high.

Table 4. Relationship Between Perceived Professional Development Needs and Emotional Intelligence towards Mathematics Teaching Anxiety

Independent Variables	Mathematics Teaching Anxiety		
	r-value	p-value	Remarks
Perceived Professional Development Needs	-0.417	0.000	Significant
Emotional Intelligence	-0.393	0.000	Significant

This result conformed to the findings of Flynn (2020), who points out that the difficulty posed by the reluctance to seek professional development in mathematics is that instructors who have a negative image of the subject tend to be more anxious about teaching it than those who seek professional development in mathematics. It implies that the higher the mathematics teaching anxiety, the lower the chances a mathematics teacher may seek professional development. Moreover, Lo (2021) highlighted that the pre-service teacher's teaching proficiency in the subject matter negatively correlates to the anxiety in teaching mathematics courses. It is implied that having low levels of mathematics teaching anxiety will greatly boost the perceived professional development needs while they are training themselves with the help of their school to become holistic teachers in the future. Furthermore, Marban et al. (2021) also emphasized that if the instructor's professional development needs are lacking, then the mathematics teaching anxiety would be high or evident. As a contrapositive, if the aforementioned terminologies were more than enough, the mathematics teaching anxiety among pre-service teachers would be low.

Likewise, the table showed that there is a significant negative relationship between emotional intelligence and mathematics teaching anxiety among the mathematics pre-service teachers ($p < 0.05$). The r-value of -0.393 implies a negative correlation between the abovementioned variables. This means that when the emotional intelligence among mathematics pre-service teachers is high, their anxiety about teaching mathematics is low. Conversely, when their emotional intelligence is low, their mathematics teaching anxiety is high.

This result is aligned with the proposition of Sobrevega and Arellano (2014) that there is a negative correlation between emotional intelligence and mathematics teaching anxiety among pre-service teachers. They stipulated that if the students have

developed their emotional and social skills, they are more likely to have lower levels of anxiety in teaching mathematics. In addition, Olango (2016) also asserted that there is a weak negative correlation between mathematics teaching anxiety and mathematics self-awareness, implying emotional intelligence among respondents. It denotes that the greater the stress in the mathematics lesson and the relationships between students and instructors, the lower the self-awareness of the pre-service teacher. In other words, it can also be denoted that the more emotionally intelligent a pre-service teacher is, the less anxious they are about teaching the mathematics course.

Influence of Perceived Professional Development Needs and Emotional Intelligence towards Mathematics Teaching Anxiety

Presented in table 5 the influence of perceived professional development needs and emotional intelligence on mathematics teaching anxiety. The results showed that only Perceived Professional Development Needs appears to be a statistically significant predictor of Mathematics Teaching Anxiety ($p < 0.05$) with a p-value 0.042. The beta value ($\beta = -0.356$) indicates that for every unit increase of perceived professional development needs, mathematics teaching anxiety will decrease by -0.356 units. Emotional Intelligence does not appear to be a statistically significant predictor of Mathematics Teaching Anxiety ($p > 0.05$) with a p-value of 0.183.

The R square of 0.189 shows that the model predicts 18.9% of the statistical variation observed in the mathematics teaching anxiety among mathematics pre-service teachers. The coefficient of alienation which is 81.1%, points to the extent to which other variables may explain the variance observed in the mathematics teaching anxiety among mathematics pre-service teachers.



Table 5. Influence of Perceived Professional Development Needs and Emotional Intelligence towards Mathematics Teaching Anxiety

Independent Variables	Unstandardized Coefficients		Standardized Coefficients	T	p-value	Remarks
	B	Std. Error	Beta			
(Constant)	4.907	0.537		9.143	0.000	Significant
Perceived Professional Development Needs	-0.356	0.172	-0.281	-2.083	0.042	Significant
Emotional Intelligence	-0.250	0.186	-0.182	-1.340	0.183	Not Significant
	R = 0.434;	R square = 0.189;	F-value = 11.623;	p = 0.000		

This result conformed to the assertion of Prachagool and Nuangchalem (2021) that several factors, including their conceptual understanding and their perspective of the mathematics subject, may contribute to the anxiety that pre-service mathematics teachers feel when it comes to teaching the subject. Furthermore, it is analogous to the findings of Jenssen et al. (2020), which stated that a lack of the mathematical and conceptual knowledge necessary for pre-service teachers to meet curriculum requirements could all contribute to pre-service teachers' anxiety about teaching mathematics. Likewise, Patkin and Greenstein (2020) pointed out that specialized mathematics education influences the mathematics anxiety of pre-service teachers, and teaching experience is connected with mathematics teaching anxiety.

On the other hand, the result of this supported the claim of Ibaishwa (2014), who stated that emotional intelligence does not significantly predict mathematics anxiety among secondary school students, which corroborates the idea that emotional intelligence does not significantly predict mathematics teaching anxiety. Similarly, it is also aligned with the results of the study of Libbrecht et al. (2014), where emotional intelligence did not predict performance, implying anxiety, in courses on medical subject domains, as the findings of their investigation revealed that emotional intelligence has little to no effect on anxiety. It could be further elaborated that having a high degree of emotional intelligence can be applied to teaching mathematics because it has been contextualized to show that it has no direct impact on the anxiety associated with taking courses in subjects like medicine.

SUMMARY

The major findings of the study are the following:

1. The overall mean on the level of perceived professional development needs is 4.12, with a descriptive equivalent of high and a standard deviation of 0.49.
2. The overall mean on the extent of emotional intelligence is 4.18, with a descriptive equivalent of highly extensive and a standard deviation of 0.47.
3. The overall mean on the level of mathematics teaching anxiety is 2.38, with a descriptive equivalent of low and a standard deviation of 0.62.

4. The test of the relationship between perceived professional development needs and mathematics teaching anxiety and emotional intelligence and mathematics teaching anxiety have r-values of -0.417 and -0.393, respectively, and with p-values less than 0.05 level of significance. Thus, the null hypotheses are rejected.

5. Perceived professional development needs significantly predict mathematics teaching anxiety with a beta value of -0.356. The R square of 0.189 shows that the model predicts 18.9% of the statistical variation observed in the mathematics teaching anxiety among mathematics pre-service teachers. The coefficient of alienation is 81.1%. However, emotional intelligence does not appear to be a significant predictor of mathematics teaching anxiety.

CONCLUSION

The findings of the study provide valuable insights into the interplay between perceived professional development needs, emotional intelligence, and mathematics teaching anxiety among pre-service teachers. Firstly, the results indicate that pre-service teachers perceive a high level of professional development needs and possess a significantly extensive level of emotional intelligence. However, despite the high level of perceived professional development needs and emotional intelligence, they experience relatively low levels of mathematics teaching anxiety. This suggests a complex relationship between these variables, where the perceived need for professional development may act as a mitigating factor against anxiety associated with teaching mathematics. In addition, there is a significant relationship between perceived professional development needs and mathematics teaching anxiety, and emotional intelligence and mathematics teaching anxiety among mathematics pre-service teachers.

Secondly, the study demonstrates a negative correlation between perceived professional development needs and mathematics teaching anxiety, indicating that as the perceived need for professional development increases, the level of anxiety decreases. This highlights the importance of addressing professional development needs to alleviate anxiety among pre-service teachers, particularly in the context of mathematics



teaching. However, emotional intelligence does not emerge as a significant predictor of mathematics teaching anxiety, suggesting that while emotional intelligence is important for overall well-being, it may not directly influence anxiety levels specific to mathematics teaching.

In general, these findings underscore the significance of targeted professional development interventions to address the specific needs of pre-service teachers and mitigate anxiety associated with mathematics teaching. By understanding the relationship between perceived professional development needs, emotional intelligence, and mathematics teaching anxiety, educators and policymakers can design more effective strategies to support the professional growth and well-being of pre-service teachers, ultimately enhancing the quality of mathematics education.

RECOMMENDATIONS

Based on the findings presented, the researcher suggested the following recommendations:

1. Administrators of the higher education institutions under the department/college of teacher education are suggested to provide programs like seminars and training to enhance the adaptive reasoning among mathematics pre-service teachers to enable them to develop mathematical proofs for their students, recast pedagogical practices, and provide co-curricular activities or local professional learning action cell to improve the content knowledge among mathematics pre-service teachers, and sustain the identified established practices for the development of self-awareness among mathematics pre-service teachers.
2. Guidance center heads of higher education institutions may administer social skills tests to the mathematics pre-service teachers so they can understand their students' needs.
3. Mathematics pre-service teachers are suggested to participate in the programs provided by their institution related to the enhancement of their professional development needs and emotional intelligence that may help reduce or even eliminate their anxiety about teaching mathematics.
4. Future researchers may consider the findings of the study to develop interventions that might be needed to identify the other factors that might improve the conduct of perceived professional development needs and emotional intelligence in relation to mathematics teaching anxiety.

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COMPETENCY AND RESILIENCY OF SECURITY GUARDS IN CABANATUAN CITY, PHILIPPINES

Shirley Pascual Ayeo-eo

University of Baguio Graduate School, Baguio City, Philippines

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ABSTRACT

Resiliency is the talent to do what is right under duress and to rebound to a daily round. The study determined the level of competency, resiliency, and resilience strategies in coping with challenges faced by 259 security guards in Cabanatuan City. The researcher utilized a mixed method was used to gather data. Findings revealed that security guards perceived themselves as very competent. Null hypothesis is accepted on the type of security guards; however, rejected on length of service and shift of duty. The level of resiliency was further perceived as very resilient. Null hypothesis is accepted on the type of security guards and shift of duty; however, rejected on the length of service. Further, a positive correlation between competency and resiliency is evident. Last, coping strategies were identified as; positive response, self-assessment, following rules, confidence, value work, and seeking support. Based on the findings of the study, the following conclusions are drawn: security guards were equipped with sufficient knowledge, skills, and attitude in performing their duties and responsibilities; security guards were able to perform despite challenges encountered; the more competent the security guards, the more resilient they become; coping strategies vary on challenges encountered. Hence, module of instruction was crafted.

KEYWORDS: Security Guard, Competency, Resiliency, Coping Mechanism

INTRODUCTION

Security is everybody's business, and everyone is bound to secure oneself. It is defined as "the quality or state of being secure," "freedom from danger," or "freedom from fear or anxiety" (Kanji, 2003). Your security lies in your hands. How you manage your security depends on your value and the assets you possess. Thus, rich people, people in business, or other able people tend to hire security guards to make them safe and secure their belongings.

Shakespeare (n.d.) once said, "For some must watch, while some must sleep, so runs the world away." For us to have a goodnight's sleep, somebody must stay alert to watch for our safety and security, the security guards.

A security guard is a person who renders services to watch or secure in exchange for compensation (RA 5487, as amended by PD 11, 1972). They are sometimes called Watchmen, whose duty is complex, from providing protection, securing properties, and maintaining peace and order in their area of responsibility, among others. They are sometimes tagged as force multipliers of law enforcement and are looked upon as strong, courageous, and jack of all trades, and sometimes answer any problems in offices or to those who are lost. Through their uniform, they can be easily identified, are expected to be alert, and always provide information or direction. However, these security guards are also human, like us, who face difficulties at home or work. It can either be emotional, physical, financial, or psychological.

However, despite all the odds, these security guards must wake up and report to work every day, bearing in mind that another challenging day is ahead. Hence, they need to be competent, which includes flexibility and adaptability to change. As Lily (n.d.) states that "Our only security is our ability to change." Thus, at the end of the day, there is a need for them to be resilient.

Resiliency is recovering from or adjusting easily to adversity or change (Webster, n.d.). In becoming resilient, one component needed is competency. Being competent in what you do can lead you to build your resiliency. In the fast-changing world, security guards need to learn how to appraise, respond and cope with the challenges of daily life.

Various studies on security as a general concept have been conducted internationally. At the same time, there is a limited study conducted in Malaysia, one on job satisfaction among security guards and the other on attitudes and training of security guards. The challenges and motivations of security guards have yet to be fully studied due to unclear laws and regulations (Rustam & Habidin, 2021).

In the Philippines, more or less 500,000 Security Guards have felt neglected. Most are getting only a bit more than the minimum wage even as they risk their life to protect offices and homes. Thus, the legislators must review RA 5487, which governs security guards. However, amendments to the Department of Labor and Employment's Order No. 150, issued in 2016, require minimum wage and benefits like social security. However, more



must be legislated, including long-term programs to retrain security guards (Tan, 2020). Such training should include resiliency-building capacity among security guards to overcome challenges presented in the different studies conducted.

The Manila Times (2022) furthered, in its editorial article entitled "Better Protection for those Who Protect Us," laid out the common complaints among security guards, such as low pay below minimum wage, long hours, difficult working conditions, and other abusive practices by their agencies. Their service undoubtedly made life easier for the rest of us during those difficult times, however they remain under-appreciated and under-compensated. Despite the difficulties, problems, and issues cited, security guards are still ready to provide safety and security services.

The researcher's experience in her career in the security industry, as once security guard for six years, a security trainer, and security services NC II assessor, made her see the difficulties and challenges these security guards face. How they respond, thrive, and cope with the challenges motivate the researcher to uncover their competency and resiliency.

The researcher's study on the competency of security guards in Baguio City revealed that they are perceived to be less competent. Security guards in the said city acknowledged a need to reinvigorate and update their knowledge, skills, and attitude as stated in the core competencies of security services NC II (Ayeo-eo, 2016).

Moreover, the crime rate in the Cabanatuan City area is 45.11 out of 100 (the lower, the better), which measures the prevalence of crime, while the safety rate is 59.94 out of 100 (the higher, the better), which measures the level of security and the sense of personal safety felt by the residents or tourists. In recent years, the crime of robbery has slightly increased, although considered safe. That means that even though crime levels are relatively low, there is a need to take precautions to prevent the commission of crime (Is It Safe to Travel to Cabanatuan City, Philippines?, 2021). The prevention of the commission of crime in the city can be prevented through the concerted effort of the Local Government Unit, Law Enforcement, and, of course, the force multipliers, particularly the security guards.

Security guards in Cabanatuan City play a major role in crime prevention activities. However, crime prevention measures, practices, security programs, and procedures, though implemented to the highest degree, are not sufficient to prevent criminal activities among shopping malls in the province of Nueva Ecija (Austria-Cruz & Jimmy, 2020).

In addition, Lubbe (2010) states that in the quest for crime prevention, the private security industry has become a key performer in helping to deter and prevent crime and criminal activities.

Anent to this, the security profession has been close to the heart of the researcher, incompetency issues and a negative image of the profession brings sadness to the researcher. As a member of the security profession, security services NCII assessor, and security trainer in a security training school, the researcher has seen that one way of improving this evolving profession is to empower the main character (security guards) through research to identify issues and promote avenues for their empowerment.

Hence, it is greatly beneficial to determine the level of competency and resiliency of security guards because gaps in competency and resiliency will be identified. The result of this research is to create a module of instruction that integrates the strengthening of competency and resiliency among security guards.

Further, this study is anchored to the theory and concepts of security, defined as being safe or free from fear or harm (Delizo, 2019). Mabe (2008) claimed that security is further an ancient human ideal to which people and communities constantly aspire. To make this happen, salient provisions of the Private Security Agency Law authorized different types of security guards whose competencies should follow the standards of the security services NC II of TESDA, which is the basis for determining the level of competency of security guards in Cabanatuan City. Security guards are also human beings who face multiple difficulties; hence, this study is further anchored on the concepts of resiliency defined by Andersen, (2017) as the ability to bounce back after experiencing physical, mental, emotional, or social difficulties. Elements and pillars of resiliency were further presented as a basis for determining the ideal resilient characteristics of security guards.

OBJECTIVES OF THE STUDY

This study sought to determine the competency and resiliency of security guards in the City of Cabanatuan, specifically to;

- to determine the level of competency of security guards;
- to determine the level of resilience in terms of physical, mental, emotional and social.;
- to investigate the significant difference in the level of competency and resiliency of security guards according to;
 - a) types of security guards,
 - b) length of service, and
 - c) shift/duty time.
- to compare the nature of the correlation between the level of competence and resilience of the security guards;
- to determine the resilient strategies in coping with the challenges encountered; and
- to create a contextualized training module can be created for the security guards.

METHODOLOGY

The study used a descriptive-quantitative design where security guards' responses were quantified to reveal numerical data, which was analyzed with the help of statistics to determine the level of



competency and resiliency of security guards. The qualitative-case study design was further utilized to extract resilient strategies for coping with challenges encountered. Purposive sampling was used, respondents were security guards posted only in the Cabanatuan City, Nueva Ecija, Philippines with at least more than three years of experience, those security guards who rendered overtime for hours only and on overtime were not included. A total of 259 respondents participated in this study.

The researcher used a structured survey questionnaire to determine the level of competency and resiliency of security guards in Cabanatuan City and used formal interviews guided by the self-made interview guide. Such tools were reliability tested and validated by experts from the university.

Descriptive statistics using mean and standard deviations were utilized to determine the respondents' level of competency and resilience. In finding out the significant differences in the level of competence and level of resilience of the respondents considering the identified moderator variables on type of security, years of experience, and time of duty/shift, the data were tested first for their homogeneity of variances using Levene's test and found that data on the level of competence according to a type of security, the homogeneity of variances were equals and the Fisher's ANOVA was utilized. For other data regarding moderator variables, it was found that the homogeneity of the variances was violated using Levene's test. Thus, the Welch ANOVA was utilized as the appropriate statistical tool, and the post hoc test was Dunnett T3 for unequal variances.

The level of competency/resiliency can be interpreted through the descriptive equivalent, the repetition of such practices builds their competency and resiliency.

In establishing the nature of correlation between the level of competence and level of resilience of the respondents, the Pearson linear correlation was utilized.

Furthermore, the respondents' answers on resilient strategies to cope with the challenges encountered were individually analyzed. Answers were carefully analyzed to come up with a code. Such codes were again organized and checked for the thought's relevance to each other in crafting the themes. Last, the crafted themes were outlined and interpreted. Ethical considerations were carefully followed in the conduct of the study.

RESULTS AND DISCUSSION

Level of Competency of Security Guards in Cabanatuan City

Security guards in Cabanatuan City perceived themselves as very competent. This means that indicators were always practiced and implemented. It can also mean that security guards were used to frontline services, especially in access control and identification system, because most of them are posted at the entrance and exits. In addition, security guards were further keen on securing their territorial jurisdiction.

The results show that security guards perform by the Security Services NC II standards as stated in RA 7796 or the TESDA Act. The security guards perceived its core competencies to be very competent.

Meanwhile, competency is defined as security guards equipped with sufficient knowledge, skills, and attitude (KSA). Such KSA was refined in the indicators perceived as always practiced by the respondents.

Further, the findings imply that Cabanatuan City security guards are knowledgeable and can practice their duties and responsibilities refined by governing bodies. Also, this implies that security guards in Cabanatuan City are equipped with sufficient knowledge, skills, and attitude required by the profession.

Thus, they assess themselves as competent, which appears to be the same as the security guards in Slovenia. Their responses indicated high values in their interpersonal competency self-assessment but noted significant differences in the security service users' assessment (Dvojmoc, 2018).

The result of the study is contradicted by the researcher's study on the competency of security guards in Baguio City, where security guards perform differently from standards, as indicated by the low overall weighted mean on all significant competency areas (Ayeo-eo, 2016).

Level of Competency of the Security Guards of Cabanatuan City According to Types of Security Guard, Length of Service and Shift/Time of Duty

The level of competency of security guards according to the type of security guards was perceived as very competent, which could mean that regardless of the type of security agency they belong to, they rate themselves as very competent.

The perceived level of competency according to the length of service of security guards with three, five, and ten years was very competent. This means that serving as security guard for three years or more has acquired enough knowledge, skills, and attitude to build their competency. Hence, the more years of experience, the more competent you become. This implies that the senior security guards have gained experience and wisdom as they aged in the security profession. Thus, they are in no doubt competent.

As to shift or time of duty, it was perceived to be very competent for the morning and night shifts. However, the combined morning and night shifts were perceived to be moderately competent.

Significant Difference on the Level of Competency of the Security Guards According to Types of Security Guards, Length of Service and Shift/Duty Time.

Security guards in Cabanatuan City level of competency has no significant difference according to the type of security guard, whether they are from a private security agency, company security force, or government guard unit.



However, the length of service significantly differs in the level of competency. Those with ten years of service have a higher competency than security guards with three years of service. This means that the longer the years of service of security guards the more competent they become.

Last, the shift or time of duty further significantly affects the competency of security guards in Cabanatuan City, where security guards who render duty at nighttime are more competent when compared to security guards who render both duties on morning and evening shifts.

Level of Resilience of Security Guards in Terms of Physical, Mental, Emotional, and Social

The study revealed that security guards in Cabanatuan City perceived themselves as very resilient physically, mentally, emotionally, and socially. This means that the indicators under were always practiced; it can further be noted that they were amenable when they encountered challenges. However, they always got back on track to continue their quest in the profession, making them resilient.

It can further be gleaned from the table that the ratings were not far from each other, however physical (3.56) still landed the highest. Meanwhile, the lowest is mental (3.53) and emotional (3.53) with same mean. This can be attributed to the fact that the security guard profession is known for strong and courageous individuals ready to respond to any adversities.

On the other hand, security guards are also human, which has weak points. Although mental and emotional were perceived as resilient, it is further the lowest among the four areas.

Moreover, findings imply that Cabanatuan City security guards are fit to work physically, mentally, emotionally, and socially. That they were able to face, managed and survived challenges encountered, as well as they were able to bounce back to their normal life after being shaken by a difficult situation.

Meanwhile, through the study of Yasaransi (2019) the security guards mental health has been diagnosed and suggested the promotion of the mental health of the security guards through an action plan implication. This is supported by the study of Brown et al. (2022) that suggested that hospital security guards should attend mental health training.

Further, security guards give service to different jobs assigned to them and have dealt with different scenarios, with such heavy responsibilities and important roles, it is very important to ensure that they are mentally safe. Hence, a mental health assessment among security guards is recommended (Begani et al., 2013).

Level of Resiliency of the Security Guards According to Types of Security Guard, Length of Service and Shift/Time of Duty

The study revealed that the level of resiliency of security guards regardless of their types were perceived to be very resilient. This means that whether they are from a private security agency, company security force or government guard unit their level of resilience does not vary, they all perceived themselves as very resilient.

Their length of service, whether they have served three, five or ten years they perceived themselves as very resilient.

As to the shift/time of duty, security guards who rendered morning shift and night shift were perceived as very resilient while those who rendered both morning and evening shift perceived themselves as moderately resilient. This could mean that working 24 hours a day affects the level of resiliency among security guards.

Significant Difference on the Level of Resilience of the Security Guards According to Types of Security Guards, Length of Service and Shift/Duty Time.

Security guards' level of resiliency is not affected by the type of security guards. The same with the shift or time of duty. However, the length of service affects their level of resiliency. Security guards with ten years of service are more resilient than those with three years. This means that the longer the length of service, the more resilient they become.



Correlation Between Level of Competence and Level of Resilience of the Security Guards

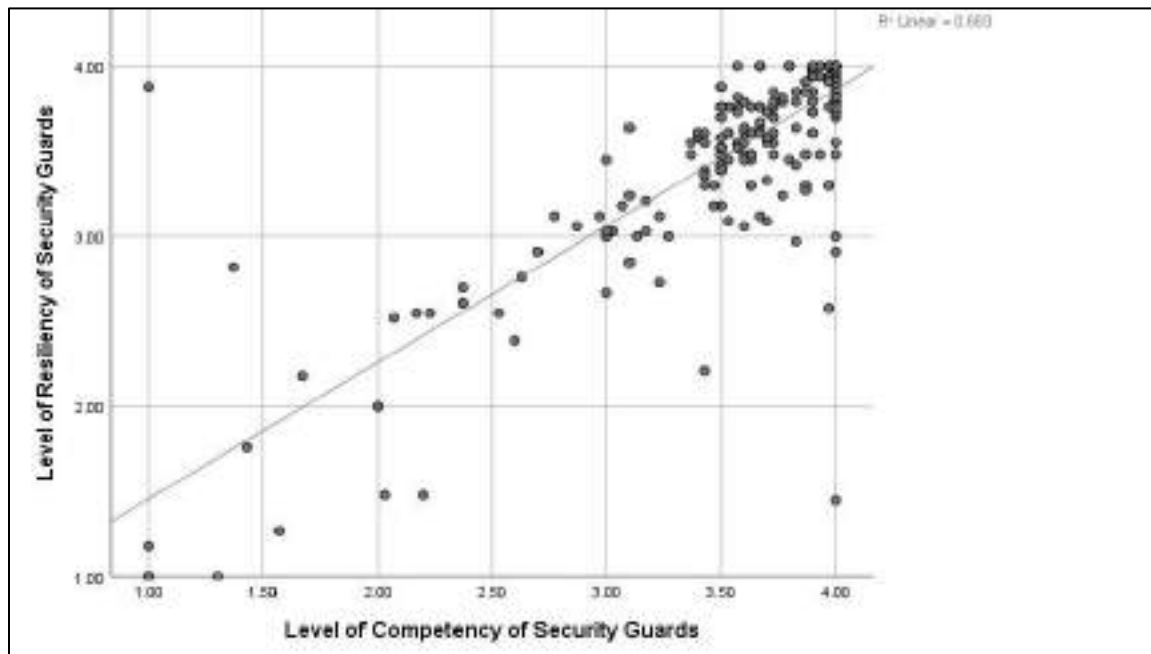


Figure 1. Correlation between Level of Competence and Level of Resilience of the Security Guards

The figure portrays security guards in Cabanatuan City perceived that they are very competent and resilient as seen from the positions of the dots on the linear equation.

This means that security guards who have higher competency have higher resiliency. As they continue to age in this profession the more experience they gain, the more competent they become and the more resilient they become. Competent security guards are equipped with the knowledge, skills, and attitude to perform their duties and responsibilities. Hence, they can manage and cope when faced with difficulties, and that is a resilient security guard.

On the other hand, the findings further mean that security guards who were able to surpass difficulties learn resiliency, because of such learning they become competent on what they do, they become experts in this profession. This implies that security guards in Cabanatuan City are performing the core competencies while adhering to the elements and pillars of resiliency.

As Aztenk (2008) posted, an individual who demonstrates resilience performs effectively and efficiently even when faced with pressures, disappointments, adversities, and opposition. Hence, a person with this competency remains focused and composed in difficult situations and can bounce back from failures and disappointments.

Moreover, this can further be attributed to the 2nd C on the models of resiliency, it explained that being competent helps an individual to act over things that cannot be controlled and become more resilient against the things that cannot further be controlled (Choi, 2020).

Resilient Strategies in Coping with the Challenges Encountered

This presents the resilient strategies of security guards in Cabanatuan City in coping with challenges encountered themed as: positive response, self-assessment, following rules, confidence, value work and seek support.

Positive Response

This theme is sub-themed into five such as: calm, maximum tolerance, patience, adjustment, and professionalism.

The participants raised difficult clients and family problems as challenges encountered. Participant 10 narrates that,

“About the behavior of clients and employees because our employees really cannot keep up with the protocol and the rules and regulations.”

“What I have experience mam are the misconduct of the students due to their volume and they have different traits, some are not following and stubborn.”

Thus, added by participant 2, which is supported by the statement of participant 1.

“In the security profession, the behavior of clients like students and even teachers.”

Meanwhile, participant 5 further narrated that he is challenged with “Family Problems.”

This means that security guards experienced numerous challenges while performing their official functions. This can be attributed with the explanation of Choi (2020), that going through difficult



times is a fact of human life, and the ability to be resilient is an admirable and useful quality for everybody.

Through the participants responses, such challenges were responded positively, first is calmness.

“First of all, you need to be calm not hot tempered, in any situation.”

Thus, corroborated by the response of participant 3 that,
“As a security guard, I always talk in a diplomatic way.”

This can be attributed to a bible verse Proverbs 15:1 “a soft word turns away wrath, however a harsh word stirs up anger” (Biblical wisdom, n.d.).

Further, maximum tolerance was seen from the participants’ response as another strategy used in coping with encountered challenges. Participant 2 narrated that,

“What I did was to students is to have a good communication and maximum tolerance.”

This was agreed by participant 9 stating that,
“What we actually do is make our problem okay, we apply maximum tolerance so that it doesn't get worse, and it doesn't make us look bad.”

This is further conformed by participant 10 with his statement,
“Maximum tolerance and giving them a reminder of what to do.”

This goes along with the responses of 2 participants elaborating that in the security profession patience is much needed to cope with challenges.

“First of all, mam, when assigned at the main gate at encountered clients with bad attitude, you must have a long patience”

This is answered by participant 4, and further participant 1 claimed that,

“For the behavior of the clients and teachers, sometimes we are not aware that they are cranky that is why we need to have a long patience.”

Furthermore, adjustment is identified by the participants as a strategy in coping with challenges encountered, to minimize problems in the workplace, they just adjust, accept, plan, and understand the situation bearing in mind that this is part of their job. As claimed by participant 7 that,

“In our plans, that's the mindset of the people, we accept what they think, if the important thing is that we do our job without disturbing ourselves.”

It goes along with the answer of participant 9,
“The way to solve problems is to first find out the problem and think about how to solve it properly without.”

Participant 7 was challenged by individuals who looked down upon their profession as well as discrimination.

“That's quite a lot, first the people think the guards are inferior, they discriminate against us.”

Moreover, to address this, he (participant 7) narrates that the best strategy is to be professional.

“In the training we were taught to be professionals, let's let them be as long as we're just doing our job.”

He further explained that,

“A strategy to overcome such things, others usually push us to them, but if we are professionals, we don't pay attention to them, we will just report to the agency or supervisor that there are people like this, and they will be the only ones to talk to them so that we are interrupted with our work.”

The study revealed that security guards' lives can be challenging. They are faced with minor to major challenges in their everyday duty. However, they further tend to look for solutions to the said challenges.

This means that security guards in Cabanatuan City adhere to the researcher's belief that "Peace is better than justice," and that even if their clients are wrong or aggressive, they tend to deal with it peacefully rather than assert their point view that would accelerate the situation. Therefore, for the sake of peace, security guards choose to be at peace.

The result implies that security guards are emotionally resilient based on Andersen (2017), who explained that emotional resilience is the acceptance of adversities with flexibility with the right attitude and finding positive things despite difficulty and a sense of hope.

Self-Assessment

Another strategy from the responses of the participants is self-assessment, some of the participants claimed that assessing yourself can lead to a better service and promotes harmonious relationship with clients and others.

Participant 6 narrates that,

“I approached them and give my side, my opinion for us is to have a good communication and in the near future I evaluate myself if there is also problem with me that pushes them not to communicate with me in the right manner.”

The study revealed that security guards recognized that they have further incompetencies that lead to misunderstanding between them and the clients. That through self-check or self-evaluation, they may be able to identify the reasons for other clients' behavior towards them. They further think that they may also be the problem and that they are open to improvement.



This implies that security guards in the city were amenable to their incompetencies and that they are further willing to be educated and to be empowered.

This can be attributed to the 1st pillar of resiliency of the Bounce Back project, (n.d.) on self-awareness, that simply understanding yourself (strength and weaknesses) allows you to understand other people.

Following Rules

One of the resilient strategies of the participants in coping with encountered challenges is following rules. Participant 10 opted to address it by starting the solution themselves by simply following rules, guidelines, protocols to maintain the rules and regulations.

“Strategy mam is to follow your rules and regulations.” as elaborated by participant 10. This can be attributed to the principle of “Walk the Talk” where improvement starts on their own selves, acts on their own incompetencies, follow rules, seek help and plan.

Confidence

Another strategy identified by a participant is being confident. Participant 1 asserted that trusting oneself is a way of coping with challenges, “There is a need to trust yourself.”

This can be attributed to the findings that the level of resiliency of security guard perceived themselves as very resilient on the indicator “Believing in oneself.”

This implies that security guards in Cabanatuan City have high regard on themselves and faced challenges with confidence. This is attributed to the 3rd element of resiliency of Bennett, (2010) confidence, where one has the guts to work it out; it is not only bouncing back but further moving forward.

Kendra (2022) can corroborate that resilient people maintain a more positive outlook and cope with stress more effectively. She said resiliency can be built by; finding purpose, believing in yourself, developing a social network, embracing change, being optimistic, nurturing yourself, developing-solving skills, establishing goals, taking action and committing to building skills over time.

Value Work

Further, work value was identified as another resilient strategy undertaken to cope with challenges.

“My rule is to appreciate my profession, just focus on work despite challenges.”

That was narrated by participant 3.

Participant 2 added that the most important thing is that he is doing his assigned task, stating,

“In my mind, this is just my work, this is not something to be taken personally because this is my job, the important thing is to implement the rules and regulations.”

This means that some security guards endure any challenges bearing in mind that this is the nature of their profession and life must go on. This implies that security guards in Cabanatuan City love their profession.

Seek Support

Last, seeking support is sub themed into support and teamwork identified as another strategy in coping with encountered challenges.

For challenges beyond the scope of the security guards’ task, they tend to seek support from the higher authority such as their supervisors, guidance office of the school, their agency or even the Police for assistance. As elaborated by participant 4,

“In case there are problems, for example there is robbery, first we must identify their number and call the PNP for assistance.”

This can be attributed by the statement of participant 8 on repeated.

violations among students in schools.

“If they do it again and again, they will be warned, and I will refer them to the guidance office.”

This could simply mean that security guards adhere to the general order number 9 “To call the superior officer in any case not covered by instruction.”

This could further mean that the 5th C in resiliency model were applied by security guards, that is connection, where developing and fostering meaningful connection with other people is practiced through seeking support from superiors and authorities as well as teamwork.

This implies that security guards are a force multiplier of the law enforcement but need supervision or assistance from the proper authority when faced with unwarranted situations.

Further, participants further identified teamwork as their strategy in coping with challenges. This is elaborated by the responses of participants 6 and 10,

“Unity of everyone, security guards and our groups to maintain the rules and regulations.”

He (participant 10) further explained that,

“Camaraderie, always report to the security officer for the events inside.”

This means that security guards recognized that they need help and support from their superiors and co-workers as well as they value their relationships in the organization. The results imply that security guards in Cabanatuan City are team players.

Above all, the study revealed that security guards in Cabanatuan City can cope with different challenges encountered using a



different resilient strategy. This means that there is no absolute strategy to cope with challenges, hence, every encountered challenge requires a different strategy depending on the perception, character, and belief of the security guard.

With the strategies implemented, this implies that security guards in the city overcome challenges through good deeds, good behavior and good relationship.

The result of the study is corroborated by the study of Balingit et al. (2013) on private security guards in Cagayan De Oro City. Their coping strategies in dealing with their problems are optimistic. These include being alert, regularly roving, self-disciplined, conforming to policies, establishing good human relations, and enhancing communication techniques. They further consider the Philippine National Police as their partners in their work because they rely on their assistance in all cases they cannot handle.

Further, the result of the study can be attributed to the Cs model of resiliency where Dr. Kennett Ginsberg includes competence, confidence, Connection, and coping, all people have different coping strategies in life, and it is essential to recognize them and know how and when to use them to get through difficult times (Choi, 2020).

Corroborated by Schoeman (2021), individuals can use various coping strategies across different situations. No strategy for coping, however, guarantees a successful outcome. The coping strategies that are likely to be effective will vary depending on the exact nature of the situation. Even the healthiest coping responses may be ineffective in some circumstances. Coping was defined as, "active cognitive emotional or behavioral effort that is selectively applied in various combinations to master, reduce or tolerate the demands created by stress at the time." Scientifically, there are healthy coping strategies such as training, physical exercise, social support, group cohesion, humor, healthy sleeping habits, healthy diet, religion, and relation. In addition, his study revealed that security employees endorsed training, religion, physical exercise, and relaxation as their preferred coping strategies.

However, the result of the study is in contrast with the study of Erçetin et al. (2021) that private security guards working in the Ankara Electricity, Gas, and Bus Operations Organizations in Turkey could not cope with stress and anger.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of the study, the following conclusions are drawn security guards had sufficient knowledge, skills, and attitude to perform their duties and responsibilities; security guards were able to perform despite the challenges encountered; the more competent the security guards, the more resilient they become; and coping strategies vary on the challenge encountered. Moreover, the module of instruction was crafted.

In the light of the findings and conclusions, the researcher recommends the following: security agencies should strengthen and update their security guard's capability through training and seminars; security agencies should further educate their security guards on physical, emotional, and mental health and human relation and the contextualized training module is crafted to be adapted as a reference in security training. Also, other researchers may conduct another study not covered by this study to enlighten other security profession issues further.

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FORMULATION AND EVALUATION OF CLINDAMYCIN HYDROCHLORIDE FLOATING DRUG DELIVERY

**K Pavani*¹, Kondabala Bhavya sri², Barkam Mamatha², Daravath Rajesh²,
B Annie Jayachitra², A Manisha², Mirza Sami Ullah Baig²**

¹Assistant Professor, Department of Pharmaceutics, St mary's group of institutions, Deshmukhi (village), Pochampally (Mandal), Yadadri Bhuvanagiri (Dist), Hyderabad-508284, Telanagana, India.

²St Mary's Group of Institutions, Deshmukhi (village), Pochampally (Mandal), Yadadri Bhuvanagiri (Dist), Hyderabad-508284, Telanagana, India.

ORCID Ids

K Pavani: <https://orcid.org/0009-0001-0984-1346>

Kondabala Bhavya sri : <https://orcid.org/0009-0007-1118-8220>

Barkam Mamatha: <https://orcid.org/0009-0009-7800-9711>

Daravath Rajesh: <https://orcid.org/0009-0001-7037-4361>

B Annie Jayachitra: <https://orcid.org/0009-0006-4408-0067>

A Manisha: <https://orcid.org/0009-0006-2020-9073>

Mirza Sami Ullah Baig: <https://orcid.org/0009-0009-9010-2599>

Corresponding Author: K Pavani

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ABSTRACT

The Clindamycin Hydrochloride is a broad spectrum cephalosporin antibiotic. It is mainly used to treatment of bacterial infections. It is a suitable candidate for controlled release administration due to its short elimination time 1 hours. The main aim of present investigation is to increase the gastric residence time by preparing floating drug delivery by using raft forming approach thereby improving bioavailability. The prepared Clindamycin Hydrochloride floating drug delivery were evaluated for hardness, weight variation, thickness, friability, drug content uniformity, total floating time, In-vitro dissolution studies and buoyancy lag time. Floating tablets were formulated using direct compression technique. Various polymers are used in the formulation they Micro crystalline cellulose used as binder, HPMC K15M, Guar gum used as hydrophilic polymers, Chitosan, Sodium bicarbonate was incorporated as an effervescent substance, Sodium alginate used as viscous gel forming agent, Magnesium stearate used as lubrication, talc was used as diluent. The formulated Clindamycin Hydrochloride tablet to be evaluated the following parameters as follow Weight variation (mg), Hardness, Thickness, Friability, Drug content uniformity, Floating lag time, the in vitro cumulative amount of drug released was shown the F4 is 99% within 12 Hours the comparative studies with marketed formulations F4 show the better results. In vitro release rate studies showed that the maximum drug release was observed F4 formulation up to 12 hours.

KEYWORDS: Clindamycin Hydrochloride, Direct compression, Floating drug delivery system.

INTRODUCTION

The substances produced by microorganisms, they selectively suppress the development of or destroy other microorganisms at very low concentrations. The definition includes other natural substances which also inhibit microorganisms but are produced by higher forms (e.g. antibodies) or even those produced by microbes but are needed in high concentrations (ethanol, lactic acid, H₂O₂). Initially the term 'chemotherapeutic agent' was restricted to synthetic compounds, but now since many antibiotics and their analogues have been synthesized, this criterion has become irrelevant; both synthetic and microbiologically

produced drugs need to be included together. It would be more meaningful to use the term Antimicrobial agent to designate synthetic as well as naturally obtained drugs that attenuate microorganisms. Oral controlled release dosage forms has not been suitable for a variety of important drugs, characterized by a narrow absorption window in the upper part of the gastrointestinal tract i.e. stomach and small intestine. This is due to the relatively short transit time of the dosage form in these anatomical segments. Thus, after only a short period of less than 6hrs, the control release dosage form has already left the upper gastrointestinal tract and the drug is released in non-absorbing



distal segments of the gastrointestinal tract. This results in a short absorption phase that is often accompanied by lesser bioavailability.

MATERIALS AND METHODS

MATERIALS

The best sample Clindamycin hydrochloride is from Hetero Drugs LTD and other polymer mixtures such as Micro crystalline cellulose, Sodium alginate, HPMC K15M, Guar gum, Chitosan, Sodium bicarbonate, Talc, and Magnesium stearate are from Aurobindo pharma LTD. All these materials those were either AR/ LR grade or the best possible grade were used as supplied by the manufacture.

METHODS

PRE-FORMULATION

Drug and excipients interaction (FTIR) study

The compatibility between pure drug and polymer like Clindamycin Hydrochloride, HPMC K15M, guar gum, chitosan, Mcc, mixture of compounds prepared in the form of KBr Pellets

and subjected for scanning from 4000 cm^{-1} to 400 cm^{-1} using FTIR spectroscopy.

Formulation of Floating Tablet of Clindamycin Hydrochloride

The Floating Raft forming approach tablets of Clindamycin Hydrochloride were prepared through direct compression method. The preparations of Clindamycin Hydrochloride by various steps involved in tablet production are sieving, mixing, lubrication and compression. Microcrystalline cellulose use as binder, HPMC K 15M used as synthetic hydrophilic polymer. Guar gum and chitosan used as natural hydrophilic polymer. Sodium alginate use as viscous gel forming, sodium bicarbonate used as gas generating agent. Talc is used as diluents, magnesium stearate used as lubricant. Finally, the powder mixture was compressed into tablets using rotator tablet punching machine at the weight of 500mg each. The below expressed gastro retentive drug delivery of Clindamycin Hydrochloride tablets performed a different formulation from F1 to F9 batches study with various concentrations of different polymers.

Table 1
Formulation of gastro retentive of Clindamycin Hydrochloride tablet prepared by using different polymers

Ingredients	Formulation Code								
	F1	F2	F3	F4	F5	F6	F7	F8	F9
Clindamycin Hydrochloride (mg)	150	150	150	150	150	150	150	150	150
Micro crystalline cellulose (mg)	165	115	85	165	115	85	165	115	85
Sodium alginate (mg)	70	70	90	70	70	90	70	70	90
HPMC K15M (mg)	60	110	110	---	---	---	---	---	---
Guar gum (mg)	---	---	---	60	110	110	---	---	---
Chitosan (mg)	---	---	---	---	---	---	60	110	110
Sodium Bicarbonate (mg)	40	40	50	40	40	50	40	40	50
Talc (mg)	9	9	9	9	9	9	9	9	9
Magnesium stearate (mg)	6	6	6	6	6	6	6	6	6
Total (mg)	500	500	500	500	500	500	500	500	500

❖ All formulation are shown in mg

Parameters for Evaluation

Pre Compression Parameters

Angle of repose: Angle of repose is defined as the maximum angle between the surface of pile of the powder and the horizontal plane. Fixed funnel method was used. A funnel was fixed with its tip at a given height (h), above a flat horizontal surface on which a graph paper was placed. Powder was carefully poured through the funnel until the apex of the conical pile formed just reached the tip of the funnel. These studies were carried out before and after incorporating lubricant/glidant. The angle of repose (θ) was then calculated.

$$\theta = \tan^{-1} (h/r)$$

Bulk density: Bulk density was determined by using bulk density apparatus, during measurement accurately weighed quantity of

the powder were taken in a measuring cylinder and recording the volume and weight of the total powder⁶¹. Bulk density is expressed in gm/ml and is given by,

$$BD = W/V_0$$

Tapped density: Tapped density was determined by using Tapped density apparatus during measurement accurately weighed quantity of the powder were taken in a measuring cylinder and recording the volume of powder after 30 tapping and weight of the total powder.

$$TD = W/V_F$$

Compressibility index (or) Carr's index: Compressibility index is an important measure that can be obtained from the bulk and tap densities. A material having values less than 20 to 30% is defined as the free flowing material, based on the apparent bulk



density and tapped density, the percentage compressibility of the bulk drug was determined by using the following formula.

$$\text{Compressibility index} = \frac{\text{TD} - \text{BD}}{\text{BD}} \times 100$$

Hausner's ratio: It indicates the flow properties of the powder. The ratio of tapped density to bulk density of the powder is called Hausner's ratio.

$$\text{Hausner's Ratio} = \text{TD/BD}$$

Table 2
Standard limits for flow properties of powder

S.NO.	Type of flow	Angle of repose	Carr's index	Hausner's ratio
1.	Excellent	25-30	10	1-1.11
2.	Good	31-35	11-15	1.12-1.18
3.	Fair	36-40	16-20	1.19-1.25
4.	Passable	41-45	21-25	1.26-1.34
5.	Poor	46-55	26-31	1.35-1.45
6.	Very poor	56-65	32-37	1.46-1.54
7.	Very Very poor	>65	>38	>1.60

Post Compression Parameters

Hardness: The hardness of ten tablets was measured using Monsanto tester. Resistance of the tablet during transportation or breakage under storage conditions and handling before usage depends on its hardness. The hardness was measured in terms of kg/cm². Five tablets were chosen randomly and tested for hardness. The average hardness of five tablets was recorded.

Thickness: Thickness was measured using a calibrated vernier calliper. It was determined for check the thickness of tablet. Five tablets of each formulation were picked randomly and thickness was measured individually.

Friability: The friability of the prepared tablets was determined using Roche friability apparatus. It is expressed in percentage (%). To calculate the percentage friability determines 10 tablets initial weight and transferred into friabilator. The friabilator was operated at 25 rpm for four minutes. After four minutes the tablets were weighed again. Then % friability was then calculated using formula.

$$\% \text{ Friability} = \frac{\text{initial weight} - \text{final weight}}{\text{Initial weight}} \times 100$$

Weight variation: The weight of the tablet being made was determined to ensure that a tablet contains the proper amount of drug. Twenty tablets were selected at random from each formulation and weighed on electronic weighing balance. The average weight of the tablets was determined. The weight of individual tablets was compared with the average weight variation.

Drug content uniformity: The drug content of prepared tablets was accurately weight and finely powered by pestle in a mortar. Weighed tablet of each powder equivalent to 400mg of Clindamycin Hydrochloride was transferred in to volumetric flask, dissolved in 60ml of 0.1N HCL and content of the flask were sonicated for 15 minutes. Then the volume was made up to 100ml. The samples were analyzed UV-Visible

spectrophotometer, and concentration of the drug in the sample was calculated.

In-Vitro Buoyancy Studies: The in vitro buoyancy was determined by floating lag time (FLT). The time between introduce of dosage form and its buoyancy on the simulated gastric fluid and the time during which the dosage form remain buoyant were measured. The time taken for dosage form to emerge on surface of medium called floating lag time (FLT). Method described by the tablets was placed in a 100ml beaker containing 0.1 N HCL. The time required for the tablet to rise to the surface and float was determined as floating lag time.

In-vitro dissolution studies: Dissolution of the tablets was carried out on USP XXXIII dissolution type II apparatus using paddle. The tablet was fixed to the paddle by hydration mechanism 900 ml of 0.1N HCL as dissolution medium was filled in a dissolution vessel and the temperature of the medium were set at 37± 0.5°C. The rotational speed of the paddle was set at 100 rpm. At particular intervals 5 ml of sample was withdrawn at predetermined time intervals of 2hr, 4hr, 6hr, 8hr, 10hr up to 12 hr and same volume of fresh medium was replaced. The withdrawn samples were diluted to 10 ml with 0.1N HCL, filtered and analyzed on UV spectrophotometer at 210 nm 0.1NHCL using buffer as a blank. Percentage cumulative drug release was calculated. The values and graphs are represented in tables and figure.

Raft strength measurement by in house method:

A tablet powder equivalent to unit dose was transferred to 150 ml of 0.1N HCL and maintained at 37°C in a 250 ml glass beaker. Each raft was allowed to form around an L- shaped wire probe (diameter: 1.2mm) held upright in the beaker throughout the whole period (30 min) of raft development. Raft strength was estimated using the modified balance method. Water was added drop wise to the pan and the weight of water required to break the raft was recorded.

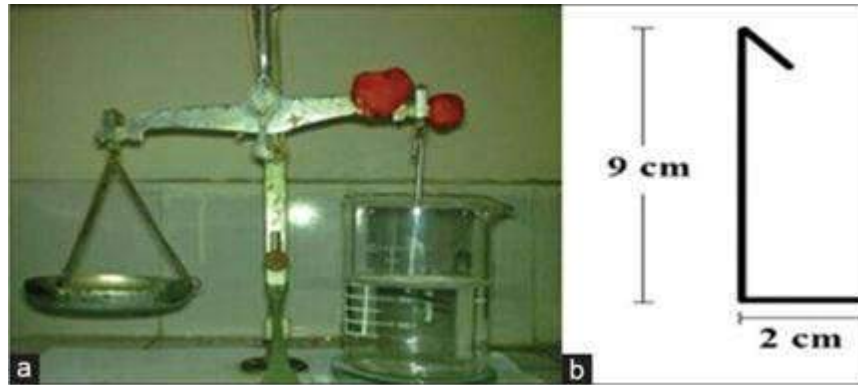


Figure 1

(a) Modified balance method. (b) Wire probe for raft strength measurement

Data analysis: To analyse the mechanism of release and release rate Zero order, first order, Higuchi matrix and Peppas's model. Based on the r-value, the best-fit model was selected

Zero order kinetics: Drug dissolution from pharmaceutical dosage forms that do not disaggregate and release the drug slowly, assuming that the area does not change and no equilibrium conditions are obtained can be represented by the following equation.

$$Q_t = Q_0 + K_0 t$$

First order kinetics

To study the first order release rate kinetics, the release rate data were fitted to the following equation.

$$\text{Log } Q_t = \text{Log } Q_0 K_1 t / 2.303$$

Higuchi's model

Higuchi's developed several theoretical models to study the release of water soluble and low soluble drugs incorporated in semisolids and/or solid matrices. Mathematical expression were obtained for drug particles dispersed in a uniform matrix behaving as diffusion media. And the equation is,

$$M_t/M_\infty = KH t^{1/2}$$

Korsmeyer- Peppas Model:

The power law describes the fractional drug release is exponentially related to the release time and adequately describes

the release of drug from slabs, cylinders and spheres, as expressed in following equation.

$$M_t / M_\infty = K t^n$$

$$\text{Log } (M_t / M_\infty) = \text{log } K + n \text{ log } t$$

Stability Conditions

Stability study of tablets containing Clindamycin Hydrochloride was performed at following temperatures for one month and three months.

1. Long term testing : 25oC/ 60%RH (1Month)(3Month)
 2. Accelerated testing : 40oC/75% RH (1Month)(3Month)
- Parameters estimated: Moisture content, assay and dissolution.

RESULTS AND DISCUSSION

Preformulation Studies

Drug and interaction (FTIR) study: From the spectra of Clindamycin Hydrochloride, excipients physical mixture of drug was observed that all characteristic peaks of Clindamycin Hydrochloride were present in the combination spectrum, thus indicating compatibility of the Clindamycin Hydrochloride and excipients. IR spectra of individual polymers and combination of Clindamycin Hydrochloride with all individual polymers shown in Figure 2 to 7, data as shown in table 3.

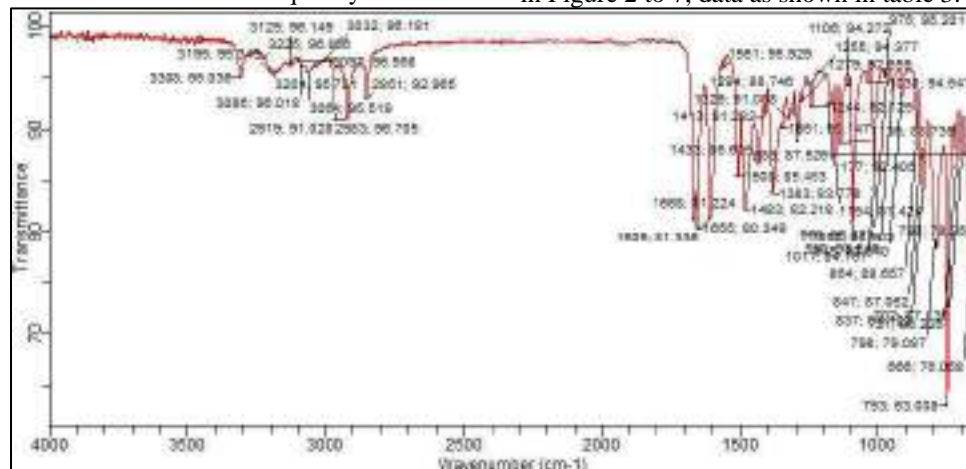


Figure 2

FTIR Spectrum of Clindamycin Hydrochloride

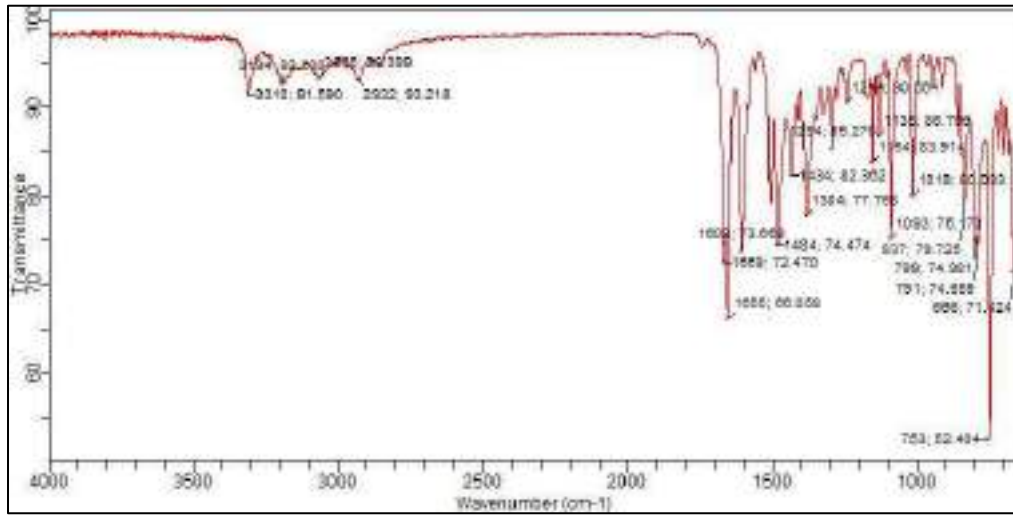


Figure 3
FTIR Spectrum of HPMC K15M

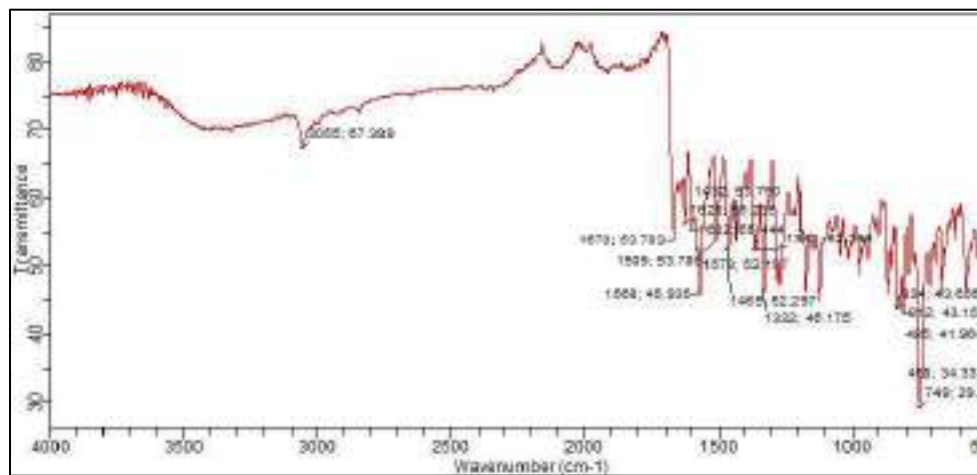


Figure 4
FTIR Spectrum of Guargum

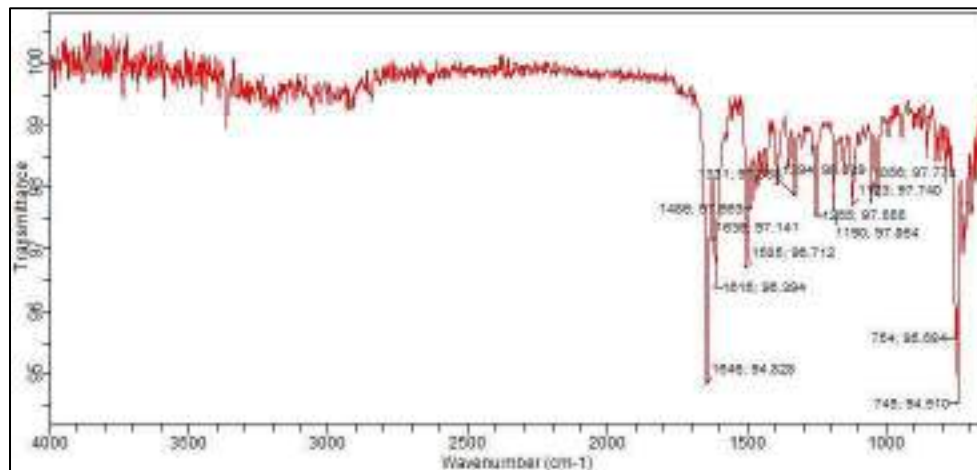


Figure 5
FTIR Spectrum of Chitosan

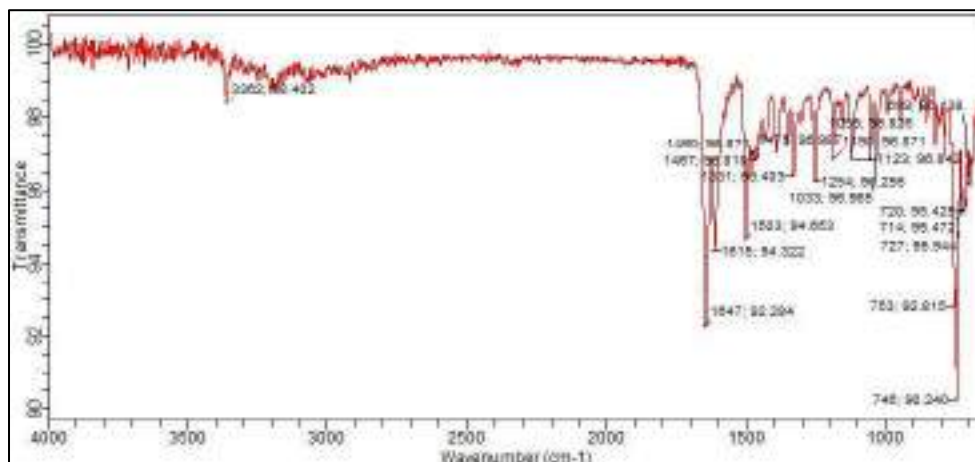


Figure 6
FTIR Spectrum of Microcrystalline cellulose

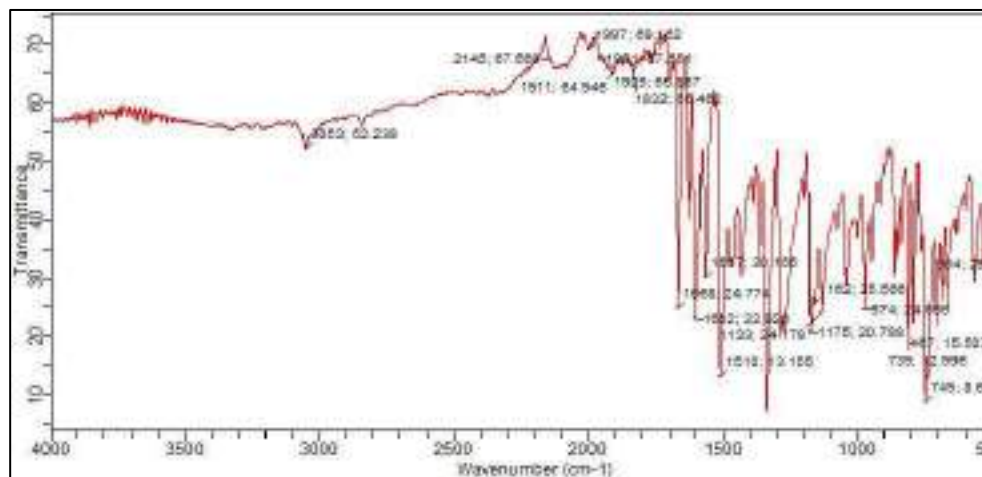


Figure 7
FTIR Spectrum of Mixtrue of compounds

Table 3
IR Interpretations for Pure drug and Polymers

Functional Group	Clindamycin Hydrochloride	HPMC K15M	Guar Gum	Chitosan	Microcrystalline Cellulose
(s)= C-H bend (Alkenes)	1106	3065	1363	1190	1140
(m)O-H bend (Carboxylic acid)	2851	2932	3055	1505	2996
(s, b) N-H wag (1°,2° amines)	1609	1609	1602	1616	1595
(m) C-Cl stretch (Alkyl halides)	847	799	834	1255	833
(s)C-O stretch (Nitro Compunds)	1017	1669	1670	1505	1670
(m)C-N stretch (Aromatic Amines)	1038	1609	1332	1486	1222



Physical mixture of pure drug of Clindamycin Hydrochloride and polymer was characterized by FTIR spectral analysis for any physical as well as chemical alteration of the drug characteristics. From the results, it was concluded that there was no interference in the functional group as the principal peaks of the Clindamycin Hydrochloride were found to be unaltered in the drug- polymer physical mixtures, indicating they were compatible chemically. IR spectra are shown in figures and interpreted values shown in the table respectively.

Physical properties of Clindamycin Hydrochloride

Inter particulate interactions influence the bulking properties of powder. A comparison of the bulk density and tapped density can give a measure of the relative importance of this interaction in a given powder; such a comparison is often used as an index of the ability of the powder to flow. The bulk density and tapped density were found to be 0.35gm/cm³ and 0.43gm/cm³ respectively.

A simple indication of ease with which a material can be induced to flow is given by application of a compressibility index. The value for % compressibility index of Clindamycin Hydrochloride was found to be 12.79% and hausner's ratio of 1.16. The pre compression properties were tabulated.

Pre-Compression Parameters

Angle of repose: The results obtained for angle of repose for all the formulations. The values were found to be in the range of

27°.54' to 28°.82'. All the formulation showed the angle of repose below 30°, which indicates good flow.

Bulk density & Tapped density: The loose bulk density and tapped bulk density for all the formulations varied from 0.35gm/cm³ to 0.43gm/cm³ and 0.42gm/cm³ to 0.44gm/cm³ respectively. The values obtained lies within the acceptable range and no large difference found between loose bulk density and tapped density. These results help in calculating the % compressibility of the powder.

Percentage compressibility (carr's consolidation index): The percentage compressibility of powder mix was determined by the equation given for carr's consolidation index. The percentage compressibility lies within the range of 8.62 to 12.79 which indicates that the flow of the tablet mixture of various formulations is good to excellent.

Hausner's ratio: The Hausner's ratio of powder mix was determined by the data of loose bulk density and tapped bulk density. The Hausner's ratio for all the formulations lies within the range of 1.07 to 1.16, which indicates flow of powder is excellent.

Table 4

Evaluation of pre-compression parameters of Clindamycin Hydrochloride with different formulations

Formulation Code	Bulk density(g/cc) MEAN±SD	Tapped density(g/cc) MEAN±SD	Hausner's ratio MEAN±SD	Compressibility index (%) MEAN±SD	Angle of repose (θ) MEAN±SD
F1	0.35±0.03	0.42±0.06	1.07±0.03	8.62±0.05	27.54±0.05
F2	0.36±0.06	0.51±0.05	1.23±0.04	12.33±0.03	24.38±0.04
F3	0.38±0.04	0.44±0.03	1.21±0.06	11.49±0.06	23.32±0.03
F4	0.42±0.07	0.44±0.08	1.21±0.05	13.29±0.04	26.75±0.04
F5	0.37±0.03	0.45±0.03	1.09±0.03	8.72±0.03	25.64±0.03
F6	0.42±0.05	0.42±0.06	1.18±0.07	11.35±0.05	24.82±0.06
F7	0.44±0.04	0.46±0.04	1.15±0.03	11.57±0.06	23.38±0.03
F8	0.41±0.02	0.42±0.03	1.13±0.04	10.34±0.03	22.82±0.07
F9	0.43±0.05	0.44±0.07	1.16±0.07	12.79±0.05	28.82±0.06

Each value represents the mean ± standard deviation (n=3) The evaluation studies of all the formulations were proved to be within limits and were shown good derived and flow properties.

Formulation development: Development of the formulation in the present study was mainly based on the type of polymers, different ranges of concentration of polymers used. Various polymers in different concentrations were used so as to get tablet with good physical properties and with minimum disintegration time. So, in the present study attempts were made to get good physical and analytical parameters of the tablets.

Total 9 formulations of gastro retentive drug delivery system of Clindamycin Hydrochloride tablet using raft forming approach by direct compression method. Different types of polymers in

different concentrations and in different combinations were used and the tablets were prepared by the procedure described in the methodology section.

Post Compression Parameters

Shape and thickness: Macroscopic examination of the tablets from each formulation showed circular shape with no cracks. The thickness of tablet randomly was measured using vernier callipers.

Weight variation test: All the formulations passed weight variation test as the percent weight variation was within the pharmacopoeia limits of ±5%. It was found to be from 378.52 to 454.04 mg. None of the formulations were exceeding the limit



$\pm 5\%$ specified by IP. Thus all the formulations were found to comply with the IP standard as shows in table no 5.

Hardness and friability of the tablets: The tablet hardness of all the formulations was checked using Monsanto hardness tester, by the method described in methodology section. The average hardness of all the batches is in the range of 4.7 to 3.7 kg/m². The lower standard deviation values indicated that the hardness of each formulations were almost uniform in specific method and possess the good mechanical strength with sufficient hardness. The hardness of all formulations was found to be in acceptable range as shows in table no 5.

The friability test is designed to evaluate the ability of the tablet to withstand abrasion in packaging, handling and shipping. A number of tables were weighed and placed in tumbling apparatus where they were exposed to rolling and 50 resolutions resulting from freefalls within the roche's apparatus. The percentage friability for all the formulations lies in the range of 0.22 % to 0.43 %, which was found to be in limit (i.e. <1%) as shows in table no 5.

Estimation of drug content: All the formulations were evaluated for the drug content estimation in 0.1NHCl sample of tablets using the procedure described in methodology section. The drug content values for all the formulations are in the range of 97 to 99% as shows in table no 5.

Table 5
Evaluation of Post Compression Parameters of Different Formulations Clindamycin Hydrochloride tablet floating drug delivery

Formulation code	Hardness (kg/cm ²) MEAN \pm SD (n=3)	Thickness (mm) MEAN \pm SD (n=3)	Weight variation(mg) MEAN \pm SD (n=20)	Friability (%) MEAN \pm SD (n=3)	Drug content (%) (n=2)
F1	4.7 \pm 0.3	5.2 \pm 0.4	378.52 \pm 0.32	0.22 \pm 0.19	97.35
F2	3.2 \pm 0.1	6.4 \pm 0.1	469.09 \pm 0.57	0.15 \pm 0.15	98.62
F3	4.2 \pm 0.3	6.7 \pm 0.2	455.56 \pm 0.24	0.37 \pm 0.16	97.65
F4	3.1 \pm 0.3	6.4 \pm 0.1	479.22 \pm 0.62	0.35 \pm 0.16	98.22
F5	4.8 \pm 0.2	6.6 \pm 0.2	475.34 \pm 0.24	0.32 \pm 0.18	99.34
F6	3.5 \pm 0.4	6.3 \pm 0.3	457.47 \pm 0.36	0.29 \pm 0.14	98.13
F7	3.3 \pm 0.2	6.7 \pm 0.3	445.74 \pm 0.48	0.42 \pm 0.15	99.14
F8	4.2 \pm 0.2	6.8 \pm 0.3	488.02 \pm 0.27	0.45 \pm 0.18	99.63
F9	3.7 \pm 0.3	6.9 \pm 0.2	454.04 \pm 0.42	0.43 \pm 0.16	99.64

Each value represents the mean \pm standard deviation

In-vitro drug release studies: The *In-vitro* dissolution study of Clindamycin Hydrochloride tablet floating drug delivery, 0.1N HCl as dissolution medium. The *In-vitro* drug release study of Clindamycin Hydrochloride tablets from each batch (F1 to F9) was carried out by using 0.1N HCl for 12 hours. The samples were withdrawn at specified time intervals and analyzed by UV-visible spectrophotometer. Percentage drug release was calculated on the basis of mean amount gastro retentive of Clindamycin Hydrochloride present in respective formulation. The cumulative percentage of drug release of floating drug

delivery of Clindamycin Hydrochloride on y-axis was plotted against time on x-axis to obtain drug release profiles.

Drug Release Kinetics: The release constant was calculated from the slope of the appropriate plots, and the regression coefficient (r^2) was determined. The drug release data obtained were extrapolated by Zero order, First order, Higuchi model and Korsmeyer-Peppas plot for Best Formulation F6. The release kinetics shows that the release of drug followed zero order release in all the formulations as shown in table no.15 and figure 23.

Table 6
In Vitro dissolution Studies of Clindamycin Hydrochloride tablet floating drug delivery

Sl.no	Time	% of Drug release								
		F 1	F 2	F 3	F 4	F 5	F 6	F 7	F 8	F 9
1	5	8.65	5.07	6.95	12.67	6.57	15.13	12.63	11.41	8.57
2	10	7.45	13.95	11.23	22.35	21.41	27.97	27.33	25.07	24.21
3	15	12.86	22.45	21.58	35.63	24.31	36.15	33.15	31.81	37.07
4	20	54.05	65.81	72.81	81.63	76.41	71.97	73.61	53.11	72.21
5	25	28.57	46.41	57.31	54.15	44.05	57.32	55.85	43.37	53.92
6	35	17.67	32.57	41.63	51.31	31.17	44.94	45.71	35.63	45.93
7	30	41.41	58.05	58.89	66.31	54.07	72.63	61.47	47.21	67.85
8	40	58.89	73.47	71.00	85.91	81.63	82.11	86.61	61.85	82.85
9	45	75.63	82.21	87.13	92.85	87.25	97.55	97.27	86.91	96.59

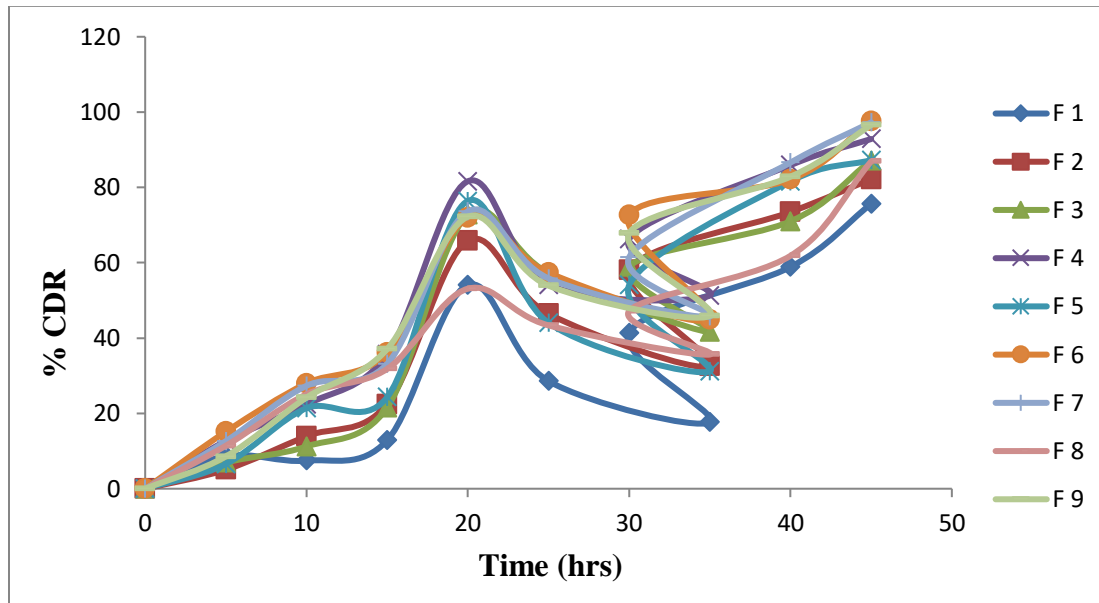


Figure 8

In Vitro dissolution Studies Clindamycin Hydrochloride tablet floating drug delivery
Release Order Kinetics of Clindamycin Hydrochloride Floating Drug Delivery

Table 7
Release kinetics of Clindamycin Hydrochloride Floating Drug Delivery (F1 to F5)

Model	Equation	F 1		F 2		F 3		F 4		F 5	
		R ²	m	R ²	m	R ²	M	R ²	m	R ²	M
Zero order	$M_0 - M_t = kt$	0.655	69.4	0.939	1123	0.007	15.93	0.202	72.88	0.928	1414
First order	$\ln M = \ln M_0 - kt$	0.494	0.061	0.540	0.067	0.257	0.038	0.352	0.044	0.438	0.062
Higuchi's Matrix	$M_0 - M_t = kt^{1/2}$	0.516	4508	0.767	7420	0.023	212.0	0.189	515.5	0.803	9618
Korsmeyer-Peppas	$\log(M_0 - M_t) = \log k + n \log t$	0.835	2.354	0.884	2.545	0.572	1.709	0.663	1.813	0.806	2.517

Table 8
Release kinetics of Clindamycin Hydrochloride Floating Drug Delivery (F6 to F9)

Model	Equation	F 6		F 7		F 8	
		R ²	m	R ²	m	R ²	M
Zero order	$M_0 - M_t = kt$	0.917	15.49	0.949	154.4	0.937	1593
First order	$\ln M = \ln M_0 - kt$	0.481	0.052	0.465	0.051	0.399	0.061
Higuchi's Matrix	$M_0 - M_t = kt^{1/2}$	0.798	1057	0.848	1067	0.899	11409
Korsmeyer-Peppas	$\log(M_0 - M_t) = \log k + n \log t$	0.835	2.032	0.827	2.033	0.785	2.560

In-vitro Buoyancy Studies

The all formulation were showed good floating lag time (FLT) and total floating time (TFT). The FLT and TFT of the tablets

mainly depend on the type of polymer and their concentrate as shown in figure 9 and table 9.



Figure 9
Buoyancy floating of formulated floating tablets

Table 9
Floating lag time of the gastro retentive tablets (F1-F9)

Formulation Code	Floating lag time (sec)	Total floating time (hour)
F1	23	12
F2	36	12
F3	28	12
F4	16	10
F5	10	10
F6	42	12
F7	18	12
F8	26	12
F9	31	12

STABILITY STUDY: Optimized formulation F4 was subjected to stability studies for 1 to 3 months and the tablets were tested

for drug content and dissolution. The results obtained were as in the following table 10 and figure 10.

Table 10
Stability studies of the optimized formulation F4

Time in hrs	Cumulative % Drug Release		
	Standard	After 1 Month	After 3 Month
1	13.61	11.58	12.41
2	22.31	21.24	21.83
3	32.15	28.91	31.02
4	49.83	44.64	46.36
5	46.45	42.77	42.95
6	39.43	34.42	38.35
7	61.63	57.68	61.97
8	68.16	66.23	67.54
9	78.33	76.72	77.58
10	89.64	85.21	86.82
11	92.56	91.72	92.48
12	96.74	94.22	95.67

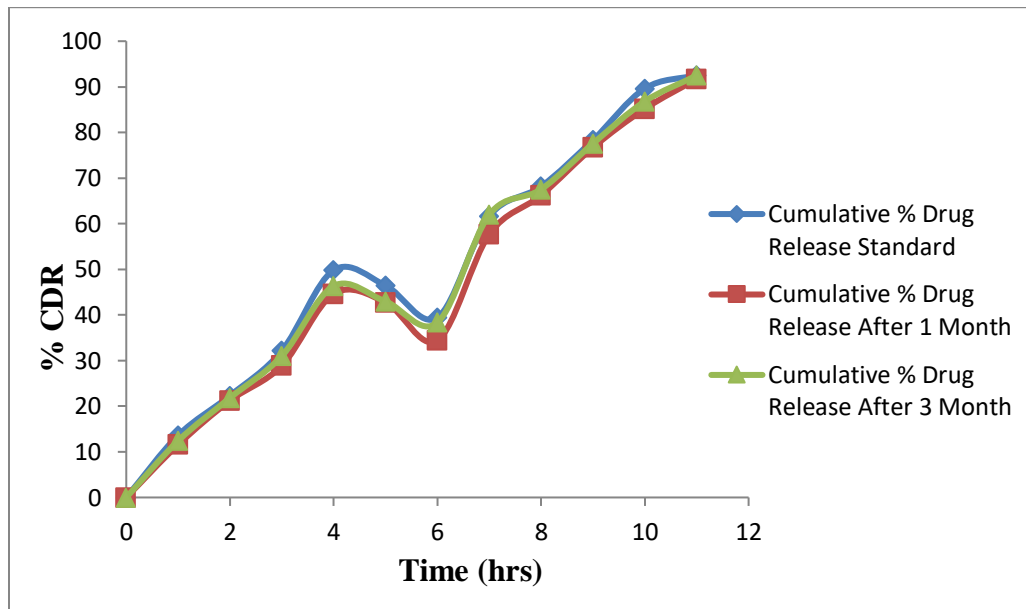


Figure 10

Stability studies of Optimized *In-vitro* Cumulative % Drug release of F4

Comparison of dissolution profile of optimized formulation (F4) with marketed product: The prepared all F4 formulations, the tablets made with combination of chitosan F4 showed better

results of dissolution. It has showed 99.8% dissolution in 12 hours. This formulation was compared with marketed formulation shown in table 11 and figure 11.

Table 11

Comparison of dissolution profile of F4 and marketed product
Brand name: - Claforan

Time (H)	Marketed product	Optimized formulation F4
2	13.7	24.1
4	32.2	46.2
6	64.3	64.8
8	86.4	82.3
10	92.5	93.2
12	98.6	99.8

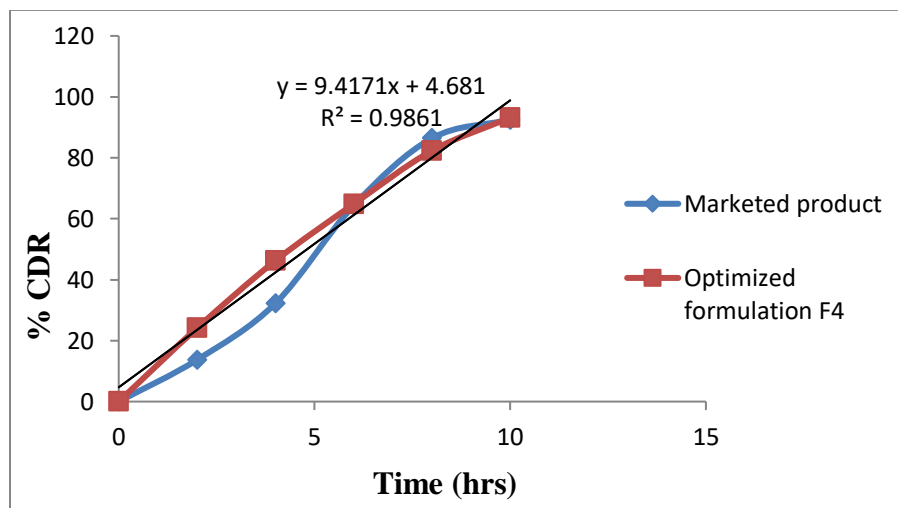


Figure 11

Comparison of dissolution profile of F4 and Marketed product



CONCLUSION

From the experimental results, it can be concluded that the sodium bicarbonate and sodium alginate has shown a predominant effect on the buoyancy lag time, while HPMC K15M and Guar gum have the predominant effect on drug release. Floating drug delivery of Clindamycin Hydrochloride tablet has controlled release. In vitro release rate studies showed that the maximum drug release was observed F4 formulation upto 12 hours.

From the study it is evident that promising controlled release tablets of Clindamycin Hydrochloride can be developed. Further detailed investigations are required to establish efficacy of these formulations.

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AN ANALYSIS OF CROSS-BORDER TERRORISM BETWEEN INDIA AND PAKISTAN: STRATEGIES AND CHALLENGES

Ch. Chiranjibi Rao¹, Srujana Sahu²

¹Lecturer, Department of Political Science, R.K.A. Degree College, Dasamantapur, Koraput, Odisha, India.

²Ph.D. Department of Political Science, Berhampur University, Berhampur-7, Odisha, India.

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ABSTRACT

The history of conflict between India and Pakistan indeed stems from the partition in 1947, which led to the creation of two separate nations based on religious lines. The region of Jammu and Kashmir has been a focal point of contention between the two countries, leading to several conflicts, including three major wars. The Kashmir issue has not only fueled tensions between India and Pakistan but has also had broader implications, including the proliferation of terrorism. Various militant groups have operated in the region, with some receiving support or sanctuary from elements within Pakistan. This has led to cross-border terrorism, with attacks in India being orchestrated or supported from across the border. The escalation of conflicts between India and Pakistan has contributed to a nuclear arms race in the region, raising concerns about nuclear proliferation and the potential for a catastrophic conflict with global ramifications. Efforts to address the root causes of the conflict and promote peace between India and Pakistan are crucial for regional stability and global security. Policy alternatives could include diplomatic dialogue, confidence-building measures, and efforts to address the underlying grievances of both sides. Confidence-building measures could include measures to reduce military tensions, such as agreements on border security and communication channels to prevent misunderstandings or miscalculations. Furthermore, addressing the Kashmir issue in a manner that respects the aspirations of the Kashmiri people while addressing the concerns of both India and Pakistan is essential. This could involve dialogue between the stakeholders, including India, Pakistan, and representatives of the Kashmiri people, to find a mutually acceptable solution. Ultimately, sustained efforts from both India and Pakistan, supported by the international community, will be necessary to achieve lasting peace and security in the region.

KEYWORDS: Conflict, Government Policies and strategies, International Peace, Kashmir Issues.

INTRODUCTION

The complex web of terrorism and security concerns in South Asia, particularly between India and Pakistan, is deeply rooted in historical, religious, and geopolitical factors. Since their independence in 1947, both countries have grappled with various forms of internal and external threats, including cross-border terrorism, religious extremism, and separatist insurgencies. The partition of British India along religious lines created a legacy of conflict, with the issue of Jammu and Kashmir becoming a focal point of contention between India and Pakistan. This dispute has fueled cross-border terrorism, with militant groups operating in the region with varying degrees of support from elements within Pakistan. India faces a range of security challenges, including communal violence, separatist insurgencies in the northeast, and Naxalite extremism. Additionally, external threats such as the unresolved boundary dispute with China and cross-border jihadist terrorism sponsored by Pakistan add further complexities to the security landscape. Pakistan-based Islamist fundamentalist organizations like Lashkar-e-Taiba and Jaish-e-Mohammad have been implicated in various terrorist attacks in India, with alleged support from Pakistan's Inter-Services Intelligence (ISI). These groups have ties to international jihadist organizations such as the Taliban and Al-Qaeda,

adding a transnational dimension to the security threat. Furthermore, the threat from Bangladesh, while not as prominent as the India-Pakistan dynamic, also presents challenges, particularly in terms of illegal immigration, border security, and potential radicalization.

Addressing these multifaceted security challenges requires comprehensive strategies that include diplomatic dialogue, counterterrorism cooperation, efforts to address underlying grievances, and regional cooperation mechanisms. Sustainable peace and security in the region will depend on the willingness of all stakeholders to engage in meaningful dialogue and address the root causes of conflict and extremism. The evolving nature of terrorism and security challenges in India, particularly in regions like the northeast and along the India-Bangladesh border, underscores the complexities faced by the country. The presence of insurgent groups like ULFA and Naga factions in the northeast, along with ISI-sponsored infiltration of terrorists from Bangladesh, exacerbates the security situation. The specter of nuclear threat, both from neighbouring states and jihadist groups, further heightens security concerns. The China-Pakistan nuclear nexus adds a significant dimension to the nuclear threat faced by India and the region as a whole.



Terrorism can be classified into political and non-political categories, with the former driven by political objectives and the latter motivated by individual or collective gain. India's diverse population, along with varying ideological and religious aspirations, adds layers of complexity to the security landscape, as seen in historical instances of terrorism in Punjab, Assam, Jammu and Kashmir, and more recently, Maoist insurgency in states like Chhattisgarh, Bihar, Andhra Pradesh, West Bengal, and Orissa. Border security and defence are crucial aspects of national sovereignty, and boundary disputes can escalate into conflicts. In Asia, border issues are particularly significant, with leaders striving to formulate foreign policy objectives aimed at resolving these disputes through cooperation or conflict resolution mechanisms. Cross-border terrorism remains a pressing challenge for India, with various factors contributing to the perpetuation of such threats. Understanding the reasons behind cross-border terrorism is essential for formulating effective strategies to address and mitigate these threats, thereby safeguarding the lives and security of citizens.

II. REVIEW OF LITERATURE

Evans' (2000) analysis from sheds light on the complex dynamics surrounding the Kashmir problem during that time. The infiltration of militants supported by Pakistan's Inter-Services Intelligence (ISI) agency exacerbated the conflict in Kashmir. However, Indian countermeasures and the 1996 elections in Kashmir marked a turning point, leading to some improvements in the situation. Despite these positive developments, the tourism industry in Kashmir faced significant challenges. From 1990 to 1999, the region witnessed a decline in tourist activity due to the security concerns stemming from the conflict. However, there was a glimmer of hope in 1999 as tourist interest began to revive. Unfortunately, the Kargil intrusion later that year dampened the optimism, leading to a decline in tourist numbers once again. The knowledge possessed by militants about the organization, structure, and safety measures of security forces enabled them to launch attacks on security force bases with increasing frequency and sophistication. The inability of the state government to implement expected changes, combined with incidents like the IC 814 hijacking in December 1999 and the subsequent release of hardcore militants further exacerbated the situation. Moreover, the failure to achieve normalization through counterterrorism policies, a perceived lack of political will, and continued support from Pakistan contributed to the escalation of terrorist activities in Kashmir, further deteriorating the security situation in the region. These factors underscore the challenges faced by both India and Kashmir in addressing the complex issues surrounding terrorism and insurgency in the region.

Basrur's (2002) highlights the shift in Indian strategic thinking following the Kargil conflict in 1999, particularly regarding approaches to addressing Pakistani intervention in Kashmir. The Kargil conflict served as a wake-up call, prompting India to reassess its strategies and policies in dealing with cross-border tensions. Post-Kargil, India pursued a range of initiatives aimed at improving the political environment, including the Agra summit. However, despite

these efforts, the depth of Pakistani involvement in Kashmir persisted, indicating the challenges in achieving lasting peace and stability in the region. One significant change in the strategic landscape was the recognition that India's conventional military advantage could be neutralized by Pakistan's possession of nuclear weapons. This realization underscored the need for alternative approaches to address security challenges in the region, beyond traditional military means. Basrur's commentary suggests that clinging to outdated notions of limited war and strategic space may not be conducive to the region's future stability. Instead, there is a need for innovative and adaptive strategies that take into account the evolving security dynamics, including the nuclear factor, and seek to address the root causes of conflict in Kashmir through diplomatic engagement and confidence-building measures.

Henderson's (2003) provides insights into the repercussions of the Bali bombing on the tourism sector and the subsequent efforts to revive tourism in the region. The bombing had a profound impact, leading to a decline in tourist arrivals as travellers, operators, and investors avoided areas perceived as dangerous. In response to the crisis, tourism marketing and development agencies played a crucial role in devising and implementing strategies to attract tourists back to Bali. Despite efforts to entice visitors from around the globe, the immediate aftermath of the bombing resulted in significant aftershocks for the tourism industry. Travel advisories, reduced air transport services, and decreased occupancy rates in large hotels contributed to the decline in tourist arrivals. The impact of the bombing extended beyond major establishments, affecting various sectors such as small enterprises, taxi drivers, garment and souvenir sellers, tour guides, craftsmen, hawkers, and vendors. Recognizing the importance of reviving tourism, the government prioritized efforts to stimulate the domestic tourism sector. Central to the government's approach was the emphasis on safety and security as key marketing themes. Measures were implemented to address safety concerns and handle complex situations effectively, thereby instilling confidence among tourists and stakeholders. Henderson's assessment underscores the resilience of the tourism sector in the face of adversity and the importance of proactive measures to mitigate the impact of security threats on the industry. By focusing on domestic tourism and prioritizing safety and security, Bali was able to gradually recover from the fallout of the bombing and restore confidence among tourists.

Chen & Chen (2003) attempted to assess terrorism effects on travel arrangements and tourism practices after September 11 WTC twin tower attack in USA. Airlines suffered decline in passenger load, followed by slump in hotel Occupancy rate and heavy security deployment at highly raise buildings, heavily crowded public places, and in commercial complexes. Casinos, sporting events, state tourism, and international tourism received setback to maximum extent and US stock Values went down by seven percent. People showed less interest in visiting New York and rather liked to visit beaches to avoid terror attacks. People feared to use air Transportation. When the fear of terror attack persists, new marketing ideas



centered on community based tourism may reduce the impact of terror effect on travel business.

Saliq (2005) addressed the significance of ineffective methods of fighting terrorism. He defines terrorism as the unlawful application of violence or the threat of its application for political purposes and insists that the root cause of terrorism has to be sought out and then cured by means of moral persuasion. The author clearly supports the view that terrorism is a great evil to the peace of society and has to be eliminated with lesser evil approaches.

Rajagopalan (2007) dealt with India's counter – insurgency strategy. Author found India views terrorism as a political problem. India adopted soft approaches with minimum force utilisation and solve it. Globally armies adopt repressive measures and this forced terrorists to follow various guerrilla tactics which in turn compels state army to deploy more strength and undertakes large operations to hold territory. When state army maintain huge force to keep insurgents away from population and economic centres, terrorists used limited capacity to harass people by attacking at unexpected place and time. The author suggests modulate use of force along with political compromises will be more effective.

Goswami's (2009) delves into the effectiveness of the "trust and nurture" strategy in counter-insurgency operations, highlighting its merits and demerits. According to Goswami, the primary obstacle to solving the insurgency problem is the existing distrust between security forces and the local population. The "trust and nurture" strategy involves building trust between security forces and the local population through democratic political practices, judicious military methods, the deployment of special counterinsurgency forces, and an understanding of local social and cultural dynamics. However, Goswami acknowledges that implementing this strategy requires significant changes in approach, particularly within military institutions accustomed to more traditional methods of counterinsurgency. He suggests that fostering a culture of research within the military, particularly in subjects related to counterinsurgency, can facilitate the effective implementation of the "trust and nurture" strategy.

III. AIMS AND OBJECTIVES OF THE STUDY

1. To make an analysis on the theoretical concept of cross-border terrorism.
2. To examine the bilateral conflict has had international implications over the years.
3. To find out the problems and challenges on cross border terrorism in India.
4. To analysis the policies taken by government of India on cross border terrorism.

IV. RESEARCH METHODOLOGY

The present study adopts a descriptive and analytical approach to examine the phenomenon of cross-border terrorism. Secondary data, collected from a variety of sources, forms the basis of the analysis. This secondary data includes information extracted from annual reports of key government ministries such as the Ministry of Home Affairs, Ministry of Defence, and Ministry of External Affairs, as well as reports from the

Government of India. Additionally, the study draws upon insights from various academic journals, periodicals, and newspapers, which provide a broader perspective on the issue of cross-border terrorism. These sources likely offer diverse viewpoints, empirical evidence, and expert analysis, enriching the understanding of the subject matter.. Overall, the descriptive and analytical nature of the study, coupled with the use of secondary data from diverse sources, enhances the rigor and depth of the research, contributing to a more nuanced understanding of the complex phenomenon of cross-border terrorism.

V. ANALYSIS OF CROSS BORDER TERRORISM BETWEEN INDIA AND PAKISTAN

Cross-border terrorism between India and Pakistan is a longstanding and complex issue that has significantly impacted the security dynamics of the region. Here, I'll provide an overview of the phenomenon, its historical context, key factors contributing to it, and efforts to address it.

Historical Context

The roots of cross-border terrorism between India and Pakistan can be traced back to the partition of British India in 1947, which led to the creation of the independent nations of India and Pakistan. The unresolved territorial dispute over the region of Jammu and Kashmir has been a major source of tension between the two countries, resulting in multiple conflicts and acts of violence over the years.

Key Factors Contributing to Cross-Border Terrorism

Territorial Dispute: The dispute over Kashmir has fueled cross-border terrorism, with militant groups operating in the region and receiving support from elements within Pakistan. **State Sponsorship:** Pakistan has been accused of providing financial, logistical, and ideological support to militant groups that carry out attacks in India, viewing them as proxies in its conflict with India over Kashmir. **Proxy Warfare:** Cross-border terrorism has been used as a tool of proxy warfare between India and Pakistan, with both countries seeking to advance their strategic interests and undermine each other's security. **Religious Extremism:** Extremist ideologies and religious fundamentalism have also played a role in motivating and justifying acts of terrorism, exacerbating tensions between the two countries.

Efforts to Address Cross-Border Terrorism

Diplomatic Dialogue: Both India and Pakistan have engaged in diplomatic dialogue to address their differences and find peaceful resolutions to the Kashmir dispute. However, progress has been slow and often derailed by incidents of violence.

Counterterrorism Cooperation: Efforts to enhance cooperation on counterterrorism between India and Pakistan have been sporadic and hindered by mutual distrust. Limited cooperation has been observed in areas such as intelligence sharing and border security.

International Mediation: The international community, including organizations like the United Nations, has called for dialogue and mediation to reduce tensions and prevent



escalation between India and Pakistan. However, meaningful progress has been elusive.

Bilateral Agreements: Various bilateral agreements and confidence-building measures have been proposed and implemented to promote peace and stability between India and Pakistan. However, their effectiveness has been limited by the underlying political and security challenges. Despite these efforts, cross-border terrorism remains a persistent challenge and a significant obstacle to peace and stability in the region. Addressing this issue will require sustained political will, constructive dialogue, and comprehensive measures to tackle the root causes of terrorism and extremism.

The emergence of cross-border terrorism poses a significant threat to the security, democracy, and sovereignty of India. This form of terrorism, originating from neighboring countries, aims to destabilize India's peace and undermine its governance structures. The term "terrorism" itself is laden with political controversy, as it carries a deeply negative connotation due to its association with violence and the targeting of innocent civilians. Indeed, the definition of terrorism is subjective and varies based on political perspectives. What one group may consider an act of terrorism, another may view as legitimate resistance or a fight for freedom. This ambiguity complicates efforts to address and combat terrorism effectively. However, despite the lack of a universal definition, experts generally agree on common elements of terrorist acts. Terrorism often involves violence perpetrated by non-state actors who lack conventional political power but seek to influence or change policies they perceive as unjust or intolerable. In many cases, terrorist groups resort to extreme measures due to perceived grievances or to advance their ideological agendas. The intensification of Middle Eastern terrorism in the 1970s provides a historical context for understanding the roots of modern terrorism. This period saw the rise of militant groups opposed to peace initiatives and diplomatic efforts aimed at resolving conflicts, particularly the Arab-Israeli conflict over Palestine. As some Arab nations pursued peace agreements with Israel, militant factions within these countries turned to terrorism as a means of opposing what they saw as capitulation to the enemy.

In the context of India, cross-border terrorism reflects similar dynamics, with extremist groups exploiting regional conflicts, grievances, and geopolitical tensions to advance their agendas. These groups often operate from sanctuaries across the border, making it challenging for Indian authorities to counter their activities effectively. Addressing cross-border terrorism requires a multifaceted approach, including robust border security measures, intelligence cooperation with neighbouring countries, diplomatic initiatives to address root causes of conflict, and efforts to counter radicalization and extremist ideologies within society. By understanding the complexities and historical context of terrorism, India can develop more effective strategies to safeguard its security and sovereignty. The tactics employed by terrorists are often aimed at maximizing psychological impact on society or government, with the goal of coercing policy changes through fear and disruption. Terrorist attacks are meticulously planned to create

situations where governments feel compelled to alter their policies to prevent further violence or chaos. To achieve these objectives, terrorists often resort to mass destruction methods such as bombings and target transportation hubs or crowded public places to in still widespread anxiety and fear among the population.

The attacks on the World Trade Centre and the Pentagon on September 11, 2001, exemplified the devastating consequences of transnational terrorism, also known as cross-border terrorism. These attacks drew global attention to the threat posed by terrorist organizations that operate across national boundaries, exploiting the interconnectedness of the modern world to carry out their nefarious activities. Cross-border terror groups exhibit a global orientation, with the ability to move funds, personnel, and materials across borders with relative ease. They do not confine themselves territorially or ideologically to a particular country or region. Examples of such groups include Palestinian nationalist organizations and the Irish Republican Army (IRA), both of which have engaged in attacks, arms smuggling, and seeking refuge across state borders. For instance, the IRA obtained weapons from Libya and conducted attacks in Britain, as well as plotted assaults on British forces in Gibraltar. Similarly, Palestinian terrorists crossed into Israeli territory or what they considered Palestinian territory, seeking refuge in neighbouring states like Egypt and Syria. They executed high-profile acts of terrorism such as hijacking airplanes, taking hostages at the 1972 Olympics in Munich, and infamous incidents like the hijacking of an Italian cruise ship in 1985. These examples underscore the transnational nature of terrorism and the challenges it poses to national and international security. Addressing cross-border terrorism requires coordinated efforts, intelligence sharing, and cooperation among nations to disrupt terrorist networks, dismantle their infrastructure, and prevent further attacks. Additionally, addressing underlying grievances and promoting peace and stability in conflict-affected regions are crucial for long-term solutions to terrorism. You're correct in pointing out that despite their cross-border activities, groups like the Irish Republican Army (IRA) and Palestinian nationalist organizations maintained strong political and organizational ties to specific territories. While they operated transnationally, their goals and objectives were often rooted in territorial disputes or nationalist movements focused on specific regions.

Ray Takeyh and Nikolas Gvosdev's assessment highlights the nuanced nature of these groups' motivations and strategies. While they engaged in cross-border activities, such as seeking refuge, obtaining weapons, or launching attacks in multiple countries, their ultimate goals were often tied to specific territorial claims or political agendas. For example, the IRA's struggle for Irish independence cantered on Northern Ireland, and their attacks in Britain and elsewhere were aimed at furthering this cause. Similarly, Palestinian nationalist groups' actions, including hijackings and attacks on Israeli targets, were driven by their aspirations for Palestinian statehood and sovereignty over disputed territories. Despite their global reach, these groups maintained a strong territorial focus and sought to achieve their political objectives within specific



geographic contexts. Understanding this dynamic is essential for developing effective strategies to address cross-border terrorism while also addressing underlying political grievances and territorial disputes.

The landscape of cross-border terrorism has evolved significantly in recent years, with contemporary groups demonstrating a distinct departure from traditional armed movements. According to experts like Ray Takeyh and Nikolas Gvosdev, today's cross-border terror groups exhibit explicitly global characteristics, with broadly anti-Western ideologies and members drawn from diverse states rather than distinct communities. Unlike the armed groups of the past, which often sought to build or reshape nation-states, modern cross-border terrorists thrive in environments where state authority is weak or fragmented. They exploit the breakdown of state structures, moving fluidly between failed or unstable states to organize their activities and launch attacks. Moreover, while earlier armed movements typically focused on achieving localized objectives, contemporary terror groups espouse a broader agenda of spreading jihad or radical Islamist ideologies on a global scale. This shift reflects a departure from traditional notions of territoriality and the emergence of non-state actors as significant players in international security dynamics. Some analysts argue that Western intervention in the post-Cold War era, particularly through humanitarian interventions in the Third World, inadvertently facilitated the rise of modern cross-border terrorists. By undermining state authority and sovereignty, these interventions created fertile ground for non-state actors to operate and flourish. Additionally, internationalizing local conflicts through Western intervention blurred traditional borders and facilitated the movement of armed groups across territories.

This analysis underscores the complex interplay between geopolitics, state sovereignty, and the dynamics of terrorism in the contemporary world. Understanding these dynamics is essential for developing effective strategies to counter cross-border terrorism while also addressing the root causes and underlying grievances that fuel its proliferation. The concept proposed by Dr. Thomas P.M. Barnett offers a framework for understanding the global landscape based on the level of globalization and stability within states. According to Barnett, the world can be divided into three categories: core states, seam states, and gap states.

Core States: These are regions characterized by high levels of globalization, network connectivity, economic development, and stable governance. Core states typically experience rising standards of living and are integrated into global economic and political networks. Examples include North America, much of South America, the European Union, Russia, Japan, China, India, Australia, New Zealand, and South Africa. Despite some internal challenges, core states generally have robust institutions and security mechanisms in place.

Gap States: Gap states are regions where globalization is limited or absent, and governance is often weak or unstable. These states are plagued by poverty, disease, political repression, and chronic conflicts that serve as breeding

grounds for terrorism and extremism. Gap states lack the infrastructure and resources to effectively address internal security challenges, making them vulnerable to exploitation by non-state actors. Examples of gap states include countries in the Middle East, parts of Africa, and certain areas of Asia.

Seam States: Seam states lie between the core and gap states and are in transition towards full globalization. These regions are characterized by varying degrees of connectivity, economic development, and political stability. Seam states may experience both the benefits and challenges of globalization, including increased trade and investment opportunities, as well as social, economic, and political tensions. Examples of seam states include Mexico, Brazil, South Africa, Morocco, Algeria, Greece, Turkey, Pakistan, Thailand, Malaysia, the Philippines, and Indonesia.

The concept of core, seam, and gap states provides a useful framework for analysing the dynamics of globalization, security, and terrorism on a global scale. It highlights the interconnectedness between economic development, governance, and security, and underscores the importance of addressing the root causes of instability and conflict in order to effectively combat terrorism and promote global security and prosperity.

VI. THE POLICIES AND STRATEGY ON CROSS BORDER TERRORISM

1. India needs to formulate a comprehensive national anti-terror strategy which must address many issues – defence, law enforcement, intelligence, diplomacy, economic development, education, promotion of socio-political justice within the context of policies promoting national security.
2. Reforming Domestic Anti-Terror Apparatus:
 - a) Immediately beef up NIA
 - b) To create a strong NCTC (National Counter Terrorism Centre)
 - c) ensure that terrorism fighting organizations are equipped with adequate physical infrastructure, manned with suitably trained manpower and do not face a cash crunch; Most importantly, the agencies must be least in number and have a mechanism to seamlessly communicate and strike whenever needed, without jurisdictional conflicts.
3. Military Options: A strong state with the ability to give as well as it gets is a pre-requisite for peace. Military options like the recent surgical strikes across LoC not only enhance the deterrence in place against such attacks, but also ensure that the state-jihadi nexus is constricted.
4. Diplomatic Dialogue- Henry Kissinger, an American political scientist has written that nations cooperate for long periods only when they share common political goals and that policy must focus on these goals rather than on the mechanisms used to reach them. Thus, India must diplomatically engage not only Pakistan, but also Nepal, Bhutan, Bangladesh and Myanmar, so as to formulate policies for cooperation in economic, military, cultural and terrorism fields and ensure mutual quest for regional peace, prosperity and stability.
5. International Support– to further a policy of non-violent compellence.



a) India must designate Pakistan as a state sponsor of terrorism and continue its efforts to isolate Pakistan internationally as it has successfully done in South Asia (SAARC). To impose further political isolation, India could convince its partners to postpone bilateral meetings with Pakistan or delay visa processing

b) In more tangible economic terms, India and its partners could seek to raise the prominence of anti-terrorism issues at the IMF to condition further financing for Pakistan on cracking down on terrorist groups that attack other states.

c) Furthermore, India could seek an advance commitment from the United States and other major powers to cut security assistance to Pakistan in case of a future terrorist attack in India. Such agreements would raise the costs for any authorities that would subsequently violate them. China and U.S. both have great interests in stability between Pakistan and India. Both could be expected to press India and Pakistan to uphold any agreements and to contribute to fact-finding if there are disputes over compliance.

6. Internal Stability—India needs to understand the importance of maintaining peace and harmony amongst all religions and communities in India, with special reference to Muslim and people belonging to NE states and the RED CORRIDOR (Maoism). Pakistan has for decades exploited the dissatisfaction and given covert and overt assistance in fuelling insurgency in these regions. The intelligence agencies have an important role to play as the eyes and ears of the government in different communities to detect feelings of anger and alienation which need immediate attention.

7. Solving border issues with wider consultation, initiating confidence building measures and more and more people to people contact along with improved trade across the border would help.

8. Use of the latest surveillance technologies available such as drones, unmanned Aerial vehicle such as Nishant, Rustam-1 etc. to detect the presence of unwarranted activities across the border whether land or maritime.

VII. CONCLUSION

The passage highlights terrorism as a significant contemporary challenge, often described as the "cancer of the modern world." It underscores the multifaceted impact of terrorism, including its detrimental effects on societal order, economic development, political stability, and democratic institutions. Furthermore, the passage criticizes the Indian government's approach to tackling terrorism, particularly its cooperation with Pakistan. It suggests that before engaging with Pakistan on counterterrorism efforts, India should prioritize formulating its own comprehensive strategy to address internal security challenges. This includes dealing with terrorism perpetrated by extremist outfits such as the Naxal movements, which pose significant threats within the country. The passage advocates for India to rely on its own mechanisms and resources rather than seeking support from external actors like the United States or the military rulers of Pakistan. This reflects a call for greater self-reliance and autonomy in addressing security threats, as well as a recognition of the complexities and sensitivities involved in external partnerships on counterterrorism. Overall, the passage emphasizes the importance of a proactive and self-reliant approach to

combating terrorism, grounded in a thorough understanding of internal security dynamics and a commitment to upholding human rights, stability, and democratic principles.

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LAWAK NG BOKABULARYO AT ANTAS NG PAG-UNAWA NG PILING PAMPUBLIKONG MAG-AARAL SA FILIPINO

Christian R. Sunio^{1,3}, Dr. Rodel B. Guzman^{2,3}

¹Don Mariano Marcos High School

²College of Education, Isabela State University – Echague

³Central Graduate School, Isabela State University-Echague

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ABSTRAK

Isinagawa ang descriptive-correlational na pag-aaral na ito upang suriin ang ugnayan sa pagitan ng lawak ng bokabularyo at antas ng pag-unawa ng piling pampublikong mag-aaral sa Filipino 9. Nakabatay ito sa paniniwalang ang kakayahan ng mga mag-aaral na bigyan ng angkop na kahulugan ang mga terminong binabasa ay mayroong malaking impluwensiya sa kakayahan nitong unawain ang kabuuang mensahe ng teksto. Natuklasan mula sa pag-aaral na karamihan sa mga mag-aaral ay nasa antas na pagkabigo o frustration sa kasanayan sa bokabularyo habang nasa lebel naman na instructional sa antas ng pag-unawa. Napatunayan sa pananaliksik na mayroong sapat na ebidensiyang estadistika upang masabing mayroong makabuluhan at direktang ugnayan ang kasanayan sa bokabularyo at antas ng pag-unawa ng mga mag-aaral. Nangangahulugan ito na ang pagkakaroon ng mga mag-aaral ng sapat na kakayahan upang bigyang kahulugan ang mga terminong ginagamit sa teksto ay nakatutulong upang higit na mapataan ang antas ng pag-unawa. Dahil dito, iminumungkahi ang pagsasagawa ng interbensiyon upang mapaunlad ang kasanayan sa bokabularyo ng mga mag-aaral.

URING SALITA: *Kasanayan sa Bokabularyo, Komprehensiyon, Antas ng Pag-unawa, Frustration Level, Instructional Level*

INTRODUKSIYON

Makabuluhan ang gawaing pagbasa sa mga mag-aaral at sa kabuuan ng miyembro ng lipunan. May kasiyahan matatamo sa pagbabasa. Gayundin, may karunungan natatamo sa gawaing ito. Ang pagbabasa ay maaaring pampalipas oras o isang paraan ng paglilibang. Ang pagbabasa ay nakatutulong upang makadama ang sinoman ng tuwa sa mga panahong sila ay nalulumbay o tawa sa mga pagkakataong nakadarama ng pagkabagot ang tao. Bukod sa sanhi ito ng panandaliang mga positibong emosyon, maaari rin itong magdulot ng aral sa tao. Naglalaman ang iba't ibang babasahin ng makabuluhang mga aral sa buhay. Sa kabilang dako, instrumento rin naman ang pagbabasa sa pagtatamo ng karunungan. Ang mga tekstong pampanitikan, mga tekstong ekspositori mula sa iba't ibang disiplina o karungan ay nagtataglay ng mga karunungan at impormasyong kinakailangan ng tao sa kanyang pang-araw-araw na pamumuhay. Sa kasaysayan ng bansa, maraming beses ng naitampok ang kasanayan sa pagbabasa bilang sangkap ng karungan. Dahil dito, mahihinuha ang paliwanag ni Adigue (2023) na nakatutulong nang malaki sa pag-unawa, pagpasa ng kultura at kaalaman ang pagbasasa.

Ang pagbabasa ay ang proseso ng pagbibigay ng kaukulang kahulugan sa mga nakalimbag na simbolo (Badayos, 2016). Isa itong prosesong mental at kognitibo na kailangang pagtuunan ng

pansin. Ang mambabasa ay kailangang makapagbigay ng angkop na kahulugan ng tekstong binabasa upang masabing tagumpay ang prosesong pinagdaanan. Sa kabila nito, isang katotohanan na hindi pare-pareho ang paraan ng pagpapakahulugan ng bawat mambabasa. Dahil ayon kay Goodman, ang pagbabasa ay isang *psycholinguistic guessing game*. Nangangahulugan ito na kahulugan ng isang teksto ay nakapedende sa kakayahan ng mambabasa na laruin at hulahan ang mga kahulugang dala-dala ng nakalimbag na simbolo. Ayon naman kay Coady, ang kakayahang umunawa ay apektado ng *schema* o karanasan ng mambabasa sa wika at paksa ng teksto. Nangangahulugan ito na dahil iba-iba ang karanasan, may mga pagkakataong iba-iba rin ang paraan ng pag-unawa ng mambabasa (Guzman, *et al.*, 2015).

Sa kasalukuyang estado, sapat ang mga pag-aaral na mahina ang mag-aaral na Pilipino sa kasanayan sa pagbasa. Sa panahon ngayon ay marami ang mag-aaral na may nahihirapan sa pag-unawa at may mababang kasanayan sa mga teksto na nagiging dahilan ng kawalan ng interes ng pag-aaral. Litaw sa mga pagtataya ang suliranin sa komprehensiyon ng mga mag-aaral na Pilipino. Sa report na inilabas ng PISA (Programme for International Student Assessment) noong 2019, natuklasan na sa 79 na bansang kalahok sa pagsusulit, ang Pilipinas ang may pinakamababang puntos sa antas ng komprehensiyon sa pagbasa (San Juan, 2019). Sa huling datos ng PISA noong 2022, hindi pa



rin nagbabago ang mababang komprehensiyon ng mga mag-aaral na Pilipino.

Napatunayan din nina Perez (2019) na sadyang mahinang bumasa at mababa ang komprehensiyon ng kani-kanilang mga mag-aaral. Dagdag pa, maraming salik ang nagsasanhi ng mga bagay na ito. Ganito rin ang natuklasan ni Saraos (2021) sa kanyang pag-aaral. Napatunayan niyang maraming mag-aaral ang nahihirapang magbigay ng kahulugan sa tekstong binabasa lalo na kung gumagamit ang mga ito ng komplikadong mga termino.

Ang kakayahang umunawa ay karugtong naman ng pagbibigay kahulugan sa talasalitaan o bokabularyong ginagamit sa teksto. Ayon kay Bartolome (2017), may mga naniniwala na kapos sa bokabularyo ang mga Pilipino. May mga suliranin na ang mga mag-aaral ay kulang sa kakayahang pambokabularyo. Samakatuwid ang kakulangan sa kaalaman sa bokabularyo ay nakaaapekto sa bawat indibidwal lalo't higit sa kanilang kaalaman. Isa sa madalas na suliranin ng mga mag-aaral ang kakulangan sa kaalaman kakayahang pambokabularyo. Mapapadali kung gagamit ang mga mag-aaral ng mga estratehiya sa pagpapaunlad ng kakayahang pambokabularyo. Ang mga pamamaraang ito ay lubhang makakatulong sa mga indibidwal na mga mag-aaral. Kapansin-pansin ang mga mag-aaral ngayon sa mga pampublikong paaralan ng sekundarya ay nahihirapan lalo sa mga malalalim na salita sa araling Filipino. Ito ay nagpapatunay lamang na lahat ng salita ay may katuturan sa kaalamang pambokabularyo. Sa pag-aaral ni Saraos (2021), pinatutunayan na mayroong mahalagang ugnayan ang kasanayan sa pagpapakahulugan sa mga bokabularyong nababasa at ang antas ng pag-unawa.

Malapit ang ugnayan ng lawak ng bukabolaryo at ang kabuuang antas ng pag-unawa ng mga mag-aaral. Subalit kakaunti ang mga pananaliksik na nakapokus sa ugnayan ng mga ito. Dahil dito, ang pag-aaral na ito ay isasagawa upang suriin ang lawak ng bokabularyo, kasanayan sa pagbasa at ang antas ng pag-unawa ng mga mag-aaral sa layuning makabuo ng mga pamamaraan upang tugunan ang suliranin sa pagtuloy na pagbaba ng kakayahan at kasanayan sa pagbasa ng mga mag-aaral na Pilipino.

RESULTA AT TALAKAYAN

Talahanayan 1. Antas ng Kasanayan sa Bokabularyo ng mga Mag-aaral Gawang-Gurong Pagsusulit.

Grado	Deskripsyon	Frequency	Percentage
80-100	<i>Independent</i>	33	16.18
59-79	<i>Instructional</i>	75	36.76
58-below	<i>Frustration</i>	96	47.06
<i>Mean Score</i>		58.75	<i>Frustration</i>

Ang Talahanayan 1 ay nagpapakita sa antas ng kasanayan sa bokabularyo ng mga mag-aaral batay sa gawang-gurong pagsusulit. Makikita mula sa talahanayan na karamihan sa mga

LAYUNIN NG PAG-AARAL

- Tukuyin ang antas ng kasanayan sa bokabularyo ng mga mag-aaral sa Filipino 9 gamit ang gawang-gurong pagsusulit.
- Ilarawan ang antas ng pag-unawa ng mga mag-aaral sa Filipino 9 batay sa sumusunod na dimensiyon ng pagbasa:
 - Pag-unawang Literal;
 - Pag-unawang Interpretasyon;
 - Pag-unawang Kritikal;
 - Aplikasyon; at,
 - Pagpapahalaga.
- Suriin ang ugnayan sa pagitan ng antas ng kasanayan sa bokabularyo at antas ng pag-unawa ang mga mag-aaral sa Filipino 9.

METODOLOHIYA

Isinagawa ang pag-aaral na ito sa tatlong pampublikong paaralan sa Echague, Isabela. Ito ang ang Don Mariano Marcos High School, Highway Region National High School at Pangal Sur High School. *Descriptive-correlational* ang disenyong ginamit sa pag-aaral at ito ay kinasangkutan ng 204 na mga mag-aaral sa Baitang 9 na pinili gamit ang *probability sampling* na 95% *confidence level* at 5% *margin of error*. Gawang-gurong pagsusulit ang pangunahing instrumenting ginamit sa pag-aaral upang kalapin ang datos. Ang pagsusulit para sa antas ng kasanayan sa bokabularyo ay ibinatay sa pananaliksik ni Saraos (2021) habang ang pagsusulit para sa antas ng pag-unawa ay hinalaw mula sa pananaliksik ni Velasco (2022). Ang pagsusuri sa antas ng kasanayan sa bokabularyo at antas ng pag-unawa ay ibinatay sa mga panuntunan ng *Philippine Informal Reading Inventory* (Phil-IRI) 2018 kit. Ginagamit ito ng Kagawaran ng Edukasyon upang tayahin ang kasanayan sa bokabularyo ng mga mag-aaral. Makalipas makakuha ng permit sa kinauukulan, personal na pinamunuan ng mananaliksik ang pagsasagawa ng pagsusulit. Ang mga datos ay naiproseso gamit ang Statistical Package for Social Science (SPSS) research. Ginamit ang *mean score* upang ilarawan at tukuyin ang kasanayan sa bokabularyo at antas ng pag-unawa ng mga mag-aaral. Bukod pa rito, ginamit ang Kendall tau b para naman sa pagsusuri sa ugnayan ng dalawang baryabol.

mag-aaral ay nasa antas na *frustration*. Maging ang kabuuang performans ng mga mag-aaral ay nasa antas din ng *frustration* o pagkabigo. Nangangahulugan ito na ang mga respondent ay



nagtamo ng marka sa pagsusulit na gawang-guro na 58 o mas mababa pa. Ang mga mag-aaral sa ganitong antas ay walang kakayahang bigyan ng kahulugan ang mga salita o bokabularyong nababasa sa mga akademiko at pampanitikang teksto. Ang mga mag-aaral sa antas ding ito ay nangangailangan ng agarang interbensiyon upang maitaas ang kasanayan sa pagbibigay-kahulugan sa mga bokabularyong nababasa.

Makikita pa rin sa talahanayan na mayroon namang 75 na respondent o 36.76 bahagdan mula sa kabuuang bilang ng mga mag-aaral ang kabilang sa antas na “*Instructional Level*”. Ang mga mag-aaral na nasa antas na ito ay mayroong kabuuang marka mula sa pagsusulit na gawang-guro mula 759 hanggang 79. Sa ganitong sitwasyon, ang mga mag-aaral ay mayroong tiwala sa sarili at kakayahang kilalanin at bigyan ng kahulugan ang mga bokabularyong nababasa mula sa mga teksto lalo kung ginagabayan sila ng kani-kanilang mga guro.

Ang pag-aaral ay kinasangkutan naman ng mga 33 mag-aaral na kabilang sa antas na “*Independent*”. Binubuo nila ang 16.18 bahagdan mula sa kabuuang bilang mga respondent. Itinuturing ang antas na ito bilang pinakamataas na antas. Sa ganitong sitwasyon, ang mga mag-aaral ay may tiwala sa sarili at may kakayahang bigyang-kahulugan ang mga salitang nababasa mula teksto- mahihirap man ito o nagtataglay ng mga simpleng kahulugan. Nakapagbibigay din sila ng angkop at wastong mga kahulugan sa salitang binabasa may gabay man o wala mula sa kanilang mga guro.

Talahanayan 2. Antas ng Pag-unawa ng mga Mag-aaral batay sa mga Dimensiyon sa Pagbasa.

Dimensiyon ng Pagbasa	Antas	Deskripsiyun
1. Pag-unawang Literal	80.61	<i>Independent</i>
2. Pag-unawang Intepretasyon	71.46	<i>Instructional</i>
3. Pag-unawang Kritikal	65.21	<i>Instructional</i>
4. Aplikasyon	77.18	<i>Instructional</i>
5. Pagpapahalaga	69.83	<i>Instructional</i>
<i>Mean Score</i>	72.86	<i>Instructional</i>

Ang Talahanayan 2 ay nagpapakita sa antas ng pag-unawa ang mga mag-aaral batay sa limang (5) dimensiyon sa pagbasa. Makikita mula sa talahanayan na sa kasanayan sa pag-unawang literal ay maituturing ang mga mag-aaral bilang “*Independent*” batay sa resulta ng gawang-gurong pagsusulit. Nagtamo sila ng kabuuang marka na 80.61. Ang pag-unawang literal ay tumutukoy sa kakayahan ng mga mag-aaral na alalahanin ang mga impormasyong tahasang binabanggit sa tekstong binasa. Sa ganitong sitwasyon, masasabing ang mga mag-aaral ay mayroong tiwala sa sariling kaya nilang maalala ang mga tiyak na impormasyong kanilang nabasa may gabay man o wala mula sa kanilang guro.

Sinusuportahan ng pag-aaral na ito ang mga naging tuklas ni Saraos (2021) ukol sa lawak ng bokabularyo ng mga mag-aaral sa Filipino. Sa kanyang pag-aaral, natuklasan niyang kung hindi mababa ay napakababa ang kasanayan ng mga mag-aaral na magbigay ng angkop na kahulugan sa mga terminong kanilang nababasa. Halos katulad din ng pag-aaral na ito ang resulta ng pananaliksik ninan Santillan at Daenos (2020). Sa kanilang pananaliksik, natuklasan na bagaman mataas ang paniniwala ng mga mag-aaral sa *Senior High School* na sila ay mahusay sa pagbibigay ng kahulugan sa mga terminong nababasa, kabaliktaran naman ito ng kanilang aktuwal na kasanayan na malayong mas mababa kaysa sa kanilang paniniwala.

Sinasalungat ng pag-aaral na ito ang resulta ng pananaliksik nina Misuari-Adburasul (2023) na nagsasabing mahusay ang mga mag-aaral sa usapin ng kasanayan sa bokabularyo dahil mataas ang kanilang kakayahan na bigyan ng kahulugan ang mga terminong nababasa sa mga teksto. Bukod pa rito, salungat din ang resulta ng pag-aaral na ito sa pananaliksik ni Mercado (2020). Sa kanyang pananaliksik, lumilitaw na ang mga mag-aaral sa kursong edukasyon ay may katamtamang husay sa pagbibigay kahulugan sa mga bokabularyo. Ayon sa kanyang pag-aaral sapat na ang kakayahang ito upang makaunawa at magkaroon ng makabuluhang interaksyon kung nababasa ng nobela para sa kanilang edad, nanonood ng pelikula o kaya naman ay nakikipagtalastasan sa kanilang mga kaibigan at kaklase.

Makikita pa mula sa talahanayan na batay sa tinuos na markang 71.46, ang mga mag-aaral na nasa antas na “*Instructional*” sa dimensiyon ng pag-unawang interpretasyon. Sa dimensiyong ito, ang mga mag-aaral ay inaasang magkaroon ng ganap na pag-unawa sa kaisipan ng awtor kalakip ang iba pang karagdagang kahulugan tulad ng malalim na pagpapakahulugan, implikasyon at pagkilala sa tunay na hangarin ng awtor sa kanyang sulatin. Dagdag pa, dahil sila ay nasa lebel na *independent*, nagagawa nila ang kasanayang ito nang may tiwala sa sarili sa gabay ng kanilang guro.

Ang dimensiyon sa pagbasa na pag-unawang kritikal ay tumutukoy naman sa kakayahan ng mag-aaral na sumagot sa mga tanong na bakit at paano. Tumutukoy din ito sa kakayahan ng tagabasa na pag-ugnayin ang mga pangyayari sa teksto upang



maunawaan ang sanhi at bunga ng mga pangyayari. Batay sa resulta ng tinuos na marka ng mga respondent na 65.21, masasabing ang mga ito ay nasa antas na "Instructional". Nangangahulugan ito na sa pamamagitan ng gabay ng guro ay mayroong kakayahan ang mga mag-aaral na magkaroon ng ganap na pag-unawa sa masasalimoot na konseptong nasa teksto kabilang ang pag-uugnay-ugnay sa sanhi at bunga ng mga pangyayari sa teksto.

Ang dimensiyon naman ng aplikasyon ay tumutukoy sa kakayahan ng mambabasa na pagsanibin ang mga kaisipang nabasa at naunawaan at mga karanasan upang makalikha ng mga bagong pananaw o pilosopiyang magagamit sa pang-araw-araw na pakikipamuhay. Makikita mula sa talahanayan na ang mga respondent ay nasa antas na "Instructional" dahil sa tinuos na mark ana 77.18. Nangangahulugan ito na sa tulong ng guro ay magkakaroon ng kakayahan ang mga mag-aaral na iugnay ng mag-aaral sa kanilang tunay na buhay ang mga impormasyon at aral na nabasa mula sa teksto.

Nasa antas din na "Instructional" ang dimensiyong pagpapahalaga ng mga respondent. Nakabatay ito sa kanilang marka na 69.83. Ang dimensiyong pagpapahalaga ay tumutukoy ito sa paglikha o pagbubuo ng sariling kaisipan o pananaw batay

sa mga kaisipan, kasanayan at kawilihang natamo sa binasang teksto. Lumilitaw sa lebel na ito ang paghanga sa kasiningan at kagandahan ng teksto. Magagawa ito sa pamamagitan ng pagbabago sa ilang elemento ng teksto gaya ng pamagat, karakter, panimula, wakas at iba pa. Sa resulta ng pag-aaral, masasabing ang mga mag-aaral, sa pamamagitan ng gabay ng kanilang guro, ay may kakayahang bumuo ng mga pansariling pananaw at pilosopiya sa buhay batay na rin sa mga natamong kaisipan at kawilihan sa tekstong binasa.

Pinatutunayan ng resulta ng pag-aaral na ito na sadyang mahihina ang mga mag-aaral na Pilipino sa pagbasa. Sa mga naunang pag-aaral nina Macadangdang (2020), Pasenos (2020), Isaguirre (2019), Bagaoisan (2019) at Andres (2019) ay litaw na litaw ang katotohanan na bagaman mahusay ang mga mag-aaral na makaalala ng mga impormasyong direktang nakasulat sa tekstong binasa, kapos ang kakayahan ng mga ito na tugunan ang kasanayang may kinalaman sa pagsusuri sa kawastuhan at kabuuang mensahe ng tekstong binabasa. Dahil sa mga tuklas na ito, malawakan din ang panawagan na bumuo ng mga interbensiyong makatutulong sa pagpapaunlad sa antas ng pag-unawa ng mga mag-aaral sa anomang antas ng edukasyon.

Talahanayan 3. Relasyon sa Pagitan ng Antas ng Pag-unawa at Kasanayan sa Bokabularyo ng mga mag-aaral sa Filipino

Antas ng Pag-unawa	Kasanayan sa Bokabularyo	
	Corr.	Sig.
1. Pag-unawang Literal	0.39*	0.000
2. Pag-unawang Intepretasyon	0.28*	0.000
3. Pag-unawang Kritikal	0.23*	0.001
4. Aplikasyon	0.23*	0.001
5. Pagpapahalaga	0.17*	0.017

* - Significant

Ipinakikita sa Talahayan 3 ang relasyon sa pagitan ng antas ng pag-unawa batay sa limang (5) dimensiyon sa pagbasa at ang kasanayan sa bokabularyo ng mga respondent. Mula sa talahanayan ay makikita ang makabuluhan at positibong ugnayan sa pagitan ng antas ng pag-unawa at kasanayan sa bokabularyo ng mga mag-aaral. Nakabatay ito sa tinuos na *correlational value* mula 0.17 hanggang 0.39 at *significance level* na hindi tataas sa 0.017. Dahil dito, pinawawalang-bisa ng pananaliksik na ito ang *null hypothesis* ng pag-aaral na nagsasabing walang makabuluhang ugnayan sa pagitan ng antas ng pag-unawa at kasanayan sa bokabularyo ng mga mag-aaral.

Mula sa resulta ng pag-aaral ay mahihinuha na mayroong mataas na posibilidad na ang pagpapaunlad sa kasanayan sa bokabularyo o ang pagbibigay ng kahulugan sa mga terminong mababasa sa teksto ay makatutulong nang malaki upang mapaunlad ang kasanayan ng mga mag-aaral na alalahanin ang mga

impormasyong direktang nakasulat sa teksto at ang pagkakaroon ng ganap na pag-unawa sa mensahe ng teksto sa pamamagitan ng pag-uugnay sa iba't ibang bahagi at pangyayari sa teksto. Dagdag pa rito, ang pagpapaunlad sa kasanayan sa pagbibigay ng kahulugan sa mga terminong mababasa sa teksto ay mayroong malaking posibilidad na makatutulong upang mapaunlad ang kasanayan ng mga mag-aaral na suriin ang impormasyong nababasa, iugnay ito sa tunay na mga pangyayari, pagbubuo ng mga kaugnay na pilosopiya, prinsipsyo at pagkilala sa tekstong binasa bilang likhang-sining.

Makabuluhan ang kasanayan sa pagpapakahulugan ng mga bokabularyo sa kabuuan ng antas ng pag-unawa at komprehensiyon ng mga mag-aaral. Pinatatatag ng kasalukuyang pag-aaral ang mga naunang pananaliksik na nagpapakitang ang kasanayan sa bokabularyo ay nakatutulong upang paunlarin ang kasanayan sa pag-unawa sa tekstong binabasa.



Sa mga nagdaang eksperimental na pag-aaral ay lumilitaw at napatutunayang ang mga mag-aaral na mayroong mas mataas na kasanayan sa pagbibigay-kahulugan sa mga terminong nababasa sa paligid, o sa mga teksto ay mayroong mataas na impluwensiya sa antas ng pag-unawa o komprehensiyon ng mga tagabasa (Misuari-Abdurasul, 2023; Gultiano, 2022; Dong, *et al.*, 2020; Santillan at Daenos, 2020; Carranza *et al.*, 2015).

Sa mga korelasyunal naman na pananaliksik ay natuklasan nila na bukod sa iba't ibang sosyo-demograpiko at sosyo-ekonomikong mga salik na nakaapekto at may posibleng ugnayan sa debelopment ng pag-unawa o komprehensiyon ng mga mag-aaral sa elementarya, sekundarya at kolehiyo, ang kakayahan ng mga mag-aaral na bigyan ang iba't ibang termino ng angkop na kahulugan gamit ang iba't ibang estratehiya ay mayroong direktang ugnayan sa pag-unlad ng komprehensiyon ng mga mag-aaral. Ibig sabihin nito, habang tumataas ang kasanayan sa bokabularyo ng mga mag-aaral ay tumataas din ang antas ng kanilang pag-unawa (Vacalares, *et al.*, 2023; Caraig at Quimbo, 2022; Saraos, 2021; Tomas, *et al.*, 2021; Mercado, 2020).

KONGKLUSYON

Batay sa naging resulta ng pag-aaral, ang sumusunod na kongklusyon ang nabuo:

1. Napatunayan sa pananaliksik na ang lebel ng kasanayan sa bokabularyo ng mga respondent ay nasa antas na *frustration* o pagkabigo. Nangangahulugan ito na lubhang nahihirapan ang mga mag-aaral na bigyang-kahulugan ang mga terminong nababasa nila sa teksto, ang mga ito man ay simple o may komplikadong kahulugan.
2. Ang mga respondent ay nasa antas na *instructional* sa antas ng pag-unawa na nangangahulugan na may kakayan silang unawain ang mensahe ng teksto ang masuri ang mahahalaga nitong impormasyon tungo sa pag-unawa, paggamit sa mga ito sa totoong buhay, paglikha ng mga prinsipyo batay sa teksto at iba pa.
3. Natuklasan sa pananaliksik na ito na may sapat na ebidensiyang estadistika upang patunayan na mayroong makabuluhan at direktang ugnayan ang antas ng kasanayan sa bokabularyo at antas ng pag-unawa ng mga mag-aaral sa Filipino. Nangangahulugan ito na habang tumataas ang kasanayan ng mga mag-aaral na bigyan kahulugan ang mga termino sa tekstong binabasa ay tumataas din ang kanilang kasanayan na unawain ang nilalaman ng tekstong binabasa.

REKOMENDASYO

Batay sa mga naging resulta ng pag-aaral, ang sumusunod na mga mungkahi ang nabuo:

1. Sa mga mag-aaral, iminumungkahi na ipagpatuloy ang sigasig sa pagbabasa upang matuloy na mapaunlad ang kasanayan sa bokabularyo at antas ng pag-unawa.
2. Para sa pamunuan ng mga paaralan at guro sa Filipino, iminumungkahi ang pagkakaroon ng agarang interbensiyon upang mapaunlad ang kasanayan sa bokabularyo ng mga mag-aaral. Maaaring magkaroon ng iba't ibang pormal na di-

pormal na mga gawain o programa tulad ng *drills*, paghahanda ng mga personal na sanggunian ng mga termino, pagtuturo ng iba't ibang estratehiya sa pagpapakahulugan at iba pa.

3. Para sa pamunuan ng paaralan, hinihikayat na maglaan ng panahon, seminar o pondo para sa pagsasanay ng mga guro na nakapokus sa mga makabagong estilo at pamaraan ng pagtuturo na makatutulong sa pagpapaunlad ng mga kasanayan sa bokabularyo, kasanayan sa pagbasa at antas ng pag-unawa ng mga mag-aaral.
4. Para sa mga susunod na mananaliksik, iminumungkahing magsagawa ng iba pang mga katulad na pananaliksik upang makabuo ng mas mapananaligang kongklusyon. Bukod pa rito, maaari ring magpokus sa iba pang baryabol tulad ng interes at kultura sa pagbabasa, mga paniniwala at praktika sa pagbabasa ng mga mag-aaral, guro at mga magulang.

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A STUDY ON GENDER DIFFERENCES IN FINANCIAL LITERACY

Binod Murmu

Assistant Professor, Sido Kanhu Murmu University, Dumka

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ABSTRACT

Financial Literacy is the basic understanding of personal finance. With the increase in complexity of the financial market the need for financial literacy has become more and more important. Financial literacy helps an individual to make informed financial decision. The study aims to identify the differences in financial literacy level of the male and female respondents.

KEYWORDS: Financial Literacy, Financial Knowledge, Financial Behaviour, Financial Attitude

INTRODUCTION

Even though personal finance market has developed rapidly over the past several years, there is still a need for increased financial literacy. Despite the fact that personal finance has grown in importance over the last several years, there is still a sizable gap in financial literacy. Financial literacy is crucial for people of all ages and backgrounds to make sound financial decisions, improve financial well-being and work towards achieving their long-term financial objectives. Governments, educational institutions and financial organizations often promote financial literacy programs to enhance the overall financial well-being of individuals and society as a whole.

Being financially literate means having the knowledge to understand financial concepts and terminology, such as banks accounts, credit cards, loans and insurance.

Financial literacy is essential for individuals to achieve financial stability, plan for the future, and work towards their financial goals. With financial literacy, people can make wise decisions about managing their income, assets, and debt, and they are better equipped to protect themselves from financial fraud and scams. Developing financial literacy is crucial for individuals to achieve financial well-being and make sound financial decisions throughout their lives.

Financial literacy refers to the knowledge, understanding and skills necessary to make informed and effective decisions about money and financial matters. It involves having the ability to manage personal finances, including budgeting, saving, investing, borrowing, and spending in a responsible and informed manner.

LITERATURE REVIEW

Sekar and Gowri (2015) in their research article examines the financial literacy level among respondents in Coimbatore, finding an overall financial literacy level of 50.90%, which indicates a general lack of awareness about financial matters. The study highlights that young people have low savings habits and bear the burden of financial planning due to reduced

employee benefits. The research finding also reveals that financial literacy varies significantly based on demographic and socioeconomic factors such as gender, education, income, marital status, and number of dependents. Interestingly, age does not seem to have an impact on financial literacy level.

Bucher-Koenen et. Al. (2021) in their study shows that women are less financial literate than men. The survey experiment result shows that women tend to respond don't know in financial knowledge related questions. Further the findings also shows that about one-third of the financial literacy gender gap is due to lack of confidence among females.

Kamoto S, Komamura K (2021) in their study of financial literacy among 25,000 individuals in Japan shows that financial literacy of the respondents increases until early 60's and then starts declining, although the confidence in financial literacy follows the opposite trend, particularly among man. Further, the study also shows that financial literacy level of men is higher than that of women.

Rink et. Al. (2021) in their study uses empirical research to examine how culture may contribute to the commonly noted disparities in financial literacy between men and women. The study discovered that women have substantially lower financial literacy than men using nationally representative survey data from India. However, in matrilineal states, however, the study does not find any evidence of this gender discrepancy. In addition, the study also shows that matrilineal women know more about money than patriarchal women do.

OBJECTIVES OF THE STUDY

The main objective of the study is to find the differences in financial literacy of male and female respondents.

SAMPLE SIZE

A sample size of 100 male and 100 female respondents of Mizoram were selected for the purpose of the study.



SCOPE OF THE STUDY

The study is limited to the people of Aizawl city.

LIMITATION OF THE STUDY

Since the study is restricted to the people of Aizawl it may not be the representative of all the population.

DATA ANALYSIS

Table 1: Age of the Respondents

		Age				Total
		Less than or equal to 30	Between 31-40	Between 41-50	Above 50	
Male	Count	26	25	24	36	111
	% within Gender	23.4%	22.5%	21.6%	32.4%	100.0%
Female	Count	14	31	28	16	89
	% within Gender	15.7%	34.8%	31.5%	18.0%	100.0%
Total	Count	40	56	52	52	200
	% within Gender	20.0%	28.0%	26.0%	26.0%	100.0%

Source: Sample Survey

The above table shows the age wise distribution of the respondents. The table shows that among the male respondents 32.4 per cent belongs to the age group of above 50 years, 23.4 per cent 30 years and below, 22.5 per cent between 31 to 40 years and the rest 21.6 per cent belongs to the age group of 41

to 50 years. Among the female respondents, 34.8 per cent belongs to the age group of 31 to 40 years, 31.5 per cent between 41 to 50 years, 18 per cent above 50 years and the remaining 15.7 per cent belongs to the age group of 30 years and below.

Table 2: No. of Family Members of the Respondents

		No. of family members			Total
		2-4	5-7	Above 7	
Male	Count	30	65	16	111
	% within Gender	27.0%	58.6%	14.4%	100.0%
Female	Count	30	50	9	89
	% within Gender	33.7%	56.2%	10.1%	100.0%
Total	Count	60	115	25	200
	% within Gender	30.0%	57.5%	12.5%	100.0%

Source: Sample Survey

The above table shows the no. of family members among the respondents. Among the male respondent's majority i.e. 58.6 per cent are of family members between 5-7, 27 per cent among 2-4 family members and 14.4 per cent among the family members above 7. Among the female respondent's majority

56.2 per cent are of family members between 5-7, 33.7 per cent among the family members between 2-4 and 10.1 per cent among the family members - above 7.

Table 3: Educational Qualification of the Respondents

		Educational Qualification				Total
		Upto 10th	12th	Graduation	Post Graduation	
Male	Count	25	31	43	12	111
	% within Gender	22.5%	27.9%	38.7%	10.8%	100.0%
Female	Count	30	26	22	11	89
	% within Gender	33.7%	29.2%	24.7%	12.4%	100.0%
Total	Count	55	57	65	23	200
	% within Gender	27.5%	28.5%	32.5%	11.5%	100.0%

Source: Sample Survey



The above table shows the educational qualification of the respondents. The result shows that among the male respondent 38.7% of the respondents are graduate, 27.9 per cent have a qualification of 12th, 22.5 percent upto 10th standard and the remaining 10.8 per cent have a qualification of post graduate.

Among the female respondents 33.7 per cent have a qualification of upto 10th standard, 29.2 per cent have a qualification of 12th standard, 24.7 percent graduate and the rest 12.4 per cent have an educational qualification of post graduate.

Table 4: Annual Family Income of the Respondents

		Annual family income				Total
		3-4 lakhs	4-5 lakhs	5-6 lakhs	Above 6 lakhs	
Male	Count	72	21	8	10	111
	% within Gender	64.9%	18.9%	7.2%	9.0%	100.0%
Female	Count	60	13	8	8	89
	% within Gender	67.4%	14.6%	9.0%	9.0%	100.0%
	Count	132	34	16	18	200
	% within Gender	66.0%	17.0%	8.0%	9.0%	100.0%

Source: Sample Survey

Table 4 shows the annual family income of the respondents. Among male respondents 64.9 per cent have an income of 3-4 lakhs, 18.9 per cent have an income of 4-5 lakhs 7.2 per cent 5-6 lakhs and the rest 9 per cent has an annual family income of

above 6 lakhs. Among the female respondents 67.4 per cent has an income of 3-4 lakhs, 14.6 per cent 4-5 lakhs and 9 per cent 5-6 lakhs and the rest 9 per cent has an income of above 6 lakhs.

Table 5: Employment status of the Respondents

		Employment			Total
		Govt.	Non-Govt.	Self-Employed	
Male	Count	73	11	27	111
	% within Gender	65.8%	9.9%	24.3%	100.0%
Female	Count	53	16	20	89
	% within Gender	59.6%	18.0%	22.5%	100.0%
	Count	126	27	47	200
	% within Gender	63.0%	13.5%	23.5%	100.0%

Source: Sample Survey

The above table shows the employment status of the respondents. The result shows that among both male and female

respondents' majority of the respondents are government employees.

Table 6: Financial Literacy programme of the Respondents

		Have you attended any financial literacy programme?		Total
		No	Yes	
Male	Count	92	19	111
	% within Gender	82.9%	17.1%	100.0%
Female	Count	75	14	89
	% within Gender	84.3%	15.7%	100.0%
	Count	167	33	200
	% within Gender	83.5%	16.5%	100.0%

Source: Sample Survey

The above table shows whether the respondents have attended any financial literacy programme or not. The result shows that more than 80 per cent of both male and female respondents have not attended any financial literacy programme.

**Table 7: Financial Knowledge level of the Respondents**

		Financial Knowledge Level			Total
		Poor level of Financial Knowledge	Average Level of Financial Knowledge	High level of Financial Knowledge	
Male	Count	2	44	65	111
	% within Gender	1.8%	39.6%	58.6%	100.0%
Female	Count	4	30	55	89
	% within Gender	4.5%	33.7%	61.8%	100.0%
	Count	6	74	120	200
	% within Gender	3.0%	37.0%	60.0%	100.0%

Source: Sample Survey

The above table shows the financial knowledge level of the respondents. The result shows that 58.6 per cent of the male respondents possessed high level of financial knowledge in comparison to 61.8 per cent among female respondents which

determines that the percentage of high level of financial knowledge is higher slightly higher among the female respondents.

Table 8: Financial Behaviour level of the Respondents

		Financial Behaviour Level			Total
		Indifferent Financial Behaviour	Average Level of Financial Behaviour	Positive Financial Behaviour	
Male	Count	8	24	79	111
	% within Gender	7.2%	21.6%	71.2%	100.0%
Female	Count	4	19	66	89
	% within Gender	4.5%	21.3%	74.2%	100.0%
	Count	12	43	145	200
	% within Gender	6.0%	21.5%	72.5%	100.0%

Source: Sample Survey

The above table shows the financial behaviour level of the respondents. The table depicts that majority of both male and female respondents possessed positive financial behaviour. It

also shows that 71.2 per cent of male respondents in comparison to 74.2 per cent of female respondents possessed positive financial behaviour.



Table 8: Financial Attitude level of the Respondents

		Financial Attitude Level			Total
		Indifferent Financial Attitude	Average Financial Attitude	Positive Financial Attitude	
Male	Count	45	49	17	111
	% within Gender	40.5%	44.1%	15.3%	100.0%
Female	Count	35	43	11	89
	% within Gender	39.3%	48.3%	12.4%	100.0%
	Count	80	92	28	200
	% within Gender	40.0%	46.0%	14.0%	100.0%

Source: Sample Survey

Table 8 depicts the financial attitude level of the respondents. The result shows that the percentage of positive financial attitude is low among both male and female respondents. Only

15.3 percent of male and 12.4 per cent of female possessed positive financial attitude.

Table 8: Financial Literacy level of the Respondents

		Financial Literacy level			Total
		Poor Financial Literacy	Average Financial Literacy	Good Financial Literacy	
Male	Count	0	64	47	111
	% within Gender	0.0%	57.7%	42.3%	100.0%
Female	Count	3	50	36	89
	% within Gender	3.4%	56.2%	40.4%	100.0%
	Count	3	114	83	200
	% within Gender	1.5%	57.0%	41.5%	100.0%

Source: Sample Survey

The above table shows the financial literacy level of the respondents. The result shows that majority of both male and female respondents possessed average financial literacy and

42.3 per cent of male in comparison to 40.4 per cent of female respondents possessed good financial literacy.

Hypothesis

H01: There is no significant difference between gender and financial knowledge level of the respondents.

Table 9: Chi Square Test on association between gender and financial knowledge

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.750 ^a	2	.417
Likelihood Ratio	1.754	2	.416
Linear-by-Linear Association	.005	1	.945
N of Valid Cases	200		

The above table shows the association between gender and financial knowledge. Since the chi square p- value .417 is more than the 0.05 level of the significance value the null hypothesis

is accepted and conclude that there is no association between gender and financial knowledge of the respondents.



H02: There is no significant difference between gender and financial behaviour level of the respondents.

Table 10: Chi Square Test on association between gender and financial behaviour.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.668 ^a	2	.716
Likelihood Ratio	.684	2	.710
Linear-by-Linear Association	.466	1	.495
N of Valid Cases	200		

The above table shows the association between gender and financial behaviour. Since the chi square p- value .716 is more than the 0.05 level of the significance value the null hypothesis

is accepted and conclude that there is no association between gender and financial behaviour of the respondents.

H03: There is no significant difference between gender and financial attitude level of the respondents.

Table 11: Chi Square Test on association between gender and financial attitude.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.513 ^a	2	.774
Likelihood Ratio	.516	2	.773
Linear-by-Linear Association	.032	1	.859
N of Valid Cases	200		

The above table shows the association between gender and financial attitude. Since the chi square p- value .774 is more than the 0.05 level of the significance value the null hypothesis

is accepted and conclude that there is no association between gender and financial attitude of the respondents.

H04: There is no significant difference between gender and financial literacy level of the respondents.

Table 12: Chi Square Test on association between gender and financial literacy

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.803 ^a	2	.149
Likelihood Ratio	4.920	2	.085
Linear-by-Linear Association	.504	1	.478
N of Valid Cases	200		

The above table shows the association between gender and financial literacy. Since the chi square p- value .149 is more than the 0.05 level of the significance value the null hypothesis is accepted and conclude that there is no association between gender and financial literacy of the respondents which is in contrast with the findings of Lusardi and Mitchell (2011) and Patel (2018).

FINDINGS

- The study shows that majority of both male and female respondents possessed average level of financial literacy. It was also found that the percentage of good and average financial literacy is slightly higher among the male respondents.

- The findings on financial attitude also shows that financial attitude among male and female is very poor. Among male respondents 40.5 per cent and female 39.3 per cent possessed indifferent financial attitude and only 15.3 per cent of male and 12.4 per cent of female respondents possessed positive financial attitude.
- The findings on financial behaviour shows that the percentage of positive financial behaviour is higher among the female respondents. And the result also shows that majority of both male and female respondents possessed positive financial behaviour.
- The findings on financial knowledge shows that the percentage of high financial knowledge is higher among female respondents.



- No significant association was found between gender and financial knowledge, gender and financial behaviour, gender and financial attitude, gender and financial literacy.

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ACCOUNTS OF ELEMENTARY TEACHERS ON THE USE OF PEDAGOGIES IN ADDRESSING LEARNING LOSS DURING THE IN-PERSON CLASSES: A PHENOMENOLOGY

Mariz G. Porras¹, Joju Amor D. Villajos²

Master of Arts in Elementary Education, St. Mary's College of Tagum, Inc.
Graduate School Department, Tagum City, Philippines

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ABSTRACT

The purpose of this phenomenological study is to describe the experiences of Elementary School Teachers in using pedagogies to address learning loss during in-person classes. The concept and idea for the study were gleaned from Shulman's (1986) Pedagogical Content Knowledge Theory, which proposes that effective teachers possess a specific knowledge set alongside certain personality qualities, abilities, and dispositions. This theory emphasizes that teaching well requires both artistry and scientific understanding. There are numerous practices, techniques, and abilities that contribute to effective instruction, and these cannot be fully captured in a limited list. The study is further supported by Vygotsky's (1978) Cultural-Historical Activity Theory, which views the learning environment from a social constructivist perspective. This theory fundamentally explains how students acquire knowledge in a social context, interacting with peers and mentors. Additionally, Bandura's (1977) Social Learning Theory is used as a supporting framework, which suggests that increased social interaction leads to higher levels of learning. Finally, the study is grounded in van Dijk's (2020) Theory of the Digital Divide. There were five (5) public elementary school teachers participated in the in-depth interview. They were selected using purposive sampling method. The results revealed in the experiences, coping up mechanisms, and insights in using pedagogies and strategizing to address the learning loss of the students. More so, collaboration with parents, ineffectively usage of modular learning, problems in reading skills of the learners, structuring of rewards and punishment, and flexibility and consistency in teaching. The results are believed to be significant to teachers and Department of Education regarding on the experiences of public elementary school heads returning to being classroom teacher.

KEYWORDS: experiences, public elementary school teachers, learning loss, phenomenology, Davao de Oro

INTRODUCTION

Learning loss became a setback in students' educational progress and competencies compared to what is typically expected for their age group. With the persistent challenges posed by the pandemic over the past couple of years, the extent of this learning loss has been heightened, particularly among students from disadvantaged backgrounds or those facing additional barriers to learning to marginalized backgrounds. With this in mind, teachers and administrators are facing the dilemma on how learning loss can be resolved as the world starts to resume to its normal pace after the vaccines for COVID-19 have been developed. Likewise, this is one of the major concerns that has been experienced in the research setting.

To highlight, school closures in Indonesia affected the majority of its 62 million learners in a span of more than 19 months. It was estimated that these closures expanded the learning loss of students from 21 points to 35 points in the reading scores in Program for International Student Assessment (PISA). Likewise, this is also estimated to reduce the lifetime earnings in the country which is approximately USD359 billion in present value (UNICEF, 2021; Afkar & Yarrow, 2021). Moreover, the 41 weeks of school closure in Malaysia which

ended in June 2022 significantly impacted the students as it widened the learning loss among those students in marginalized sectors. This was due to the insufficiency of learning devices that were necessary to facilitate online learning during the pandemic. In fact, Malaysia has been considered to be one of the countries with high learning losses and it becomes a national emergency (Ganeson, 2022). In the rural areas of Chhattisgarh, India, it was determined that the reading and arithmetic levels that are normally achievable in 2 years during the pre-pandemic era would already take 3 years to be acquired during the pandemic. Data estimates suggest that there is a one-year learning loss among elementary learners in the area (ASER Centre, 2022).

In the Philippines, a joint study was conducted by the University of San Carlos (USC) and Thames International School in 18 private schools in the last quarter of previous year, enjoining 3,600 students from Grades 1-12. The study's purpose was the determination of learning loss among the learners in private schools through the first Philippine Assessment for Learning Loss Solutions (PALLS). Findings showed that students nationwide suffered in learning loss, particularly in the subject areas of science and mathematics. This was manifested in the average scores of the sampled test



takers in mathematics and science which are 54.1 percent and 47.5 percent, respectively. These average scores are inferior to the passing score of 60 which is set by the Department of Education (Marcelo, 2023).

Additionally, in Mawab District, Davao de Oro Division, many public-school teachers in the elementary level have observed the apparent learning loss among their pupils, as the resumption of full face-to-face classes has happened. Many teachers complained about the observable disparity between their learner's grade level and the proficiency that they manifest at the same time. Elementary teachers have been vocal about the learning loss in almost all subject areas including reading, mathematics, and science. This raise worries in the elementary faculty at large. Likewise, this also poses questions as to what kind of pedagogy and strategies are suitable to help learners cover for their learning loss and be able to aid them in catching up with the supposed level of proficiency that they must have.

In today's education, many teachers are using pedagogies in addressing learning loss during in-person classes, especially in the province of Davao de Oro, due to the students' widening learning loss. I had looked through journal articles on the internet and discovered studies about the causes that lead to learning loss and the usage of different pedagogies to close them. I learned that similar studies on the learning loss had been done prior to my research. Previous studies of UNICEF (2021) entitled "Towards a child-focused COVID-19 response and recovery: A call to action" and ASER Centre (2022) entitled "Status of learning during the pandemic: Evidence from 3 states in 2021" showed statistical data on the extent of learning loss that simultaneously happens in different countries. However, these studies failed to account the actual pedagogical practices implemented by various elementary teachers in public schools to resolve the widespread learning loss among students.

Undoubtedly, there is an imperative to undertake this study given the growing evidence that many students have experienced significant learning setbacks during the pandemic, with potential repercussions on their overall development and well-being. This issue extends beyond individual students; it has broader societal implications, including negative effects on the country's economy, as indicated by previous research findings. Consequently, this study holds considerable research value as it seeks to explore how elementary teachers in public schools employ pedagogical strategies to address learning loss among students. The findings of this study could yield critical insights that are pertinent and applicable to various stakeholders, including teachers, students, school administrators, and the Department of Education (DepEd).

PURPOSE OF THE STUDY

The purpose of this phenomenological study is to explore and understand the teacher's accounts on the use of pedagogies

nowadays. Further, this study wants to explore the different pedagogies of teachers in addressing the learning loss during the in-person classes and how the teachers cope with their situations.

RESEARCH QUESTION

This research work seeks to answer the following questions:

1. What are the experiences of elementary teachers on the use of pedagogies in addressing learning loss during in-person classes?
2. How did elementary teachers cope with the challenges encountered on the use of pedagogies in addressing learning loss during in-person classes?
3. What are the insights drawn from the experiences of elementary teachers on the use of pedagogies in addressing learning loss during in-person classes?

METHODS

This study employs a qualitative design with a phenomenological approach to explore the under-researched topic of learning loss among pupils from the perspective of elementary teachers. Qualitative research is appropriate here due to the broad and subjective nature of the topic, which is ill-suited for quantitative methods that demand high specificity and measurability. Instead, this approach allows for an in-depth, contextual understanding based on non-numerical data such as text and interviews, enabling a detailed exploration of concepts, beliefs, and experiences.

This qualitative study examined the experiences of five elementary teachers from public schools in the Mawab District, Davao de Oro, using Nielsen's (2021) guidelines on the formative and summative potential of such research. A purposive sampling method, selecting participants who could offer detailed and reliable insights, was used. The study involved in-depth interviews as the main data collection technique, aiming to provide robust support for the research findings or identify areas needing further study.

In this study, coding and thematic analysis were employed to extract themes from textual data by examining word meanings and sentence structures (Medelyan, 2019). Data coding involves organizing information into meaningful categories to summarize and describe phenomena systematically (Allen, 2017). Thematic analysis, a method used in analyzing qualitative data, typically from interviews and transcripts, follows six steps: familiarization, coding, generating topics, analyzing themes, defining and labeling themes, and reporting themes (Caulfield, 2019).

REVIEW OF RELATED LITERATURE

Teaching Pedagogies

Professional growth supports pedagogical practice and encourages teacher development. In Kentucky, districts must create a professional development plan that is based on research that promotes high-quality professional development, and teachers must complete annual professional development hours (Bridgstock & Tippett, 2019). It also gives teachers the ability to spark their students' interests and foster a progressive learning environment. Teachers can assist students in learning



at their own pace by utilizing a variety of pedagogical techniques (SplashLearn, 2021).

Moreover, according to Paterson (2018), pedagogy is the cornerstone of both teaching and learning. To educate students for the new issues of today, teachers must review and modernize their pedagogical approaches. Schools continue to be primarily seen as being particularly resistant to innovation, despite the increased reporting of innovative instructors and institutions.

Learning Loss During Pandemic

In general, researchers are starting to worry about the influence that Covid-19 has had on student learning progress and, in particular, whether learning loss has been experienced because it has significantly disrupted the worldwide education system. The authors thoroughly analyzed the recorded learning loss evidence that was recorded between March 2020 and March 2021 in order to assess this. To do this, a thorough literature review has been conducted. The novelty of the topic led to the identification of eight research; seven of them discovered evidence of student learning loss among at least some of the participants, while one of the seven also discovered instances of learning gains in a particular subgroup. The individuals in the remaining study made greater learning gains. Four of the studies also noted a rise in inequity, with some student groups suffering more severe learning deficits than others. In order to enhance the volume of studies generated, their geographic scope, and the number of pupils they monitor, more research is deemed necessary (Donnelly & Patrinos, 2022).

Indeed, education systems all throughout the world are experiencing severe disruptions as a result of the Covid-19 pandemic's emergency status. Nearly 1.6 billion students, or 94% of the global student population, were affected by educational institution closures at their peak, according to UNESCO (2020). Teachers and administrators were unprepared for this change due to the sudden nature of the circumstances. Thus, they were compelled to construct emergency remote-learning systems relatively immediately. Education scholars are starting to examine the effects of these closures on student learning progress—or lack thereof—in reaction to this disturbance (Park, 2018).

Teaching Pedagogies during In Person Classes

Exploring teaching pedagogies in the context of in-person classes involves delving into a wide array of strategies designed to enhance student engagement, understanding, and retention.

According to Bonwell (2019), employing active learning strategies is a foundational work that introduces the concept of active learning, where students participate in activities that promote analysis, synthesis, and evaluation of class content. It contrasts traditional lecture methods with interactive techniques such as discussions, problem-solving, and group work, highlighting the benefits for student engagement and learning. More so, constructivist pedagogy, arguing for classrooms where learners construct their own understanding and knowledge of the world, through experiencing things and reflecting on those experiences. They advocate for a shift from teacher-centered instruction to student-centered learning environments (Brooks, 2018)

Utilization of Teaching Pedagogies in Addressing Learning Loss

Finding out exactly where and what those gaps are, as well as which learners struggle with them, is the first step in correcting learning gaps, according to Heather (2020). Quizzes, according to the author, are a quick and simple approach to formatively evaluate students' understanding of what they have learnt. These can be brief end-of-topic tests, she continued, or they can even encompass a few units of a subject. To find learning gaps, teachers must make sure that the questions are well-balanced and distributed. Teachers must fill up the gaps after identifying them and then reassess the learners' level of mastery using quizzes. Learning gaps can be addressed and closed using these strategies.

In a study that was published, Cabigao (2021), the author began to identify writing learning gaps from the student outputs in his class. He developed and put into action the intervention program based on the data acquired. To assess the degree of progress made, the performance levels of learners were compared before and after the implementation phase. A systematic strategy known as the input-process-output approach was used by the teacher to address the disparities in fundamental writing abilities among the students. Determining and carefully documenting the learning gaps should therefore be the first steps in resolving them, followed by carefully devising an intervention program based on the identified learning gaps. The predicted result of improved performance from the learners succeeds this. teachers adjust classroom strategies, maintain students' attention over a longer time, and enhance the learning process. Moreover, when dealing with children who actively disrupt classroom order, one should always stay calm and immediately control the problem (Yu, 2022).



RESULTS AND DISCUSSIONS

Table 1
Major Themes and Core Ideas on the Perceptions of Public Elementary Teachers on the Use of Pedagogies in Addressing Learning Loss During In-Person Classes

Major Themes	Core Ideas
Reading Struggles Evident with the Learners	<ul style="list-style-type: none"> it was then observed that there is reading difficulties among learners. one must employ strategies that aids reading problems. not only in reading but also in analysis and comprehension. difficulties in reading basic sight words are evident. the retention and comprehension occur due to difficulty in reading was observed.
Employing Strategies and Techniques for Instructional Delivery	<ul style="list-style-type: none"> students possess diverse cognitive, emotional, and developmental requirements. one-size-fits-all instruction may fail to engage all students effectively. traditional assessment methods may not accurately measure individual student progress. students may lack confidence and motivation when their learning needs are not adequately addressed. disparities in learning outcomes may widen due to insufficient adjustment to diverse learning needs.
Declining Engagement in Learning among Students	<ul style="list-style-type: none"> noticeable decrease in students' enthusiasm for learning compared to before. instances of students losing focus during lessons or discussions serve as tangible examples of these challenges. increased reliance on parental or sibling assistance for completing educational tasks. seeing pupils who are hesitant to interact with the teacher after the pandemic seeing learners struggle in cooperating with classmates and sustaining attention in class
Manifesting Behavioural Changes of the Learners	<ul style="list-style-type: none"> students exhibit increased social engagement and decreased listening and attentiveness observed. behavior in elementary school is particularly unpredictable and challenging. noticeable differences in behavior between students attending face-to-face classes before and after returning.
Assessing the Learner's Strengths and Weaknesses to Tailor Instruction Effectively	<ul style="list-style-type: none"> administering a pretest to identify learner strengths, weaknesses, and required strategies. targeting weaknesses to enhance skill development. evaluating initial student understanding through pre-assessments.

Reading Struggles Evident with the Learners

The findings shed light on a multifaceted challenge within the learning environment, beginning with the observation of reading difficulties among learners. In response to these challenges, educators have been proactive in employing a variety of strategies aimed not only at addressing reading problems but also at enhancing analysis and comprehension skills. Despite these efforts, difficulties persist, particularly with the reading of basic sight words, underscoring a fundamental barrier to literacy. This hurdle contributes significantly to issues with retention and comprehension, as the foundational difficulty in reading impedes the ability to grasp

and remember more complex information. The interconnection of these factors highlights the critical need for targeted interventions that address the roots of reading challenges to foster a more supportive and effective learning environment.

Reading Struggles Evident with the Learners encapsulates the common obstacles students encounter in mastering reading skills. Shaywitz (2019)'s groundbreaking book stands as a beacon of understanding and support in this realm. It illuminates the complexities of dyslexia and related reading difficulties, offering profound insights into their neurological foundations. Through research-backed strategies and



interventions, empowers educators, parents, and advocates to navigate and mitigate these challenges effectively. Thus, it serves as a transformative resource, guiding the way toward overcoming these hurdles and unlocking the full potential of every learner (Shaywitz, 2019).

Employing Strategies and Techniques for Instructional Delivery

The traditional one-size-fits-all approach in education often fails to meet the diverse cognitive, emotional, and developmental needs of students, leading to disparities in learning outcomes. Standard assessment methods may not accurately reflect individual progress, potentially demotivating students when their unique needs are unmet. This underscores the importance of educators adopting inclusive and adaptive teaching strategies to ensure that education effectively supports all students, regardless of their specific requirements.

A study meticulously explores a multitude of effective teaching strategies and techniques, blending theoretical insights with practical applications. It underscores the essential fusion of artistry and scientific principles in effective teaching and emphasis on evidence-based practices ensures that educators are equipped with empirically validated methods for optimizing student learning. From crafting engaging lesson plans to implementing formative assessments, it offers actionable guidance that resonates with educators across various instructional contexts. By emphasizing the alignment of instructional strategies with learning objectives, it empowers educators to create purposeful and impactful learning experiences for their students. "The Art and Science of Teaching" stands as a seminal work, inspiring educators to embrace innovation while staying grounded in research-backed pedagogical approaches, ultimately fostering a culture of continuous improvement in teaching and learning (Marzano, 2020).

Declining Engagement in Learning among Students

There has been a noticeable decline in students' enthusiasm for learning, a shift starkly contrasted with attitudes observed prior. This waning interest is exemplified by instances where students lose focus during lessons or discussions, highlighting a significant challenge in maintaining engagement. Concurrently, there's been an increased reliance on parents or siblings to assist with educational tasks, suggesting that the support structures within traditional classroom settings may not be fully meeting students' needs post-pandemic. Moreover, a hesitance to interact with teachers has become apparent among pupils, indicating a potential disconnect or lack of confidence that has emerged in the aftermath of extended periods of remote learning or pandemic-related disruptions.

Drawing from self-determination theory, they emphasize the importance of students' perceived control and autonomy in influencing their level of engagement in academic tasks. The authors propose agency as a fourth dimension of student engagement, alongside the commonly recognized aspects of behavioral, emotional, and cognitive engagement (Graham, 2019).

Manifesting Behavioral Changes of the Learners

In recent observations within the educational sphere, the nuanced shift in student behavior has become evident, characterized by an increase in social engagement compared to a decrease in listening and attentiveness. This dichotomy is especially pronounced in elementary school settings, where behavior has become notably unpredictable and challenging. Educators have pinpointed significant behavioral differences among students who attended face-to-face classes prior to widespread disruptions, such as the pandemic, and their demeanor upon returning. These variations underscore a complex interplay of social and cognitive adjustments that students are navigating. The heightened desire for social interaction, possibly stemming from prolonged periods of isolation or remote learning, appears to clash with the traditional classroom expectations of listening and attentiveness. This scenario presents a unique challenge for educators, who must now seek innovative strategies to balance the innate need for social engagement with the equally crucial requirement for focused attention and receptivity during class activities.

By focusing on various elements within the school context, such as peer relationships, teacher-student interactions, and classroom climate, it elucidates the intricate dynamics that contribute to behavioral changes among learners. The significance of peer relationships in influencing students' behavioral development. Furthermore, the role of teacher-student interactions in fostering positive behavioral outcomes. She highlights the importance of supportive and nurturing teacher-student relationships in promoting students' engagement, motivation, and overall well-being (Wentzel, 2019).

Assessing The Learner's Strengths and Weaknesses to Tailor Instruction Effectively

Implementing pretests as a foundational step in educational practice has proven instrumental in effectively addressing learner needs and tailoring instructional strategies accordingly. By administering pretests, educators gain valuable insights into students' individual strengths and weaknesses, allowing for targeted interventions aimed at enhancing skill development. These assessments serve as a vital tool in evaluating initial student understanding, providing educators with a baseline from which to gauge progress and adjust instruction as needed. Through the systematic analysis of pretest results, educators can identify specific areas requiring additional support or enrichment, thereby facilitating a more personalized learning experience for each student. By strategically targeting weaknesses identified through pretesting, educators can optimize instructional delivery and foster a more comprehensive understanding of the subject matter, ultimately empowering students to achieve their full academic potential.

By embedding assessment seamlessly into the learning process, educators gain immediate insights into student understanding, allowing for timely adjustments to instruction. Central to the concept of actionable feedback. It emphasizes the importance of feedback that is specific, timely, and relevant to individual student needs. This feedback not only helps students understand their strengths and weaknesses but also guides their next steps



in learning. Moreover, it underscores the role of formative assessment in promoting a growth mindset among students. By focusing on progress rather than fixed ability, formative assessment encourages students to see mistakes as

opportunities for learning and improvement. This mindset shift fosters resilience and a willingness to take risks in the learning process (William, 2019).

Table 2
Major Themes and Core Ideas on the Coping Mechanisms in the Challenges Encountered on The Use of Pedagogies in Addressing Learning Loss During In-Person Classes

Major Themes	Core Ideas
Fostering Structured Learning Routines	<ul style="list-style-type: none"> giving homework and activities to make the learners understand the lesson better providing materials for parents to follow up on their child's learning to address difficulties having observed that there should be routines and rules for classroom management having observed that a routine was established for the students to determine what is right and wrong observing that there should be giving of rewards, aside from imposing rules, to manage student behavior
Promoting Motivation Through Receiving Appreciation and Recognition	<ul style="list-style-type: none"> receiving small rewards from the school head as a symbol of appreciation encourages and motivates ongoing efforts being motivated helps in easing one's difficulties and exhaustion observing a display of love for teaching as a motivation amidst exhaustion being motivated to address learning loss by one's students and work salary
Peer Learning through Strategy Sharing	<ul style="list-style-type: none"> asking from one's colleagues based on their experience, school heads, and parents sharing of similar experiences with other teachers during their time together having observed empowerment was observed due to sharing practices on pedagogy among colleagues helping one another by sharing practices and suggestions on how to address learning losses
Employing Strategies in Addressing Students Learning Gaps	<ul style="list-style-type: none"> having the need for prioritization on morning remediation to tackle accumulated learning gaps from previous years providing sequential tasks of increasing difficulty proves effective for students. having the need to utilize eclectic approach as effective in promoting student learning
Collaborating with Parents in Supporting Student Learning Recovery	<ul style="list-style-type: none"> having collaboration with parents extends beyond school accessibility and control, offering substantial support in the learning process engaging parents for addressing learners' difficulties, especially in classes with large sizes conducting home visits to involve parents and address struggling students' needs.

Fostering Structured Learning Routines

Educators utilize a range of strategies to enhance student learning and manage behavior effectively. Assigning homework and providing resources for parental involvement aids in reinforcing lesson concepts and addressing learning difficulties. Establishing structured routines and rules fosters a

conducive learning environment, promoting a sense of security and responsibility among students. Additionally, the use of rewards encourages positive behavior, contributing to a positive classroom atmosphere. Overall, these strategies collectively support student learning and behavior management, ensuring an optimal learning environment for all.



More so, creating a classroom environment where students feel valued, respected, and empowered to take ownership of their learning. He emphasizes the importance of building strong relationships between teachers and students, fostering mutual respect and trust. Kohn also highlights the role of meaningful engagement in promoting positive behavior, suggesting that students are more likely to behave responsibly when they are actively involved in relevant and meaningful learning experiences involvement of students in decision-making processes, promote collaboration and cooperation among peers, and prioritize intrinsic motivation over extrinsic rewards. By shifting the focus from compliance to community, it argues that educators can create learning environments that support academic achievement, social-emotional growth, and lifelong learning (Kohn, 2021).

Receiving Appreciation and Recognition

Receiving small rewards from school leaders as tokens of appreciation can greatly motivate teachers, fostering a sense of recognition for their ongoing efforts. This encouragement plays a vital role in alleviating challenges and fatigue, as motivation serves as a powerful antidote to exhaustion. Teachers' passion for their profession also acts as a source of motivation, driving them to persevere even when faced with difficulties. Moreover, the motivation to address students' learning gaps, coupled with the incentive of a stable income, further fuels educators' commitment to their work. These motivational factors not only contribute to teachers' personal satisfaction but also enhance their effectiveness in supporting student learning and well-being.

An emphasis of the importance of relatedness, or the sense of connection and belonging within the school community, in shaping teachers' motivation. Recognition and appreciation from colleagues, administrators, and students play a vital role in fulfilling the need for relatedness, enhancing teachers' sense of competence and fostering a supportive work environment. By applying SDT as a theoretical framework, it provides insights into the motivational dynamics of teaching profession and underscore the significance of fostering an environment that supports teachers' psychological needs. Recognition and appreciation, in particular, emerge as essential components in enhancing teachers' motivation and job satisfaction, ultimately contributing to their continued commitment to the profession (Wang, 2022).

Peer Learning through Strategy Sharing

Teachers draw motivation and support from various sources within their professional community. Seeking advice from colleagues, school leaders, and parents provides valuable insights and encouragement. Collaborating with fellow educators allows for the exchange of experiences and practices, fostering a sense of camaraderie and shared learning. Additionally, sharing pedagogical strategies enhances teaching effectiveness and promotes collaboration among colleagues. By helping one another navigate challenges, including addressing learning losses, teachers reinforce their commitment to continuous improvement and student success. These collaborative efforts not only strengthen the professional

community but also contribute to teachers' motivation and resilience in the face of educational challenges.

The importance of structured cooperative learning activities that encourage active participation and equal contribution from all group members. It discusses various cooperative learning techniques, such as group discussions, problem-solving tasks, and collaborative projects, that can be effectively implemented in university classrooms to enhance student learning outcomes. Furthermore, it provides practical guidance for instructors on how to implement cooperative learning strategies effectively and highlight the importance of establishing clear expectations, structuring collaborative tasks, and providing feedback to support student learning and collaboration (Johnson, 2019).

Employing Various Strategies in Addressing Students Learning Gaps

Morning remediation sessions effectively address learning gaps by providing focused support early in the day. Sequential tasks of increasing difficulty enable gradual skill development and mastery. An eclectic teaching approach, integrating diverse methods and resources, caters to individual learning needs and enhances engagement in the classroom.

Educators play a crucial role in promoting a culture of growth mindset in the classroom. The importance of providing feedback that emphasizes effort and progress rather than innate ability. By praising students' hard work, resilience, and strategies for overcoming obstacles, educators can foster a growth mindset and empower students to take ownership of their learning. Furthermore, the transformative potential of mindset interventions in closing achievement gaps. By instilling a belief in the power of effort and resilience, educators can help students from diverse backgrounds overcome learning challenges and reach their full potential (Dweck, 2019).

Collaborating with Parents in Supporting Student Learning Recovery

Collaboration with parents is integral to the educational process, extending beyond mere school accessibility and control to provide substantial support in fostering students' learning. Particularly in classrooms with large sizes, engaging parents becomes crucial for effectively addressing learners' difficulties and ensuring their academic success. One effective strategy involves conducting home visits, which not only involve parents directly in their child's education but also provide educators with valuable insights into students' home environments and individual needs. By forging strong partnerships with parents and involving them in the educational journey, educators can create a supportive network that enhances student learning and well-being both inside and outside the classroom.

Hence, an underscore notion that when schools actively engage families and communities in supporting student learning, students are more likely to experience academic success. By fostering collaborative relationships among stakeholders, schools can create a supportive environment that promotes student learning and well-being. The significance of meaningful parent involvement in the education process, advocating for strategies that empower parents to play an active



role in their child's learning journey. They discuss various forms of parental involvement, including participation in school events, volunteering opportunities, and engagement in educational decision-making processes. By involving parents as partners in the education process, schools can effectively address student learning recovery and promote positive academic outcomes for all students (Mapp, 2021).

Table 3
Major Themes and Core Ideas on the Insights Drawn from The Experiences of Elementary Teachers on The Use of Pedagogies in Addressing Learning Loss During In-Person Classes

Major Themes	Core Ideas
Ethical Concerns Arising from Modular Learning	<ul style="list-style-type: none"> it was observed that while modular learning benefits eager learners, it also leads to demotivation as students rely heavily on parents for answers. it was observed that the busy nature of parents led to a reliance on answer keys, it undermines the effectiveness of modular education for students. cheating in modular learning does not lead to genuine learning, hence, students gain nothing from it. due to the pandemic, there are limitations in addressing issues with the modular approach. with highlighting with the reliance on copying answers from the answer key, it undermines the critical thinking skills.
Streamlining Teacher Responsibilities to Teaching	<ul style="list-style-type: none"> there should be a consistent advocacy for the Department of Education to prioritize teaching over additional administrative tasks. a suggestion wherein, to prioritize remedial classes for students rather than focusing on administrative paperwork. there should be a significance of readily available materials, particularly in initiatives like reading camps. as observed, there should be an emphasis on training effectiveness, particularly in addressing learning loss in reading.
Understanding the Vital Role of Teacher-Student Connections in Classroom Settings	<ul style="list-style-type: none"> upon realization on the significance of teacher-student relationship during face-to-face classes. as observed, there is a concluding the efficacy of face-to-face classes. upon observation, an expression of happiness on the return of face-to-face classes because many students were observed to lack knowledge.

Ethical Concerns Arising from Modular Learning

Modular learning, while flexible, can demotivate students and promote cheating by relying too much on parents or answer keys. Pandemic-related limitations worsen these issues, hindering genuine learning and critical thinking development. To improve, we must focus on promoting student engagement and independence within the modular framework.

The collection and utilization of student data, raising questions about transparency, consent, and the potential for data exploitation. While personalized learning purports to offer tailored instruction, it may inadvertently exacerbate existing inequalities in education, particularly for marginalized students

who lack access to necessary resources or are disproportionately impacted by data-driven decision-making. Furthermore, the commercialization of education within the personalized learning landscape, highlighting the influence of ed-tech companies and the profit-driven nature of educational innovation. It warns against the uncritical adoption of personalized learning technologies without careful consideration of their ethical implications and potential consequences for students and society at large (Watters, 2021).

Streamlining Teacher Responsibilities to Teaching

In advocating for a more effective educational system, there's a call to prioritize teaching over additional administrative tasks



within the Department of Education. This entails shifting the focus towards providing remedial classes for students, rather than getting bogged down by administrative paperwork. Furthermore, the availability of materials, especially in initiatives like reading camps, holds significant importance in ensuring the success of such programs. Finally, emphasis is placed on the effectiveness of training, particularly in addressing learning loss in reading, highlighting the need for targeted and impactful interventions to support students' academic growth.

In addition, ensuring that teacher education programs provide aspiring educators with the knowledge, skills, and experiences necessary to meet the diverse needs of students effectively. By streamlining teacher education, policymakers can better support the professional development of educators and ultimately improve student outcomes. Through the advocacy for policy change, the discrepancies between teacher preparation programs and the realities of the classroom are addressed. By promoting greater alignment between theory and practice, as well as emphasizing the importance of hands-on learning experiences and seek to enhance the overall quality and effectiveness of teacher education (Zimpher and Howey, 2019).

Understanding the Vital Role of Teacher-Student Connections in Classroom Settings

The shift back to face-to-face classes has highlighted the crucial role of direct teacher-student interactions in enhancing learning and academic success. Educators recognize the limitations of remote and hybrid models and appreciate the benefits of in-person teaching, such as the ability to tailor lessons to individual needs and more effectively address learning gaps. This return to classroom teaching allows for stronger connections and improved support for students, particularly those who faced challenges in virtual learning environments.

The return to in-person classes emphasizes the importance of teacher-student interactions for academic success. Educators value the personalized approach and ability to address learning gaps that face-to-face teaching offers over remote or hybrid models. Strong teacher-student relationships foster engagement, motivation, and a positive classroom atmosphere, leading to better academic outcomes. Research confirms a link between positive teacher-student connections and higher achievement levels, highlighting their significant role in facilitating learning. (Roorda, 2021)

IMPLICATION FOR TEACHING PRACTICE

Based on the findings of this study, teachers should consider a range of classroom management tactics to assist them effectively manage their students during in-person sessions. Collaboration between teachers and parents is critical for addressing issues and student concerns. To effectively handle different student behavior, instructors should actively seek guidance, maintain open contact with colleagues and superiors, and collaborate. Furthermore, exercising patience when coping with various tasks.

CONCLUSION

Returning classroom instructors faced challenges but found strength through colleague support, relevant lessons, and celebrating student successes. Ongoing training in modern teaching strategies is recommended, along with support mechanisms and career advancement opportunities. The study, based on in-depth interviews, highlights the need for proactive support from the Department of Education for returning educators. Effective communication, reorientation sessions, and staying updated on teaching methods are suggested to improve classroom management and student engagement.

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A STUDY ON THE IMPACT OF SENSORY MARKETING TOWARDS CUSTOMER IN RESTURANTS

Ms. Sri Varshni R K¹, Ms. Indhumathi G²

¹II.M.COM(CS), Department of Corporate Secretaryship, PSG College of Arts & Science, Coimbatore-641014.

²Assistant Professor, Department of Corporate Secretaryship, PSG College of Arts & Science, Coimbatore-641014.

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ABSTRACT

This study examines the influence of sensory marketing on customer perceptions in restaurants. Sensory marketing utilizes various sensory strategies to enhance consumer experiences. Through a mixed-methods approach including surveys, experiments, interviews, and observations, this research explores how sensory cues affect customer satisfaction and loyalty. Key findings highlight the importance of sensory congruence and the role of contextual factors in shaping sensory experiences. By understanding these dynamics, restaurants can tailor their marketing strategies to resonate with diverse consumer preferences, fostering lasting customer loyalty and competitive advantage in the industry.

KEYWORDS: Restaurant, Consumer, Sensory Marketing, Customer Experience, Ambiance, Aroma, Music, Sensory Cues, Customer Satisfaction, Loyalty, Competitive Advantage, Hospitality Industry.

INTRODUCTION

In the competitive landscape of the restaurant industry, creating memorable dining experiences is paramount to success. Brand messaging, business are increasingly turning to innovative strategies to captivate consumers on a deeper level. Beyond just serving delicious food, restaurants are increasingly turning to sensory marketing to engage customers on a deeper level and level a lasting impression.

Sensory marketing is an approach that involves engaging consumers senses to enhance their overall brand experience. While there isn't a specific ideology tied to sensory marketing, it aligns with various marketing philosophies and strategies aimed at creating memorable and emotional connections with consumers. Sensory marketing engages consumers through their five senses, creating multi-sensory experience that resonates with emotions and memories.

Sensory marketing is a tactic that brands employ to stimulate and engage different senses in order to leave a positive impression on customers. It's based in the idea that when you appeal to a consumer's senses, it's easier to capture their attention and create an emotional bond, opening the door to a wide range of business opportunities and potential marketing campaigns.

OBJECTIVES OF THE STUDY

1. To study the awareness among on consumer on sensory marketing strategies used by the restaurants.

2. To evaluate whether restaurants use different sensory marketing strategies for different age groups.
3. To examine how each five senses influence the consumer in restaurants.
4. To identify different aspects of overall sensory experiences in restaurants by the consumer.

RESEARCH METHODOLOGY

SOURCES OF DATA

The study relies on primary data as well as secondary data.

- The primary data
- The secondary data

PRIMARY DATA:

The primary data have been obtained through questionnaires.

SECONDARY DATA

The secondary data are been collected through journals, newspapers, books and articles.

AREA OF THE STUDY

This study is covered within the Coimbatore city.

SAMPLE SIZE

The sample design used for the study is Simple Random Sampling and the sample size is entrusted to 120 participants.



FINDINGS AND RESULT
SIMPLE PERCENTAGE

TABLE NO 1 AGE

S.no	Age	No. of. Respondents	Percentage
1	Below 20 Years	27	22.5
2	21 - 30 Years	72	60.0
3	31 - 40 Years	13	10.8
4	Above 40 Years	8	6.7
	Total	120	100.0

Source: Primary Data

Interpretation

From above table 4.1, it is concluded that 22.5% of respondents were Below 20 Years followed by 60% of respondents were at the age of 21-31 Years, 10.8% of respondents were at the age of 31-

40 Years and 6.7% of respondents belong to the group of above 40 Years.

The Majority of the respondents belongs to the age group of 21-30 Years (60%).

TABLE NO 2 GENDER

S.no	Gender	No. of. Respondents	Percentage
1	Male	50	41.7
2	Female	70	58.3
3	Transgender	0	0
	TOTAL	120	100.0

Source: Primary Data

Interpretation

From the above table 4.2, 41.7% of respondents were Male and 58.3% of the respondents were Female.

The Majority of respondents were Female respondents (58.3%).

TABLE NO 3 ANNUAL INCOME

S. no	Annual Income	No. of. the respondents	Percentage
1	Less than Rs.2,00,000	57	47.5
2	Rs.2,00,000 - Rs.5,00,000	32	26.7
3	Rs.5,00,001 - Rs.7,00,000	18	15.0
4	Rs.7,00,001 and above	13	10.8
	Total	120	100.0

Source: Primary Data

Interpretation

From the above table 4.5, 47.5% of the respondents falls under the annual income of less than Rs. 2,00,000, 26.7% of the respondents falls under the annual income ranging from Rs.2,00,000 - Rs.5,00,000, 15% of the respondents falls under the

annual income ranging from Rs.5,00,001 - Rs.7,00,000 and 10.8% of the respondents have Rs.7,00,001 and above.

The Majority of the respondents had an annual income of less than Rs.2,00,000.

CHI-SQUARE TEST

TABLE NO 4 COMPARING GENDER AND FACTORS INFLUENCED TO CHOOSE A RESTAURANT

		Factor influences				Total
		Location	Ambiance	Reviews	Taste	
Gender	Male	7	14	7	22	50
	Female	13	15	8	34	70
Total		20	29	15	56	120



Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.172 ^a	3	.760
Likelihood Ratio	1.172	3	.760

Source: Primary Data

HO: There is no significant association between gender and factors influencing the decision to choose a restaurant.

H1: There is significant association between gender and factors influencing the decision to choose a restaurant.

Level of significance: 5% or $\alpha = 0.05$

From the above table, p value of chi square test is greater than 0.05. So, we are accepting **NULL HYPOTHESIS** and rejecting alternative hypothesis. So, there is no significant association between gender and the factors influencing the decision to choose a restaurant.

ANOVA ANALYSIS

TABLE NO 5 SENSORY CUES THAT RESTAURANTS USE TO ATTRACT CUSTOMERS

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Children	Between Groups	49.626	3	16.542	5.366	.002
	Within Groups	357.574	116	3.083		
	Total	407.200	119			
Young Adults (18 - 24 yrs)	Between Groups	14.241	3	4.747	2.567	.058
	Within Groups	214.550	116	1.850		
	Total	228.792	119			
Adults (25 - 44 yrs)	Between Groups	3.413	3	1.138	.665	.575
	Within Groups	198.553	116	1.712		
	Total	201.967	119			
Middle Aged Adults (45 - 64 yrs)	Between Groups	28.083	3	9.361	5.754	.001
	Within Groups	188.717	116	1.627		
	Total	216.800	119			
Seniors (65+ yrs)	Between Groups	6.209	3	2.070	.951	.419
	Within Groups	252.458	116	2.176		
	Total	258.667	119			

Source: Primary Data

Interpretation

The above table 4.13, gives a result of relationship between age and sensory cues that restaurants use to attract customers using Oneway ANOVA.

Relationship between age and sensory cues that restaurants use to attract customers

From the above table the significant value of association between age and sensory cues that restaurants use to attract customers is < 0.05 .

So, we are rejecting null hypothesis and accepting alternative hypothesis.

So, there is **Significant association** between age and sensory cues that restaurants use to attract customers.

Relationship between age and sensory cues that restaurants use to attract customers

From the above table the significant value of association between age and sensory cues that restaurants use to attract customers is



<0.05 . So, we are rejecting null hypothesis and accepting alternative hypothesis.

So, there is **Significant association** between age and sensory cues that restaurants use to attract customers.

Relationship between age and sensory cues that restaurants use to attract customers

From the above table the significant value of association between age and sensory cues that restaurants use to attract customers is >0.05 . So, we are accepting null hypothesis and rejecting alternative hypothesis

So, there is **no Significant association** between age and sensory cues that restaurants use to attract customers.

Relationship between age and sensory cues that restaurants use to attract customers

From the above table the significant value of association between age and sensory cues that restaurants use to attract customers is <0.05 .

So, we are rejecting null hypothesis and accepting alternative hypothesis.

So, there is **Significant association** between age and sensory cues that restaurants use to attract customers.

Relationship between age and sensory cues that restaurants use to attract customers

From the above table the significant value of association between age and sensory cues that restaurants use to attract customers is >0.05 . So, we are accepting null hypothesis and rejecting alternative hypothesis

So, there is **no Significant association** between age and sensory cues that restaurants use to attract customers.

CONCLUSION

In conclusion, the study provides valuable insights into the impact of sensory marketing on customer perceptions in restaurants in Coimbatore city. While there are varying levels of awareness and appreciation for sensory cues among respondents, it is evident that these cues play a significant role in influencing dining experiences. Restaurants can benefit from understanding their target demographics' preferences regarding sensory cues and tailoring their marketing strategies accordingly. By optimizing visual, olfactory, and auditory elements, restaurants can create memorable dining experiences that resonate with customers and foster loyalty. Further research and experimentation in this area can lead to continuous improvement in sensory marketing strategies, ultimately enhancing overall customer satisfaction and restaurant success.



A STUDY ON ANALYSIS OF READERS EXPERIENCE TOWARDS E-BOOK

Ms. Shobika.S¹, Ms. Indhumathi G²

¹II.M.COM(CS), Department of Corporate Secretaryship, PSG College of Arts & Science, Coimbatore-641014.

²Assistant Professor, Department of Corporate Secretaryship, PSG College of Arts & Science, Coimbatore-641014.

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ABSTRACT

The shift towards digital reading platforms has significantly transformed the landscape of reading habits worldwide. This study delves into the analysis of readers' experiences towards e-books, aiming to provide insights into the evolving preferences and challenges faced by readers in the digital era. Through a mixed-methods approach combining qualitative interviews and quantitative surveys, this research explores various dimensions of readers' interactions with e-books, including their perceptions of convenience, usability, content engagement, and emotional satisfaction. The findings reveal nuanced perspectives on the advantages and limitations of e-books, shedding light on factors influencing reader preferences such as device compatibility, interface design, reading environment, and personal preferences. Additionally, the study examines the impact of demographic variables such as age, gender, and reading habits on e-book usage patterns. By comprehensively analyzing readers' experiences, this research contributes to a deeper understanding of the evolving dynamics between readers and digital reading platforms, offering valuable insights for publishers, educators, and technologists seeking to enhance the e-book reading experience.

KEYWORDS: E-books, Readers' Experience, Digital Reading, User Preferences, Usability, Convenience, Content Engagement, Emotional Satisfaction, Device Compatibility, Interface Design, Reading Habits

INTRODUCTION

An electronic book, sometimes known as an E- Book, is a digital representation of a book that can be read on reading platforms such as computers, smartphones, and tablets. Although the majority of eBooks are available in hard copy, some are only available online as soft copies. Reading books has become much easier because to technological advancements, and E-Books can now be accessible at any time and from any location. E-books are less expensive than paperbacks and hardcovers in general, but eBook licenses are more expensive. Following the purchase, they can be downloaded immediately to PCs or mobile devices. Various online libraries also make eBooks available to the public for free through their websites. In 1998, the American Library Association was the first to do so. Printed books in paperback and hardback editions are preferred by a huge majority of the population over eBooks. With the advancement of technology, people are becoming more interested in the concept of eBooks. Individuals are permitted to own only one eBook reader.

This platform allows you to access all of the books accessible. eBooks can also be simply shared and used by several people via the internet. eBooks have a lot of room for improvement and are widely accepted. The digital publishers are making an effort. Because eBooks are cloud-based, writers and publishers can

update their content at any time, reducing the expense of reprinting several editions of the book while also saving time and money. E books allow authors to experiment with and change previously submitted work, and they are published more quickly. eBooks can also help to preserve the books. If the publication of a book is prohibited for some reason, or if the publisher ceases to publish, the eBook is readily available, even if the paperback edition is not. As a result, there is still a digital edition of old books available. In some ways, E Books are good for the environment because they don't require the felling of trees to manufacture enormous amounts of paper.

OBJECTIVES OF THE STUDY

- To know the reader preference of e-books
- To analysis the factor that influence readers to choose e-Books
- To identify potential barriers or challenges faced by readers while using e-books
- To study the impact of using e-books

RESEARCH METHODOLOGY

SOURCES OF DATA

The research should keep in mind two types of data while collecting data via primary data and secondary data.



PRIMARY DATA

Primary data- Data collected directly from the respondents
Secondary data- journal, books, articles, Internet.

AREA OF THE STUDY

The study mainly concentrates on youngster

SAMPLE SIZE

The sample size of the study is to be 111 respondents.

FINDINGS AND RESULT

SIMPLE PERCENTAGE

TABLE NO 1 AGE

SNO	AGE	NO OF RESPONDENTS	PERCENTAGE
1	Below 20 years	14	12.5%
2	21-30 years	73	66.1%
3	31- 40 years	18	16%
4	Above 41 years	6	5.4%
TOTAL		111	100%

(SOURCE: PRIMARY DATA)

INTERPRETATION

The above table shows that out of 111 respondents, 12.5 % are in the age group of below 20 years, 66.1% are in the age group

of 21-30 years, 16% are in the age group of 31-40 years and 5.4% are in the age group of above 41 years.

TABLE NO 2 GENDER

SNO	GENDER	NO OF RESPONDENTS	PERCENTAGE
1	MALE	38	66.1%
2	FEMALE	73	33.9%
TOTAL		111	100 %

(SOURCE: PRIMARY DATA)

INTERPRETATION

The above table shows that out of 111 respondents, 66.1% are male and 33.9% are female.

TABLE NO 3 ANNUAL INCOME

SNO	ANNUAL INCOME	NO OF RESPONDENTS	PERCENTAGE
1	Less than 2,00,000	44	39.3%
2	Rs 2,00,000 – 5,00,000	36	32.1%
3	Rs 5,00,001 – 7,00,000	17	16%
4	Rs 7,00,001 Above	14	12.5%
TOTAL		111	100%

(SOURCE: PRIMARY DATA)

INTERPRETATION

The above table shows that out of 111 respondents, 39.3% people earning less than 2,00,000, 32.1% people earning Rs

2,00,000 – 5,00,000, 16% people earning Rs 5,00,001 – 7,00,000 and 12.5% people earning above Rs 7,00,001.

TABLE NO 4 ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Kindle	Between Groups	10.985	3	3.662	2.563	.059
	Within Groups	152.870	107	1.429		
	Total	163.856	110			
Smashwords	Between Groups	8.761	3	2.920	2.222	.090
	Within Groups	140.608	107	1.314		
	Total	149.369	110			
Kitaboo	Between Groups	10.905	3	3.635	3.635	.015



	Within Groups	107.005	107	1.000		
	Total	117.910	110			
E- booklobby	Between Groups	7.097	3	2.366	1.605	.192
	Within Groups	157.677	107	1.474		
	Total	164.775	110			
Feed books	Between Groups	20.092	3	6.697	3.779	.013
	Within Groups	189.638	107	1.772		
	Total	209.730	110			

(SOURCE: PRIMARY DATA)

INTERPRETATION

The above table gives a result of relationship between annual income and level of satisfaction on e-books based on e-book sites by using one way ANOVA.

Relationship between annual income and kindle

From the above table the significant value association between annual income and kindle is <0.05 so, we are accepting null hypothesis and rejecting alternative hypothesis. So, there is significant association between annual income and kindle

Relationship between annual income and Smashwords

From the above table the significant value association between annual income and Smashwords is <0.05 so, we are accepting null hypothesis and rejecting alternative hypothesis. So, there is significant association between annual income and Smashwords

Relationship between annual income and kitaboo

From the above table the significant value association between annual income and kitaboo is <0.05 so, we are accepting null hypothesis and rejecting alternative hypothesis. So, there is significant association between annual income and kitaboo.

Relationship between annual income and e-booklobby

From the above table the significant value association between annual income and e-book lobby is <0.05 so, we are accepting null hypothesis and rejecting alternative hypothesis. So, there is significant association between annual income and e-booklobby.

Relationship between annual income and feed books

From the above table the significant value association between annual income and feed books is <0.05 so, we are accepting null hypothesis and rejecting alternative hypothesis. So, there is significant association between annual book and feed books.

CHI-SQUARE TEST

TABLE NO 5 SHOWING RELATIONSHIP WITH ANNUAL INCOME AND LEVEL OF SATISFACTION ON E-BOOKS BASED ON THE E-BOOK SITES

FACTORS	P-VALUE	DF	SIG.VAL	S/NS
OCCUPATION	44.920 ^a	9	0.01	S
GENDER	5.110 ^a	3	1.64	NS
AGE	24.425 ^a	9	0.04	S

Note: significant (value <=0.05), NS: Not significant (value > 0.05)

(Source: primary data)

HO: There is no significant association between personal factors and time spent on reading e-books

H1: There is significant association between personal factors and time spent on reading e-books.

From the table, p value chi square test is less than 0.05. So, we are rejecting the null hypothesis and accepting the alternative hypothesis and in one case p value of chi square test is greater than 0.05. So, we are accepting null hypothesis and rejecting alternative hypothesis.

It is concluded that the occupation and age have significant association on the time spent on reading e-books and gender have no significant association on the details about time spent on reading e-books.

CONCLUSION

This study explains the preference for e-books among readers continues to grow steadily, driven by factors such as convenience, accessibility, and environmental considerations. With the rise of digital reading devices and platforms, e-books offer readers the flexibility to carry thousands of titles in a single device, read across multiple devices seamlessly, and access a wide range of content instantly. Additionally, features like adjustable font size, built-in dictionaries, and the ability to highlight and annotate text enhance the reading experience for many. While print books still hold sentimental value for some readers, the convenience and versatility of e-books make them an increasingly popular choice in today's digital age.



A STUDY ON THE DETERMINANTS OF EMPLOYEES' LOYALTY

Dr. Harsandaldeep Kaur¹, Manjot Kaur²

¹Associate Professor, University School of Financial Studies, Guru Nanak Dev University, Amritsar, Punjab, India

²Research Scholar, University School of Financial Studies, Guru Nanak Dev University, Amritsar, Punjab, India

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ABSTRACT

A human being is a basic asset for making or development of anything. Each organisation need is to have talented and equipped individuals to make their organisation skilful and best. Worker's retention is very important for the company. The workers can be retained by building employee's loyalty among them. loyalty is portrayed by the expectation to engage with the company in the long term, which assumes a positive job in the maintenance of individuals in the association. So, employee's loyalty can be proved very beneficial for the employees as well as the organisation. This study will highlight the factors influencing employees' loyalty. Confirmatory factor analysis has been conducted through SMART PLS to determine the factors. It was found that four factors Employees' treatment, Job characteristics and satisfaction, Management leadership and Training and Development impacted the employees' loyalty the most in the banking sector.

KEYWORDS: Employees' loyalty, Employees' treatment, Job characteristics and satisfaction, Management leadership, Training and Development

INTRODUCTION

A human being is a basic asset for making or development of anything. Each organisation need is to have talented and equipped individuals to make their organisation skilful and best. The administration must attempt its level best to retain those employees who are extremely significant for the framework and are known to be powerful supporters. Worker's retention is very important for the company. The workers can be retained by building employee's loyalty among them. If they are loyal towards their job and the organisation, then they will never leave an organisation in any case and perform their job with full efficiency and effectively, which ultimately improves the performance of the organisation.

As per Khuong and Tien (2013), "Loyalty is the willingness of an employee invest in or sacrifices for the organization to strengthen a relationship." Pandey and Khare, (2012) defined employee loyalty as, "employees being committed to the success of the organization and believing that working for this organization is their best option". Thus, loyalty is portrayed by the expectation to engage with the company in the long term, which assumes a positive job in the maintenance of individuals in the association. So, employee's loyalty can be proved very beneficial for the employees as well as the organisation.

LITERATURE REVIEW

According to Eskildsen & Nussler (2000), "employee loyalty measures to what degree an employee takes personal responsibility for their work, and how likely they are to look for

another job. This latter component is also a measure of an employee's organizational commitment."

Sandra Obilade, (1998) suggested that management should focus on the employees' benefits to incline the morale and then employees will be more loyal. Also, Minjoon Jun, Shaohan Cai, Hojung Shin (2006) reviewed that increased workplace satisfaction results in a higher level of employee loyalty. Lockwood, (2007) highlighted in their study that organization that treats its employees with dignity and respect creates a workplace culture that increases loyalty and engagement. In the study of Maznah Wan (2010), some determinants, i.e., peer corporation, working Environment, employee benefits had been discussed which influence employee loyalty. In a study, it was shown that there was a positive relationship between employee satisfaction and employee loyalty. out of all the five factors, training and personal development was the most important and teamwork was the least important factor while working condition, reward recognition and empowerment and participation were at second, third and fourth position respectively (Ali Turkyilmaz et al.,2011).

So, there are many studies that examined employees' loyalty and its determinants. The present study will determine the factors that influence loyalty of employees, who are working in the banking sector.

OBJECTIVES OF THE STUDY

1. To determine the factors influencing loyalty of employees.



- To suggest methods to enhance the loyalty of employees in the banking sector.

RESEARCH METHODOLOGY

To collect the data, online survey was conducted. A survey form was formed through google forms. Then, questionnaire was sent to the respondents through online mode, through social sites. One hundred and ninety-two responses were gathered. As per Hair et al., 2012, the minimum sample should be 5 times of the variables in the research but not less than 100. The sample

size of this research is 192. Therefore, for this research sample size is acceptable. Demographic distribution of the sample is displayed in table 1.

Data was collected from the employees working in the banking sector. The scope of the study is limited to the three major cities of Punjab that is, Amritsar, Ludhiana and Tarn Taran. Convenience sampling was used for selecting respondents in the process of data collection. So, sampling unit was chosen from employees working at banks in the three major cities of Punjab.

Table1: Demographic distribution of the sample

Demographic	Frequency	Percentage
Gender		
Male	108	56%
Female	84	44%
Age Group		
22-29years	127	66.15%
30-37years	49	25.52%
38 or more	16	8.33%
Total tenure in the Organization		
Less than 1 year	33	17.19%
1-5 years	100	52.08%
6-10 years	42	21.88%
More than 10 years	17	8.85%
Type of Banks		
Private Banks	116	60%
Public Banks	76	40%

DATA ANALYSIS

Confirmatory factor analysis was carried out through SMART PLS 3. CFA is a statistical tool used to verify the factor structure of a set of variables, it was initially formulated by Joreskog (Joreskog, 1969). Through CFA, researchers can specify the factors which determine the variables is associated with the latent variable. CFA is a technique to decide whether the measurement model has been accepted or rejected. Its aim is to check whether the data fit is a hypothesized measurement model. In the area of structural equation modelling (SEM), it is frequently called as a “measurement model”. Measurement model was performed by the researcher through PLS-SEM by “factor weighting scheme”.

PLS algorithm was run by researcher with factor weighting scheme. Then, it was observed that factor loadings of all the variables were more than 0.7, ranges from 0.724 to 0.875. Composite Reliability (CR) and Cronbach’s alpha are used for the evaluation of internal consistency. It is assumed that CR is better way to assess internal consistency than Cronbach’s Alpha

as it remains the standardised loadings of observed variables (Fornell; Larcker, 1981). It can be clearly seen from the table 6, Cronbach’s Alpha and CR were more than 0.74 and 0.85 respectively, indicating more than the threshold limit of 0.7.

To demonstrate the convergent validity of the variables, researcher calculated the Average Variance Extracted (AVE) of every latent construct. The minimum value of AVE should be above 0.5(Hair, 2011). It is vivid from table 2, AVE of every construct was more than 0.5. These outcomes validated the convergent validity and good internal consistency of the model. Now moving further to Discriminant Validity, discriminant validity checks that the measurements which should not be related are unrelated. The Fornell-Larcker criterion and Cross loadings were used to check the discriminant validity. Table 3 depicts that correlations of all were smaller as compared to the squared root of average variance, along with diagonals, which implies that discriminant validity has been established.

Therefore, the conceptual model was accepted with validation of Reliability, Convergent validity, Discriminant validity



Table 2 Construct Reliability and Validity

Main constructs	Variables	Outer loadings	Cronbach's Alpha	CR	AVE
Job characteristics and satisfaction	CS1	0.724	0.857	0.897	0.636
	CS2	0.742			
	CS3	0.817			
	CS4	0.829			
	CS5	0.866			
Fair income and Benefits	IB1	0.744	0.807	0.865	0.563
	IB2	0.724			
	IB3	0.777			
	IB4	0.752			
	IB5	0.753			
Training and Development	TD1	0.804	0.749	0.855	0.664
	TD2	0.762			
	TD3	0.875			
Management leadership Style	ML1	0.740	0.786	0.860	0.607
	ML2	0.819			
	ML3	0.765			
	ML4	0.790			
Loyalty	L1	0.788	0.828	0.884	0.658
	L2	0.874			
	L3	0.828			
	L4	0.748			

Table 3 Fornell-Larcker Criterion Test

	Employees' treatment	Job Characteristics and satisfaction	Management Leadership	Training and Development	Loyalty
Employees' treatment	0.750				
Job characteristics and satisfaction	0.639	0.797			
Management leadership	0.495	0.583	0.779		
Training and Development	0.605	0.610	0.489	0.815	
Loyalty	0.488	0.516	0.389	0.564	0.811

SUGGESTIONS TO IMPROVE EMPLOYEES' LOYALTY

There are some suggestions gathered from the respondents at the time of collecting data about what things can increase employees' loyalty. So, authorities and managing bodies can follow or adopt the following recommendations to enhance the loyalty of employees at workplace:

- Monetary benefits excite everyone. So, adequate pay packages should be offered to employees according to the work assigned to them, so that they can feel motivated. Moreover, a decent hike in salary should also be given to them as per the performance of employees, which will encourage them to perform better. It keeps them motivated to keep working for the organisation.

- Besides monetary benefits, other benefits such as medical or health, travelling expenses, insurance, etc, could also help in boosting the loyalty of employees.
- Organisations should treat every employee equally and give equal rights to get involved in things. No partial judgements will help them to stay longer in the organisation.
- The employees' loyalty at work has a direct relationship with the empathetic nature of the management. If the employee is recognised and rewarded fairly, he will surely be loyal towards his work.
- Give each employee a fair chance to show his leadership skills, will help the employees to work in the organisation for the long term.



- Delegation of work should be there, according to the capabilities and interests of employees, as right men at the right job will definitely help for the company as well as for the employees at individual level, resulting in enhancing the employees' loyalty towards the organisation.
- The employees' loyalty to work is directly proportional to the respect given to his work. If an employee is appreciated enough for his work or efforts, then his loyalty will surely increase.
- There should be a cordial relationship among employees, between superiors and subordinates, etc.
- The working hours are needed to be improved; their personal life should not be ignored.
- Structured dispute resolution should be adopted if any kind of disputes arises among employees and superiors or subordinates.
- There should be a good environment or healthy environment at the work place towards employees.
- More fair opportunities should be provided of being promoted in the organisation and promotion policy should be fair enough. Employees should be promoted to the high designation with increased salary on the basis of performance.
- Employees satisfaction initiatives should be taken by the superiors by knowing the need of them.
- Proper motivation channels and training and development programs could help to incline the sense of loyalty among employees.

DISCUSSION AND CONCLUSION

In these competitive scenarios, for any organisation to sustain in the market, these have to be prepared for all the aspects such as finance, goodwill, etc. but the predominant factor is Human Resources. The ultimate work is performed or come into practice only by the human resources or employees. So, they contribute the maximum to the survival, making profits, and smooth functioning of the organisations. So, organisations must consider the aspects related to human resources while taking any decisions for the organisations. If the company's employees are satisfied to the extent, they will try to perform to their maximum ability for their benefits as well as for the company's benefits. And they will stand by the company even in some difficult situations. This will develop the feeling of loyalty among employees. And as already mentioned, employees' loyalty contributes the most in company's success.

Therefore, it is very important to study or finding out which factors impact the loyalty of employees the most. In this study, Through CFA, four factors had been examined, which are, Job characteristics and satisfaction, Fair income and benefits, Training and development and Management Leadership style, which impacts the loyalty of employees.

LIMITATIONS AND SCOPE OF THE FURTHER RESEARCH

This research has some limitations on which further researchers can work. Firstly, in this research, researcher has only considered only four factors influencing the employees'

loyalty, however, there are many other factors which can also be considered. So, further researchers can pursue research on this research problem with many other factors.

Also, this study is limited to the employees only who work in a bank, as researcher has performed the research by considering only the banking sector. So, research on this issue can also be performed in any other sector or industry.

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STYLISTICS: A CRITICAL APPROACH TO COMPREHEND LANGUAGE AND LITERATURE

Chandu Ganta

Lecturer in English, Vikas Degree College, Nidadavole, Andhra Pradesh, India,

ABSTRACT

Language must be considered a social phenomenon, a structured system that can be viewed synchronically (as it exists at any particular time) and diachronically (as it changes over time) - Ferdinand de Saussure. As we all know, language is an essential and preeminent tool for human communication; with the aid of language, knowledge is transferred, meaning is created and comprehended, and the scientific enhancement of society. It is true not only for speech but also in writing, and both are the most potential language uses. After the 1960s, literary critics accused and targeted linguists of being too dry when analysing a piece of writing. Moreover, linguists have accused literary scholars of being too subjective and imaginative. In order to bridge the differences or gaps between the two, stylistics, a branch of applied linguistics, functions to analyse the use of language in literary texts. The object of this paper is to create exposure and explore the link between language and its most creative use, that is, literature. Through this attempt, the researcher aims to show the characteristics of language and creative uses under which these forms are put to visualise the human senses and make a piece of literature alive (whatever the genre is).

KEYWORDS: linguistics, stylistics, speech, writing, language

INTRODUCTION

Linguistics is the scientific study of language. Linguistics is learning about a language rather than learning a language. Moreover, every piece of literature exists in language. Any literary text can be comprehended and exposed to various activities by understanding the language in which it is being attempted. Language and literature have to be studied in the light of one another because linguists have been mistaken for an inadequacy of the linguistic science itself. We all realise that a linguist deaf to the poetic function of language and a literary scholar in different linguistic problems unacquainted with linguistic methods are equally flagrant. Stylistics is a discipline within the field of linguistics. It is defined as the process of analysing the literary texts or interpretation of a literary text that is linguistically oriented in nature.

Affinity between language and literature

Language works as a channel for the systematic teaching of linguistics and literature. Since language is vital in the construction of literature, stylistics is a branch of linguistics that serves as a link between the two disciplines of linguistics and literature. Analysing a text becomes more accessible within the linguistic framework. When we adopt the process or stylistic analysis, it offers the development of critical appreciation and interpretative skills as well as reading comprehension. Through literature, it is possible to know the use of language in various cultural contexts. The analytical study of literature through the scientific lens of language refers to stylistics.

Stylistics

Stylistics is the study of the devices in languages, such as rhetorical figures and syntactical patterns that are considered to produce an expressive or literary style. Style has been an object of study from ancient times. Aristotle, Cicero, and Demetrius treated style as the proper adornment of thought. Stylistics is a tool for scientific investigation. An ordinary term of language can be used for literary purposes in the case of strict dualism, in which the word indicates a split-off meaning and manner or that in which meaning is split into two separable kinds of meanings. "According to Ellis (1970), "Style is, in fact, in ordinary language a way of avoiding those areas of the meaning of a word which are not considered essential to the speaker's dominant purpose". We always make choices about the words we use and the order in which we use them consciously and unconsciously. These choices are from a particular style, and changing the choices changes the style. This is what stylistics explores: how the author creates the effect through their linguistic styles and how readers interpret those effects.

Stylisticians believe there is no fundamental difference between literature and any other kind of text, even spoken conversations, because all writings are made up of language. Stylistics inherited something else from the rhetorical tradition, too. Two words might be synonyms, replaceable and might even refer to the same thing, but at the same time, they might have distinct meanings. So, the difference is marked by the difference in attitude on the speaker's part and the different classifications of the phenomenon. One of the examples used by Ellis is the phrases "You can go



now" and "Get out." Both the phrases convey the listener to leave but the choice of words has changed what the listener should understand about the mood, intention of the speaker and his or her position in the context. So, the expressions used by the writer or author are driven by the unique context of purpose, not because of their identity of meaning.

Ellis (1970) further compares literary text to speech by saying that " literary texts are not limited to speech acts with a crude purpose; they are notoriously complex in their verbal structure and are not able to have ascribed to them any simple statement of their purpose. Another definition of style refers to it as an elusive phenomenon in literature, and that is a concept which is widely used. This is because style is an abstract concept as it is not a holistic identity of literature, which means how literature can be solely defined. It is one of the many qualities of literature as it consists of many aspects of concepts rather than style. It is individuality that a literary text acquires that is referred to as style. Style is also modified by language because literature is a creative product, but accurate use of language can not be denied. One has to look beyond the literature. The fact that language is the medium of literature is not confined to literature alone. Moreover, it is the channel which carries the whole of the culture of which literature is one aspect. Hence, while conducting stylistic analysis, the language used, and language functions should be considered along with the literary texts.

Literary Texts and Stylistics

Comprehending the science of linguistics allows the reader to find the meaning of the text he or she is reading. Structures of language assist in understanding literature through language. Hence, language provides a structure, organisation, and pattern to a text, whereas literature gives a creative meaning. So, the content and art of the author flow smoothly through language. Stylistics is comprehensive and interdisciplinary and creates a way between the study of features and rules of the text analysis between aesthetics, linguistics, psychology and literature. It could be defined as the style of the expression, a method of making things in a definite way while keeping a definite purpose in mind. It can also serve as a method to master or understand linguistic concepts.

The facets of style, namely syntax, phonology, graphology, semantics and others, are essential during text analysis as they display various emotional states of mind on paper. These facets give the reader the potential to view a literary piece through the lens of objectivity. While appearing to their subjective senses, the subjective analysis directs to the evaluative and illative study that is reading between and beyond the line to comprehend a text, such as the author's intention, theme, or moral behind the literary piece. This method of studying a text is called stylistic analysis. The stylistic approach intends to locate linguistic features of a literary piece of text and identify the meaning through these features. In the ray of this approach, the selection of vocabulary, grammatical features, structural aspects and other rhetorical elements are studied to decode a text's meaning.

Hence, in the linguistic study of literature, a linguistic structure has to be studied concerning its combination with other linguistic features and references to the entire text. Scientific study can be understood as the study of forms and vocabulary of a language in addition to the structural analysis of texts. The primary one is concerned with the form and functions of structural elements of language and is directed to analytic linguistics. The second one is called synthetic linguistics as it deals with the textual meaning and language functions. If a text is to be analysed linguistically, then its structures and text itself should be analysed in both ways, in combination and isolation. Therefore, the study of literature becomes a part of synthetic linguistics. While evaluating a piece of literature, the critic should not be driven, convinced or frustrated by its fallacies.

FEATURES OF STYLISTICALLY ANALYSING A TEXT

Rhetoric

It is a grammatical style which brings out the clarity in a text, and then rhetoric or word craft effects make writing persuasive, vivid and clear. Figures of speech like metaphor, personification, metonymy, simile, irony and so on provide a soul meaning to the text with aesthetic and psychological implications. While rhetorically analysing a text, the reader should scrupulously analyse the discourse structure and rhetorical devices expected in the text.

Syntax

Readers can understand the thought process, nature and feelings of the characters through the sentence constructions found in a text like phrases, clauses, and other types of sentences, which helps to get an idea about the character and also the writer's thinking, his or her experience displayed in a text-based on functions. There are types of sentences in the English language according to the functional aspect, such as declarative, imperative, exclamatory and interrogative. Apart from the types of phrases like noun phrase over phrase are also a part of the stylistic effect found in a text. In analysing the text stylistically, the reader or the author should carefully go through the entire text to locate the most frequent sentence types based on function and structure, phrases and vocabulary.

CONCLUSION

Literary language is attractive because it works as a tool to manifest the thinker's mind on paper through words and sentences. Stylistics works as a link that connects the author's mind to the readers' minds. So, it is a phenomenal method which helps the students to look beyond the text. Stylistics also serves as an effective instrument to teach language and literature by enhancing the learner's or reader's sensitivity and creating awareness to identify specific linguistic patterns and literary devices used in the text.



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DELVING INTO THE LIVED EXPERIENCES OF TEACHERS IN DEALING WITH PLAGIARISM ISSUES AMONG ELEMENTARY STUDENTS: A PHENOMENOLOGY

Rulan S. Morial¹, Henry C. Ligan, PhD²

¹Teacher II, Esperanza Elementary School

²Full-Time Professor, University of Mindanao Tagum College, Part-time Professor, St. Mary's College of Tagum, Inc.

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ABSTRACT

The purpose of this qualitative research is to explore and describe the experiences of elementary school teachers in dealing with plagiarism issues among elementary students in the DepEd schools, Division of Davao del Norte. 14 participants were selected through purposive sampling, of which seven engaged in in-depth interviews while another seven participated in focus group discussions. The results revealed the experiences of elementary teachers such as pervasive plagiarism acts, lack of engagement, challenges in reforming undesirable learning behaviors, and noticing self-doubts and poor performance. Moreover, the coping mechanisms of the participants were student encouragement and communication, crafting of rules against academic dishonesty, academic integrity strategies, reporting and seeking advice, and collaborative approaches. Then, their insights were establishing standards and communication, creating policies and countermeasures, cultivating positive student behavior, promoting academic integrity, and cultivating patience. With these findings, it can be gleaned that elementary schools must strengthen their policies and programs against the menace of plagiarism. Teachers must also be wary of this fact and never give the students opportunities to commit plagiarism in the classroom. More so, considering that the elementary level covers the formative years of the children, it is also important to address the problem by focusing on their moral and spiritual aspects.

KEYWORDS: elementary students and teachers, plagiarism issues, qualitative research, phenomenology, Davao del Norte

INTRODUCTION

Plagiarism or academic dishonesty has been a challenging focus for educators nowadays. With the presence of technology today, they can just copy and paste answers to assignments and other academic tests. Plagiarism does not only exist among students in higher education, but this is also being observed in elementary education as what I and my fellow teachers have observed among the students after the return of full face-to-face classes. Falsifying information, concealing errors, collaborating with others when not permitted, and plagiarizing are all examples of dishonest behavior. This poses a challenge among teachers particularly on how to deal with the plagiarism issues among learners, especially if the school has no measures to detect it.

In South Korea, academic dishonesty has been observed as a result of an increase in students taking online classes to complete their degrees, which has led to them simply copying and pasting answers to questions (Costley, 2019). Similarly, in Thailand, students have numerous opportunities to plagiarize content they come across on the internet (Nagi & John, 2020). Since Thai students have a low level of English proficiency, there is an acceptance of replicating from the internet. Additionally, in

China, students plagiarize on written English assignments, and it is ultimately necessary to explain and comprehend the mindset of students who plagiarize, as they are unable to construct good written English communication (James et al., 2019).

In the Philippines, for decades, Filipino scholars have conducted research on academic integrity, the majority of which focused on cheating on assignments and exams, with more than half of them involving students in elementary and secondary school. Several studies have found evidence of increasing academic dishonesty in academic institutions. Academic dishonesty at the primary level is more commonly understood as exam cheating. Cheating on homework or assignments is common due to the increased opportunities provided by the circumstances as well as the freedom from teacher supervision. It is blamed on the teacher's incompetence, peer consent, a rigid curriculum, and a lack of strict school policy that students can copy and paste answers from the internet. With this, sometimes, the academic performance of the students, most particularly in written work is not measured objectively (Beruin, 2022).

In the Division of Davao del Norte, particularly in Sto. Tomas East District, plagiarism among public school students has been



noted by the teachers. These acts of plagiarism include copying from the internet and then pasting to the assignment questions given to the learners. Also, learners are too dependent on duplicating notes or statements without acknowledging the authors of the passage of articles. This has posed a challenge for teachers who have experience with plagiarism among learners. This was supported by Beruin (2022) who claimed that students commit plagiarism due to various possible external (peer involvement, overwhelming academic workload, difficulty of subject/course, limited teacher assistance, parental expectations, and use of digital technology) and internal (laziness or procrastination, lack of proper time management, fear of failure, poor learning capability, motivation, state of mental health, self-attitude, capability, and intention) influencing factors.

The researcher deemed the urgency to conduct the study considering that there is an existing problem of plagiarism among learners. It is not yet conclusive, but the chances of this problem's recurrence in a complicated situation may happen since at this present time, teachers and students are still on the catch-up measures especially since the country has just turned into a full-blown face-to-face teaching-learning delivery. There are similar articles dedicated by Bautista and Pentang (2022) about academic integrity in higher education institutions and Campbell (2019) on cultivating academic honesty among elementary learners. These articles only served as additional literature on academic honesty and integrity among learners and they did not try to uncover the experiences of teachers regarding the plagiarism behaviors of their elementary learners. There is limited research data regarding this research topic, which merits the scholarly investigation of this study.

The study is of social relevance since this may provide the Department of Education with some better strategies on how teachers handle plagiarism issues. Through this study, strategies against pupil plagiarism may be devised through the collaboration of concerned teachers and collaborators in the elementary department. More importantly, emphasis on values such as honesty and integrity may be highlighted in the classroom, all in order to discourage this dishonest behavior.

Research Questions

The purpose of this qualitative phenomenological study was to explore and describe the experiences of elementary school teachers in dealing with plagiarism issues among elementary students in the Division of Davao del Norte for the school year 2023-2024. The study may also be deemed important by teachers, students, school heads/administrators, Department of Education, and future researchers. To achieve the study purpose, the following research questions were devised:

1. What are the lived experiences of teachers in dealing with plagiarism issues among elementary students?
2. How do teachers cope with the challenges in dealing with plagiarism issues among elementary students?

3. What are the insights drawn from the experiences of teachers in dealing with plagiarism issues among elementary learners that can be shared to others?

Scope and Limitation of the Study

This qualitative study focused on 14 elementary teachers' experiences, coping mechanisms, and insights into dealing with student plagiarism. The participants were the elementary teachers teaching in the Division of Davao del Norte. This study was conducted from July 2023 to August 2023 for the school year 2023-2024.

The study was dependent on the participant's ability to describe their experiences and respond to interview questions. Participants have varying levels of knowledge and experience with student plagiarism, so their opinions may be subjective. Higher authorities were informed of the rationale and purpose of the study because administrative permission was required to gain access to informants and participants.

METHODOLOGY

In this study, I employed qualitative research design utilizing phenomenology as its approach. This study adapted the qualitative research design for it dwelled on the experiences, coping mechanisms, and insights of elementary teachers pertinent to the topic of this thesis.

My participants were the 14 elementary teachers of the Davao del Norte division for the school year 2023-2024, chosen from the 3 schools of Sto. Tomas East District. I chose seven for my in-depth interview (IDI) and seven for the focus group discussion (FGD). Purposive sampling was also used in looking for participants who can provide invaluable information about the thesis of this research.

For my participants, I considered the inclusion criteria as the following: (a) they must be public elementary teachers in the Division of Davao del Norte; (b) they must be coming from the public schools situated within Sto. Tomas East District; (c) they must be handling Grade 6 learners either as advisers or subject teachers; (d) they must have a minimum teaching experience of five years; and (e) they must have experiences about plagiarism among their learners whose writeups and essays in English were commonly identified to be plagiarized. For the exclusion criteria, the study did not include teachers in high school and college.

In pursuing this study, I performed the following duties in this study: as someone who ensured the ethical conduct of the study; as an interviewer; as a moderator; as a person who recorded the interview; as a transcriber; as a translator; as data analyst; and as a person who performed member checking. Interviews were the primary sources of data for this study, while published articles were the secondary sources of data for the same. The interviews were done in person, following the highest ethical standards and strictly adhering to the tenets of trustworthiness in qualitative research.



RESULTS AND DISCUSSION

The participants shared their various experiences as elementary teachers who witnessed the plagiarism issues committed among their students. These experiences were organized systematically into themes which can be viewed in Table 1. In this section, there

were four themes which surfaced from the responses of the elementary teachers in the study. These themes were the following: pervasive plagiarism acts, lack of learning engagement, challenges in reforming undesirable learning behaviors, and noticing self-doubts and poor performance.

Table 1
Major Themes and Core Ideas on the Lived Experiences of Teachers in Dealing with Plagiarism Issues among Elementary Students

Themes	Core Ideas
Pervasive Plagiarism Acts	<ul style="list-style-type: none"> observing students who are copying answers without paraphrasing witnessing an all word-for-word copying of answers doubting the ability of students to use certain words which leads to the conclude that the answers were plagiarized confirming the suspicion of plagiarized answers upon doing internet search copying in assignments and projects, including Google ideas seeing identical answers among students in their assignment submissions noticing frequent student plagiarism in challenging writing tasks such as writing articles and biographies noticing plagiarism especially when writing essays
Lack of Learning Engagement	<ul style="list-style-type: none"> observing short answers with lacking explanations among students detecting plagiarism that is linked to lack of interest in lessons copying from the internet without any effort to modify their answers lacking effort and relying on others' ideas in writing which leads to plagiarism having lack of student attention during lessons which leads to confusion
Challenges in Reforming Undesirable Learning Behaviors	<ul style="list-style-type: none"> difficulty in fostering independent learners having difficulty in changing the students' copying behavior facing difficulty with students continuing to plagiarize despite correction encountering difficulty in addressing their laziness in learning
Noticing Self-doubts and Poor Performance	<ul style="list-style-type: none"> copying due to lack of confidence in one's own ideas having difficulty in generating their own writing which led students to rely on the internet having difficulty in identifying students who copy answers

The experiences of the participants were supported by different pieces of literature. For an instance, the theme is reinforced by Zaher et al. (2020) which cited that numerous scholarly investigations have presented analogous conclusions, identifying Iran, China, India, Japan, Korea, Italy, Romania, Turkey, and France as the nations with the greatest frequency of retractions resulting from plagiarism. Many of the scientific works that students complete dishonestly, such as exams, scientific research, assignments, quizzes, and research projects, have become contaminated with plagiarism. In consonance, the study of Horbach and Haffman (2019) outlined the potential internal

causes of plagiarism, including indifference, sloth or procrastination, poor time management, fear of failing, poor learning capacity, motivation, mental health issues, self-attitude, capability, and intention, as well as external causes, including peer pressure, an excessive workload, a challenging course or subject, few teacher resources, parental expectations, and the use of digital technology.

In response to the challenges faced by elementary teachers, they revealed how they coped with these difficulties on the plagiarism issues committed among their students in schools. These coping



strategies were organized into themes which can be seen in Table 2. In this portion, we can see five themes which encapsulated the strategies that they used to cope with the mentioned plagiarism issues. These themes include: student encouragement and

communication, crafting rules against academic dishonesty, academic integrity strategies, reporting and seeking advice, and collaborative approaches.

Table 2

Major Themes and Core Ideas on the Coping Strategies of the Teachers in the Challenges in Dealing with Plagiarism Issues among Elementary Students

Themes	Core Ideas
Student Encouragement and Communication	<ul style="list-style-type: none"> encouraging open dialogue with students utilizing open dialogue to convey the negative implications of plagiarism encouraging the students to study hard consistently advising students against cheating emphasizing consequences of plagiarism
Crafting Rules Against Academic Dishonesty	<ul style="list-style-type: none"> emphasizing the importance of following instructions advocating for a school-wide honor code making students sign a logbook as a commitment to avoid repeating plagiarism addressing plagiarism by explaining consequences issuing warnings and anecdotal notebook to address plagiarism issues
Academic Integrity Strategies	<ul style="list-style-type: none"> managing student plagiarism through increased reading time addressing plagiarism gradually by giving reminders encouraging oral expression to assess learning investing time in research to develop new strategies
Reporting and Seeking Advice	<ul style="list-style-type: none"> reporting of experiences among more experienced colleagues such as grade heads and master teachers about the similar answers of students sometimes reporting plagiarism to higher DepEd administrators seeking guidance from a master teacher who only advised the use of minimal measures seeking advice from co-workers
Collaborative Approaches	<ul style="list-style-type: none"> collaborating with colleagues for support and guidance seeking advice from colleagues to address plagiarism issues sharing incidents of plagiarism with co-teachers for personal guidance suggesting the option of consulting the guidance counselor for plagiarism issues

In connection, previous literature underscores the simplistic reliance on punitive measures or sanctions alone to address plagiarism which fails to recognize the nuanced motivations and circumstances underlying academic misconduct. While consequences may serve as deterrents, they often fall short in addressing the root causes or educating individuals about proper citation practices and ethical scholarship. Therefore, a comprehensive approach to combating plagiarism should encompass not only disciplinary actions but also proactive measures such as promoting awareness, providing resources for skill development, fostering a culture of academic integrity, and offering support mechanisms to empower individuals to engage in ethical academic practices. By adopting a holistic approach, educational institutions can better cultivate a culture of integrity and responsibility, ultimately mitigating the prevalence of

plagiarism within academic communities (Ndebele, 2020). Hence, rules and punishments are integral in deterring plagiarism behavior.

Moreover, the elementary teachers shared that they have reflected on the plagiarism issues among their students which led to various realizations and insights. These realizations were organized systematically into themes which can be viewed in Table 3. There were five themes which helped explain the realizations of elementary teachers regarding the issue being discussed in this paper. These themes were the following: establishing standards and communication, creating policies and countermeasures, cultivating positive student behavior, promoting academic integrity, and cultivating patience.



Table 3

Major Themes and Core Ideas on the Insights of Teachers on Dealing with Plagiarism Issues among Elementary Students

Themes	Core Ideas
Establishing Standards and Communication	<ul style="list-style-type: none"> • set standards before giving activity in the classroom • correct students and address their wrongdoings as a first step • remind the students about the consequences of plagiarism • provide guidance to students • conduct plagiarism-related symposium • encourage open communication and dialogue
Creating Policies and Countermeasures	<ul style="list-style-type: none"> • advocate for a school-wide honor code with consequences for cheating • suggest the implementation of a reward and penalty system • recommend the confiscation of cellphones during class • providing prevention and investigation for penalties regarding plagiarism • suggest the creation of policies and orientation programs • collaborate with religious groups addressing dishonesty issues
Cultivating Positive Student Behavior	<ul style="list-style-type: none"> • train students' attitudes, communication, and socialization skills • emphasize the value of honesty • recommend the importance of teaching values to students to inculcate the fear of committing plagiarism • focus on values formation by discussing that plagiarism is not good • realize plagiarism as a bad habit through values formation • advise students that the plagiarism they committed is wrong
Promoting Academic Integrity	<ul style="list-style-type: none"> • explain the significance of their very own answers • stress the need to not ignore and address plagiarism issues seriously before it worsens • emphasize the importance of studying over copying
Cultivating Patience	<ul style="list-style-type: none"> • teach patience and guide students in giving their own ideas • advise teachers to have patience in checking pupils' outputs • find ways to change the attitude of those engaged in plagiarism • extend one's patience and understanding

The insights generally point the importance in cultivating the positive behaviors of their students. Research has indicated that developing traits in students such as self-control and academic self-efficacy can reduce their propensity to plagiarize. Thus, the theme is supported by Bautista and Pentang (2022) who mentioned that plagiarism is a recognized problem in higher education institutions worldwide. The association between positive attitudes regarding plagiarism and each element of negative emotionality is mediated by academic self-efficacy and self-control. It was also mentioned that future studies should look at the possibility of increasing academic self-efficacy and self-control by employing stress, anxiety, and depression alleviation measures, which could lower positive attitudes toward plagiarism.

In support, the idea of theme was in agreement with that of Camara et al. (2017) who revealed a crucial link between student intention and attitude towards plagiarism. Their study indicates that students inclined to plagiarize often hold positive attitudes towards academic misconduct, while those less inclined tend to have negative attitudes. This highlights the significance of addressing both intention and attitude in fostering a culture of

academic integrity. Educators and institutions must prioritize initiatives aimed at shaping positive attitudes towards originality, honesty, and ethical scholarship to effectively combat plagiarism and uphold academic standards.

CONCLUSIONS

I have personally come across instances of plagiarism among my own elementary students after the pandemic ended, and this study has helped me to a great degree to confirm that this issue is really a serious concern for the Department of Education. Thus, I have come to the conclusion that actions must be devised to correct these behaviors and reverse the effects of plagiarism on the present quality of learning of the pupils. This kind of behavior should be corrected as soon as the elementary days of the learners because these days are the formative phases of the personality of the learners. Leaving this issue aside would only encourage an undesirable culture of cheating in schools later which the affected students would carry from womb to tomb.

Personally, my belief lies in an integral part of the kind of values education and upbringing that learners receive at home from their parents or guardians. Values such as honesty, integrity, and



earnest desire for genuine learning are things that can be developed initially at home and imparted personally by the student's parents. It is time for everyone to be cognizant of this issue and of the fact that there is a need to revisit the values of education for the pupils. By looking into this aspect more closely, we may be able to find solutions to persisting problems in our community which includes the issues of plagiarism.

RECOMMENDATIONS

The study holds numerous implications for teaching practice that are addressed to public school teachers, students, school heads, and the Department of Education. Thus, the study delivers insights and ideas which can be considered and utilized by the mentioned sectors to optimize the education system, curriculum, and academic integrity in public schools.

On one hand, the study implies that teachers may collaborate with their colleagues and higher-ups in the Department of Education to find solutions to the persisting problems of plagiarism among elementary students. They may attend seminars on pedagogy as well as invest on educational resources in an effort to increase learners' engagement in lessons particularly in writing activities. They may also hold symposiums and orientations which inform students about plagiarism, its consequences, responsible use of information resources on the internet, and certain practices to avoid intentional and unintentional plagiarism. Above these, teachers should also walk the talk so that they serve as great examples of academic honesty which they constantly preach about.

On the other hand, the results encourage the students to prioritize learning than getting high grades. This study also serves as a reminder that academic integrity is an important concept which merits no additional grade but is instrumental in developing the wholeness of the moral character of the students. Students themselves and their parents or guardians should make great efforts to learn independently and consistently apply the values that are taught to them at school, as the heart of education is the education of the heart of the learners.

For the school heads and the Department of Education, strengthening the policies and penalties of plagiarism must be enforced in order to mitigate the problem in the elementary school level. Considering the suggestions highlighted in the study such as redefining the rules and regulations, advocating the honor code, conducting of reminders to emphasize the negative effects of plagiarism may be done by the thinkers in the upper echelons of the department to address this issue substantially. Acquisition of anti-plagiarism software programs may also be considered.

We have learned from pursuing this study that the issue of plagiarism is also pervasive in the context of elementary teaching as opposed to majority of related literature which only dwelt on plagiarism and cheating in the contexts of secondary and tertiary schools. With this in mind, this adds to the body of literature which has an identified gap in terms of the literature on plagiarism

issues in the elementary level. Further, this will also encourage future studies which will add more angles on the phenomenon that is investigated.

At this rate, researchers in the future may dedicate more similar studies employing different research designs and engaging participants or respondents from elementary schools in other places or multiple countries. Future studies may also be devoted on uncovering the factors of committing plagiarism among elementary students. Researchers may also test the efficacy of the mentioned strategies in the study to counteract plagiarism such as the use of honor codes, setting rules and regulations, giving of constant reminders on the consequences of plagiarism. Strategies to be tested may not be only limited to such which can also be another opportunity for future study by other researchers in the field of education.

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AUTHENTIC VIDEOS IN TEACHING ENGLISH TO ENGINEERING STUDENTS

Saidova Munira Karimovna
Namangan State University

ABSTRACT

The article dedicates the study of authentic videos effectiveness in teaching English to future engineers, focusing on listening and speaking skills advancement. Being created primarily for native speakers, authentic videos (movies, TV shows, and programs) present real-life issues and communication examples. Therefore, such records may become indispensable for engineering students, who often have limited English vocabulary.

KEYWORDS: *Authentic video; Teaching; English; Engineering student.*

Nowadays require up-to-date forms of study at university, especially a technical one. Students need a unique approach to get modern education and relevant expertise that will be flexible and acceptable in the constantly developing scientific field in the time of the ever-changing world. Besides, future professionals should acquire lifelong learning skills as they are among the most needed ones now for career advancement. Teaching English requires keeping up with current trends. Recently, the ongoing shift towards a mainly communicative approach to teaching English at non-linguistic faculties has become visible. Therefore, it is important to analyze personality types and traits of technical students and find suitable means and aids to boost their incentive to improve their skills and knowledge of English at university and after graduation.

In this article a current trend towards adding audio-visual materials in the classroom of both humanities and technical students to boost the teaching/studying process (Malhotra & Verma, 2020; Muslem et al., 2017). Among others, engineering students express a positive attitude to the use of videos in class (Babu H et al., 2019; Månsson, Löfgreen & Warfvinge, 2017; Sun, 2020). During the training of future engineers, videos are mainly used for demonstration of a device, a technological process, or an issue and not for teaching English (Zabalza et al., 2020; Zhou, 2005). However, relevant authentic videos used in English lessons as educational aids can also potentially improve the levels of foreign language proficiency of the students in question and make such classes more effective. Yet, this aspect has not been sufficiently studied, making our research opportune. Scientists from different countries across the globe are investigating the positive and negative sides of videos as a supplement to foreign language teaching. The role of video records in teaching English oral speech at university has been covered widely in scientific works. The findings are provided further. Polat and Erişti (2019) examined the impact of authentic video aids on foreign language listening skill development. According to the scholars, authentic videos demonstrate the 'real' language (spoken by native speakers of English) and give communication samples, and thus have a highly effective influence on the development of English

listening skills. Also, they relieve the foreign language listening anxiety of the students who have low levels of English proficiency. Ismaili (2013) explored the beneficial nature of films for the work of students in the EFL class.

The results of the investigation showed a direct connection between motion pictures and the boost of students' listening comprehension and communication skills development. Kalra (2017) described the same outcomes of the study. It was determined that films in English are motivating aids that present the speech in a close-to-authentic way, as it is done by the native speakers; thus, they significantly contribute to the enhancement of students' listening and speaking comprehension. The foregoing literature review allows us to conclude that the subject matters of audio-visual materials use in foreign language lessons of humanities students and the communicative approach to teaching have been examined by various researchers, creating prerequisites for further study. Yet, there is a pressing need for an in-depth analysis of authentic video clips efficacy in teaching English to students of technical faculties. Among such are engineering students. In their lessons at university, videos are mainly used for specialty-related purposes, not for teaching English.

However, authentic videos used in English classes may provide the opportunity to teach general and specialized English vocabulary, scientific concepts, issues, slang, and idioms that appear and are updated almost every day, being in permanent use by native speakers. The examination of the authentic videos use effectiveness for English studying (at university and after graduation) of engineers-to-be should be conducted together with the study of engineering students' characteristics, and their future employers' requirements for them. Lifelong Learning of Engineering Students It is important to remember that an individual's learning usually happens not solely in a formal ambience (university classroom). It occurs at every moment of their life, including non-formal (professional associations) and informal (library, museum, cinema, family, etc.) settings. As regards lifelong learning, it is a continuous process, among key features of which are diversity, flexibility, and availability at



any time and place. Learning opportunities can be found everywhere. The mentioned kind of learning emboldens people to acquire all the knowledge and skills they may require throughout their lives (both personal and professional) and apply them with creativity, assurance, and satisfaction in any circumstances and environments (Djebbari & Djebbari, 2018, p. 9). In the process of continuous learning, people should regularly update their competencies, not allowing their knowledge and skills to become obsolete.

The quantitative research method relied on collecting and processing data through the use of pre and post-experimental questionnaires and tests (B2 level). The qualitative research method focused on interpreting the information. The theoretical data collected and presented in the current work were experimentally verified. The results are provided further in the article.

The obtained positive results demonstrate the practicality of authentic video records in teaching engineers-to-be English, boosting their positive characteristics, and amending the weak points. The outcomes of the study prove our hypothesis about the effectiveness of authentic videos in improving engineering students' listening and speaking skills when such audio-visual materials are introduced in the English course regularly.

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THE SPRED OF CHINESE CULTURE IN UZBEKISTAN

Ibadulloeva Ozodagul Shodievna

PhD Student, Shanghai International Studies University, Shanghai, China

ABSTRACT

Since Uzbekistan's independence, the friendship and cooperative relations between China and Uzbekistan have spanned over three decades. During this period, the two nations have experienced no significant disputes or confrontations, and their political ties have remained stable and progressively strengthened. By 2012, China and Uzbekistan further fortified their collaboration, announcing the establishment of a strategic partnership. Today, China stands as Uzbekistan's primary business partner, playing a significant role in investments as well.

The achievements of the collaboration between the two countries are substantial, especially in the field of infrastructure development. For instance, railways and highways connecting the two countries have been successfully constructed. In the energy sector, their partnership has yielded notable successes, including the laying of an oil pipeline and four natural gas pipelines to China, positioning Uzbekistan as a primary supplier of natural gas and a significant source of oil to China. Concurrently, China is the main consumer of Uzbekistan's energy, a collaboration that has boosted Uzbekistan's economy and improved the living standards of its residents. However, despite the deep economic ties, China's image in Uzbekistan still requires refinement. A majority of Uzbek citizens lack a comprehensive understanding of China, largely attributed to the insufficient promotion of China's cultural "soft power" in Uzbekistan. To foster a closer relationship with Uzbekistan and the broader Central Asian region, China needs to enhance its cultural influence.

KEY WORDS: *Chinese culture, intercultural communication, Uzbekistan, "Soft power" cultural dissemination, National image*

INTRODUCTION

After the collapse of the Soviet Union, Central Asia experienced dramatic geopolitical shocks. At that time, Russia, Turkey and Iran emerged as important players in the region. They share similar language and cultural backgrounds with Central Asia, providing a natural soil for their influence in Central Asia. But over time, an Eastern giant, China, began to emerge in Central Asia, especially in terms of economy and infrastructure.

As one of the most populous countries in the world with a large economy, China's economic size and influence continue to grow on the international stage. China's involvement in Central Asia, especially in economic and political terms, has undoubtedly had a significant impact on the pattern of the region. Uzbekistan, as an important country in Central Asia, has also felt the impact of this growth momentum from China.

Uzbekistan has unique geographical conditions. The fertile land breeds abundant agricultural products, and large amounts of natural gas and mineral resources have brought stable wealth to the country. At the same time, the country's demographic structure is changing, and the young population is gradually increasing. If they are well educated and trained, this generation will undoubtedly become an important driving force in the global economy.

Throughout history, China and Uzbekistan have had profound friendly relations, and the two countries have had close cultural,

economic and political exchanges. The ancient Silk Road is a witness to the cultural and commercial exchanges between the two countries. China has surpassed other countries and become Uzbekistan's largest economic and trade partner. The rise of China's middle class and changes in its consumption habits have brought new business opportunities to Uzbekistan's exporters, especially in agricultural products such as fruits and dried fruits. According to the latest statistical data from Uzbekistan, as of 2022, there are 15,801 foreign-funded enterprises in Uzbekistan. Among them, there are 3,156 Russian-Ukrainian joint ventures in Uzbekistan, accounting for 20% of the total; 2,204 Turkish companies, accounting for 14% of the total; and 2,141 Chinese companies, accounting for 13.5% of the total.

The Uzbek government knows that establishing close economic and trade relations with neighboring countries is crucial to the country's long-term development, especially in the current context of globalization. Uzbekistan's foreign policy has also changed accordingly, from a purely security-oriented to an economic-oriented one. Security and stability provide favorable conditions for economic growth.

China's attitude toward Uzbekistan has always been based on the principles of non-interference in internal affairs and peaceful development. Cooperation between the two countries has become increasingly close in many fields such as economy, security, and culture. Especially in terms of culture, China has realized the importance of cultural diplomacy and is improving its "soft power" through various cultural carriers such as



"Chinese fever", educational projects, national diet, sports and traditional medicine, and strengthening cooperation with Cultural exchange in Uzbekistan.

In recent years, with the proposal of China's "One Belt, One Road" initiative, the cooperation between China and Ukraine has entered a new historical stage. But in this cultural exchange, how is the spread of Chinese culture in Uzbekistan? What are the motivations, values, effects and possible obstacles behind it?

Current research on the spread of Chinese culture in Uzbekistan is still relatively limited. Most studies focus on the macro theory of cross-cultural communication, or the economic and political cooperation between China and Ukraine, but lack in-depth discussions on specific cultural communication mechanisms, effects and obstacles. In order to gain a deeper understanding of China's cultural communication activities in Uzbekistan, this article will explore it from three aspects: first, to reveal the actual situation of cultural communication through field research and case analysis; second, to explore culture from the perspective of "soft power" theory The significance and value of diplomacy; finally, establish an analytical framework for studying cultural diplomacy, and conduct an in-depth analysis of activities in media, education, and cultural exchanges.

LITERATURE AND METHOD

Uzbekistan is a country with a long history in Central Asia. It has rich natural resources and a large population, and occupies an important position on the ancient Silk Road. In recent years, friendly exchanges with China have been increasingly deepened, especially cooperation in the fields of energy and economy and trade. Scholars have written numerous monographs to gain a deeper understanding of Uzbekistan.

"Uzbekistan (Second Edition)" (2016) was co-written by Sun Zhuangzhi, Su Chang and Wu Hongwei. It describes in detail the history, geography, politics, culture, economy and other aspects of Uzbekistan. Zhou Jianying's "One Belt, One Road" Country Overview: Uzbekistan (2018) and Zhang Ning's "Uzbekistan's Political and Economic Development after Independence" (2012) both provide comprehensive discussions on Uzbekistan. These studies provide Rich information allows readers to better understand Uzbekistan's national conditions and foreign affairs.

In addition, Shen Yuhua's "Research on Uzbekistan's Foreign Policy after Independence" (2008) started from the international and regional situation faced by Uzbekistan after its independence, discussed the various factors affecting the country's foreign policy formulation, and analyzed its relationship with the main Relations between international organizations, the United States, Russia and other major countries. The book not only summarizes the characteristics of Uzbekistan's foreign policy, but also provides insights into its future development.

In "The Story of China and Uzbekistan" (2019), Zhou Xiaopei shows in detail the development of friendly relations between China and Uzbekistan and the close people-to-people

exchanges between the two countries by collecting real experiences and insights from diplomats and friendly people from the two countries, providing readers with It presents the diplomatic process of steady development between the two countries from the establishment of diplomatic relations to the present and the profound friendship between the two peoples.

The "Central Asian Countries Development Report (2008-2019)" (2019) co-authored by Sun Li and Wu Hongwei provides an in-depth analysis of the five Central Asian countries, including their relations with global powers such as China, the United States, and Russia. The chapter about Uzbekistan, especially the policy evolution after the current president of Uzbekistan Shavkat Mirziyoyev came to power, provides readers with authoritative and reliable information.

Pan Zhiping's "Research on Relations between China and Central Asian Countries" (2018), from a holistic perspective, comprehensively examines the cooperative relations between China and Central Asian countries in the fields of politics, economy, security and culture, and also reveals The current situation of Central Asian countries and the future development trend of relations with China. At the same time, Wu Hongwei's "Research on Security and Stability in Central Asia" (2017) deeply explores the security challenges in Central Asia from the perspectives of economy, culture, society and external environment, while also providing directions for future development.

"Analysis of Bilateral Relations between China and Uzbekistan in the New Era" (2019) by Elifire Eska provides a detailed analysis of the results of cooperation between China and Uzbekistan in the fields of politics, economy and culture. At the same time, she also pointed out some problems and challenges in the development of relations between the two countries, such as Uzbekistan's domestic socio-economic problems, geopolitical competition between major powers and the security situation, etc., and put forward some suggestions for future cooperation between the two countries. Such as strengthening security cooperation and system building.

Uzbekistan is the first country in Central Asia to launch Chinese language teaching. In 2005, the first Confucius Institute in Central Asia was established in Tashkent, Uzbekistan. As time goes by, more and more people, especially the younger generation, are keen to learn Chinese and understand Chinese culture, not only in Uzbekistan but also throughout Central Asia. Uzbekistan, as an ancient civilization on the ancient Silk Road, is internationally renowned for its rich and unique culture and has rich tourism resources.

Li Huiling's "Current Situation of People-to-People Exchanges and Cooperation between China and Uzbekistan" (2018) provides an in-depth discussion of the results of exchanges and cooperation between the two countries in the fields of culture, education, science and technology, tourism and people-to-people exchanges. It also pointed out some existing problems, such as the lack of cultural exchanges, excessive government involvement, insufficient private exchanges, backward media methods and the lack of long-term strategic planning.



Xu Changchang's "Research on Chinese Language Teaching and Promotion in Uzbekistan" (2017) emphasized the popularity of Chinese language teaching in Uzbekistan and believed that it played a vital role in strengthening relations between the two countries. This article reviewed the development of Chinese language teaching in Uzbekistan from a historical perspective, focused on the role of the Confucius Institute, and put forward some suggestions for cooperation between the two countries in this field.

Liu Xingxing's "Development of the Confucius Institute in Uzbekistan and the Spread of Chinese Culture" (2016) emphasized the importance of the spread of Chinese language and Chinese culture in Uzbekistan to strengthen cultural exchanges between the two countries. The Confucius Institute not only promotes Chinese language and culture, but also strengthens the friendship between the two countries.

2. Current status of foreign research

Foreign scholars' research on Chinese culture in Uzbekistan is very weak, and their research on exchanges between China and Uzbekistan is also very small. Most Uzbek scholars focus on research in the fields of economy, trade, energy and tourism. Salvi discussed the current situation of Chinese teaching in Uzbekistan in the context of the "Belt and Road Initiative" (2018), and pointed out that with the deepening of economic and cultural ties between China and Uzbekistan, Chinese language learning has received more and more attention in Uzbekistan.

Tashmota Kamora is a researcher at the Institute of History of the Academy of Sciences of Uzbekistan. The author has an in-depth discussion in "Economic and Cultural Cooperation between Uzbekistan and Other Central Asian Countries with China: 1991-2011" (2011) It examines the historical roots of cooperation between Uzbekistan and other Central Asian countries and China, and analyzes China's economic influence in Central Asia. Comprehensive analysis of the causal relationship between how Central Asian countries establish cooperation with China in the economic and cultural fields, including the motivation, direction and importance of cooperation to countries in the Central Asian region, especially in the context of ensuring the security and sustainable development of the region. In addition, the positive and negative factors encountered by Uzbekistan and other Central Asian countries in economic and cultural cooperation with China are also discussed. These factors may affect the effectiveness and depth of collaboration. Finally, it summarizes the goals and principles that China and Ukraine share in economic and cultural cooperation, as well as specific methods on how to achieve these goals.

American scholars' attention and research on Uzbekistan began to increase mainly after the "9.11" incident. Martha Brier Orcutt's "Second Chance in Central Asia" (2007) analyzed it from the perspective of Western democratic values. democratization process in sub-national countries. Point out that the first attempts at democratization by Central Asian countries failed. When the United States intervened in Central Asia because of the war in Afghanistan, it brought a second

chance for democratization to these countries. But once again, Central Asia's political elites missed this opportunity.

The Center for International and Strategic Studies' "Uzbekistan's Foreign Economic and Security Policy" (2015) explores Uzbekistan's interests and strategies in foreign economic and security. In general, American scholars' research on Uzbekistan covers many aspects such as the country's social development, domestic and foreign policies, security conditions, and bilateral relations with the United States.

In "The Evolution of Relations between China and Uzbekistan: 2001-2012" (2013), M.V. Danilovich, a scholar at the Belarusian State University, discussed the relationship between China and Uzbekistan during the period from 2001 to 2012. The evolution and changes in Stan's relationship. First, it reviews the series of geopolitical changes that occurred in Central Asia after the disintegration of the Soviet Union, which provides the background and historical context for the subsequent development of Sino-Uzbekistan relations. Subsequently, the author analyzed the respective national development paths of China and Uzbekistan, and how the two countries established and developed cooperative relations during this process. In order to more systematically understand the Sino-Uzbekistan relations during this period, M.V. Danilovich divided the development of cooperative relations during this period into two stages. This division helps to gain a deeper understanding of the characteristics and development trends of relations between the two countries in different time periods.

1. Document analysis method

In the process of researching the spread of Chinese culture in Uzbekistan, various aspects of cultural exchange and spread were deeply explored through document analysis. After collecting and carefully analyzing relevant literature and materials on Uzbekistan's attitude towards Chinese culture, acceptance level and the influence of Chinese culture in the local area, a large number of documents related to the spread of Chinese culture in Uzbekistan were obtained mainly through database searches such as China National Knowledge Infrastructure. Books, academic papers and news reports were analyzed in detail to collect relevant data on history, current situation, challenges and opportunities. However, no documents or information directly related to the spread of Chinese culture in Uzbekistan could be found in these databases.

2. Historical analysis method

In order to grasp the history of the spread of Chinese culture in Uzbekistan and its evolution, the history of cultural exchanges between the two countries was systematically sorted out, focusing on important cultural exchange activities, projects and cooperation. This process revealed the historical context of the spread of Chinese culture in Uzbekistan, and presented the changes in Uzbekistan's attitude and acceptance of Chinese culture over time.

3. Questionnaire method and interview method

In order to further understand the spread of Chinese culture in Uzbekistan, a questionnaire survey was conducted among Uzbek audiences, mainly to investigate their situation from the perspective of the spread of Chinese film culture. The survey



subjects of this article are students at the Confucius Institute in Tashkent, all aged between 16 and 31. A total of 100 questionnaires were distributed.

In order to explain the problem objectively and accurately, the research also adopted the interview method, mainly selecting ordinary audiences in Tashkent as interview subjects for analysis, trying to explore their true thoughts and specific reasons for encountering Chinese cultural bottlenecks when watching Chinese movies.

4. Data analysis and induction

In order to quantitatively grasp the influence of Chinese culture in Uzbekistan, Uzbekistan's consumption data of Chinese cultural products, statistics on the number of participants in Chinese cultural activities, and the specific number of Uzbek students learning Chinese were collected and analyzed. The data provide detailed information about the actual influence and reception of Chinese culture in Uzbekistan. Through further induction and summary, key conclusions about the propagation trends and characteristics of Chinese culture in Uzbekistan were extracted.

RESULTS

The research on cultural exchanges and "soft power" between China and Uzbekistan is not just a bilateral issue, but also a microcosm of the cultural strategies and international relations between countries in the context of globalization. How to conduct effective exchanges at the cultural level and how to use "soft power" to enhance a country's international status and influence are currently hot topics in the fields of international relations, cultural studies and foreign policy.

First of all, from a theoretical perspective, the definition, content and methods of cultural diplomacy and "soft power" are still in the exploratory stage. Although Joseph Joseph Nye proposed the concept of "soft power" and believed that it can more effectively affect relations between countries than "hard power", the specific practice of various countries, especially China's Uzbekistan's cultural diplomacy still lacks a systematic theoretical framework. It is from this perspective that this study attempts to construct a unique theoretical framework to explain and analyze China's cultural diplomacy and "soft power" practices in Uzbekistan.

Second, we cannot ignore the uniqueness of Central Asia. Central Asia, as the intersection connecting the Eurasian continent, has historically been a crossroads of various cultures, religions and economies. The cultural exchanges between China and Uzbekistan are not only an issue between the two countries, but also related to cultural exchanges and interactions in the entire Central Asia region and even the wider region. Therefore, the theoretical framework of this study is not only of great significance for explaining Sino-Uzbekistan relations, but can also provide useful enlightenment for Central Asia and even broader regional research.

Furthermore, the importance of cultural diplomacy and "soft power" in modern international relations has gradually increased. In the information age, the spread of culture and information is getting faster and faster, and the influence of

culture is also growing. Culture has become an important means of interaction between countries. From this perspective, this study is not only of great significance for understanding Sino-Uzbekistan relations, but can also provide useful reference for the theory and practice of international relations.

In terms of research methods, this article will combine historical analysis, comparative research, empirical research and other methods to conduct an in-depth discussion on the practice of cultural diplomacy and "soft power" between China and Uzbekistan. The study of Sino-Ukrainian cultural diplomacy can provide useful inspiration and suggestions for cultural exchanges between China and other countries, especially with Central Asian countries.

To sum up, this study not only has important practical significance for explaining and analyzing Sino-Uzbekistan relations, but also provides a unique theoretical perspective for the study of cultural diplomacy and "soft power". Through this study, we can gain a deeper understanding of the role of cultural diplomacy in modern international relations, and how to use "soft power" more effectively to enhance a country's international status and influence.

DISCUSSION

The purpose of this article's research is to cultivate the ability to correctly interpret the specific manifestations of communicative behavior in Chinese culture; to cultivate practical skills and abilities in communicating with other cultures. Currently, academic research on the spread of Chinese culture to other regions focuses mainly on economic and political strategic interests. However, it is difficult to find specific interactions between all these factors or a comprehensive methodological basis in these studies. The reason is that most of these studies regard economic interests as the main driving force for the spread of Central Asian culture. Furthermore, studying China's cultural diplomacy toward Uzbekistan from the perspective of flexibility does not understand or advance the broader concept of China's "soft power."

The innovations of this study are as follows:

1. This study is the first to comprehensively explore the role and impact of China's diplomatic "soft power" in Uzbekistan. Different from the past, which regarded "soft power" mainly as a component of economic strategy, this study emphasizes the importance of Chinese cultural communication in maintaining regional political and social stability and enhancing national strength, and empirically analyzes China's role in the international arena through cultural communication. Strategies to create a positive image.

2. Regarding the cross-cultural communication between China and Uzbekistan, this study reveals for the first time in depth how cultural communication promotes the integration of the two societies and the establishment of cultural identity. It further elaborates on the profound significance of "soft power" as a driving force for social and cultural changes in the transmission and interaction of values between different cultures.

3. Through a new perspective, this study explores the complex interaction between China's cultural communication



based on “soft power” and its economic, security and political strategic interests. It emphasizes the basis of cooperation between China and Uzbekistan based on common interests and a common future for mankind, and provides a new research perspective for the diplomatic academic community.

4. For the first time, it systematically analyzes the challenges and impacts brought by external factors, especially the interference of Western countries, on China’s cultural dissemination in Uzbekistan. This study also explores how China responds to these challenges through different institutions and means, such as the media, diplomatic teams, and cultural centers, thereby further strengthening mutual trust and friendship between China and Uzbekistan.

In short, this study is ground breaking in the field of the spread of Chinese culture in Uzbekistan and provides subsequent researchers with rich research materials and new research perspectives.

CONCLUSION

In recent years, China has demonstrated its continuously strengthening “soft power” in its diplomatic activities in Central Asia. This is mainly reflected in two aspects: first, the economic ties between China and Central Asian countries continue to expand; second, Chinese culture has had a profound impact on these countries. Taking Uzbekistan as an example, the spread of Chinese culture in the country has received increasing attention. This kind of cultural communication is of extremely important significance for studying the political and economic relations between China and Central Asian countries, as well as the evolution of China's foreign foreign policy and cultural communication strategy.

First of all, cultural soft power is the embodiment of the authoritative power of the national spirit and national will. It not only includes the essence of the country's system and economic and social development concepts, but also includes the country's values. In the process of cross-cultural communication, cultural soft power manifests itself as a kind of control, influence and discourse power through national leadership and the use of cultural resources. It affects and wins people's hearts through the practical operation of cultural industries and cultural undertakings, with the help of powerful communication media and effective communication methods.

Secondly, cultural soft power plays an important role in both internal and external dimensions. Internally, it is the cultural driving force for the country to maintain its internal cohesion and a virtuous cycle of economic and social development; externally, it is an important force to enhance its international influence and enhance its voice in the world. For China, improving cultural soft power is the only way to realize the strategic goal of the Chinese Dream of great rejuvenation of the Chinese nation.

Next, the analysis of the spread of Chinese culture in Uzbekistan shows that Chinese culture has had a positive impact in many fields such as politics, economy, society and environment. Chinese culture not only strengthens communication and trust between China and Uzbekistan,

improves China's national image in Uzbekistan, but also promotes the development of bilateral economic exchanges and cultural industries, and provides an example for multicultural exchanges.

In addition, the motivations, diverse manifestations and effects of the spread of Chinese culture in Uzbekistan show that cultural spread not only promotes educational cooperation and cultural exchanges, but also deepens artistic exchanges and Internet media cooperation, and promotes the continued progress of cultural tourism cooperation.

Finally, the challenges and promotion strategies faced by Chinese culture in Uzbekistan reveal the difficulties of cultural communication and acceptance, as well as misunderstandings caused by external factors and cultural differences. In order to more effectively promote the spread of Chinese culture in Uzbekistan, it is necessary to deepen the essence of culture and conduct diversified displays, stimulate the spread and exchange of Chinese culture in Uzbekistan, and expand new communication channels and platforms. At the same time, we should broaden the promotion strategy of Chinese culture in Uzbekistan, use the "One Belt, One Road" strategy to promote cultural communication, strengthen communication between China and Uzbekistan, ease cultural differences, and eliminate external negative influences on the communication of Chinese culture.

To sum up, this study not only clarifies the core elements and functions of cultural soft power, but also deeply explores the multiple dimensions, influences and challenges faced by the spread of Chinese culture in Uzbekistan. Through a comprehensive analysis of the spread of Chinese culture in Uzbekistan, this article reveals the importance of cultural soft power in international relations, especially its key role in promoting mutual understanding and cooperation between countries.

This study emphasizes that the improvement of cultural soft power is not only crucial to China's international status and influence, but also an important force in promoting global cultural diversity and mutual respect. In the current era of globalization, cultural exchanges and the improvement of soft power have become important aspects of competition between countries. The richness and uniqueness of Chinese culture, as well as its successful spread in Uzbekistan, demonstrate how cultural soft power can play a positive role on the international stage and promote exchanges and understanding between different cultures.

However, the process of cultural dissemination is full of challenges, which requires China to pay attention to cultural differences and acceptance issues while promoting its culture. Effective cultural communication strategies should take into account the cultural background and receptive capabilities of the target country and avoid one-size-fits-all communication methods. At the same time, China needs to continue to strengthen the construction of its domestic cultural soft power to ensure that the culture spread is authentic and attractive.



Finally, the findings and analysis of this study provide valuable perspectives and inspirations for further cross-cultural communication research. For China, understanding and responding to the challenges that arise in the process of cultural dissemination not only helps improve the country's image and international influence, but is also a key step in building a community with a shared future for mankind and promoting harmonious coexistence around the world. Therefore, future research should continue to focus on the development and application of cultural soft power and how to achieve effective cultural exchanges and win-win situations in the context of global cultural diversity.

Although the promotion of Chinese culture in Uzbekistan has encountered various difficulties and obstacles, as long as both sides continue to make efforts and work together, the prospects for cultural exchanges between China and Uzbekistan are very broad, and the potential opportunities are countless. This in-depth cultural interaction will further consolidate the friendly ties between China and Uzbekistan and open up a new economic and social development path for Uzbekistan. Through cultural exchanges, the two countries can not only enhance mutual understanding, but also bring more business opportunities and social value to Uzbekistan.

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AN IMPORTANCE OF “MUKHTASAR AL-WIQAYA” AND ITS COMMENTARY “SHARKH AL-WIQAYA” IN THE INTELLECTUAL, EDUCATIONAL, AND RELIGIOUS LIFE OF CENTRAL ASIA

Nematullo NASRULLAEV

Doctor of Historical Sciences, Department History and Source, Studies of Islam-IRCICA, International Islamic Academy of Uzbekistan 11, A.Kadiri, Tashkent, 100011, Uzbekistan

ABSTRACT

This article is an attempt to shed light into the valuable contribution of Ubaydullah ibn Masud's (d. 747/1346) two key works on fiqh "Mukhtasar al-Wiqaya" and "Sharkh al-Wiqaya" to the further fiqh related researchers further to come after above scholar and article argues that the influence of these works were notable in the coming years in the region in the development of Hanafiyah madhhab.

KEYWORDS: *Ubaydullah ibn Masud, Mukhtasar al-Wiqaya, Sharkh al-Wiqaya, Fiqh, Hanafi madhhab, Central Asia.*

INTRODUCTION

During the late 13th to 14th centuries, translating key works into Arabic, explaining them, writing commentaries, and versifying texts were common practices among scholars in Central Asia. These works could be divided into three stages. Initially, scholarly works were produced in Arabic. However, with the decline of the Arab Caliphate and the emergence of independent states in Central Asia, the role of local literary languages, especially Persian and Turkic languages, gradually increased. Although some scholars in Central Asia continued to produce works in Arabic, their number was relatively small. Instead, the local population began to use Persian more frequently.

During this period, there was a decrease in the creation of major works in Arabic and Persian. Instead, they began to focus on works related to social and political life, such as "Vaqe'at," "Fatawa," "Meros," "Sarf," and "Nahv," which dealt with legal rules, the essence of Sharia, and worship issues. The later flourishing of Islamic source studies also involved the creation of scholarly works and popular educational materials. In this line of works, the "Mukhtasar al-Wiqaya" and "Sharkh al-Wiqaya" by Ubaydullah ibn Masud (d. 747/1346) are notable. Its text spread rapidly to other regions and quickly became famous in the Muslim world.

THE MAIN PART

The "Mukhtasar al-Wiqaya" and "Sharkh al-Wiqaya" are translations, explanations, commentaries, and versifications of ancient royal works mainly produced in Central Asia during the late 13th to 14th centuries. Their use and dissemination are significant in terms of intellectual and religious aspects. These

works cover a wide range of topics, including religious teachings, jurisprudence, economics, politics, and society, making them valuable resources for education and knowledge dissemination.

The work "Mukhtasar al-Wiqaya" stands out for its scholarly depth and unique style. Its manuscript and printed copies can be found in almost all of the world's manuscript funds. Due to its wide usage among the public, its comprehensive coverage of various topics, and its accessibility to students, it was easily integrated into the educational system.

In many cases, the term "Mukhtasar al-Wiqaya" is used, but there are some variations in its naming conventions. This discrepancy arises from the numerous copies produced by different scribes and its widespread dissemination among the public. However, the essence of the text remains unchanged. For instance, the work is commonly referred to as "Mukhtasar" (Summary). This book was perceived as a fundamental text among contemporary legal works. Historically, many works related to worship were titled similarly.

The commentary on "Mukhtasar al-Wiqaya" is sometimes titled with various names such as "Mukhtasar," "Wiqayat ur-Rivoya," "Niyoqa," "Wiqaya," or "Matni sharia." Additionally, many editions of the text were published alongside other books in the same volume. For example, editions with titles like "Fiqhi Kaydony ma'a Mukhtasar ul-Wiqaya" are common¹. These editions were designed to facilitate easy understanding and memorization, thus aiding in both teaching and learning.

¹ See: *Institute of Oriental Studies Academy of Sciences of Uzbekistan. Manuscripts: 3975, 8149, 3739, 3944, ... and other copies.*



Ubaydullah ibn Masud's prolific activity in this regard coincided with a period of dominance by the Mu'tazilites, Qadarites, Jabarites, and Karramites, who had a significant influence on the scholars of that time. Consequently, he efficiently addressed worship-related issues and facilitated easy acceptance and consolidation of these ideas among students. Because the decline of knowledge and enlightenment during the time of the Mongols had an effect on the factors that unite people. However, Ubaydullah ibn Masud, like other jurists, remained faithful to his traditions and customs, contributing to the expansion of people's religious and intellectual lives. Considering the natural disagreements and diverse circumstances of that time, there was a pressing need for thorough and comprehensive works. The primary reason for the writing of this work was to quickly and effectively convey information to people. The writing of this work was crucial because it facilitated rapid and understandable dissemination of knowledge to people. This work, written in accordance with Hanafi jurisprudence, is significant for its incorporation of previously written sources. In fact, Hanafiyah maddhab is a widely followed school of thought among Central Asian populations, and adherents to Sunni beliefs often consider it one of the leading schools of thought. Hence, the Hanafi school's nuanced interpretations have contributed to its widespread acceptance in the Islamic world.

The factors mentioned above have led to extensive study among the populace and broad dissemination of the work, contributing to its wide recognition within the Muslim world. Its widespread acceptance among the public, association with established legal traditions, and the presence of poetic verses dedicated to the work also played a role in its popularity².

In studying the history of Islamic jurisprudence in Central Asia, official documents (diplomatic documents) hold a significant place. These include decrees, decrees of rulers and khans, charters, documents from legal archives (contracts, marriage contracts, divorce documents, inheritance documents), endowment deeds, and narratives issued by muftis³. They serve as valuable sources, especially regarding the application of Hanafi jurisprudence in matters prevalent among the population. Undoubtedly, they encompass a diverse range of topics. Undoubtedly, they also include *Jung* sets.

The term "*Jung*"⁴ has a literal meaning of large-sized paper on which poetry and other writings are inscribed; parchment, folio.

² See: Institute of Oriental Studies Academy of Sciences of Uzbekistan. Manuscripts: 3975, 8149, 3739, 3944, ... and other copies.

³ Boriev O. *Central Asia in the written sources of the Timurid period*. - Tashkent: Uzbekistan, 1997. - Pp.134-148.

⁴ Since the 16th century, it has been used mainly in Central Asian treasury books. *Jung's* collections are compiled by quoting from Islamic sources. They mainly contain answers given by muftis and judges to questions from the public.

⁵ Muhammadaminov S. *Some collections of fatwas created during Bukhara rule and their significance. Lessons of Imam Bukhari* //

From the 16th to the early 20th centuries, collections of legal issues compiled by muftis, judges, and jurists were created in Central Asia. These collections contain excerpts from past legal sources. At times, they include references to similar issues found in the "*Mukhtasar al-Wiqaya*"⁵. *Jungs* are a product of Central Asian jurists, often titled with names like "*Jungi Rivoyat*," "*Jungi Mukhtasar*," "*Jungi Mahzarot*," "*Jungi Fatawa*," and others. Copies of these works were preserved in every legal library in Central Asia and widely utilized.

Jung collections cover a wide array of legal issues that were prevalent among the public, including responses to questions raised by individuals, religious rulings issued by muftis and legal authorities, and documents from the archives of muftis and legal authorities detailing Sharia rulings. Studying *Jung* collections is crucial for understanding the practical aspects of Hanafi jurisprudence that were prevalent in Central Asia.

Two editions of *Jung* collections were published in Bukhara. One of them, titled "*Jungi Fatawa va Mahzarot*,"⁶ was printed in 1325/1907. It was prepared for publication based on the manuscript by Mulla Mir Husamiddin, who served as the assistant mufti to Mulla Nazrullo Bukhari (d. 1334/1916). Its publication was dedicated to Islamic legal transactions. It includes extracts from religious narratives, copies of decrees and documents, starting from marriage issues and extending to contracts, partnerships, agencies, suretyship, and the laws governing endowments⁷.

The second "*Jung*" was published together with the book "*Mukhtasar ul-Wiqaya*" in one volume⁸. The compilation is attributed to Mavlawi Inoyatulloh Khozikalon Bukhori (1780-1857) and his grandson, Porso Hoja, who served as the mufti of Bukhara. It was transcribed by one of Bukhara's renowned calligraphers, Abdurrahim Torobi (d. 1322/1905). The title page of the publication bears the signatures of Khozikalon, his grandson, and the mufti's seal⁹.

Although practical work is being carried out in the field of archives and the preparation of specialized personnel in documentology, research in the field of Islamic scholarship and Islamic law is not being conducted to a sufficient extent. Unfortunately, handwritten legacy documents are still stored in various archives, awaiting researchers. Nevertheless, the most reliable and important historical documents are considered to be

Spiritual-educational, scientific-literary journal. Number 3. - Tashkent: 2020. - Pp. 60-62.

⁶ *Jungi fatawa and mahzarot*. - Bukhara, 1907. - p.495

⁷ *Catalog of manuscripts of the State Museum of Literature*. named after A.Navoi. T.1. - Tashkent: 2006. - P. 661-671.

⁸ *Jung ma'a Mukhtasar al-Vikoya*. - Bukhoro, 1909. - p. 766.

⁹ Hamidulla Aminov, Saatmurod Primov. *History, sources and interpretations of Hanafi jurisprudence*. - T.: "Movaraunnahr" publishing house, 2017. -Pp. 218-219.



handwritten manuscripts. Therefore, the significance of documents relevant to the history of Islamic jurisprudence cannot be overstated.

Many scholars have expressed their positive opinions about Ubaydullah ibn Mas'ud's "Mukhtasar ul-Wiqaya" and "Sharh ul-Wiqaya." Since the text of the work contains numerous texts widely used in the religious and social life of the Transoxiana region, it is considered as one of the primary textbooks for middle and upper-level students in madrasas. Moreover, its simple and straightforward language, as well as its relevance to the social issues of Muslims, attest to its widespread acceptance.

Another aspect that demonstrates the uniqueness of "Mukhtasar ul-Wiqaya" is its organization. Ubaydullah ibn Mas'ud meticulously classified and explained the issues, dividing them into separate chapters and sections, demonstrating a sense of responsibility towards the topics. Thus, the author did not overlook the importance of first understanding the various types of actions before their complete fulfillment. Another significant aspect that has been highlighted in comparison with other works is that the topics mentioned in the "Hidaya" are not generally covered in "Mukhtasar ul-Wiqaya." Moreover, this aspect is related to its concise presentation.

The author's ability to encapsulate multiple meanings in short sentences, his skillful selection and use of words, and the avoidance of using cumbersome terms that could burden the language are distinctive features of the book's composition. Ubaydullah ibn Mas'ud's mastery of Arabic language-related sciences, his adherence to Hanafi principles in presenting legal issues, and his ability to find a place for it among respected works ensure its credibility.

"Mukhtasar ul-Wiqaya" shares similarities with the aforementioned works in terms of its composition method. Comparative analysis with the aforementioned contemporary works demonstrates that the legal issues and conclusions in the text are based primarily on the views of Abu Hanifa and his disciples.

"Mukhtasar ul-Wiqaya" follows the tradition of beginning with the "Basmala." Starting the text with "Bismillah" is supported by hadiths that emphasize the importance of not commencing any action without mentioning Allah's name. The virtues of "Bismillah" are discussed in detail, and it has been mentioned in various works throughout history. The expression "Bismillahir Rahmanir Rahim" is known in scholarly terms as "Tasmiiya" or

"Basmala." The opening section of the work also includes praises and salutations.

The first sentence of any text holds significant importance. The commencement of the text with such emphasis serves as a means to highlight the importance of the topics covered and to prepare the reader for what follows. This method is widespread in both legal and grammatical works. Its literary and poetic styles are noteworthy. The success of the opening sentence is considered a key indicator of the work's success, and this characteristic is not limited to literary works but also applies to scholarly works¹⁰.

The fact that the work was constantly copied by calligraphers indicates the high status of the text. There are many places where the author's talent is shown. Therefore, this work has not lost its value over the centuries and is highly valued even today. With this, Ubaydullah ibn Mas'ud made his worthy contribution to the cultural and educational life.

Efforts are underway to disseminate these rare works through transcription and preservation. Manuscripts copied by calligraphers primarily serve the purpose of dissemination through distribution, and among them are rare and valuable finds. These manuscripts are used for daily study purposes in homes, mosques, madrasas, and other educational institutions in a simple format¹¹.

One copy of "Mukhtasar ul-Wiqaya," translated into Uzbek, is preserved in the State Archives of Uzbekistan (Oriental Studies Institute of the Academy of Sciences of Uzbekistan)¹². This copy dates back to 1286 Hijri. Numerous manuscripts of books written in such madrasah schools are also found in this archive.

The fact that our society places a high value on book culture is evident from the strong demand for and appreciation of books. Encouraging reading and teaching books to future generations is essential for the development of our country. The fact that numerous copies of books are preserved in various manuscripts is due to the high demand and appreciation for them. The abundance of these works is further evidenced by the numerous commentaries, glosses, annotations, and explanations written by scholars over the centuries.

In the middle ages, complete scholarly works on fiqh began to be widely disseminated as general educational resources. Especially during the Timurid period, under the rule of Shahrukh, intellectual, educational, and religious activities flourished¹³. During this period, scholars such as Azuddin Iji (d. 756/1355), Qutbiddin Rozi (d. 766/1365), Sa'diddin Mas'ud ibn Umar Taftazoni (d. 792/1390), Shamsiddin Kirmoni (d. 786/1384), Ali

¹⁰ Atullah Hosseini. *Badoyi' as-sanoyi'*. - T.: Literature and Art, 1981. - Pp. 250-252.

¹¹ Nasrullaev N. *If we know the language of the manuscripts... "Ziyo" / spiritual-educational, literary, scientific-popular publication. Target number.* - T.: "Tashkent Islamic University" publishing-printing association, 2014. - Pp. 23-24.

¹² UzR FA ShI fund. R:7757. For more information, see: Nasrullaev N. *Fiqh Kaidani. Catalog.* - Tashkent: Elmundo-press, publishing house, 2010. - 321 p.

¹³ Orinboev A. *Indian travelogue of Abdurazzaq Samarkandi.* - Tashkent: Publishing House of the Academy of Sciences of the Uzbek SSR, 1960. - Pp. 12-26.



ibn Muhammad Sayyid Sharif Jurjani (d. 816/1413), Shamsiddin Abulkhayr Muhammad Jazari Damashqi (d. 833/1429), Salahiddin Muso Qozizoda Rumiy (circa 1360/1430) and others actively contributed¹⁴.

The educational system of madrasas remained largely unchanged until the 19th century. Especially in Samarkand and its surrounding cities, the education system was structured into three levels - "adno" (elementary), "avsat" (intermediate), and "a'lo" (advanced). These levels progressed systematically, with literature and educational curricula evolving over time. The first stage lasted 9-10 years, focusing on memorizing Qur'anic verses, hadiths, learning the basics of sharia, studying Arabic and Persian languages, arithmetic, ethics, and manners. During this period, introductory courses such as "Avvali ilm," "Bidon," "Mu'izziiy," and others were taught, followed by "Zanjoni," "Avomil," "Harakot," "Fiqhi Qaydoniy," and initial sections of "Mukhtasar ul-Wiqaya." In the fourth and fifth years, the continuation of "Kofiya", "Mukhtasar ul-Wiqaya" was taught. In the sixth and seventh years, "Sharhi Mullo" and others. In the eighth and ninth years, literature such as "Shamsiyya" and "Sullamul Ulum" were taught with the help of a special guide.

The second stage, or intermediate education, lasted 7-8 years and began with the study of Umar Nasafi's "Aqaid." Strong sources on logic included Umar Taftazoni's "Tahzib ul-mantiq wal-kalom" and "Mutawwal," as well as Ibn Hojib's "Kofiya" and other literary works. After completing the primary and intermediate stages, students progressed to the final four-year advanced stage. Here, subjects like theology, fiqh, and other complex topics were studied. Students learned from significant works such as Burhoniddin Marg'inoniy's "Hidoya," Mahmud Zamahshari's "Kashshof," Imam Bukhari's "Sahih Bukhari," Hatib Tabrizi's "Mishkot al-masobih," Ubaydulloh ibn Mas'ud's "Tavzi," and others. These works were considered essential for understanding hadith, fiqh, usul al-fiqh, and other aspects of Islamic jurisprudence.

Overall, the availability of comprehensive educational resources significantly contributed to the advancement of scholarly pursuits during this period.

In the 19th century, N. Khanikov came to Bukhara and studied the educational system¹⁵. He provided a list of 137 works included in the educational curriculum. Renowned scholars of religious studies and history in Transoxiana, including Hamidulloh Aminov (Beruni)¹⁶, conducted research and provided their scholarly conclusions. In his article, he mentioned that some were

¹⁴ Sadreddin Cumus. *Seyyid Serif Curcani ve arap dilindeki yeri*. - Istanbul: Marmara universitesi ilahieat fakultesi, 1996. - S. 64.

¹⁵ Khanikov N. *Description of the Bukhara Khanate*. - Moscow, 1843. - Pp. 210-223.

¹⁶ For more information, see: Aminov H. (Beruni). *List of textbooks taught in Movarounnahr madrasahs. (XVI-early XX centuries)*. - 9 b. <https://madrasa.uz/>

textbooks, while others were instructional materials for producing other works. In his article, the author cited the names and authors of textbooks, some of which were memorized, while others were taught to produce literacy, in subjects such as tafsir, aqeedah, fiqh, methodical fiqh, hadith, history, ethics, mysticism, sarf-nahv, dictionary, mushkilot, qasida.

The prominent scholar Burhaniddin Marghinani, the author of "Hidoya" in the field of jurisprudence, also studied in one of the madrasas in Samarkand and later served as a teacher there¹⁷. Madrasas mainly taught religious content, leading to the translation and dissemination of many relevant texts today.

The future task is to study these texts from a source-critical perspective, conduct research on the history of writing, provide endless information about Uzbek literature, culture, and history, and perform a deeper analysis of practical features, which are the tasks of specialists in source studies.

The wide dissemination of these texts in various forms indicates the high demand for them since ancient times. These texts were mainly copied and widely distributed in many copies, serving as essential resources for the general public, personal libraries, madrasa, and school students. As they significantly contributed to the advancement of knowledge and were historically significant, they were continuously copied in manuscript form and printed, serving the educational system and students for many years. This shows the high regard for education and the dissemination of knowledge in the region. Furthermore, the creation of new modern scientific-literary, artistic, and methodological works and tools over time has not diminished their importance as valuable intellectual heritage up to the present day. Therefore, efforts to deepen the study of the history of the country, the educational system, especially the history of higher educational institutions in the region, are conducted in various directions to achieve the intended purpose.

Formation of a culture of attitude towards maddhab plays an important role in educating the population of our country, especially the young generation, to be religiously enlightened¹⁸. This issue is especially relevant today, when active processes related to the revival of religious values are taking place¹⁹. Providing sufficient knowledge about the nature and conditions of formation of jurisprudential schools in Islam, forming a culture of attitude towards the Hanafi school in the young generation is a complex and exciting process, and its success is determined, in many ways, by the scientificity and thoroughness of methodological approaches in this field. Therefore, one of the

¹⁷ Valikhohjaev B. *Higher education in Samarkand. Clips from the history of the Madrasah University*. - Samarkand, 2001. - B. 35.

¹⁸ Sheikh Muhammad Sadiq Muhammad Yusuf. *Sects are a symbol of unity*. - T: "Hilal Nashr", 2018. - Pp. 70-73.

¹⁹ Farfiyev B.A. *The factor of Islamic rationalism in the social development of Uzbekistan*. - Tashkent: "National Society of Philosophers of Uzbekistan", 2019. - B. 115-122.



most important tasks is to study the history of schools other than Hanafi, in particular, Shafi'i, Maliki and Hanbali schools, and to show the contributions of these schools to the development of science and culture of our region²⁰.

Today, the study of the Hanafi school of thought has expanded significantly in the Central Asian region and beyond, addressing a wide range of pertinent issues. For example, in our country, the example of the well-known Hanafi jurist Burhan al-Din al-Marghinani (1118-1197), the author of "Al-Hidaya," and the prominent scholar Abu Mansur al-Maturidi (d. 944) from the Moturidiyya school, whose teaching was recognized in 1130, can be seen²¹.

In recent years, there has been a sharp transformation in the field of jurisprudence in our country, with a focus on both secular and religious content, which has been integrated into a comprehensive scientific approach. To accurately shape these areas from a scientific perspective, it is essential to publish written texts based on original sources in the Uzbek language, understandable to the public. This necessity and demand led to the execution of several scholarly works related to Hanafi jurisprudence and its history.

The translation of the text of "Mukhtasar ul-Wiqaya" attributed to Ubaydullah ibn Masud, as well as the current Uzbek translation of its Turkish commentary, was announced and separately published in a single volume²². The first volume of the famous Hanafi scholar Burhan al-Din al-Marghinani's "Al-Hidaya" was published²³. The Uzbek translations of works such as "Nur al-Izoh"²⁴ by the famous Hanafi scholar Abul Ikhlos Shurunbuloli (d. 1659), "Maslak ul-Muttaqin" by Sufi Allahyar (1663-1724)²⁵, "Mubayyin"²⁶ dedicated to the five pillars of Islam by Zahiriddin Muhammad Babur (1483-1530), "Kulliyat"²⁷ by Mawlana Kharobati (XVII), "Mira'oti Shar'" by Ghiyosiddin Ghiyosi (XIX)²⁸, and "Fiqhi Qaydoniy"²⁹ by Lutfullah ibn Umar Nasafi (d. 1349) are worth mentioning. Renowned Turkish Scholar Professor Ekrem Bugra Ekinci mentioned the names of more than

140 scholars, including the prominent figures of Hanafi jurisprudence, in his book "History of Islamic Law"³⁰.

Currently, there is still a lot of work to be done in understanding the Hanafi school of thought. For example, it is necessary to translate all volumes of the "Hidayah" into Uzbek. Additionally, several legal texts in the field of Hanafi jurisprudence are awaiting research. Collections of fatwas from other Hanafi scholars have not been fully studied yet. In this regard, it is necessary to publish these works in Uzbek, especially those that are related to specific topics within the field.

Furthermore, many Hanafi scholars' compilations of fatwas or legal opinions have not been fully organized or studied yet. Their fatwas or legal opinions are scattered across various legal texts. Gathering them, categorizing them, analyzing them, and translating them into Uzbek is still pending. Moreover, the works of renowned representatives of Hanafi jurisprudence are yet to be discovered or have only been found through their commentaries or annotations in other legal texts. Among the authors whose names have been preserved, among others, Abu Sulayman Juzhoni (d. 200/815), Abu Hafis Kabir Bukhari (767-831), jurist Abdulaziz ibn Ahmad ibn Nasr Salih Shamsul Aymma Halvai (d. 452/1060), One can include jurists such as Hokim Shahid Marvazi (d. 334/945).

Publishing the original texts of the legal works of Hanafi scholars from Central Asia began in Uzbekistan in the early years of the independence³¹. For instance, the renowned scholar Abu Ja'far Ustrushani (estimated 1180-1240), who hailed from ancient Jizzakh, had his Hanafi legal compilation "Ahkam al-Sighar"³² (Rulings on Children) and "Al-As'ilah wal-Ajwibah" (Questions

²⁰ Sheikh Muhammad Sadiq Muhammad Yusuf. *Madhabs are a symbol of unity*. - T.: "Hilal Nashr", 2018. - Pp. 90-96.

²¹ Akilov S. *The scientific legacy of Abu Mansur al-Maturidi and the teachings of Maturidi*. Monograph. - Tashkent: "Hilal Nash", 2017. - 240 p.

²² Mukhtasar. / Preparers for publication: Rashid Zahid., Akram Dehkan. - T.: "Cholpon", 1994. - 336 b; Mansurhoja ibn Maqsudhoja. *Majmaul Maksud*. I-J / preparers for publication: M.Hasani., U. Hasani. U. Hasani. (Reprint). - T.: "Adolat", 2005. - 640 p. II-J. - T.: "Movarounnahr", 2005. - 536; 600.

²³ Burhoniddin Marginani. "Al-Hidaya". Volume I. Translators: Salahiddin Muhiddin and others. - T.: "Adolat", 2001. - 848 p.

²⁴ Abul Ikhlas Hasan Wafai Shurunbulali Abu Zayd Shibli. *Nurul explained*. / Collector: Mukhtar Abdujabbar. - T.: "Movarounnahr", 2003. - 212 p

²⁵ Sofi Oloyor. *Maslakul Muttaqeen*. / Preparers for publication: Sayfiddin Saifullah., Akram Dehkan. Compiler of the application: Hamidullah Amin. - T.: "Movarounnahr", 2007. - 416 p.

²⁶ Zahiruddin Muhammad Babur. *Mubayin*. / Preparers for publication: S. Hasan., H. Hasan. - T.: People's Heritage Publishing House named after A. Qadiri, 2000. - 184 p.

²⁷ Maulana Haroboti. *Kulliyat*. / Preparers for publication: M. Hasaniy., M. Razzokova. - T.: "Tashkent Islamic University" publishing-printing association, 2009. - 645 p.

²⁸ Ghiyasiddin Ghiyasi. *Miroti shar'*. / Preparers for publication: S.Saifullah., F.N.Shofirkony. - T.: "Movarounnahr", 2008. - 196 p.

²⁹ Lutfullah Nasafi. *Fiqhi Kaidoniy (text, translation)* / Preparers for publication: N. Nasrullaev., Z. Islamov. - T.: "Tashkent Islamic University", 2009. - 96 p.

³⁰ Ekrem Bugra Ekinci. *Islam Hukuku Tarihi*. - Istanbul: Ari Sanat Yayinevi, 2015. 2. Baski. - S. 178-210

³¹ Ubaidullah ibn Mas'ud ibn Tajush shari'a Bukhari. *Mukhtasar ul-Wiqaya*. - T.: "Movarounnahr", 1991. -177 p.

³² Muhammad ibn Ahmad Majduddin Ustrushani. *Ahkomus cigar. / Investigation*: U. Alemov, Muslim Rizqi Ato. - T.: "Tashkent Islamic University" publishing-printing association, 2010. - 449 p.



and Answers)³³ published in Arabic in a significant single volume in 2010.

DISCUSSION

The current significance of these works lies in the firm establishment of Hanafism in the region over several centuries, spreading its influential sources presented by the famous imams and jurists of Hanafi jurisprudence to the whole world. Hanafism in the region of Transoxiana – Khurasan (Afghanistan and northeastern Iran), Eastern Turkestan (China, Moghulistan), the Caucasus, and Qozon (Russia) – expanded widely.³⁴ After the Mongol invasion (beginning of the 13th century), Hanafi jurists migrated in all directions. Many scholars (1281-1924) migrated to Ottoman cities – Rum Province: as a result of migration, the Hanafi jurisprudence flourished anew in those cities. It is possible to understand how much Hanafism has developed by knowing the arrangement of the two fatwa books in the empire of the Ottomans³⁵. In their time, the Shaykh al-Islams of the Ottoman state were appointed exclusively from among the Hanafis. In other words, Hanafism spread to this empire specifically through the region of Transoxiana.

After the Mongol invasion, scholars in Transoxiana and Khurasan, especially during the Timurid period (1370-1500), engaged in vigorous activities. The Timurid state was based on the Hanafi school of thought³⁶.

If we pay attention to the works written on Hanafi jurisprudence during that period, we find the emergence of numerous significant legal sources such as “Mukhtasar al-Wiqayah” (Selected Wiqayah), “Al-Wiqayah” (Preserver), “Majma al-Bahrain” (Confluence of the Two Seas), “Kanz al-Daqa’iq” (Treasure of Precise Knowledge), “Mukhtasar al-Wiqayah” and its commentaries, “Jawahir al-Fusulayn”, “Ma’araj al-Diroya”, “Bayan al-Wusul fi Sharh al-Usul” by Bazdawi, “Sharifiya”, “Kofiyya”, “Qayd al-Sharoid va Nazm al-Faroid”, “Jawahir al-Fiqh”, “Talwih”, “Fatwa-i Bazzozia”, “Jawahir al-Muzmarot”, “Jawahir al-Muzijja fi Tabaqat al-Hanafiya”, “Fatwa-i Tatarkhonia”, “Durar al-Bihor”, and others emerged directly during that period.

After the Timurids, the Shia state ruled in Khurasan, while in Transoxiana, the Shaybanids (1500-1598) held power. During the Shaybanid period, several notable Hanafi legal texts were authored, including various jurisprudential books (such as the commentary of “Mukhtasar al-Wiqayah”), fatwas (such as “Fatwa of Shaybania”, “Fatwa of Aliya”, “Fatwa of Samarqandia”, “Fatwa of Naqshbandia”), and other compilations.

In conclusion, Ubaydullah ibn Masud’s “Mukhtasar ul-Wiqaya” deserves special attention in Hanafi jurisprudence. This attention, from a Shariah perspective, undoubtedly emphasizes its relevance, authenticity, and reliability based on primary sources. The clarity and precision of the topics covered in the work are distinctive features of the author’s style. The unquestionable authenticity of the foundation and evidence led to its wide dissemination not only in Transoxiana but also throughout the Islamic world, contributing significantly to its practical application over the centuries.

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EXPLORING THE LEADERSHIP OF SCHOOL HEADS ASSIGNED IN LAST MILE SCHOOLS: A PHENOMENOLOGY

Junila A. Tejada¹, Maria Lalaine P. Chieng²

Master of Education major Educational Management, St. Mary's College of Tagum, Inc.
Graduate School Department, Tagum City, Philippines

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ABSTRACT

This phenomenological study aimed to explore and understand the leadership practices of school heads assigned in last mile schools. This study was rooted on the theory of Bush (2015) that articulated the concept of instructional leadership, also the theory of Bandura (2006) that reflects the significance of self-efficacy, and the theory of Groom (2002) that highlights the importance of distributive leadership. In collecting rich and diverse information, this study utilized purposive sampling technique that enable the ten (10) school heads assigned in last mile schools in Talaingod District, Division of Davao del Norte to share their lived experiences, coping mechanisms, and insights in leading and managing their respective schools. The identified school heads participated in-depth face to face interview upholding the safety health and protocols mandated by the IATF. Applying the thematic analysis, core ideas and major themes were extracted from the verbatim responses. As to the lived experiences of the school heads in last mile schools, five (5) themes were derived: establish community partnership, insufficiency of resources, cultivating leadership strategies, leadership opportunities, challenges to accessibility and safety going to the station. Meanwhile, on the coping mechanisms and strategies of the school heads in last mile schools, five (5) themes were generated: establish good communication among stakeholders, collaborated with stakeholders, giving rewards and recognition, managing the school effectively, and having safety procedures going to the station. Moreover, the school heads shared their insights and realizations which gave light to seven (7) themes such as: relevance of possessing positive attributes of a good school head, providing evidence of leadership, necessity of assistance from colleagues, importance of effective mechanism in leading schools, prioritizing access on resources, extending help and service to the community, and concentrating on student literacy. The results are deemed valuable and significant to the school heads, teachers, DepEd officials, and other researchers. The lived experiences and stories of the school heads were the primary the source of the derived transcriptions and emerged themes. Based on the results of the study, the school heads showed their commitment and dedication in performing their duties and responsibilities as leaders in last mile schools. They shared their unwavering sacrifice and love for the disadvantaged learners to have access to quality education. With the continuous assistance of the Department of Education, the government, the LGUs, NGOs, and other internal and external stakeholders, it is my great hope that the experiences of the participants will be heard and addressed.

Keywords: leadership, school heads, last mile schools, qualitative, phenomenological, Talaingod District, Davao del Norte

INTRODUCTION

Leadership skills reinforced the effectiveness and improvement of the school. Leaders serve as the captain of the ship who leads its constituents towards excellence and delivering quality education. In fact, leadership of a school head/principal helps a lot in identifying the pre-determined goals of the school and encapsulate it by crafting and implementing the School Improvement Plan (SIP). Despite of their assigned school, they ensure to devote their time and effort to address the need of the school and provide the best facilities to supplement the teaching-learning process. It is truly a challenge to lead and manage the school especially in the context of the last-mile schools wherein adversities are overwhelming. Schools located in the last-mile schools are evidently remote and experienced scarcity of human and physical resources.

Likewise, in one of the remote regions in Bhutan, the school principals and teachers encountered challenges in teaching the last mile. The problems that they experienced are concerns relating to the environment, concern relating to teaching, and concerns relating to the administration. In fact,

it is evident that in Indonesia, there is a huge challenge in education especially on schools located in geographical areas. These settlers in far flung areas of Indonesia have varying income and gender. Due to this, educational leaders faced tremendous challenges in leading schools in geographical areas. Meanwhile, in Pakistan lacks many civic amenities due to its status as a developing nation. Though lacking in necessities like education, its remote areas still exist because of the number of students that in need of basic education. Then, the government ensures to address their problem in education by establishing last mile schools. Even of limited resources at hand, education in basic education is made possible (Deema, 2021).

Meanwhile, in a study conducted in the Philippines, particularly in the Schools Division of La Union, teachers who are assigned in last mile schools are living examples of their vital role in providing educational services to those who are most in need. They revealed that they experienced both rewarding and frustrating encounters that put their commitment to test especially in delivering quality education. Being assigned in geographically remote area with evident scarce of resources is truly a challenge for teachers as well as



for their school leaders. School leaders and teachers initiate different strategies and programs in ensuring the accessibility of the students with the resources and the education that they deserve (Directo & Damaco, 2020).

Likewise, in the district of Talaingod, Division of Davao del Norte, it composed of school that are considered as last mile schools because it is geographically isolated, no electricity, schools are mostly makeshift rooms out of native materials, and most students belong in Ata Manobo tribe. School heads display evident scarce of human resources and financial support. With these tremendous challenges, the leadership practices and initiatives of a school leader is vital in making the school cope with the demands of our educational system given the limited resources at hand. They also spearhead the conduciveness of the learning environment among learners and maintain the motivational level of the teachers, parents, and other stakeholders.

Moreover, related studies of Brillantes and Nebria (2021) reveals one of the encountered experiences of the teachers assigned in remote areas is that they were very challenged in arriving at their workstation for it is located in top of the mountains. Meanwhile, the study of Hipolito (2022) also reveals the challenges encountered by the novice teachers in teaching in an overwhelming circumstance. These studies, however, concentrated more on the teachers' experiences in last mile school setting, whereas very few studies have on exploring the leadership of school leaders assigned in last mile schools.

Further, it is a necessity that this research work is conceived in response to seeing the different perspective on our educational system. This study will provide narrative and literature that will benefit the school heads, school administrators, DepEd officials and future researchers. School heads can share their best practices in planning and implementing programs, and other school heads will also learn the context of last mile school leaders. Further, this study will also benefit the school administrators and DepEd officials in providing appropriate and relevant programs and interventions that will help the thriving of last mile schools. Then, this endeavor will provide data and recommendation among future researchers in pursuing relevant research context. Besides, this urged me to create a research inquiry to provide new facts about the leadership challenges of school leaders assigned in last mile school and their coping mechanisms given the limited resources as well as the distance travelled from their home to school.

PURPOSE OF THE STUDY

The purpose of this phenomenological study delved on the lived experiences, coping mechanisms and insights encountered by the school heads assigned in last mile schools in Talaingod District, Davao del Norte. This study provided an avenue for school leaders unveiled and shared their practices and narratives on their struggles and strategies in leading and managing last mile schools.

At this stage of research, the leadership of the school heads in last mile schools, generally defined as the situations and challenges experienced and encountered as they lead and managing the students, teachers, parents and stakeholders in last mile schools. The shared responses and experiences of the school heads were properly documented and highlighted.

RESEARCH QUESTION

1. What are the lived experiences of school heads assigned in last mile schools?
2. How do school heads cope with the challenges they encountered as leaders in last mile schools?
3. What are the insights to be drawn from the experiences of school heads as leaders assigned in the last mile schools?

METHODS

This qualitative research adopted the phenomenological approach of Polkinghorne (1989) as mentioned in the study of Alasae (2017) advised that 5–10 participants who had similar struggles be interviewed by phenomenological researchers. In relation, there were ten (10) participants in this study who were public school heads assigned in last mile of Talaingod District, Division of Davao del Norte.

Moreover, the following inclusion criteria were used by the researcher to identify and choose the study participants: (a) school head of public elementary or primary schools within Talaingod District; (b) school head who have at least six (6) months of experience in leading and managing last mile schools; and (c) school head of multigrade classes. Meanwhile, the following were the exclusion criteria of the study: (a) reassigned school head from last mile school to more accessible schools; and (b) newly designated school head with less than six (6) months of service.

Prior to the conduct of the study, I submitted first the protocol to the Research Ethics Committee of Saint Mary's College of Tagum, Inc. to review the study to ensure that it met the requirements of accepted practice and ethical guidelines. Then, I sought endorsement from the Dean of the Graduate School for permission to conduct this research. Next, I submitted a letter to the office of our Schools Division Superintendent and asked permission to conduct my study. Then, I obtained permission from the office of Public School District Supervisor of Talaingod District. Finally, I ensured that the data obtained from my participants' responses were helpful in deriving results, I utilized iterative questioning during the in-depth interview. After the completion of thematic analysis, the formulation of core ideas was conducted. Following the extraction and formulation of the various core ideas, clustering of essential ideas was followed to arrive at a theme. The themes with core ideas then became the study's findings.

REVIEW OF RELATED LITERATURE

Importance of Leadership among School Heads

A highly developed accountability framework holds school heads accountable for school performance. Each school is given specific goals to work toward as part of this framework.



In fact, in the process of school improvement, the school heads must strengthen his transformational leadership. School heads must foster an environment that boosts school spirit by allowing different students to feel motivated, respected, and trusted at different times, increasing satisfaction, and gradually coming to an understanding of the school's overarching goals. School heads must attain the aim of school development which is the development of the students (Hallinger, 2018; Cansoy & Parlar, 2018).

Likewise, effective school heads give the school a clear vision and sense of direction. Leaders at the school make sure that improvement areas are identified and eventually serve as the foundation for improvement plans. They prevent initiatives that do not have a significant impact on the students' work from diverting and distracting staff from what is important by keeping their focus on that. They understand what takes place in their classrooms. Consequently, the school heads can determine the gains, problems, and the room for improvements of its subordinates. Creation of staff development program targets to overcome the needs of the school and its functioning bodies (Branch, Hanushek & Rivkin 2012; Begum et al., 2021).

Leadership of the School Heads Assigned in Last Mile Schools

Populations that are geographically isolated are typically disadvantaged. The context of these isolated are scarce in various fundamental areas such as they are experiencing poverty, and their parents or guardians have limited to no educational background. Also, the issues encountered in last mile schools are lack of learning resources, scarcity in power such as electricity and internet connection, outdated learning contents, lesson activities are repetitive, limited scaffolding of teachers and deficit in having peer collaboration. These unfortunate situations can directly or indirectly the leadership and management of the school heads (Rotas & Cahapay, 2020; Brilliantes & Nebria, 2021; Barcena, 2018).

On the other hand, the physical aspect, or location, of a remote school is one of the most challenging aspects of running one. The majority of school heads and teachers working in these regions undoubtedly reside in or close to cities, making travel to remote schools difficult for them, especially if they must cross numerous rivers and mountains to get there. Additionally, due to a lack of available instructional materials, these public school heads had to make purchases for the institution using their own funds. In the context of public school system, school heads need to endure and strategize solution in the problems such as lack of instructional materials, facilities, and classrooms (Begum et al., 2021; Navales, Flora, and Estremera 2017).

Strategies in Addressing the Challenges in Leadership

The responsibility of a school head is huge especially in leading and managing last mile schools. The planning process and decisions of the school depend on the ability and skills of the school heads. They can also enrich their knowledge and skills in leading and managing last mile school by studying the different polies and guidelines mandated by the department. Public policy helps the school to craft different plans, programs, and projects of the school. The different statutory policies were revised and contextualized by the department so that the school heads will have detailed instructions in planning and implementing the different policies and program of the school. The various goals and objectives of the school are mainly anchored on the regulations, laws, and other instruments that help them in implementing and attaining their objectives (Chavez & Doromal, 2018; Sanieel, Particutilo & Mariquit 2022).

In addition, trust plays an integral role for the success of the implementation of the plans and goals of the school. Trust is the core of the schools heads ability to lead and manage school that he gain from the students, teachers, parents, and its stakeholders. With public trust, school heads can earn the support from the different people that can contribute change and success to the school. Communication and relationship with the public is essential in leading and managing schools. Through communication it supports and help the schools understand the wants and needs of the community, teachers and especially the students (Day, Sammons & Gorgen, 2020; Moore, Gallegher, & Bagin 2020).

Realization in Leading Schools

It is truly a challenge to facilitate, manage and lead schools that are in last miles. School heads needed to come out from their comfort zones as they strategically solve the challenges that they encountered in the service. In the same manner, despite the struggles and challenges encountered by the school heads, they need to provide quality basic education among the learners and ensure that they are not left behind with the trends of education (Gallego 2022; Whang 2021).

In addition, school heads in remote area possess attributes that enable them to exert their enormous effort to serve beyond the call of profession. They also performed their duties and responsibilities in their assigned schools diligently, faithfully, and wholeheartedly. The different experiences and stories of triumph encountered by the school heads in last mile schools contribute to their wisdom and growth as a person and a leader. It was also emphasized in the study that both personal and professional development aids the school heads in defining and making sense of their leadership practices (Gallego, 2022; Esloban, Garcia & Amada, 2022).



RESULTS AND DISCUSSIONS

Table 1

Major Themes and Core Ideas on the Lived Experiences of School Heads Assigned In Last Mile Schools

Major Themes	Core Ideas
Establishing Community Partnership	<ul style="list-style-type: none"> • challenges in facilitating the school issues • bringing education to the community • tapping the participation of the parents • establishing linkage on different partnered agencies • using different avenues of communication such as social media sites, and other forms of communication to network support from stakeholders
Insufficiency of Resources	<ul style="list-style-type: none"> • experiencing leading a school without MOOE • insufficient number of teachers • lack of concrete classroom that can affect the teaching-learning process • lack of internet access • insufficient financial resources • limited technical assistance
Cultivating Leadership Strategies	<ul style="list-style-type: none"> • inadequate parents' understanding on education • needing to balance giving favors to the teachers • having a leader who is firm to show that you are in authority in serving the community • cultivating a positive mindset so that one will not get discouraged • having the challenge to motivate the teachers to teach in the last mile schools
Leadership Opportunities	<ul style="list-style-type: none"> • being one of the IP teachers that understands the language • recommendation from superiors • becoming a leader to give services to the community • grabbing the opportunity to be a school head • being a school head because of the need
Challenges to Accessibility and Safety Going to the Station	<ul style="list-style-type: none"> • finding it difficult to travel due to landslides and other calamities • experiencing "pangayaw" in far-flung areas • hiking for a couple of hours to reach the school • encountering obstacles like crossing the river on the way to the school • accessibility to the school

Establishing Community Partnerships

I encountered challenges in the community because they have close mind in supporting the programs of the school. IDI_01

In terms of community involvement, we had difficulty in tapping the participation of the parents. IDI_03
So, social media plays a great role that I was able to link different private and public institutions that gave donations that helped our learners. IDI-05

In the research finding of Malone (2017) agrees that parents who lack understanding on the purpose of education display less visible and active levels of parental involvement to schools. The parents' lack or limited knowledge placed them in an additional advantage because of the unfamiliarity of with the procedures of providing for their child's academic progress.

Further, in the study of Diaz (2015) confirms that school heads in remote area value the community they served by maintaining respect on them as they also give respect and value to the teachers serving in the remote community. In fact, the community will help the school in implementing the

target plans and goals of the school, especially when the school is situated in last mile.

Insufficiency of Resources

I experienced managing a school without MOOE so it means that it lacks resources and there is no fund coming from DepEd. IDI-02

The most unforgettable experience I had encountered is handling multigrade students from Kindergarten to Grade 6 for the first month and first quarter of the school year. IDI_09
My memorable experience as a school when I arrived in my designated school there are no classrooms. IDI-05

In the above finding Rotas and Cahapay (2020) agrees that the issues encountered in last mile schools are lack of learning resources, scarcity in power such as electricity and internet connection, outdated learning contents, lesson activities are repetitive, limited scaffolding of teachers and deficit in having peer collaboration.

Similarly, the inquiry of Navales, Flora, and Estremera (2017) confirms that the basic education in the Philippines faces perennial problems like shortage of textbooks, facilities, and classrooms particularly in the public school system. The



challenge in resources is evident in the schools with limited to no financial support from the government.

Cultivating Leadership Strategies

It is truly a challenge leading last mile schools especially when the parents are not fully educated on the systems of education. IDI-07

I encountered challenges especially in making decisions. The context of last mile schools, it is inevitable that teachers are asking favors especially on their time of attendance. IDI-05

I observe that in the last mile school if you're not strong enough in giving instructions, if you are just lenient then they will not take any actions. IDI-01

In the research conducted by Masters (2018) agrees that school leadership is a complex and demanding role as they are expected to lead school to excellence at the same time performing the needed paper works and tasks mandated by the department .

In addition, Whang (2021) confirms that school heads performed diverse areas of responsibilities including human resources, financial resources, educational activities of the students and teachers, external relations, well-being of students and teachers and even teaching students.

Leadership Opportunities

I decided to become a leader in the last mile school because it is important to have a leader who understands the IP learners especially their language. IDI-04

Actually ma'am, it was not my choice to be assigned in last mile school, it was a recommendation coming from our division supervisor. IDI-03

It was very unfortunate that there are children who do not receive education. This situation serves as my goal in extending my help to them through leading last mile schools. IDI-07

Arrieta and Ancho (2020) confirm that the shift from teaching in the classroom to leadership responsibilities in the

school is typically not a simple one. Teaching in the classroom and school administration are two distinct but related fields of study.

In addition, Passy and Ovenden-Hope (2020) agree that the service of the school heads are beyond questions despite of absence of research, publications, innovations, and other documents which will merit their services. Giving services to under resourced communities requires sacrifices which includes the transporting from their residence going to their respective schools.

Challenges to Accessibility and Safety Going to the Station

The most challenging part being assigned in last mile school is landslide. When heavy rains occur, there is a big chance of landslides in our area. IDI-03

I need to walked for almost seven (7) hours to be in my station performing my career as a leader, so it is very hard. IDI-02

In going to our station, we experienced crossing rivers and even encountered vehicular accidents. IDI-06

The study conducted by Equipado & Guibas (2021) agrees that the experiences of the school heads assigned in far flung areas is indeed challenging. They revealed that they do not have a comfortable means of transportation. They need to hire and ride habal-habal and overcome the rough and muddy roads just to reach their assigned stations. Unfortunately, for teachers and school heads who do not own a motorcycle, they need to hire and ride a habal-habal which is a local dialect for a motorcycle for hire.

Also, the research results of Quejada & Orale (2018) magnified the situations of the school heads and teachers assigned in remote areas. The put their lives at stake by walking for kilometers under the heat just to attend and deliver class to the students. During rainy days, it makes the hike and the travel of the school heads and teachers more challenging.

Table 2

Major Themes and Core Ideas in Coping with the Challenges of School Heads Assigned in the Last Mile Schools

Major Themes	Core Ideas
Establishing Good Communication with Stakeholders	<ul style="list-style-type: none"> connecting with the community to know the problems and concerns of the parents communicating with family to make them understand the situations of school head in last mile schools opening communication and rapport with the teachers connecting with the students by greeting them or cracking a joke learning the language or dialect of the students utilizing social media for networking support from people and groups
Collaborated with the Stakeholders	<ul style="list-style-type: none"> overcoming the challenges through the support and participation of the stakeholders being united with the stakeholders who are very eager to help the school extending support to the school by providing the basic needs of the students connecting with the community through the support of the tribal Datu for parents' meetings and other school activities tapping the support and help of the barangay, and LGU, and taking time to attend sessions and communicate with them
Giving Rewards and Recognition	<ul style="list-style-type: none"> rewarding the teachers to motivate and remind them that their efforts are known and recognized by the government appreciating the parents on what they can offer



	<ul style="list-style-type: none"> giving rewards and recognition to stakeholders recognizing and appreciating the initiatives of the teachers in making the school better
Managing the School Effectively	<ul style="list-style-type: none"> doing a variety of tasks handling multi-grade students updating the teachers and making schedules establishing strong time management and effective strategy to manage the school creating work schedules in advance allocating enough time and mitigating the challenges between home and school having a well-planned activity to help prioritize and focus on accomplishing the task effectively
Having Transportation Safety Procedures	<ul style="list-style-type: none"> needing to have a travel buddy in times of accident or emergencies taking time to enjoy travelling to our station then ensure to have a convoy and feel that we are family needing for teachers to cope with traveling the distance to the station

Establishing Good Communication with Stakeholders

In performing my duties and tasks as a school head is I always connect with the community. IDI-03

In serving our school and family it must be balanced. We need to communicate well to our family so that they will understand our situation. IDI-08

Of course, we cannot perform the tasks and duties of a leader without knowing the heart and minds of the teachers. IDI-06

Day, Sammons & Gorgen (2020) agrees that trust plays an integral role for the success of the implementation of the plans and goals of the school. Trust is the core of the schools heads ability to lead and manage school that he gain from the students, teachers, parents, and its stakeholders.

In addition, the inquiry of Moore, Gallegher, & Bagin (2020) confirms that the school heads communication and relationship with the public is essential in leading and managing schools. In implementing positive and effective communication with the stakeholders, the school head needs to understand the importance of public relations and its impact to the schools' development.

Collaborated with Stakeholders

There are various ways I had done especially in networking connection among stakeholders. It is essential that we know someone in LGU and especially in barangay. IDI-02

I think that one of the best practices that we have with the stakeholders is unity IDI-06

In my experience, it is really important to find and pursue stakeholders who will truly extend their help. IDI-07

The study of Jamon et al. (2020) confirms that collaboration is one of the most important skills that must be practiced by the school heads. With the advent of technology, collaborating with other teachers, stakeholders, students, and school administrator is easier .

Furthermore, in the inquiry conducted by Kilag et al. (2024) confirms that community involvement and support is essential in promoting effective instructional leadership practices. The community serves as the vital stakeholders that helps the schools with the access of learning materials needed for teaching-learning process.

Give Rewards and Recognition

In terms of our parents, they are very kind. My strategy is to appreciate them, even small or big things. IDI-05

I implement win-win solutions. If there are times when you give rewards among stakeholders, I give them an award. IDI-01

I practiced the giving of rewards and appreciation among my teachers so that they are more eager and motivated to work. IDI-08

The study of Renata, Wardial and Kristiawan (2018) confirms that work motivation positively affects and influence the performance of the teachers. In their inquiry they proved that regular supervision and motivation contribute a positive influence to the teachers' performance. Regardless of the context, giving appreciation

Further, the inquiry of Cansoy (2019) agrees that the administrators' leadership style, attitudes, and behaviors affect the motivation and performance of the employees positively. When leaders have mechanisms on organization, school culture and climate, and students' achievement they tend to reduce stress, burnout and many organizational negative behaviors.

Managing the School Effectively

You need to perform a variety of task and it is very hard because it needs to be delegated to others. IDI-02

I always update them to follow the instructions which is to come to school early, and always remind of the official time. IDI-04

When there is a well-organized plan on your business and whereabouts you will overcome the challenges in handling last mile schools. IDI-08

The research of Chavez & Doromal (2018) agrees that the responsibility of the school head is huge especially in leading and managing last mile schools. The planning process and decisions of the school depends on the ability and skills of the school heads. They can also enrich their knowledge and skills in leading and managing last mile school by studying the different polies and guidelines mandated by the department.

Also, it was elaborated in the inquiry of Sanie, Particulito and Mariquit (2022) that the public policy helps the school to craft different plans, programs, and projects of the school.



The different statutory policies were revised and contextualized by the department so that the school heads will have detailed instructions in planning and implementing the different policies and program of the school. The various goals and objectives of the school are mainly anchored on the regulations, laws, and other instruments that help them in implementing and attaining their objectives.

Having Transportation and Safety Procedures

It is necessary for last mile school personnel to have a travel buddy. IDI-01

In terms of distance, we never think that it is far or tiring.

Instead, we just enjoy our company, and we think that it is just nearby. IDI-03

Despite of the distance of the school, we always inculcate in our mind the tagline of our district that we should be happy all the time. IDI-06

The inquiry of Gallego (2022) agrees that in travelling to the station of teachers and school heads in far flung schools, they utilized a “buddy system”. This travel mechanism is a type of safety management practice in which individuals are paired or teamed to be responsible for each other’s welfare and safety.

Likewise, the research findings of Equipado & Guilbas (2021) confirms that the teachers and school heads assigned in far flung areas are able to reach their station by means of habal-habal. This mode of transportation is a local dialect for motorcycle for hire especially for teachers who do not own a motorcycle or cannot afford to pay for special tricycle rides.

Table 3
Major Themes and Core Ideas on the Insights of School Heads Assigned in the Last Mile Schools

Major Themes	Core Ideas
Relevance of Possessing Positive Attributes of a Good School Head	<ul style="list-style-type: none"> • excellence in making the school presentable and organized • extend help to my fellow Ata Manobo • exhibiting adaptability in adjusting plans and strategies • necessitate integrity, competence and diligence of services in managing last mile school • honesty and dedication be the first in doing one’s job • make sacrifices in the path that one has chosen • willingness to help the school and the community • learn together and enjoy the pressure • display of leadership skills especially on overcoming challenges • do your best in your job
Provide Evidence of Leadership	<ul style="list-style-type: none"> • source out and make effort to find ways with the scarcity of budget • need to teach the students because of the lack of the teachers • commit and help others • invest time and relationship among teachers • perform accountability and responsibility as school head • continue being a school head in last mile school
Necessity of Assistance from Colleagues	<ul style="list-style-type: none"> • necessitate mentoring and assistance in the implementation of school programs and activities • relevance of collaboration with the experienced school heads to make decision and perform the task • openness and communication with the previous school heads
Importance of Effective Mechanism in Leading School	<ul style="list-style-type: none"> • ensure up-to-date submission of reports • adaptation of the programs of previous leader • set schedules and advance reading and planning of memos before going to the designated station • have the structuring of the campus • continue the projects under the School Improvement Plan especially the projects not implemented yet
Prioritize Access on Resources	<ul style="list-style-type: none"> • implement innovations despite scarcity of resources • be resourceful and innovative in finding the solutions • purchase television so that the teachers can use it for demonstration or PowerPoint presentations • open the access like having electricity, concrete road, potable water system and learning facility
Extend Help and Service	<ul style="list-style-type: none"> • continue to help the learners • understand the situation of the students in the last mile schools • accept the situation of the community their attitudes, and culture



to the Community	
Concentrate on the Literacy of the Students	<ul style="list-style-type: none"> • need for the learners to receive remedial instruction especially in terms of reading • make way to innovate and teach the students read • strengthen the literacy and numeracy on the improvement of our learners

Relevance of Possessing Positive Attributes of a Good School Head

Based on my realization, it is important to possess excellence in leading schools because you will work hard in making the school better and provide its needs. IDI-02

By performing my tasks and responsibilities as a school head, I am able to extend my help a lot to my fellow Ata Manobo situated in far flung areas. IDI-04

In my experience, I realize that it is important to demonstrate integrity, competence, and diligence in performing our services because we will be able to analyze situations and make sound decisions. IDI-07

In the inquiry of Moore, Gallegher, and Bagin (2020) emphasized that the positive qualities and attributes of the school in leadership is essential to gain the trust of the community and its stakeholders. Those who trust school leadership believed that when they have been dealt with honesty and ethically they may be more open to school engagements, initiatives, and collaboration.

Also, in the works of Eslaban, Garcia, and Amada (2022) mentioned that when a school head possessed good qualities and committed to their work, the teachers will also reflect the same energy in performing their duties and responsibilities. The school head’s beliefs and attitudes can ultimately impact the teacher’s as well as the students’ growth. The experiences gained in overcoming the challenges in leading and managing schools it helped their career in dealing with their administrative and instructional duties that molded them to be effective leaders.

Providing Evidence of Leadership

Being a leader in last mile school is difficult. I realized that it is not easy to work with a school with limited budget. IDI-05

As a leader situated in the last mile, I realized that it is truly challenging. A leader necessitates commitment that in performing your duties and responsibilities. IDI-08

In my leadership experience, i realize that leadership strategies are important especially in finding ways in solving all of the challenges encountered in the last mile schools. IDI-09

School heads are considered as instructional leaders who are responsible for teaching and learning as a core responsibility of a school. They are needed to ensure to uphold and attain the school’s vision and educational goals and promote positive and supportive school climate. (Wieczorek & Manard, 2018)

In addition, the inquiry of Cabigao (2019) confirms that practices and mechanisms of the school heads/principals can serve as one of the success indicators of the school. When a school is led by a competent school head, it enable the school to achieve their target goals and performance which promote

positive and conducive learning environment. In fact, school heads are empowered in for planning, implementation, and evaluation pf all the school projects and activities for a particular school year.

Necessity for Assistance from Colleagues

At times when confused and don’t know what to do, it is best to receive assistance and mentorship from other school heads. IDI_02

My realization in managing our school in last mile is that the different experienced school heads had a great contribution to fulfill my emptiness that sometimes I find it hard to absorb written instructions. IDI-04

My message to my other school heads that are assigned in low land is that I am thankful for their help and assistance. IDI-04

The study of Whang (2021) agrees that school heads performed diverse areas of responsibilities including human resources, financial resources, educational activities of the students and teachers, external relations, well-being of students and teachers and even teaching students. As the prime mover of education, school heads need to be equipped and familiar with different tasks and duties so that they will be updated with the different reports needed by the department.

Likewise, in the research conducted by Masters (2018) confirms that school leadership is a complex and demanding role as they are expected to lead school to excellence at the same time performing the needed paper works and tasks mandated by the department. In navigating changes during uncertain times bring more hardship on the part of the school heads as they needed to be open for learning and adaptable to change and required to create difficult decisions.

Importance of Effective Mechanism in Leading Schools

As a school head, I realized that it is adaptation of the programs of the previous school head is important. It will ensure the continuity of the program. IDI-07

Creating schedules had a great impact in managing my time as the school head, I realized that I can do more and I am productive when I create a schedule every week. IDI-09

As to my practices, the projects under the School Improvement Plan must be continue especially the projects that was not implemented. IDI-08

Wieczorek & Manard (2018) affirms that school heads are also responsible in evaluating the performance of the teachers and track the progress of the students in attaining the different competencies and the status of the implementation of the programs mandated by the government. School heads need to monitor the status of teaching-learning process of the school so that he can develop the capacities of his teachers by building on their strengths and reducing their weaknesses.



In addition, the practices and mechanisms of the school heads can serve as one of the success indicators of the school. The planned activities are included in their Annual Improvement Plan (AIP) taken from the School Improvement Plan (SIP) good for three years. Also, the implementation of different programs of the school are reflected in the School Based Management (SBM) that allow the school performance of the school heads to be assessed, evaluated, and monitored (Cabigao, 2019).

Prioritize Access on Resources

The setting affects my leadership practices and methods, so the last mile schools often operate with limited resources including infrastructure, learning materials and technology. IDI-10

Our plan is to purchase television so that we can utilize it during demonstration of the teachers that involves the use of PowerPoint. IDI-03

My plan is to make last mile school be able to have opportunities and resources available in lowland. IDI-04

Schools that are remotely located faces scarcity of teaching resources which contribute to their challenge in delivering quality basic education. The school heads who lead with this problem, they innovated and improvised instructional materials available in their area in order to aid in delivering the classes to the students. Through innovation, the educators can present much more meaningful learning experiences to the students (Gallego, 2022).

In addition, the inquiry of Pelegrino, Caballes, and Javillonar (2020) confirms that in the public schools of Palawan, they encountered challenges in accessing to learning materials that contribute to the learning of the students. In addressing the problems of materials, the teachers utilized the Open Educational Resources (OER) that focuses on ICT assisted teaching. OERs enable the teachers to tailored localized materials to provide quality, usable, accessible, appropriate education for all including schools with poor or limited internet services.

Extending the Help and Services to the Community

When I had the time to speak to them, I saw and glimpse their sincere smiles, that what I think that maybe God has a purpose why I am here. IDI-06

My experience that I can share to other school heads is always understand the situation of the students. IDI-03

My advice is to accept the community and its people. It is important for school heads to understand their culture, and their behaviors so that they can connect with them. IDI-04

The study of Sanchez, et. al (2022) agrees that most of the school heads and teachers assigned in challenging situations see learning as an opportunity in addressing the needs of the learners. They sacrificed and exerted efforts among their learners as if they are their children, own siblings, and part of their families. In their respective stations, the research participants in their study appreciate the fact that they have a lot of opportunities to help their learners and the community.

Meanwhile, the investigation of Valenzuela and Buenvenida (2021) confirms that principals must outsource funds internally and externally to provide a safe working atmosphere to their teachers. By creating a conducive and supportive environment the teachers can demonstrate their best qualitative teaching.

Concentrating on Student Literacy

There are competencies and subject to be followed, but if the students don't know how to read, them give remedial sessions to them. IDI-02

In terms of the development of the students, it is better for K-3 students to focus on developing their reading skills. IDI-01
Regarding about the literacy and numeracy it must be strengthen for improvement of our learners. IDI-06

Teaching students in remote location, teachers ensure to practice one-on-one reading tutorial. Reading skills plays a significant role in unlocking the different complex lessons and competencies which requires the teacher to teach reading intensively among the learners. Tutorial serve as one of the powerful strategies especially in addressing the different unique needs of the learners (Naparan and Alinsug, 2021)

Further, Domingo & Salva (2021) confirms that implementation of the curriculum is the focus of the school heads in their study. Their participants elaborated that they empower their subordinates to make plans and decision to improve their teaching and learning. School heads are responsible for creating plans and initiatives to improve the delivery of literacy and numeracy in schools that supports strategies that highlights the intervention of struggling learners.

IMPLICATION FOR ADMINISTRATIVE PRACTICE

The rich and valuable experiences shared by the participants of this study are necessary for knowing the realities of school heads assigned in last mile schools. Showcasing their stories on the challenges that they encountered, exploring their various coping mechanisms, and magnifying their realizations is the main purpose of the conduct of this endeavor. The extraction of their responses enables to revealed the various themes that elaborates the lived experiences of school heads assigned in last mile schools.

In addition, the experiences shared by the participants may inform the different administrators to revisit or develop new policies that focus on addressing the needs of the schools situated in last mile. They may use this study as empirical evidence that school heads in last mile school need support and assistance in terms of manpower and resources. In turn, this study also speaks the need for the administrators to allocate enough resources so that the students will have better and meaningful learning opportunities.

Moreso, the results also shows that most of the school heads assigned in last mile school have little to no leadership experience which implies that they are encouraged to participate in various trainings and seminars that will surely develop their leadership skills. Engagement in various



personal and professional activities allows them to foster their decision-making, managerial, and leadership skills. Also, school heads are encouraged to constantly monitor their performance by creating schedules, strategic plans, and assessment tools that keep them on track on the attainment of the programs and projects mandated by the department.

In relation, school heads need to establish organizational culture that enable them to utilize different strategies in maintaining cordial relations with the students, teachers, and stakeholders. It was presented in this study that communication and collaboration plays a greater role in addressing the challenges of school heads in last mile schools.

CONCLUSION

In general, the participants shared an array of colorful experiences pertaining to being a public-school heads assigned in last mile schools. So, to speak, their experiences were not that easy as they had to face various challenges in their journey such as the establishing community partnership, insufficiency of resources, cultivating leadership strategies, leadership opportunities, and challenges to accessibility and safety going to the station. More so, the leadership of school heads assigned in last mile school were put into test and enable them to strategically create immediate and feasible solutions.

In response to these difficulties, the school heads assigned in last mile schools developed varying ways of coping which focused majorly on establishing good communication with stakeholders. They also recognized that collaboration with stakeholders could help them gain mileage in facing the challenges in last mile schools. More so, giving rewards and recognition could add fuel to the various stakeholders in helping the school attain the educational programs and objectives. Managing schools effectively were also seen as integral by the participants in addressing the complex tasks of being an instructional and administrative leader. Lastly, in addressing the challenges of the travel of the school heads they noted that it is important to have transportation and safety procedures.

Overall, certain realizations struck many of the participants as they ruminated on their experiences in the field. One important aspect of this is the relevance of possessing positive attitudes of a school head. The pursuit of providing evidence of leadership was also one of the major themes which spelled the desire of the school heads showcase their leadership skills in leading last mile schools. It was explicitly revealed by the school heads the necessity of assistance from colleagues that stressed that they need to improve their skills and adapt strategies from different experiences of school heads. Moreover, they have also seen that the importance of effective mechanisms in leading schools is a way of ensuring that they will prioritize access of resources that will surely help the teaching-learning process. Lastly, the participants stressed that extending help and service to the community and concentrating on the literacy of the students are the main goals of the existence of last mile school.

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SOLAR POWER: ANALYZING CLIMATE CHANGE IMPACTS AND ENVIRONMENTAL FACTORS ON PHOTOVOLTAIC SYSTEM PERFORMANCE

Rajarshi Ray*

* Chemical Engineering, Jadavpur University

ABSTRACT

Solar power stands as a pivotal renewable energy source, increasingly vital in the global shift toward low-carbon energy portfolios. The precise understanding of climate conditions is imperative for optimizing solar energy production, regulation, and planning, with climate change effects playing a central role in energy output projections. This study delves into the impact of projected changes in irradiance and temperature on photovoltaic (PV) system performance in Greece. Utilizing data from five regional climate models (RCMs) under the A1B emissions scenario for future periods, the study identifies systematic errors in RCM data, necessitating bias adjustments. By estimating the projected change in PV energy output considering temperature and insolation variations, the analysis reveals a significant increase in mean annual temperature (up to 3.5°C) and mean total radiation (up to 5W/m²) by 2100. Although the performance of PV systems shows a negative linear dependence on projected temperature increases, it is outweighed by the expected rise in total radiation, resulting in up to a 4% increase in energy output. Furthermore, the study investigates the recent applications of solar PV installations in arid climates, highlighting the impact of environmental factors such as weather and dust on PV module performance. By presenting up-to-date experimental results and analyzing the effects of these parameters, the study underscores the critical importance of considering environmental conditions when implementing PV installations in such regions. Additionally, the study evaluates the impact of various environmental factors, including dust accumulation, water droplets, birds' droppings, and partial shading conditions, on PV system performance. Findings reveal that shading exerts the most significant influence on PV module efficiency, with even partial shading resulting in substantial power reductions. Conversely, the impact of water droplets on PV panels leads to improved power output due to decreased panel temperature. Dust accumulation and bird fouling, on the other hand, significantly diminish power output and overall efficiency, underscoring the importance of mitigating these environmental factors for optimal PV system performance.

INDEX TERMS- Solar power, photovoltaic systems, climate change, irradiance, temperature, regional climate models, bias adjustment, energy output projections, environmental factors, dust accumulation, water droplets, birds' droppings, partial shading, energy efficiency.

1. INTRODUCTION

The global shift towards renewable energy sources, driven by the diminishing availability of fossil fuels, has propelled the significance of electrical energy. Among renewable energy options, the photovoltaic (PV) industry has experienced rapid growth, with PV systems poised to contribute significantly to global electricity production. By 2018, an additional 100 gigawatts (GW) of PV capacity was installed worldwide, bringing the total installed capacity to 505 GW. Notably, China alone added approximately 45 GW of capacity, reaching a total of 176 GW.

While silicon crystalline PV modules remain prevalent, newer technologies offering lower manufacturing costs, such as amorphous silicon, copper indium selenide (CIS), and cadmium telluride, have emerged. To accommodate these advancements, new standards and testing schemes compatible with these technologies are being developed. With the declining cost of PV systems, they have become increasingly competitive with conventional electricity prices, particularly in regions with high solar irradiation like the solar belt regions.



Author	Location & Year	System Size	Grid Connection	Measured Parameters	Test Duration	Main Result
Ghannem et al. [3]	Syria (2016)	147 kWp	Yes	LT characteristics, open circuit voltage, and short circuit current	70 days	The total loss in the harvested energy decreased by 23.47% after 70 days without rain. The amount of dust that accumulated on the PV panel surface was 4.086 g/m ² .
Chen [9]	UK (England) 2014	20 kWp	No	Temperature, wind speed, and humidity	11 months	Studying the effect of dust density to light transmission.
Vasude [11]	India (2014)	20 kWp	Yes	Global solar irradiance and module temperature	2 years	The estimated capacity factor and performance ratio of the PV system are 16.7% and 89%, respectively.
Saber [14]	Singapore 2014	200 kWp	No	Solar irradiance, Module cell temperature, Output power, and Module efficiency	30 months	The orientation of low-slope roofing PV has an insignificant influence on the harvested energy. However, in case of PV external materials, cool liquids, a panel slope in the range 37°-40° is the most appropriate position and inclination.
Ghannem et al. [10]	Morocco (2016)	200 kWp	Yes	Power, current, voltage, and temperature	60 months	The total loss in the harvested energy is 124 kWh during the investigation period (6 months). During the dry period, the soiling rate is 0.25% per day that caused a reduction of energy by 27 kWh per day.
Joshi et al. [10]	Delhi, India (2017)	12 kWp thin film (碲化镉) PV	No	Environmental variables, performance measurements, PV performance measurements, and Dust accumulation rate	11 months	During the first two months, the accumulated dust is approximately 180 mg/m ² per day. Calcium is the most abundant element in the accumulated dust.
Abdelmalik and Fata [17]	Algeria (2017)	4000 G 20 W	No	Ambient condition, main parameters of PV module, dust type, and dust size	-	Three different pollutants (soot, ash, and salt) are considered. Electrical power loss varied from 30% to 50% due to accumulated dust.

The performance of PV systems hinges on various factors, including sun position, solar irradiance intensity, temperature, and load demand. Evaluating the dynamic response of PV systems is essential for their integration into utility grids, as interconnecting them may lead to grid instability. Despite progress, uncertainty persists in PV performance modeling, with existing research

primarily focusing on module performance rather than system performance.

Dust accumulation on PV systems has garnered significant attention due to its adverse effects on performance. Studies have shown that the rate of dust accumulation varies depending on weather conditions, with substantial differences observed across different locations. For instance, in Colorado, dust deposition rates range from 1 to 50 mg/m²/day, while in Egypt, rates range from 150 to 300 mg/m²/day. Experimental studies have demonstrated that prolonged dust exposure can lead to significant reductions in power output, with one study reporting a 21.47% decrease after 70 days without rain.

Various environmental parameters, including temperature, humidity, and airborne pollutants, can impact PV performance. For example, high temperatures decrease PV efficiency, while wind can help cool PV panels, thereby improving their performance. Additionally, soiling from dust and sand deposition can obstruct sunlight, reducing PV efficiency. Mitigation strategies such as mechanical cleaning or water-based solutions have been explored to address this issue. Overall, understanding and mitigating environmental factors are crucial for optimizing PV system performance and promoting sustainable energy production.

II. LITERATURE REVIEW

The literature review encompasses numerous studies evaluating the performance of photovoltaic (PV) systems in various geographical locations and climates. Singh (2013) highlights the importance of factors such as orientation, type, and geographical location in determining PV system performance. Nguyen and Lehman (2006) demonstrate the utility of theoretical and simulation models in assessing power losses in solar cells under different irradiance conditions.

The review focuses on studies conducted in arid or semi-arid regions across the globe, including the Middle East, North America, Australia, Africa, Asia, South America, and even Antarctica and the Arctic. These studies aim to analyze, assess, and evaluate the performance of PV modules in such environments.

In the Middle East, studies conducted in Saudi Arabia, Israel, Yemen, the United Arab Emirates, Iran, Oman, Egypt, Jordan, and Kuwait highlight the impact of high temperatures on PV output, as well as the potential for PV systems to reduce CO₂ emissions and provide economically competitive energy solutions for desert communities.

In North America, research in Arizona, USA, and Nevada evaluates the performance of PV systems under arid conditions, emphasizing differences in power degradation between various PV technologies.

Australia-based studies explore the financial and environmental aspects of PV panels, forecasting their performance under future climate changes and analyzing their role in providing renewable energy. Additionally, studies in Western Australia address challenges faced by PV systems in arid remote areas.

African studies in Nigeria, Tunisia, Algeria, Kenya, and Djibouti assess the feasibility and impact of PV grid-connected systems, hybrid energy systems, and remote PV installations under semi-arid conditions.

Research in Asia, particularly in Pakistan, China, and the Gobi Desert, evaluates the potential and competitiveness of solar PV technologies in desert areas.

South American studies in Chile examine the performance of PV technologies in desert climates, highlighting differences between multi-Si and thin-film modules under varying temperature and dust conditions.

European research in Cyprus focuses on testing different PV panels and technologies, while studies in Antarctica and the Arctic assess the feasibility and potential of PV systems in remote and extreme environments.

Various methods for enhancing PV system performance are discussed, including predictive modeling based on cloud fractions, monitoring systems to manage dust and weather conditions,



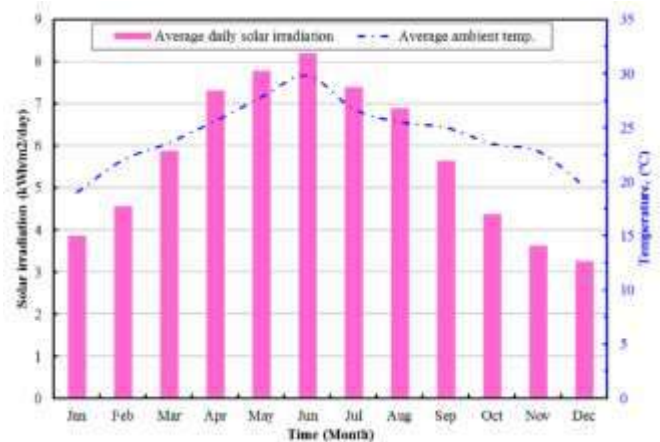
cooling systems to improve efficiency, sun-tracking systems, and applications of PV technology in irrigation, desalination, refrigeration, and anti-soiling coatings.

Overall, the literature review provides insights into the performance, challenges, and potential solutions for deploying PV systems in arid and semi-arid regions worldwide.

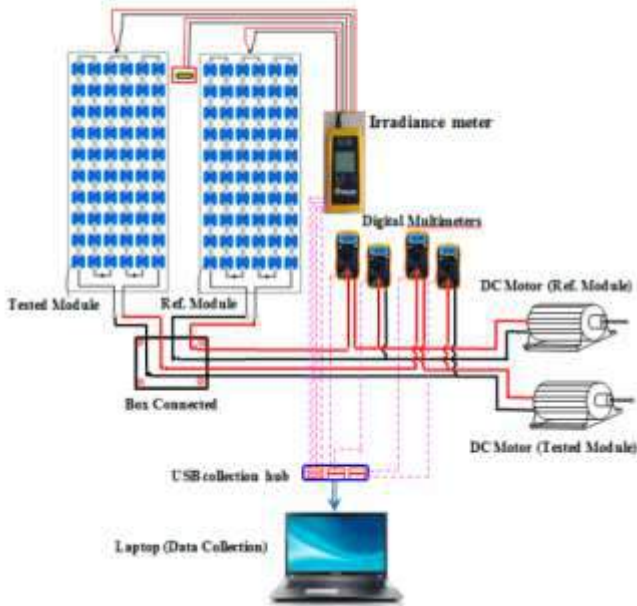
III.METHODOLOGY

PV Module and Load Profile

The experimental setup was positioned on the roof of the Faculty of Engineering at Mutah University. It consisted of two PV modules (Figure 1), each connected to a similar direct current (DC) motor. The characteristics of the photovoltaic modules used in the experiment are detailed in Table 3. While no tracking system was employed, the impact of ambient temperature was considered. The array slope angle was set at 31 degrees, and the array azimuth was directed towards sustainability.



The load profile was simulated by a DC motor, converting electrical energy into mechanical energy. An irradiance meter device, positioned alongside the modules and under the same inclination, measured effective irradiance and ambient temperature. Effective irradiance accounts for global solar irradiance and albedo/reflection fraction from the roofing system. Specifications of the solar irradiance meter are detailed in Table A2 in Appendix A. An infrared thermometer was used to measure PV panel surface temperature, with electronic components providing a temperature reading displayed on the screen, accurate to ±2°C or 2%. Wind velocity and ambient temperature were measured by a thermo anemometer, accurate to 3% (±0.2 m/s).



The experimental setup included digital multi-meters for measuring electrical parameters (current and voltage). The specifications of the multi-meters are provided in Table A1 in Appendix A. Short circuit current (I_{sc}) and load current (I_{load}) were monitored using a multi-meter with an accuracy of ±2% of a 20 A reading, while open circuit voltage (V_{oc}) and load voltage (V_{load}) were monitored using a multi-meter with an accuracy of ±0.5% of a 200 V reading.



Solar Radiation

In the Jordanian southern province of Al Karak, the annual average global solar irradiation is approximately 5.9 kWh/m²/day, with 2600–3500 sunshine hours per year. The site under investigation is situated at 31°9'49.25" N latitude and 35°45'43.34" E longitude. Figure 2 illustrates the solar irradiance per year at the study site, with average solar irradiance ranging



from 3.36 kW/m²/day in December to 7.89 kWh/m²/day in June, resulting in a scaled annual average of 5.16 kW/m²/day. The annual average ambient temperature and clearness index were recorded as 24.5°C and 0.57, respectively.

Experimental Procedure

3. The research was conducted from November to February, with data collected over sequential days. Data collection during this period was challenging due to winter conditions, including rainfall and overcast skies. Two Polycrystalline PV modules were utilized, with one serving as a reference PV (RPV) and the other as a tested PV (TPV). The TPV module's surface was subjected to environmentally induced factors such as dust accumulation, water drops, partial shading, and bird droppings. The change in PV power output due to environmental effects was calculated based on measured electrical parameters. Measurements of temperatures, wind speed, humidity, and irradiance were recorded. Real pictures of the system under various environmental conditions are depicted.

PV System Parameters

3.1. Definition of Numerical Performance Parameters

Standard testing conditions (STC) for solar PV modules are defined as a temperature of 25°C and a direct irradiance of 1000 W/m². These conditions serve as the industry benchmark for solar PV modules. However, since STC typically occur indoors, they do not accurately represent PV behavior under realistic outdoor conditions. In this section, we will outline a set of parameters for comparison: energy yield (Y_f), outdoor efficiency (η), performance ratio (PR), and capacity factor (CF). Additionally, we will discuss the influence of environmental parameters.

3.1.1. Energy Yield

Energy yield (Y_f) is defined as the energy produced by a PV system during a specific period (E_{dc}, kWh) divided by the DC power provided by the manufacturer (P, kWp): $Y_f = P E_{dc}$

For a given test period (e.g., one month or one year), Y_f represents the theoretical number of hours required under STC to produce the same amount of energy with the same module.

3.1.2. Efficiency

Outdoor efficiency (η) is a dimensionless parameter defined as: $\eta = A \cdot H_{dc} E$

where H is the total irradiance reaching the collector (kWh/m²) and A is the area of the collector (m²).

3.1.3. Performance Ratio

The performance ratio (PR) is the ratio of the actual energy produced (E_{dc}) to the theoretical energy output under standard conditions (ESTC), both measured in kWh: $PR = ESTC E_{dc}$

3.1.4. Capacity Factor

The capacity factor (CF) is the ratio of the actual energy produced (E_{dc}) to the theoretical energy output (P) if the installation were

continuously producing at maximum power output, over a given time period (t): $CF = P \cdot t E_{dc}$

3.2. Influence of Environmental Parameters

3.2.1. Solar Irradiance Effects

Global solar radiation is typically higher in arid or semi-arid climates due to less dense cloud cover. This results in lower variability of solar radiation and more predictable power output. Higher solar radiation increases the potential for electricity production.

3.2.2. Spectral Effects

The spectral distribution of light reaching the ground can vary based on atmospheric composition. Factors such as gases, humidity, particles, and atmospheric pressure influence spectral distribution. Variations in spectral irradiance can impact the competitiveness of different PV technologies.

3.2.3. Effect of Dust

Dust accumulation on PV panels, known as soiling, obstructs solar light and reduces system efficiency. Soiling losses can range from 15 to 30% in dusty and dry areas. Cleaning methods such as surface treatments or regular washing can mitigate these losses.

3.2.4. PV Degradation

Long-term reliability of PV modules is affected by various factors including climatic conditions, humidity, temperature, and ultraviolet spectrum. Degradation rates can range from 1.7% to 2.34% per year depending on technology and environmental conditions. Careful monitoring and assessment are necessary to manage degradation effects in arid climates.

Bias Correction

To correct for biases in mean and standard deviation of temperature and irradiance outputs from Regional Climate Models (RCMs), a methodology similar to that presented in Haerter et al. [14] was employed. The bias in mean is adjusted by subtracting the differences between observed and modeled values, and then the model data is corrected to match the variability of historical data. This correction process ensures that the sequence of anomalies is scaled consistently with observed historical variability. The linear transfer function used when data follow a normal distribution is expressed as follows:

$$\text{corsc} = (\text{scmod} - \text{conmod}) \times (\text{conobs} / \text{conmod}) + \text{conobs} \chi \text{corsc} \\ = (\chi \text{scmod} - \chi \text{conmod}) \times (\sigma \text{conmod} / \sigma \text{conobs}) + \chi \text{conobs}$$

where $\text{corsc} \chi \text{corsc}$ is the final adjusted time series, $\text{scmod} \chi \text{scmod}$ is the raw model predictions for the scenario period, $\text{conobs} \chi \text{conobs}$ and $\text{conmod} \chi \text{conmod}$ are the mean of observed and modeled data for the control period, respectively, and $\text{conobs} \sigma \text{conobs}$ and $\text{conmod} \sigma \text{conmod}$ are the standard deviations of observed and modeled data for the control period, respectively. This correction ensures that the final adjusted model time series maintains the appropriate baseline mean and standard deviation with respect to the observed data.



Estimation of PV Energy Output under Variable Conditions of Temperature and Irradiance

To estimate the potential percentage change in photovoltaic (PV) output, the fractional change $\Delta PV/PV \Delta PPV/PPV$ is calculated based on equations (2) and (3) from Crook et al. [10]:

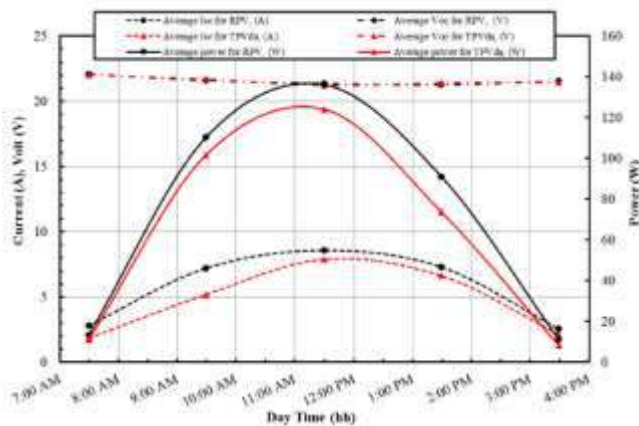
$$\begin{aligned} \Delta PV/ref = & -\Delta totc2 + \Delta tot(1 - c1 + Tref - 2c3 - c2) - \Delta totc3 - \Delta tot\Delta c2 + \Delta \\ & tot \log_{10}(\frac{Gtot}{Gref}) + \log_{10}(\frac{Gtot}{Gref}) + \log_{10}(\frac{Gtot}{Gref}) + \log_{10}(\frac{Gtot}{Gref}) + \log_{10}(\frac{Gtot}{Gref}) \\ & - \Delta T Gtot \beta c2 + \Delta Gtot(1 - \beta c1 + \beta Tref - 2\beta c3 - T\beta c2) - \Delta Gtot \beta c3 \\ & - \Delta Gtot \Delta T \beta c2 + \Delta Gtot \gamma \log_{10}(Gtot + \Delta Gtot) + Gtot \gamma \log_{10}(Gtot + \Delta Gtot) \\ PV/ref = & tot(1 - (c1 + c2 + c3 tot - ref) + \log_{10}(\frac{Gtot}{Gref})) PPV/\eta ref = Gtot \\ & (1 - \beta(\beta c1 + \beta c2 T + \beta c3 Gtot - Tref) + \gamma \log_{10}(Gtot)) \end{aligned}$$

where $\Delta PV \Delta PPV$ is the change in PV power output, $ref \eta ref$ is the reference PV efficiency, $\Delta \Delta T$ is the change in temperature between the baseline and scenario period, $\Delta \Delta G$ is the change in irradiance between the baseline and scenario period, T is the daytime temperature for the baseline period, $tot Gtot$ is the irradiance over daylight for the actual cloud cover for the baseline period, $ref Tref$ is the reference temperature for which the PV cell performance is estimated by the manufacturer, β is the temperature coefficient, γ is the irradiance coefficient, and $c1 \beta c1$, $c2 \beta c2$, and $c3 \beta c3$ are coefficients dependent on module and mounting details affecting heat transfer from the cell. The daytime temperature T for the baseline period is estimated based on the diurnal range of temperature (DTR) and the monthly average temperature, while $tot Gtot$ is calculated from the monthly average irradiance and the time of daylight for all latitudes of the study site.

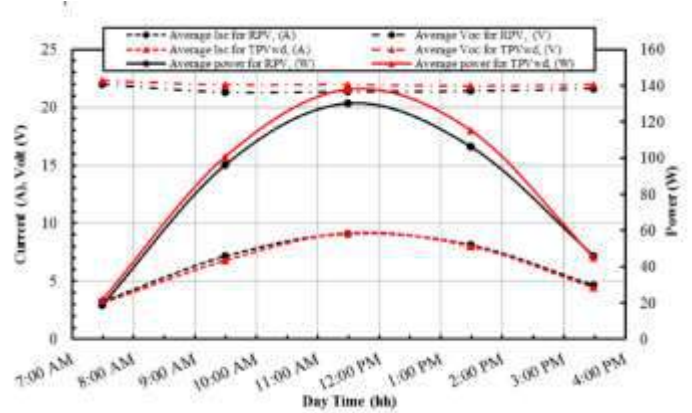
RESULTS

Dust Accumulation

Two polycrystalline PV modules underwent outdoor testing over several weeks, with daily monitoring of power output at two-hour intervals. One module (RPV) was cleaned before data collection, while the other (TPV) was exposed to dust accumulation conditions.



The daily power output, short-circuit current, and open-circuit voltage for each module are depicted in Figure 4. Dust accumulation on the TPV module obstructed solar irradiance, impacting its current and power output. Consequently, RPV exhibited higher power output compared to the dust-affected TPV.



The reduction in power and efficiency of PV modules can be quantified as follows:

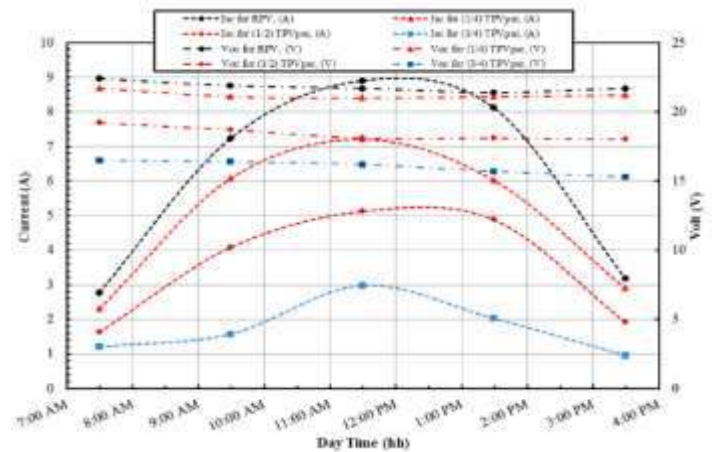
$$\text{Reduction in power} = \frac{RPV - TPV}{RPV} \times 100\% \quad \text{Reduction in power} = \frac{PRPV - PTPV}{PRPV} \times 100\%$$

$$\text{Reduction in efficiency} = \frac{RPV - TPV}{RPV} \times 100\% \quad \text{Reduction in efficiency} = \frac{\eta_{RPV} - \eta_{TPV}}{\eta_{RPV}} \times 100\%$$

At 11:30, RPV's output power was 136.1 W, whereas TPV's was 119.12 W, resulting in a 12.47% reduction in output power. RPV's efficiency was 13.86%, while TPV's was 11.7%, indicating an 11.86% reduction in efficiency. These reductions were primarily due to decreased short-circuit current caused by dust accumulation, which dispersed incident sunlight, thus reducing power output. Similar studies have reported even higher reductions in efficiency due to dust accumulation.

Water Drops

Temperature significantly influences electrical flow in PV systems. Cooling systems utilizing water have been explored to enhance PV efficiency under non-optimal temperature conditions. Figure 5 depicts the daily power output, short-circuit current, and open-circuit voltage of PV modules exposed to water drops.



Water droplets on the module surface decrease temperature, increasing potential difference and thus improving power output. The temperature coefficient defines this relationship, indicating that a decrease in temperature by one degree Celsius corresponds to a 0.33% increase in voltage. Water sprinkling cooling systems



enhance module efficiency, especially during summer, by reducing surface temperature and increasing power output.

Partial Shading

Partial shading can significantly impact PV module performance due to the interdependent nature of module strings. Figure 6 illustrates the effect of partial shading on PV short-circuit current and open-circuit voltage. Shading reduces current and voltage, resulting in a dramatic decrease in power output, as depicted in Figure 7. Even a small shaded area can lead to substantial power loss, emphasizing the importance of avoiding partial shading whenever possible.

Birds Droppings

Bird droppings, like other forms of dirt, reduce PV panel performance by obstructing sunlight. Figure 8 shows the impact of bird droppings on power output. Although the effect is relatively small compared to other forms of shading, it still affects PV efficiency. Further research is needed to mitigate the impact of bird droppings on PV systems.

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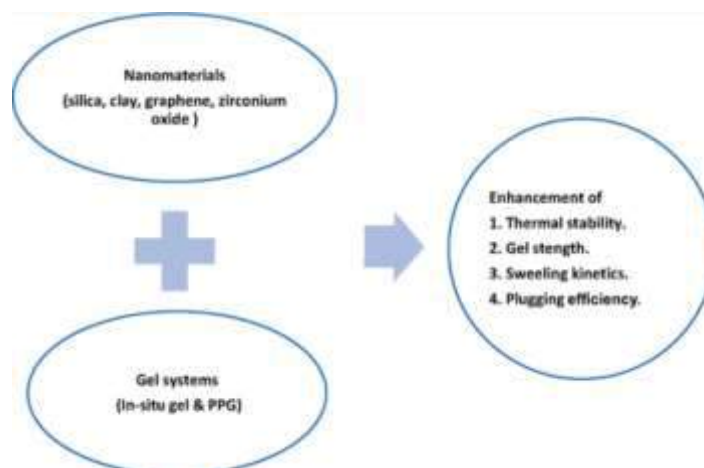
NANOMATERIAL INNOVATIONS FOR WATER SHUTOFF IN HYDROCARBON WELLS: A COMPREHENSIVE REVIEW

Rajarshi Ray*

*Chemical Engineering, Jadaoipur University

ABSTRACT

The paper discusses the importance of reducing water production from hydrocarbon wells to prolong their lifespan. Gel treatments are commonly used for water shut-off applications, but traditional methods have limitations. The paper proposes enhancing gel performance by incorporating nanomaterials like nanosilica, nanoclay, and graphene. These nanomaterials can improve gel properties such as gelation time and strength. The study reviews the benefits of nanomaterials in different gel systems, including in situ gel, preformed particle-gel, and nanosilica-based fluid. Nanomaterials are found to enhance gel properties significantly, with nanosilica-based gels exhibiting exceptional plugging efficiency. Additionally, modeling is discussed as a tool to overcome operational challenges. The study also explores colloidal gels as an alternative to polymers for addressing high water production in oil fields. Bottle tests were conducted to characterize the gels, and their applicability in porous media was inspected using a dual-patterned glass micromodel. Results indicate that increasing NaCl concentration can alter gel behavior, and rheology tests align with gelation times. The study demonstrates the effectiveness of solid gels in controlling water conformance, with promising results in oil recovery.



INDEX TERMS- Water Production, Gel Treatments, Nanomaterials, Gelation Time, Strength, Nanosilica, Plugging Efficiency, Modeling, Colloidal Gels, Oil Recovery

I. INTRODUCTION

In oil production, the effectiveness of driving fluids in pushing oil toward the production interval is crucial, measured by conformance. However, reservoir heterogeneity may lead to unbalanced fluid movement, resulting in unswept oil and concurrent production of water or gas, termed reservoir conformance problems. Water shut-off, a form of conformance control, targets excessive water production to enhance oil recovery and well longevity. Undesired water production poses economic and environmental challenges, necessitating water shut-off technologies for efficient reservoir management and regulatory compliance. Accurate diagnosis of water production issues is

essential for effective treatment, involving various data analysis techniques. Gel treatments, despite being longstanding, encounter challenges such as instability and control issues. Utilizing nanomaterials like silica and clay in gel compositions presents promising solutions, enhancing gel properties and performance. This study discusses novel gel systems incorporating nanoparticles and highlights their potential in addressing operational challenges during water shut-off treatments, emphasizing the role of gel modeling for improved efficacy.



Chemical Systems		
Chemical System	Name	Chemical Structure
Inorganic Gels	Sodium Silicate	
Monomer Systems	Acrylamide	
Polymers	Polyacrylamide	
	HPAM	
	Xanthan Gum	
Resins	Phenol-formaldehyde	

III. LITERATURE REVIEW

There are two types of water produced with oil: good water, which is part of the fractional flow process and does not compete with oil production, and bad water, which hinders oil production and requires immediate treatment. Excessive water production can stem from various sources, categorized as wellbore-related or reservoir-related. Wellbore-related sources include flow behind the pipe, casing leaks, migration of the oil-water contact (OWC), and barrier breakdowns. Reservoir-related sources include fractures between injector and producer, fissures from water layers, water coning, watered-out layers, channels through high permeability zones, and fingering. To address these issues, mechanical and chemical methods are employed. Mechanical methods involve placing high-strength tools or cement in the wellbore to shut off water sources, suitable for near-wellbore problems. Chemical methods, like gel injection, target both near-wellbore and reservoir-related sources, improving reservoir conformance and sweep efficiency. Chemical solutions can last for months to years but depend on reservoir properties and compatibility. The study focuses on chemical techniques utilizing

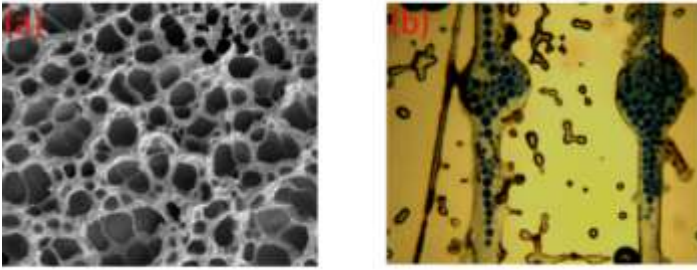
II. HYPOTHESIS

Excessive water production in oil wells, whether due to water coning from strong aquifers or channeling during injection into fractured reservoirs, presents significant challenges. High water cuts result in pipeline corrosion, separation costs, and energy consumption, potentially halting oil production for economic reasons. Variations in permeability and viscosity differences between fluids contribute to excess water production. Mechanical and chemical solutions, including polymer and gel treatments, have been introduced to mitigate this issue. Gel systems, composed of polymers or colloidal particles dispersed in a liquid phase, exhibit both liquid- and solid-like behaviors. Colloidal gels, formed by particle aggregation in a liquid, rely on interparticle attractions and can exhibit unique properties such as non-zero yield stress. Various mechanisms govern colloidal gelation, including particle aggregation and cross-linking, influenced by factors like temperature and pH. Despite limited literature on colloidal particle gels for water conformance control in oil reservoirs, promising results have been reported. Colloidal silica gel, for instance, has shown effectiveness in reducing water permeability in laboratory studies. Compared to other methods like polymer gels, colloidal gels offer advantages such as environmental friendliness, thermal stability, and injectivity. To explore their potential, bottle tests were conducted to assess gelation regions under different salinities, followed by characterization of gel properties. Furthermore, a novel dual-patterned glass micromodel was developed to simulate porous media for investigating solid gel efficiency in water conformance control, providing insights into potential applications in oil reservoir management.

gels as blocking agents, discussing their operational challenges and the role of nanomaterials like nanosilica. Various chemical systems have been developed over the years, including inorganic gels, monomer systems, polymer gels, un-gelled polymers, resins, and viscous flooding (polymers), each with distinct structures and applications for water shut-off.

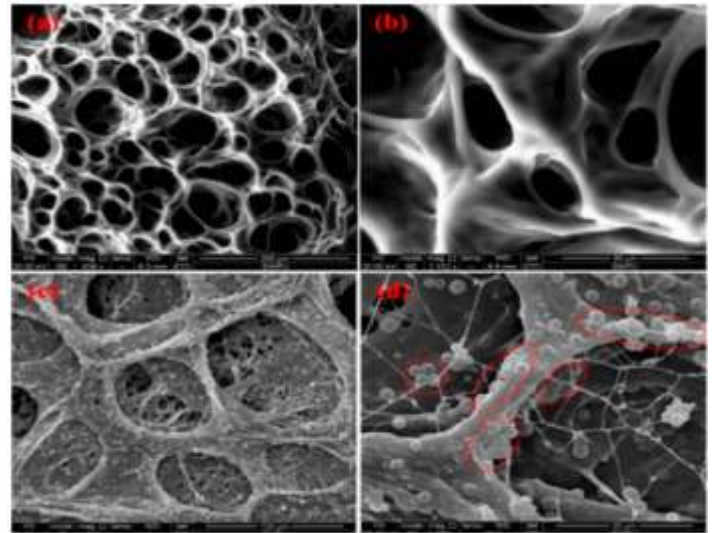
IV. METHODOLOGY

The review begins by addressing the inherent challenges associated with three distinct types of gel treatments: in situ polymer gel, preformed particle gel, and silicate gel. Figure 9 outlines the systematic methodology employed to evaluate the impact of nanomaterials on gel treatment, with nanomaterials categorized according to their effects on each gel type's properties. Notable enhancements have been observed in thermal stability, gelation time, gel strength, and swelling performance, attributed to the utilization of silica, clay, graphene, and zirconium oxide nanomaterials.

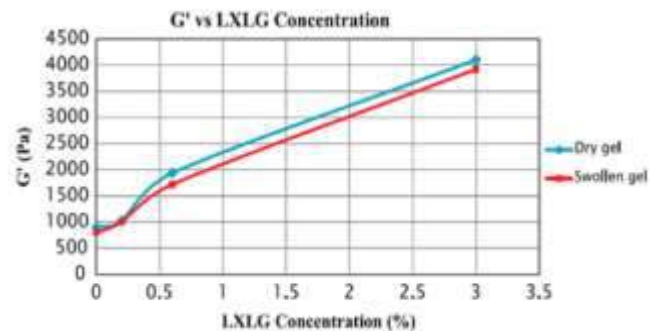


Gel treatments represent widely adopted chemical methods for mitigating water production in mature reservoirs, offering cost-effective solutions. Polymer gels effectively control water mobility by reducing permeability or blocking high-permeability zones and fractures, thereby improving sweep efficiency and increasing oil production. Depending on where gelation occurs, treatments are classified as in situ gel or preformed gel. In situ gel forms downhole, involving a mixture of polymer solution, cross-linker, and additives injected into the target zone. Conversely, preformed gels, such as PPGs, are generated at the surface before injection into the reservoir as particles, primarily addressing high-permeability zones and fractures. Silicate gels, with a mechanism akin to other gelling materials, form a brittle gel through chemical bonding between silicate solution and an activator, addressing water or gas production concerns. While silicate gels boast environmental friendliness and low cost, challenges include rapid gelation time and sensitivity to divalent ions.

The study focuses on overcoming operational challenges faced by these gel systems, necessitating modifications to composition. Recent advancements introduce nanomaterials like nanosilica, nanoclay, and nanographene to enhance gel properties. Accurate diagnosis of water intrusion root causes is crucial for effective treatment, with tracers and logging services aiding in source identification. Successful field applications highlight the efficacy of in situ polymer gels and silicate gels for addressing near-wellbore issues like casing and tubing leaks, while preformed particles excel in treating fractures, particularly in high-permeability zones.



Gelation Time (GT) serves as a crucial parameter in devising effective water shutoff treatments. Most mathematical models for polymer gels typically involve one dependent variable, GT, and three independent variables



: temperature, polymer concentration, and crosslinker concentration. To analyze the gelation kinetics of in-situ gels for water shutoff, researchers widely employ steady shear rate measurements.

The Arrhenius equation describes the impact of absolute temperature on reaction rate and elucidates the mechanism of chemical reactions. Hurd and Letteron developed an empirical model correlating the gelation time of silicic acid gels with temperature, resembling the Arrhenius equation. This correlation was validated using experimental data under certain assumptions



$$\ln k = \ln A - \frac{E_a}{R} \frac{1}{T}$$

$$\ln t = \ln c - \ln k - (n - 1) \ln a$$

$$GT = 38.4333 - \frac{13}{75}T + \frac{19}{30}S - \frac{67}{30}C + \frac{1}{100}TC - \frac{1}{300}$$

The developed model by Hurd and Letteron was further verified by Jorden et al., who examined the effect of temperature on GT using the PAM/Cr(III) gel system. They demonstrated that the Arrhenius equation can be applied to analyze various chemical reactions. Similarly, Broseta et al. validated the relationship between GT and temperature, focusing on the PAM/Cr (III) acetate system. They highlighted that temperature significantly influences GT and follows the Arrhenius equation.

Marfo et al. investigated a water shutoff gel comprising an acrylamide-acrylate copolymer crosslinked with a polyamine crosslinker. Using statistical analysis software, they developed a predictive GT model considering temperature, cross-linker concentration, and water salinity.

Modeling Water Shutoff Performance: Xianchao et al. predicted water shutoff performance in horizontal wells by modifying the PCGEL simulator, integrating gel flow physics, and considering gel degradation. They achieved reliable prediction results, aligning with actual field scenarios.

Alghazal and Ertekin proposed an artificial neural network (ANN) for deep polymer gel conformance treatments in fractured reservoirs. Their developed ANN module surpassed commercial simulators in speed and computational complexity, utilizing reference simulation modules for dataset construction.

Meshalkin et al. presented a three-dimensional computer model simulating water shutoff performance in high water cut oil zones. Their model, considering geophysical characteristics and injected water control solutions, demonstrated accuracy in predicting well performance after treatment.

Ferreira et al. focused on creating a neural network model to predict well performance post-gel treatment, aiding in ranking treatment candidates and optimizing resource use.

Limitations of Proposed Models: Existing coupled numerical models for water shutoff treatments lack integration of dynamic models between the wellbore and reservoir, simplifying gel blocking effects and dynamic interactions.

Despite available simulation tools, there exists a gap between prediction accuracy and field performance due to inadequate consideration of fluid composition and reservoir properties, impacting treatment efficiency and economic viability.

Field Cases in Oil Wells: Water shutoff treatments, including polymer gels, resins, and nanosilica, have been employed in various reservoir conditions, each with its advantages and limitations. Field cases analyzed different treatments, highlighting successes and challenges based on reservoir temperature.

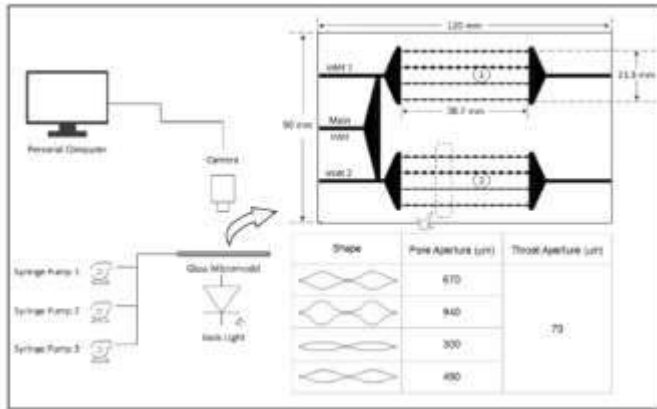
Materials and Methods

Materials: Aqueous hydrophilic silica with a SiO₂/Na₂O ratio of 75–100, comprising 30 wt% and characterized by bluish stock dispersion with a pH of 9–10 and particle sizes ranging from 10 to 30 nm (average 20 nm), was utilized in this study. Sodium chloride (NaCl) and magnesium chloride hexahydrate (MgCl₂·6H₂O) of ACS reagent grade (purity ≥ 99%) were procured from Sigma Aldrich (United States of America, USA) to adjust the salinity of dispersions. Crude oil from an Iranian reservoir with high water cut issues was also employed, and its properties are outlined in Table 1.

Methods: Determination of Gelation Regions: Various concentrations of silica (1–6 wt%) were prepared by diluting the 30 wt.% stock dispersion with deionized water (DIW), followed by the addition of varying concentrations of NaCl (1–11 wt%). After stirring for 30 minutes at room temperature (20–25 °C), the pH of all dispersions was measured using an 86502 AZ pH meter (AZ Instrument Corp., Taiwan). The dispersions were then transferred to glass vials, capped, and observed over 24 hours at room temperature to detect any visual changes in appearance. Gelation was assessed by gently rotating the sample vials by 180°. **Gelation Time:** The gelation time of solid gels was determined using both bottle tests and UV–Vis spectroscopy. The absorbance of particles was measured at 400 nm using a Dynamica DB-20S spectrophotometer (UK). Bottle tests provided the time of complete solid gelation, while spectroscopy indicated the onset of gelation. Fresh dispersions forming single-phase solid gels were prepared following similar procedures as the bottle tests. Absorbance measurements were recorded over time, and the onset of gelation was identified from the plot of absorbance versus time. **Effect of Salt Type on Gelation:** To examine the effect of cation valence on gelation, magnesium chloride replaced sodium chloride in bottle tests conducted in the "Determination of Gelation Regions" section. Visual changes were recorded over time.



Rheology of Gels: Fully solidified gels from bottle tests were rheologically analyzed using an Anton Paar (UK) cone/plate method at 25 °C. Fresh gellants were prepared with identical silica and salt concentrations and left undisturbed for 24 hours at room temperature to ensure gelation stability. Viscosity, storage modulus (G'), and loss modulus (G'') were measured under different shear strains/stresses.



Displacement Study by Glass Micromodel: A novel double-patterned glass micromodel was designed and constructed to assess the efficacy of solid gels for water conformance control in oil reservoirs. This setup, not previously utilized, involved three syringe pumps (LA-30, LANDGRAVE HLL, Germany), a back light source, a glass micromodel, and a camera connected to a computer. The glass micromodel comprised two identical porous media segments with separate inlets, simulating water-bearing zones overlying oil layers in reservoirs. Prior to the main experiment, control tests were conducted to validate the functionality of the micromodel components. The main experiment involved saturating one porous medium with a solid gel dispersion and injecting deionized water (DIW) through the main inlet to assess the gel's ability to divert flow towards the oil-saturated zone.

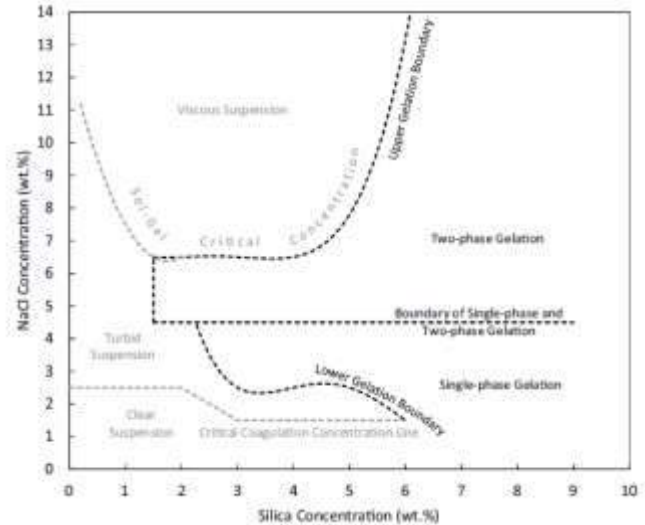
Control Experiment: Before the main experiment, the functionality of the glass micromodel was verified by saturating both porous media with crude oil and subsequently injecting DIW to ensure uniform displacement from both segments.

Main Experiment: A dispersion forming a solid gel after 24 hours at room temperature was chosen for saturating one porous medium in the glass micromodel. After saturation, DIW was injected through the main inlet to assess the gel's effectiveness in diverting flow towards the oil-saturated zone. Macro- and microscopy techniques were employed to analyze fluid displacement during the experiment, and the amount of recovered oil was determined using image analysis of porous medium images.

V. RESULTS

Water shutoff treatments in oil and gas wells employ various methods and materials, each with its own set of advantages and limitations. Polymer gels, resins, and nanosilica have been utilized across a broad spectrum of reservoir temperatures. Preformed gels

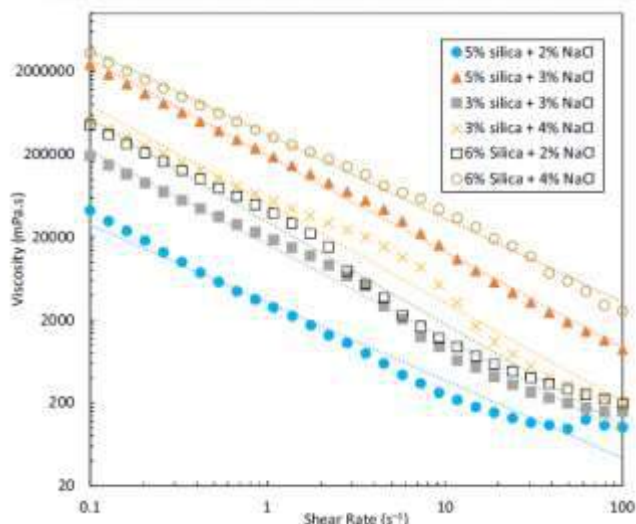
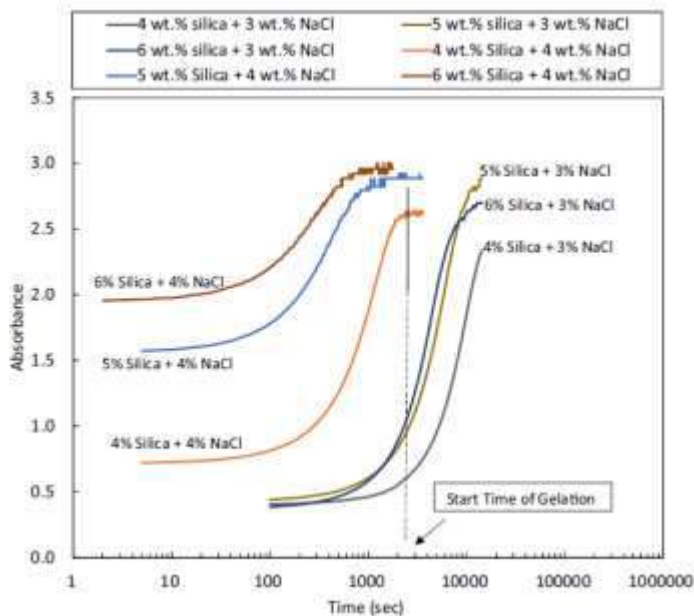
offer stability under thermal conditions but necessitate precise placement. Resins boast exceptional mechanical strength but may face challenges regarding injectability. Nanosilica treatments exhibit versatility and applicability even in ultrahigh temperatures. Further research and field studies are imperative to optimize water shutoff treatments tailored to specific reservoir conditions. The advancement in nanomaterial utilization holds promise for enhancing gel performance, presenting several future challenges:



6.1. In-Situ and Preformed Particle Polymer Gel: While studies have showcased the beneficial impact of nanomaterials like nano silica, nanoclay, and nanographene, future investigations should explore a broader array of nanomaterials approved for their applicability in EOR applications, such as Aluminum Oxide (Al_2O_3), Titanium dioxide (TiO_2), and Zinc Oxide (ZnO). Understanding the compatibility with different polymers and compositions is an area requiring further exploration. Determining the most effective nanomaterial-polymer combinations can amplify the applicability of these gels. Long-term stability and performance, along with potential degradation, necessitate in-depth investigation. Understanding the behavior of these gels over extended periods within reservoirs is crucial. This involves evaluating the longevity of gel stability and identifying potential degradation mechanisms to ensure sustained effectiveness in preventing water flow. Nanomaterials significantly bolster the mechanical properties of gels while ensuring thermal stability, rendering them suitable for use in harsh environments with temperatures exceeding 300 °C and high salinity levels. Further inquiries are warranted in this domain. The transition from laboratory experiments to field applications poses a significant



research gap. Extensive lab work and field trials are essential to validate the practicality and efficacy of nanomaterial-enhanced gels in actual reservoirs with varying characteristics.



6.2. Nanosilica-Based Gel: Studies have indicated the sensitivity of gelation time to temperature variations. Future research should delve deeper into the mechanisms underlying this sensitivity and explore additives to mitigate the impact of temperature on gelation time. This is crucial for ensuring successful placement of silicate gels across a wide temperature range. While research has confirmed that nanosilica enhances the plugging efficiency of silicate gels, additional studies can focus on assessing the long-term stability and endurance of these gels under reservoir conditions. This includes evaluating their injectivity, stability, and plugging efficiency over extended periods to affirm their effectiveness in preventing unwanted water flow. With its remarkable plugging efficiency of 100%, nanosilica gel emerges as a viable alternative to polymer in situ gels. Its low viscosity and

environmental friendliness further enhance its appeal for various scientific applications.

Conclusion: Polymer and silicate gels stand as the most widely applied chemical systems for water shut-off applications. The incorporation of nanomaterials in these treatments has the potential to substantially enhance efficiency and effectiveness. Gelation time, along with its impact on reservoir characteristics, plays a pivotal role in the placement process. Therefore, modeling treatments will aid in enhancing agents' performance as water shut off agents. Ultimately, the impact of nanomaterials can be summarized as follows:

1. Nanomaterials, such as nanoclay, nanosilica, and nanographene, can significantly adjust the properties of in situ gels, including control of gelation time, enhancement of gel strength, and maintenance of thermal stability at high temperatures.
2. Incorporating nanomaterials into preformed particle gels (PPG) could lead to adjustments in swelling ratio and improvements in gel strength to withstand reservoir conditions.
3. Experimental results of nanosilica gel demonstrate enhanced plugging efficiency, reinforcing its potential usage as a plugging material alongside other advantages of silicate systems.

Determining Gelation Regions: Figure S-1 in the Supporting Information confirms that particles alone (without salt) cannot form a gel within the concentration range studied here. Gelation is solely attributed to the effect of added ions on particle interactions. Figure S-2 illustrates the outcomes of various dispersions containing different concentrations of silica and NaCl in deionized water (DIW) at room temperature for 24 hours. These results have been incorporated into the plot in Figure 2, offering a comprehensive depiction of gelation concerning silica and salt concentrations. The boundaries depicted in this figure are fitted models ($R^2 > 0.8$) to the data presented in Figure S-2.

Five potential states based on particle and NaCl concentrations are discernible in Figure 2: clear suspension, turbid suspension, viscous suspension, single-phase solid gel, and two-phase gel (gel + liquid). Figure S-3 in the Supporting Information displays a typical photo of different classes obtained after 24 hours in glass vials. Clear suspensions exhibit no visual change in color compared to the initial bluish hue. Turbid suspensions show some degree of aggregation, while viscous suspensions appear milky and viscous. Single-phase gels are entirely solid with no liquid phase, whereas two-phase gels consist of solid gel topped with a liquid phase. Completely solid gels do not flow upon rotating the vials. Metin et al. found that two-phase gelation occurs at low silica concentrations, contrasting with the findings of this study, where single- and two-phase gelation depend more on salt concentration than particle concentration.

Critical Coagulation Concentration (CCC): The critical coagulation concentration (CCC) denotes the salt concentration above which the dispersion becomes unstable. At CCC, salt ions



screen particle surface charges, causing bare charged particles to aggregate and render the dispersion unstable. Colloidal particles can form gels above CCC, with gel formation occurring due to particle entrapment. At short distances, Van der Waals (VdW) attractions between particles may overcome electrostatic repulsions, leading to the aggregation of particles into larger structures. However, if the salt concentration is well above CCC, gelation may not occur, resulting instead in a viscous suspension without particle stranding.

Gelation Time: The gelation time, i.e., the time of complete gelation, was visually evaluated in bottle tests. Figure 5 illustrates the gelation time in hours for different silica and sodium chloride concentrations in DIW. Increasing salt concentration at a fixed silica concentration decreases gelation time, particularly for particle concentrations ≥ 4 wt%. Conversely, gelation time decreases with increasing particle concentration at both salt concentrations (3 and 4 wt%), following a power law ($R^2 > 0.91$). The decrease in gelation time is more pronounced at the highest salt concentration. The gellant containing the highest silica and NaCl concentrations (6 wt% and 4 wt% NaCl in DIW) exhibits the shortest complete gelation time.

Start Time of Gelation: The start time of gelation was determined by UV-Vis spectroscopy at 400 nm for dispersions forming single-phase solid gels. Figure 6 depicts the absorbance of different gellants at 400 nm over time. The first point where the diagrams plateaued was considered the start time of gelation. The difference between complete gelation time (determined by bottle tests) and start time of gelation (determined by absorbance measurements) indicates the time required for each dispersion to gel completely. Reducing salt concentration by 1 wt% at a fixed silica concentration significantly delays gelation time, while the required time for gelation remains relatively unchanged for varying particle concentrations at a given salt concentration.

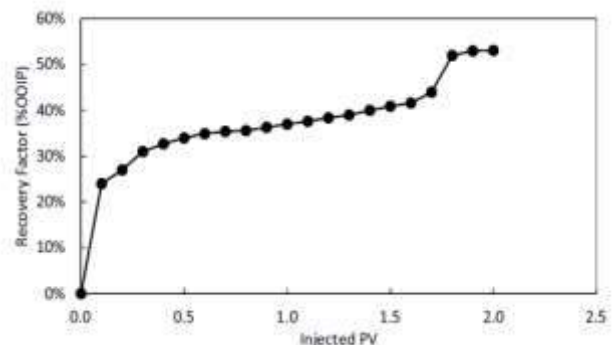
Effect of Type of Salt on Gelation: To investigate the influence of the cation type on gelation, monovalent Na^+ was replaced with divalent Mg^{2+} in some random dispersions. CCC is inversely proportional to the valence of the coagulating ion in the dispersion. Comparing NaCl and MgCl_2 , the higher valence cation can destabilize the dispersion more effectively, as evidenced by a 64-fold reduction in CCC when using Mg^{2+} . Gelation type depends solely on salt concentration; increasing salt concentration at a fixed particle concentration does not necessarily lead to gel formation. At high salt concentrations, viscous suspensions are formed instead of gels.

CONCLUSION

The study investigated the formation of colloidal gels at room temperature by introducing various concentrations of salt to hydrophilic silica dispersions for water conformance control in oil reservoirs. Bottle tests were conducted to define the gelation window concerning different particle and salt concentrations, as well as to examine gelation time, the effect of salt type, and rheology and viscosity. Subsequently, the strength of the solid gel

was evaluated in porous media using a novel dual-patterned glass micromodel designed by the research group to simulate a water producer layer overlying oil layers. The main findings of this study are summarized as follows:

- Bottle test results yielded well-classified data with clear boundaries based on different silica (1–6 wt%) and NaCl (1–11 wt%) concentrations. Various classes were identified after 24 hours at room temperature, including clear suspensions, single- or two-phase gels, and (non)viscous suspensions. It was concluded that single- or two-phase gelation primarily depends on salt concentration rather than particle concentration. The findings suggest that a high salt concentration is not necessarily required for gel formation (single- or two-phase gelation), and higher NaCl concentrations at a constant silica concentration may result in viscous suspensions. Thus, determining the gelation window for a specific salt is crucial. The machine learning-based decision tree developed in this study effectively predicted the fate of dispersions after a 24-hour resting time at room temperature, with 39% of total observations in bottle tests indicating single- and two-phase gels.



- The type of salt significantly affects the final state of dispersions. Replacing monovalent sodium cations with divalent magnesium at the same ionic strengths in some random dispersions led to notably different behavior, mainly due to the higher coagulating ability of divalent cations in colloids. This highlights the need for comprehensive studies on MgCl_2 as future research.
- Gelation times of solid gels were visually determined in bottle tests (complete gelation time) and further examined through UV-Vis spectroscopy (start time of gelation). The difference between these two times provided good estimates of the time required for each gellant to gel completely. In the single-phase solid gelation window, the highest silica and NaCl concentrations resulted in the shortest gelation time, i.e., 6 wt% silica and 4 wt% NaCl in DIW. Additionally, an additional 1 wt% salt reduced the gelation time by 2.5 times.
- Rheology and viscosity analyses corroborated the gelation time results, showing the same parametric dependence on particle and salt concentrations. At high shear rates (100 s⁻¹), the formed solid gels exhibited viscosities, storage moduli, and loss moduli of 100–2600 mPa s, 2–57 Pa, and 7–430 Pa, respectively, which are sufficient to withstand pressure gradients applied in wells. The gel formed by 5 wt%



silica and 2 wt% NaCl demonstrated the highest elasticity. However, it was observed that strong gels may become fragile under shear stresses and should be avoided for water conformance controls.

- Injection of DIW into a dual-patterned glass micromodel initially saturated with crude oil in the top porous medium and a solid gel in the bottom porous medium demonstrated the effective performance of the solid gel in blocking the bottom porous medium. This allowed the injected DIW to divert its flow toward the oil-saturated zone for potential enhanced oil recovery (EOR). A total oil recovery of 53% original oil in place was achieved, which would not have been possible without the blockage of the bottom porous medium by the gel. This promising observation in a visualization study underscores the potential applicability of colloidal gels for water shut-off applications.
- Other parameters such as temperature, ion type, particle size, and particle surface wettability may also be important in gelation and should be considered in future research efforts.

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FORMULATION AND EVALUATION OF AMITRIPTYLINE HCL MUCOADHESIVE BUCCAL FILMS

**Madhuri Reddy Muppa*¹, Garalapati Ranjith Reddy², Kambala Madhu²,
Kasarla Naistika², Machineni Sindhu², Mahadev Anitha², Muthamsetty Sravani²**

¹Assistant Professor, Department of Pharmaceutics, St mary's group of institutions, Deshmukhi (Village),
Pochampally (Mandal), Yadadri Bhuvanagiri (Dist), Hyderabad-508284, Telanagana, India.

²St Mary's Group of Institutions, Deshmukhi (Village), Pochampally (Mandal), Yadadri Bhuvanagiri (Dist),
Hyderabad-508284, Telanagana, India.

ORCID ids

Madhuri Reddy Muppa : <https://orcid.org/0000-0001-5636-4653>

Garalapati Ranjith Reddy: <https://orcid.org/0009-0005-6567-7789>

Kambala Madhu: <https://orcid.org/0009-0006-5834-3008>

Kasarla Naistika: <https://orcid.org/0009-0002-3883-2892>

Machineni Sindhu: <https://orcid.org/0009-0003-0926-7895>

Mahadev Anitha: <https://orcid.org/0009-0007-9998-9048>

Muthamsetty Sravani: <https://orcid.org/0000-0001-9894-2212>

Corresponding Author: Madhuri Reddy Muppa

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ABSTRACT

Buccal mucoadhesive systems among novel drug delivery systems have attracted great attention in recent years due to their ability to adhere and remain on the oral mucosa and to release their drug content gradually. Buccal mucoadhesive films can improve the drug therapeutic effect by enhancement of drug absorption through oral mucosa increasing the drug bioavailability via reducing the hepatic first-pass effect. The aim of the current study was to formulate the drug as buccal bioadhesive film, which releases the drug at sufficient concentration with a sustained manner reducing the frequency of the dosage form administration. One of the advantages of this formulation is better patient compliances due to the ease of administration with no water to swallow the product. Dissolution profile as studied in USP dissolution apparatus type 1 using pH 6.8 simulated saliva. The influence of variables like polymer type, concentration, of Amitriptyline HCl release profile was studied. The formulation was optimized based on various evaluation parameters like drug content and in-vitro drug release. Formulation F6 successfully release of drug within 7 hrs. The IR spectra showed stable properties of Amitriptyline HCl in a mixture of polymers used and revealed the absence of interaction between drug and selected polymer, stability studies were as per ICH guidelines, and results indicated that the selected formulation was stable.

KEYWORDS - Amitriptyline HCL, Mucoadhesive, Buccal films.

INTRODUCTION

Mucoadhesive buccal films which binds to biological surfaces that are covered by mucus. Normally, drugs are administered via numerous routes and dosage forms. Although the oral route is the most desired way of drug delivery, drug solubility and first pass metabolism sensitivity are crucial characteristics that must be present for the drug to be absorbed by this route. Parental route is the most painful type of administration. Topical medications can only be used for local or topical therapy. Drugs with high molecular weight, low skin penetration, poor water solubility, and substantial first pass metabolism require alternate routes. Most drugs are increasingly being administered via mucoadhesive route. Mucoadhesive drug delivery systems, which uses both natural and synthetic polymers, is a technique for controlled drug release that enables close contact between the polymer and a

target tissue. Mucoadhesive drug delivery systems utilise the bioadhesion of certain polymers, which in turn adhesive during hydration and are therefore able to be used for targeted drug delivery to a specific area of the body for a prolonged length of time. The mucoadhesive properties are known to extend the drug's duration in the body after administration. The direct drug absorption and the reduced excretion rate together have the effect of increasing the drug's bioavailability. Lower API concentrations may result from longer residence times and more adhesion.

MATERIALS AND METHODS

MATERIALS

The gift sample Amitriptyline HCl is from Sai Mirra Inno Pharm Pvt Ltd, and polymers such as HEC, HPMC K100, HPC,



Polyethylene glycol (mL), Sodium saccharin (mg), and Vanillin (mg) are from Vopec Pharmaceuticals Pvt Ltd.

METHODS

PREFORMULATION STUDY

Compatibility study

FTIR Studies

FT-IR spectra of pure Amitriptyline HCl, and combination with HPMC K100, HEC, HPC, showed in (Figure). Pure Amitriptyline HCl showed principle absorption peaks at 3500-3000cm-1 (NH Stretch) and 1600-1475 cm-1 (C=C Stretch) 1350-1000 cm-1 (C-N Stretch), 900- 690 cm-1 (CH bend). The same peak of NH-Stretch, C=C Stretch, N-H stretch, CH Bend, bonds were present as that of the pure drug without much shifting in the spectra of Amitriptyline HCl along with the polymers. This suggested no chemical interaction between the drug and the polymer.

DSC study

DSC thermogram was carried out for thermal compatibility of the drug and physical mixtures were shown in (figure 5 to 8). The melting point of the pure drug was 224.25 0C whereas the melting point of drugs in the physical mixture of drugs with HPMC K100 was 219.29 0C and drug with HPC 217.63 0C and drug with HEC was 202.10 0C. There is no change in the melting point peak of the drug in the physical mixture was retained indicating there is no interaction between the drug and polymers.

Preparation of mucoadhesive buccal film

The films are preferably formulated using the solvent casting method. The required quantity of polymer was added in small quantities and mixed well to dissolve in distilled water. The small quantity of drug is dissolved in the above solution. Add plasticizers to the above solution and mixed well. The solution was then cast on the Petri dish and kept in a hot air oven for drying at 40° C. After drying films were removed with the help of a sharp blade and kept in a desiccator for 24 hrs then cut into pieces of the desired shape and size.

Table 1

Formulation details of Amitriptyline HCl mucoadhesive buccal films

Formulation Code	Drug (Mg)	Polymer And Its Composition (Mg)			Polyethylene Glycol (Ml)	Sodium Saccharin (Mg)	Vanillin (Mg)	Distilled Water (Ml)
		HEC	HPMC K 100	HPC				
F1	130	150			0.1	2	2	10
F2	130	200			0.1	2	2	10
F3	130	250			0.1	2	2	10
F4	130		250		0.1	2	2	10
F5	130		300		0.1	2	2	10
F6	130		350		0.1	2	2	10
F7	130			250	0.1	2	2	10
F8	130			300	0.1	2	2	10
F9	130			350	0.1	2	2	10

CHARATERIZATION OF MUCOADHESIVE BUCCAL FILMS

Scanning Electron Microscopy (SEM)

The shape and surface characteristics of felodipine co-crystals was assessed by Scanning Electron Microscopy (SEM)

IR spectroscopy

IR spectrum of the drug, co-former, and co-crystals were recorded using FTIR in order to determine predictable interaction between the drug and co-former. The co- crystals were mixed with potassium bromide (K-Br) and then pressed with hydraulic press to form pellets which were further subjected to scanning in between 4000 and 400 cm-1.

EVALUATION OF MUCOADHESIVE BUCCAL FILMS

Physical appearance and surface texture of films

This parameter was checked simply with a visual inspection of films and evaluation of texture by feel or touch.

a. Weight uniformity of films

Three films of the size 2x2 cm were weighed individually

using digital balance and the average weights were calculated.

b. The thickness of films

Thickness of the films was measured using a screw gauge with a least count of 0.01mm at different spots of the films. The thickness was measured at three different spots of the films and the average was taken.

c. Folding endurance of patches

The flexibility of films can be measured quantitatively in terms of what is known as folding endurance. Folding endurance of the films was determined by repeatedly folding a small strip of the films (approximately 2x2 cm) at the same place till it broke. The number of times films could be folded at the same place, without breaking gives the value of folding endurance.

d. Swelling property

Simulated solution of saliva was prepared to check the swelling property of the patch. The initial weight of the patch was determined and placed in the pre-weighed



stainless steel mesh. The system was dipped in the simulated saliva solution. The increase in the weight of the patch was noted by weighing the system at regular

Degree of swelling =

intervals. The degree of swelling was determined by the formula:

$$\frac{[\text{Final weight (Wt)} - \text{Initial weight (Wo)}]}{[\text{Initial weight (Wo)}]}$$

e. Drug content uniformity of films:

The films were tested for drug content uniformity by UV Spectrophotometric method. Films of 2x2 cm size were cut from three different places from the casted films. Each film was placed in a 100 mL volumetric flask and dissolved in simulated saliva pH 6.8 and 5 mL is taken and diluted with water up to 10 mL. The absorbance of the solution was measured at λ max 240 nm using a UV/ visible spectrophotometer (Shimadzu). The percentage of drug content was determined.

f. Surface pH

Patch was slightly wet with help of water. The pH was measured by bringing the electrode in contact with the surface of the patch. The study was performed on three patches of each formulation and average was taken.

g. Moisture loss

Percent moisture loss is a parameter that determines the hygroscopicity of a film. Usually, this parameter is determined by first finding the initial weight of the film, afterward, putting this film in a desiccator for three days. Desiccator contains calcium carbonate. After three days, strips are taken out and weighed again. Moisture loss is determined by applying the following formula

$$\% \text{ Moisture loss} = \frac{(\text{Initial weight} - \text{Final weight})}{(\text{Initial weight})} \times 100$$

In vitro Mucoadhesive strength

The mucoadhesive strength of the mucoadhesive buccal patches was determined at room temperature using the two-arm balance with minor modifications. Fresh sheep buccal mucosa was obtained from a local slaughter house and used for the study within 2 h of slaughter. The mucosal membrane was separated by removing underlying fat and loose tissues, and thickness of 2 mm was obtained. The membrane was then washed with distilled water and then with BS pH 6.5 at 37 °C.

In-vitro dissolution studies

The release rate of Amitriptyline HCl dissolving Buccal films was determined by using USP dissolution testing apparatus II at 50 RPM. The film with 2x2 cm was placed in the 300 mL of 6.8 pH simulated saliva as a dissolution medium, and the temperature was maintained at 37°C. From this dissolution medium, 2 ml of the sample solution was withdrawn at different time intervals. The samples were filtered through Whitman filter paper and absorbance was determined 240 nm using double beam UV- Visible spectrophotometer.

Permeation study

The prepared mucoadhesive buccal films are placed in the diffusion cell on the upper membrane of the (donor compartment) and the receptor compartment contains simulated saliva (20 ml) it can be contacted with the dialysis membrane upper side of the donor compartment contain a film attach the film of length and width (2x2) cm it contains 20 mg of the drug. And the receptor compartment it contains simulated saliva and magnetic bead and this diffusion compartment placed in the magnetic stirrer the drug permeation start through the dialysis membrane and enter into the receptor compartment the drug to

be entered in the receptor compartment and this solution took 2 ml every one hour and maintain the sink condition by replacing the 2ml of simulated saliva into the receptor compartment and this every interval taken samples analyzed by (Shimadzu) UV-visible spectrophotometer.

PERMEATION KINETICS

The matrix systems were reported to follow the zero-order permeation rate and the diffusion mechanism for the permeation of the drug. To analyse the mechanism for the permeation and permeation rate kinetics of the dosage form, the data obtained was fitted into, Zero - order, First order, Higuchi matrix and Peppas's model. In this by comparing the r values obtained, the best fit model was selected.

Zero Order Kinetics

Drug dissolution from pharmaceutical dosage forms that do not disaggregate and release the drug slowly, assuming that the area does not change and no equilibrium conditions are obtained can be represented by the following equation

$$Q_t = Q_0 + K_0t$$

First order kinetics

To study the first order release kinetics the release rate data were fitted to the following equation.

$$\log Q_t = \log Q_0 + k_1t/2.303.$$

Higuchi model

Higuchi developed several theoretical models to study the release of water soluble and low soluble drugs incorporated in semisolids and or solid matrices. Mathematical expressions were obtained for drug particles dispersed in a uniform matrix behaving as the diffusion



media. And the equation was

$$Q_t = KH \cdot t^{1/2}$$

Korsmeyer and Peppas's model

To study this model the release rate data are fitted to the following equation.

$$M_t/M_\infty = K \cdot t^n$$

Hixon and Crosswell erosion equation

$$Q_0^{1/3} - Q_t^{1/3} = KHct$$

Stability studies

RESULTS AND DISCUSSION

PREFORMULATION STUDIES

Compatibility study

The purpose of stability testing is to provide evidence on how the quality of a drug substance or drug product varies with time under the influence of a variety of environmental factors. To assess the drug and formulation stability, stability studies were done as per ICH guidelines.

The formulated mucoadhesive buccal films were wrapped in aluminum foil and stored at $45 \pm 0.5^\circ\text{C}$ for twelve weeks. After three months, films were tested for appearance, drug content, and in-vitro drug release.

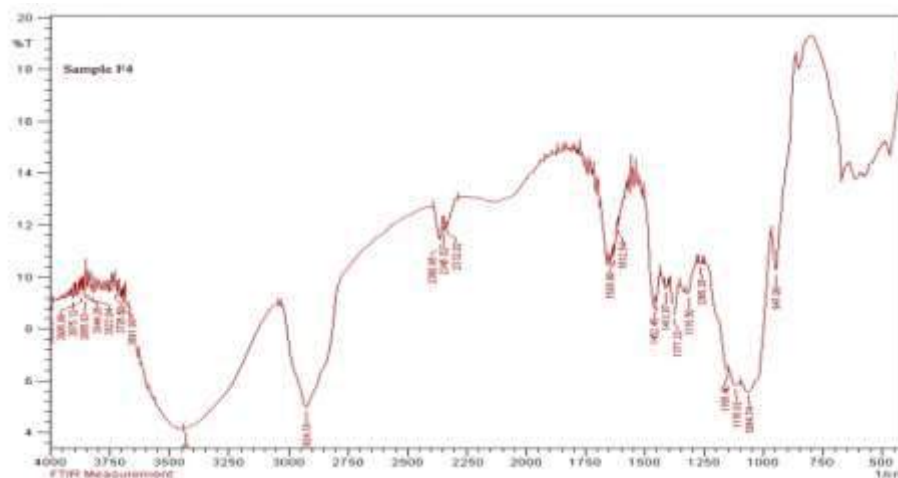


Figure 1
FTIR Spectra of Amitriptyline HCl

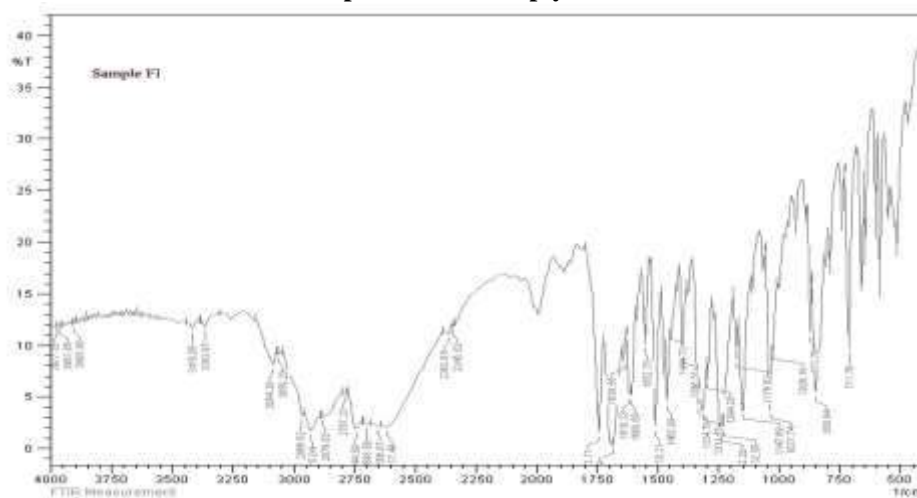


Figure 2
FTIR Spectra of Physical mixture of HEC

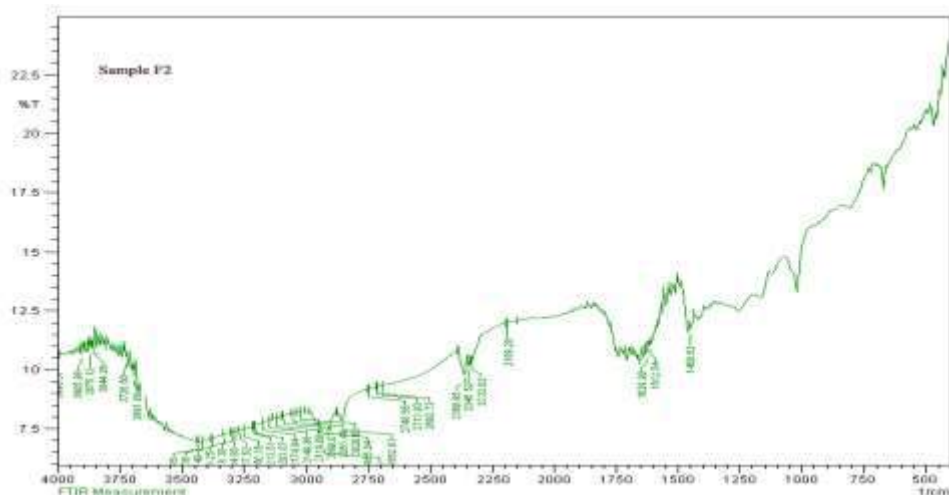


Figure 3
FTIR Spectra of Physical mixture of HPMC K100

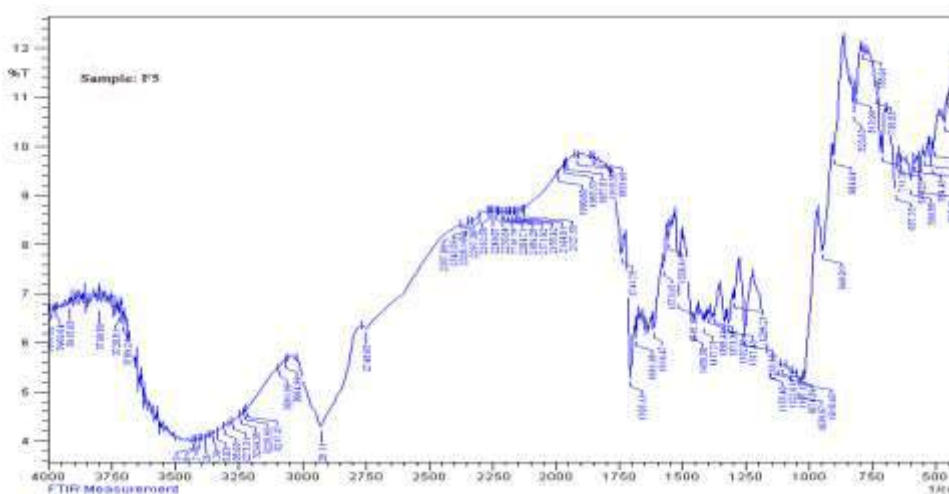


Figure 4
FTIR Spectra of Physical mixture of HPC

Table 2
IR Interpretations for Pure drug and Polymers

Functional Groups	Amitriptyline HCl	HEC	HPMC K100	HPC
OH (Alcohols)	3691.88	3632.92	2748.65	3244.38
CH (Alkane)	1315.50	3138.29	3174.94	3091.99
NH (2° amines)	1116.82	3410.26	2692.72	2357.09
C=C (Alkynes)	2345.52	2359.02	2189.28	2328.16

The drug and polymers were characterized by FTIR spectral analysis for any physical as well as chemical alteration of the drug characteristics. From the results, it was concluded that there was

no interference in the functional groups as the principle peaks of the Amitriptyline HCl were found to be unaltered in the spectra of the drug-polymer mixture.



Differential Scanning Calorimetry

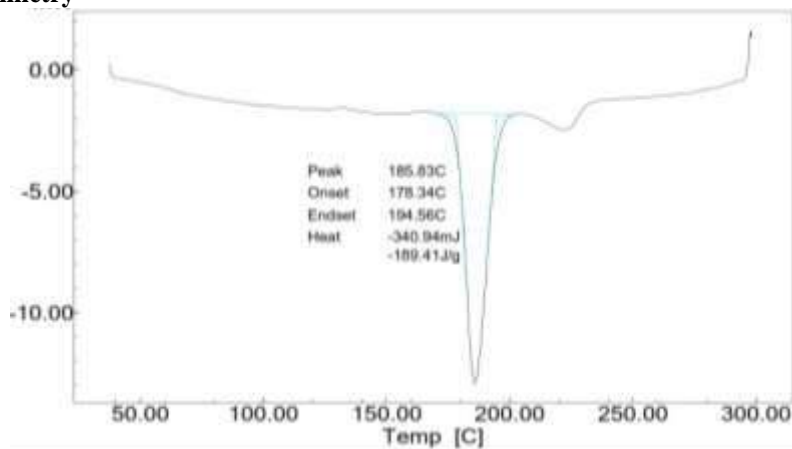


Figure 5
DSC thermogram of pure drug

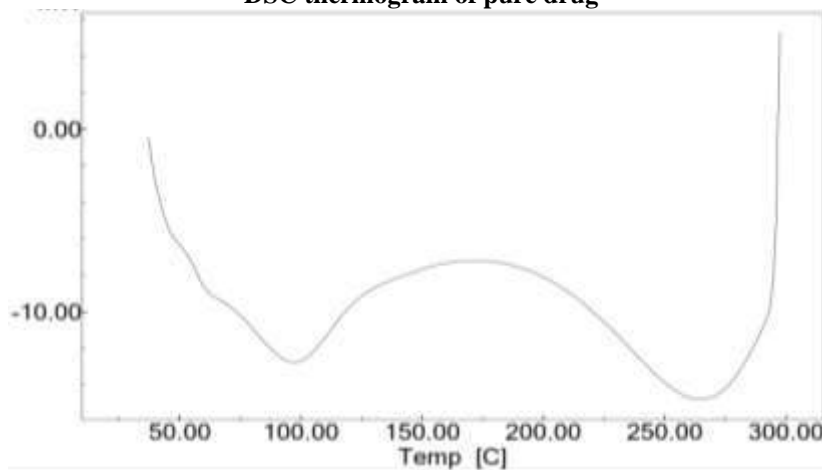


Figure 6
DSC thermogram of HEC

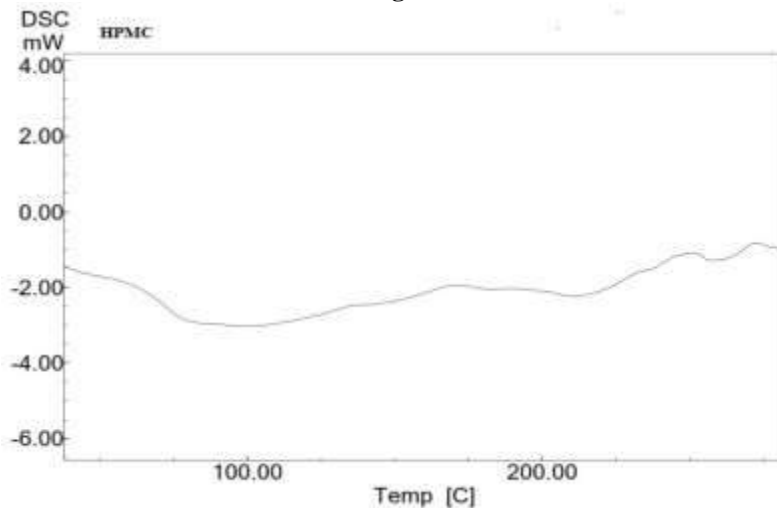


Figure 7
DSC thermogram of HPMC K100

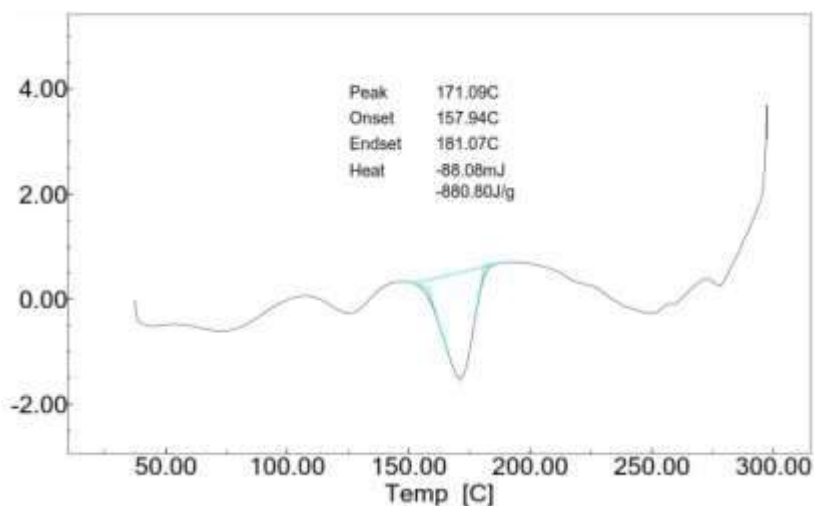


Figure 8
DSC thermogram of HPC

Preparation of mucoadhesive buccal film

The films are preferably formulated using the solvent casting method. The required quantity of polymer was added in small quantities and mixed well to dissolve in distilled water. The small quantity of drug is dissolved in the above solution. Add plasticizers to the above solution and mixed well. The solution was then cast on the Petri dish and kept in a hot air oven for drying at 40° C. After drying films were removed with the help of a sharp blade and kept in a desiccator for 24 hrs then cut into

pieces of the desired shape and size.

CHARACTERIZATION OF MUCOADHESIVE BUCCAL FILMS

Scanning Electron Microscopy (SEM)

Microscopic characterization of co-crystals:

Microscopic characteristics of prepared co-crystals were observed by light microscope.

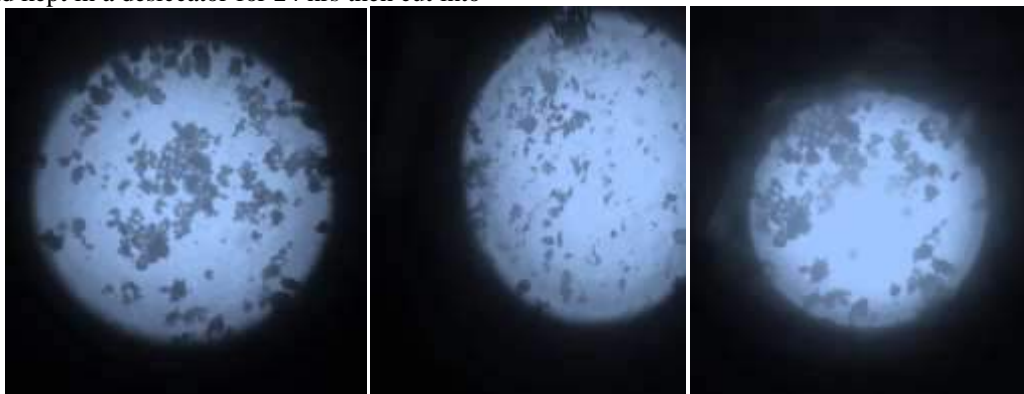


Figure 9
Microscopic Images of Co-Crystals

Morphological characteristics of co-crystals

The shape and surface characteristics of Amitriptyline HCl co-crystal was assessed by Scanning Electron Microscopy (SEM).

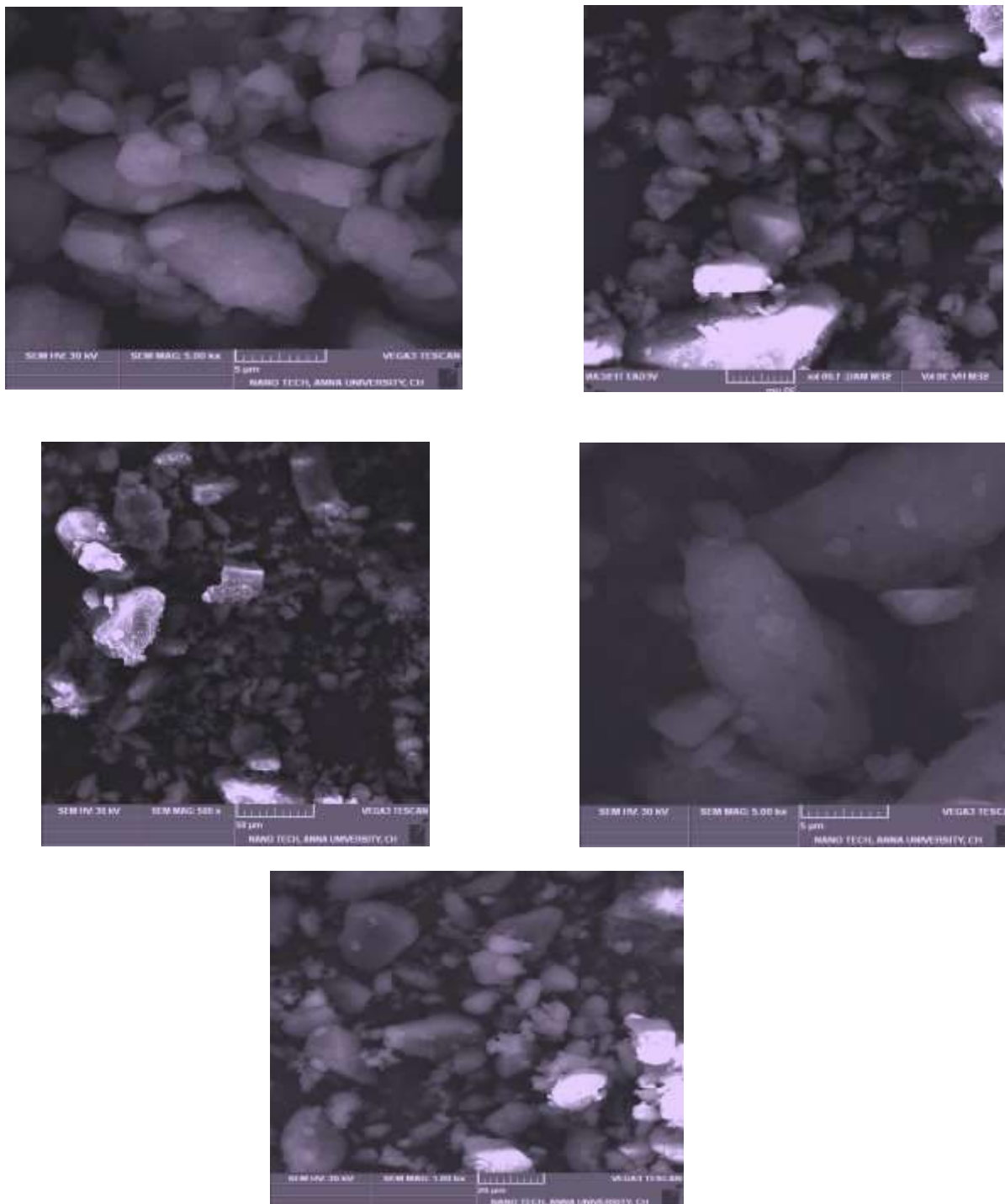


Figure 10
SEM Image of Amitriptyline HCl Cocrystals

IR- Spectroscopy:

The FTIR analysis of the pure drug and Amitriptyline HCl co-crystal was done. IR spectra are as shown in Figure 11.

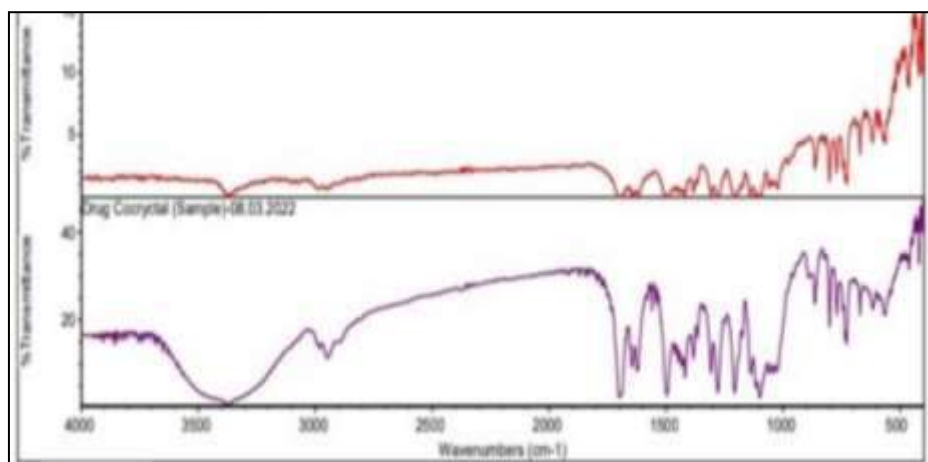


Figure 11

Comparison Between Pure Drug and Drug Cocrystal

FT-IR spectroscopy was used to detect the existence of interaction between Amitriptyline HCl and sorbitol coformer used during the preparation of cocrystal. When hydrogen bonding occurs between Amitriptyline HCl and the coformer, a shift in certain peaks, which OH affected by an interaction, can be observed in Amitriptyline HCl spectra. In Dosulepin HCl, the groups in which hydrogen bonding can occur are the amine group in the ring and the two carbonyl group. When this hydrogen bonding occurs, bond energy at the N-H or C=O bond decrease and peak shift to lower frequencies is observed. This peak shift was most

noticeable at the N-H stretch peak at 3376.43cm^{-1} , C-H stretch at 2948.28cm^{-1} and the C=O stretch peak at 1699.72cm^{-1} . These peaks shifting may be the probable group which involved in the bond formation with sorbitol to synthesis co-crystal.

EVALUATION OF MUCOADHESIVE BUCCAL FILMS

Physical appearance and surface texture of films

The overall appearance was found to be clear and transparency was good which Shows that the drug has distributed uniformly.

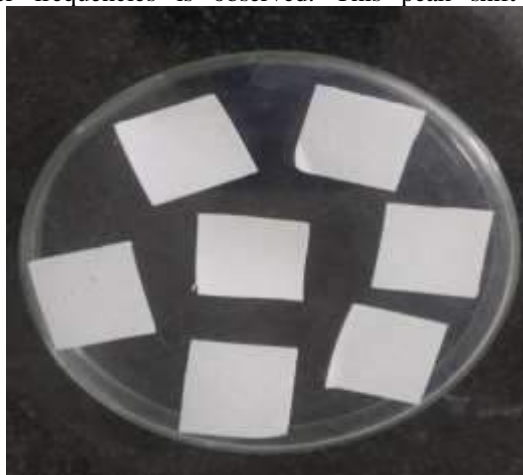


Figure 12

Images of Buccal Film

a. **Weight uniformity of films:**The weight uniformity of the films mentioned in table in which the values varied between

a minimum of 42.63 ± 0.150 to 45.96 ± 0.152 .

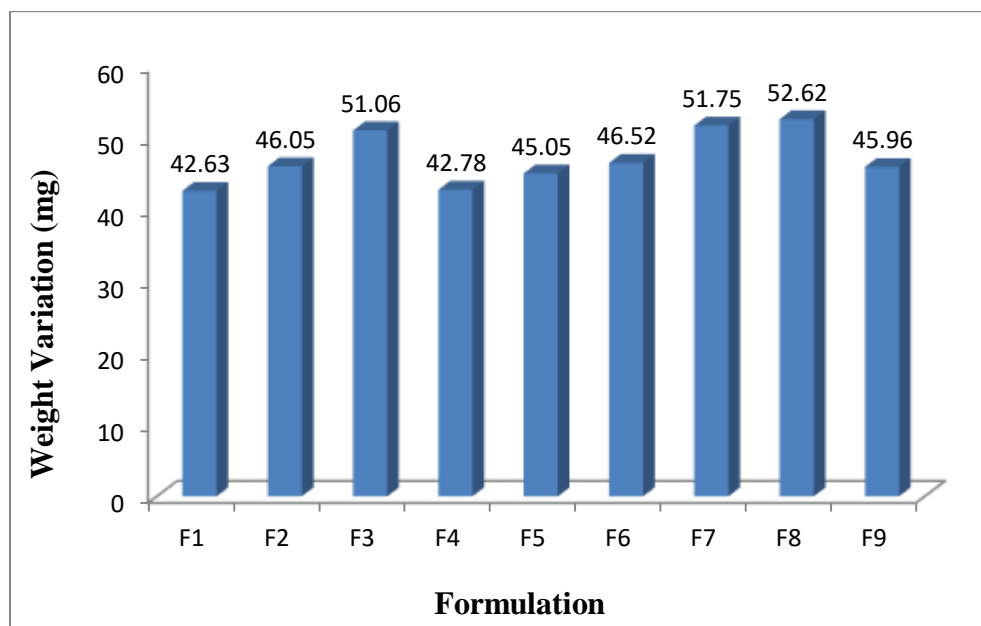


Figure 13

Weight uniformity of the film

b. The thickness of films:

As all the formulations contain different amounts of polymers, the thickness was gradually increased with the

number of polymers. All the film formulations were found to have a thickness in the range of 0.12 to 0.19 mm and were observed within the limits.

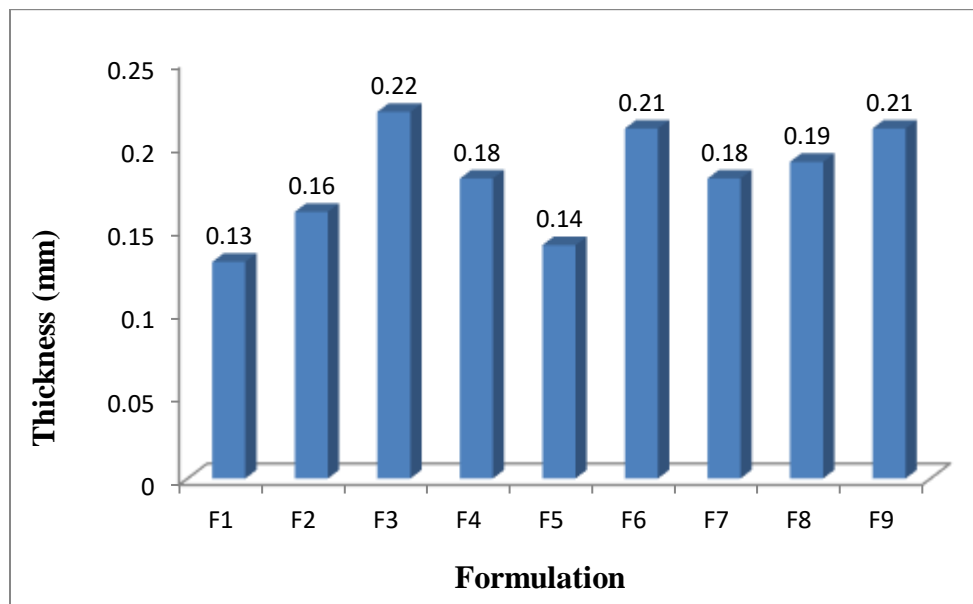


Figure 14

Thickness of the film

c. Folding endurance of patches:

The folding endurance was measured manually, by folding the mucoadhesive buccal film repeatedly at a point till it broke. The breaking time was considered as the endpoint. Folding endurance was found to be highest for F4 and lowest for F2. It was found that the folding endurance of the mucoadhesive buccal films was

affected by the increase of carrier concentration. The folding endurance values of the mucoadhesive buccal films were found to be optimum and therefore, the mucoadhesive buccal films exhibited good physical and mechanical properties. The folding endurance of films was found to be in the range of 333 to 321 (Table 14).

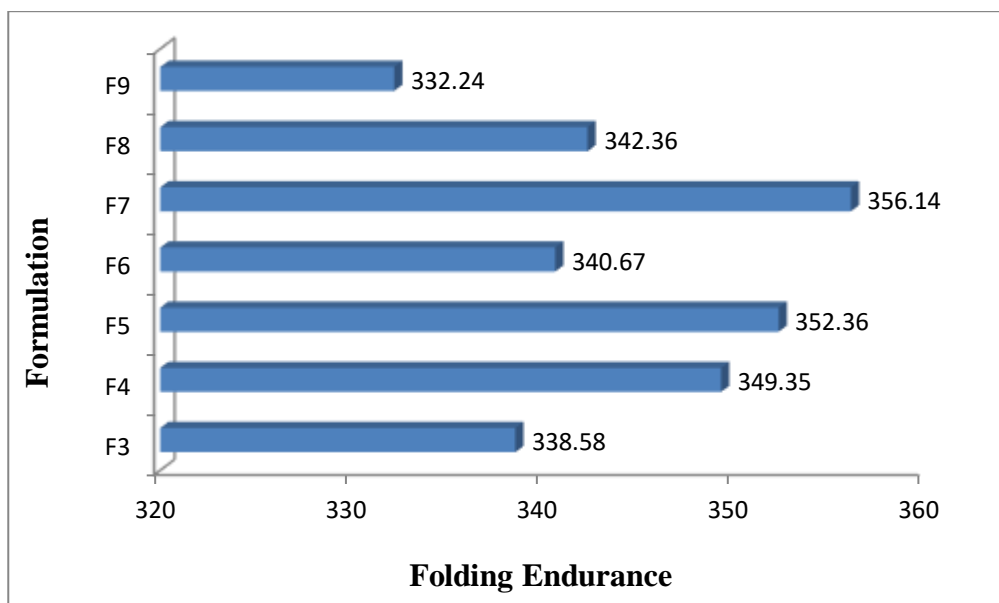


Figure 15
Folding endurance of the film

d. Swelling property

Simulated solution of saliva was prepared to check the swelling property of the patch. The initial weight of the patch was determined and placed in the pre-weighed stainless steel mesh. The system was dipped in the simulated saliva solution. The

increase in the weight of the patch was noted by weighing the system at regular intervals. The degree of swelling was determined by the formula. The average swelling was found to be 6.63

$$\text{Degree of swelling} = \frac{[\text{Final weight (Wt)} - \text{Initial weight (Wo)}]}{[\text{Initial weight (Wo)}]}$$

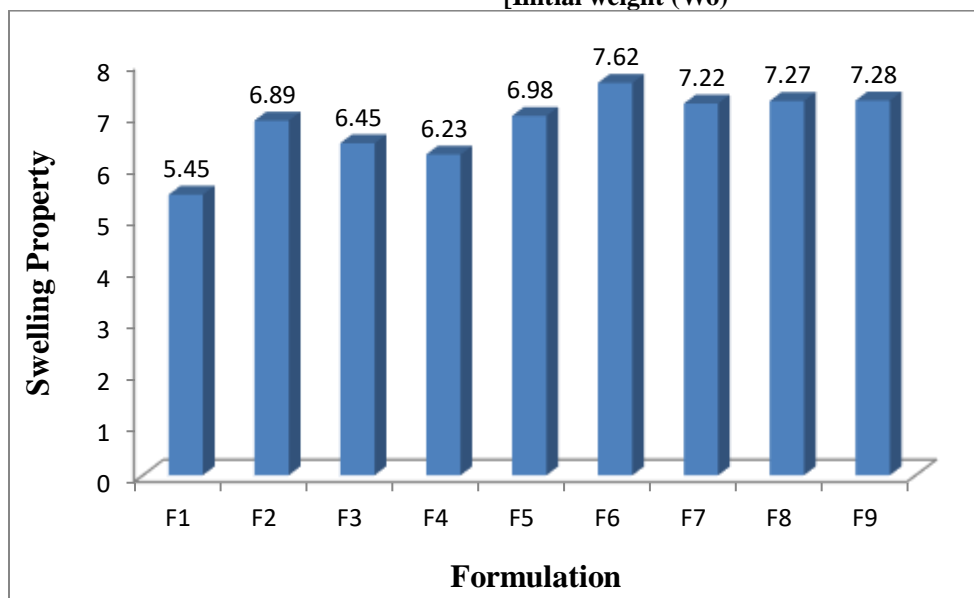


Figure 16
Swelling Property of the film

e. Drug content uniformity of films:

The prepared film formulations were studied for their drug

content. The drug was dispersed in the range of 93.76 to 97.43 %. Suggesting that the drug was uniformly dispersed in all films.

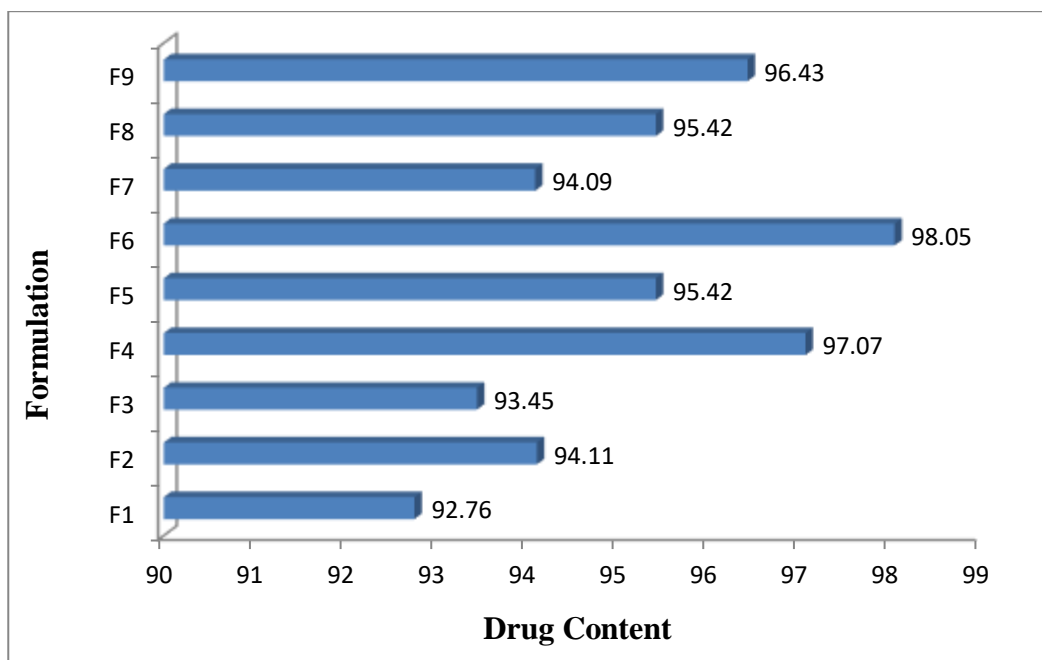


Figure 17

Drug content of the film

f. Surface pH

Patch was slightly wet with help of water. The pH was measured by bringing the electrode in contact with the surface of the

patch. The study was performed on three patch of each formulation and average was taken. The surface pH was ranging from 6.4-6.5.

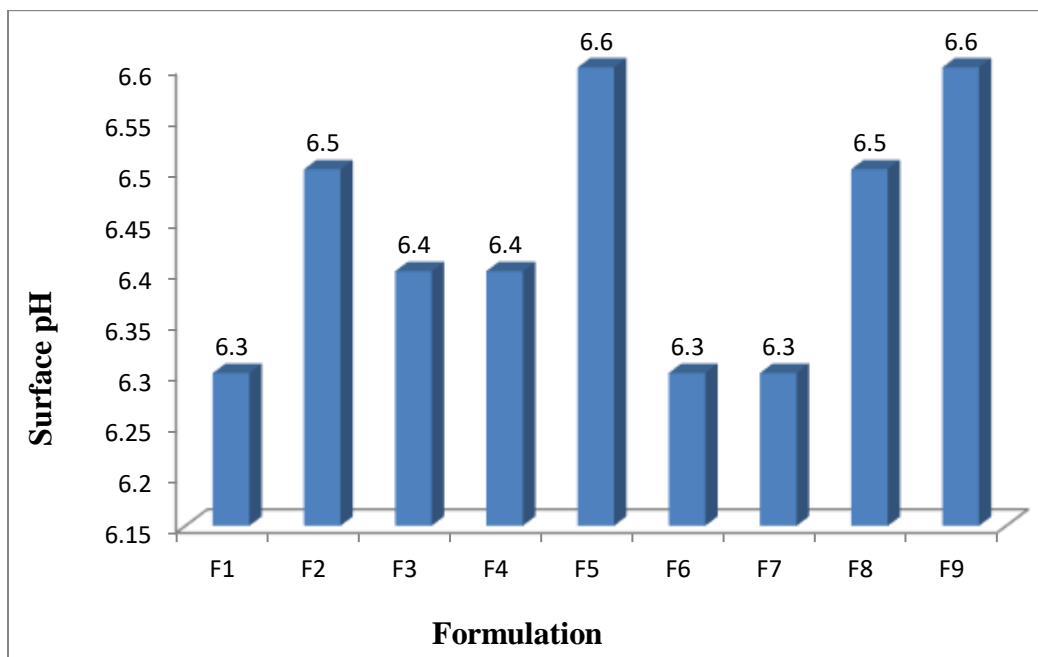


Figure 18

Surface pH of the film

g. Percent moisture loss

It was done to check the integrity of patch at dry condition and hygroscopicity of patch. Three patch of 2 x 2 cm² size

were cut out and weighed accurately. Then the patch was rested in a desiccator Containing fused anhydrous calcium carbonate. After 3 days the patches are removed, weighed and percentage weight loss are calculated.

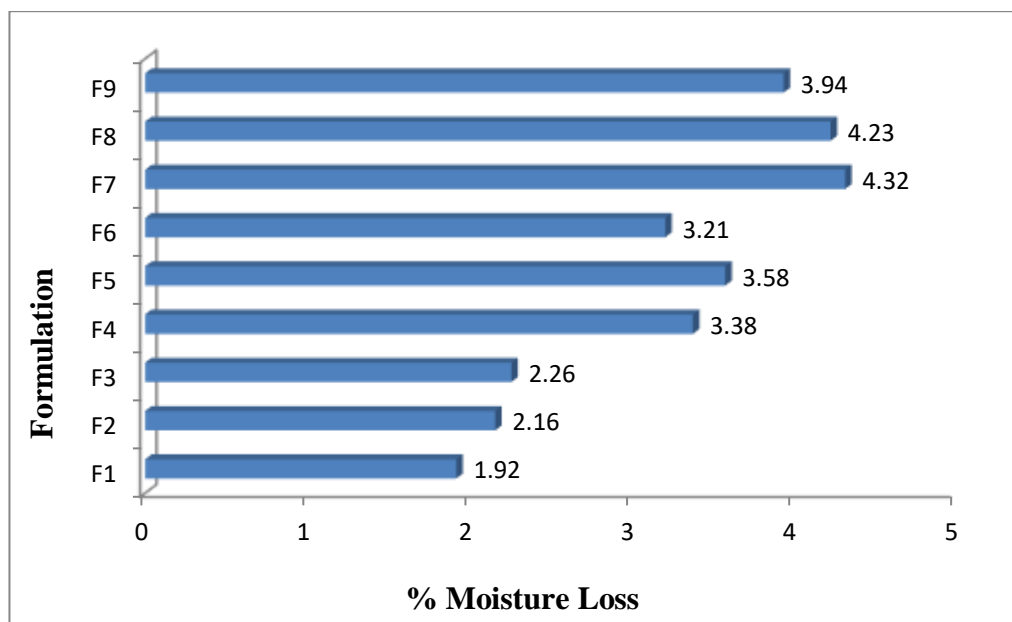


Figure 19
% Moisture Loss of the film

Table 3
Evaluation Parameters data for mucoadhesive buccal films

Formulation Code	Weight variation (mg)	Thickness (mm)	Folding endurance	Swelling Property
F1	42.63±0.150	0.13±0.0107	328.62±1.504	5.45
F2	46.05±0.075	0.16±0.0031	316.62±1.504	6.89
F3	51.06±0.165	0.22±0.0034	338.58±0.508	6.45
F4	42.78±0.178	0.18±0.0052	349.35±1.348	6.23
F5	45.05±0.267	0.14±0.0051	352.36±0.194	6.98
F6	46.52±0.152	0.21±0.0034	340.67±1.348	7.62
F7	51.75±0.176	0.18±0.0035	356.14±0.332	7.22
F8	52.62±0.309	0.19±0.0104	342.36±1.348	7.27
F9	45.96±0.152	0.21±0.0051	332.24±1.668	7.28

Formulation Code	Drug Content	Surface pH	% Moisture Loss
F1	92.76±0.83	6.3	1.92
F2	94.11±1.72	6.5	2.16
F3	93.45±0.48	6.4	2.26
F4	97.07±1.23	6.4	3.38
F5	95.42±1.68	6.6	3.58
F6	98.05±1.24	6.3	3.21
F7	94.09±2.08	6.3	4.32
F8	95.42±2.05	6.5	4.23
F9	96.43±1.68	6.6	3.94

In Vitro Mucoadhesive strength

Mucoadhesive strength was an important property to be determined because it ensures the attachment of dosage form and delivery of drug at the site of administration. The direct relationship between the swelling index and adhesion strength has been described by many authors. Formulation F9 and F6

therefore showed highest bioadhesion due to their highest swelling index, thus ensuring adhesion of patch at the site of administration. On applying factorial design, the quadratic model was suggested by software and found to be significant with model p value F^{**} less than 0.0007 for each term was obtained which indicated that every model term was significant.



Table 4

In Vitro Mucoadhesive strength data for mucoadhesive buccal films

Formulation	Mucoadhesive Strength
F1	4.6
F2	4.8
F3	6.5
F4	4.3
F5	5.6
F6	6.8
F7	7.3
F8	8.2
F9	9.4

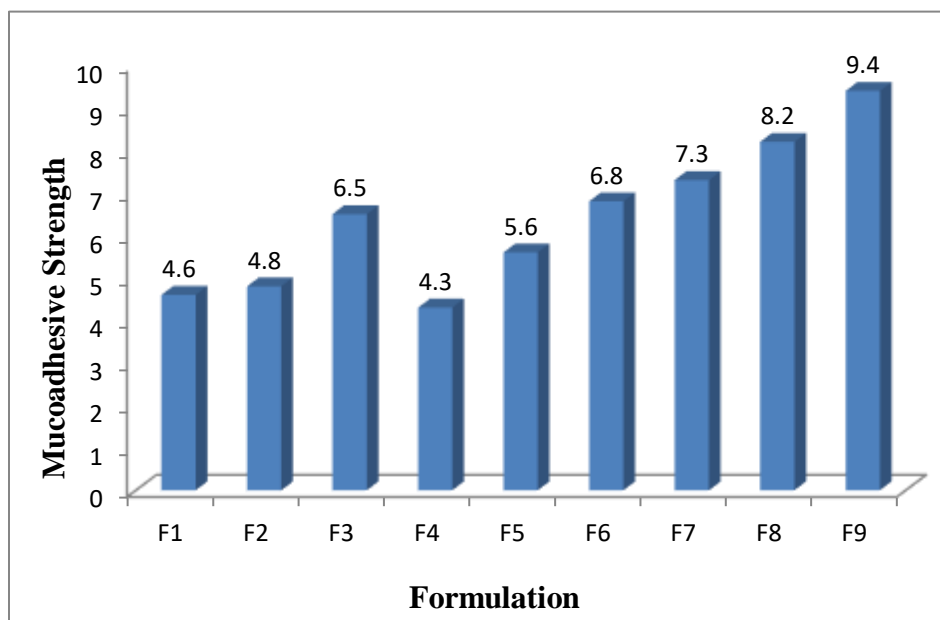


Figure 20

In Vitro Mucoadhesive strength of the film

In-vitro dissolution studies:

Table 5

In-vitro release data of various Amitriptyline HCl mucoadhesive buccal films prepared using HPMC K100, HPC, HEC
Cumulative % drug release from buccal films F1 to F9 prepared from HEC, HPMC K100, HPC

Formulation Code	F1	F2	F3	F4	F5	F6	F7	F8	F9
15 mins	13.96	16.94	19.03	16.78	23.91	25.78	12.42	17.34	18.33
30 mins	28.08	24.08	34.13	31.98	37.05	42.98	28.46	32.47	35.43
1h	41.19	42.18	43.17	43.96	45.97	57.07	47.47	43.49	48.54
2h	48.22	52.21	55.18	55.05	57.08	65.08	54.52	47.54	59.58
3h	52.18	57.24	58.27	68.07	71.14	73.13	62.59	63.56	73.61
4h	64.24	68.28	71.28	72.13	78.16	81.15	68.61	72.62	73.62
5h	75.27	77.32	78.32	83.16	84.12	85.22	78.68	83.64	81.67
6h	79.34	83.32	88.36	91.22	91.21	92.18	84.65	87.72	88.72
7h	87.39	91.37	96.08	97.19	96.17	98.24	92.71	92.68	94.67

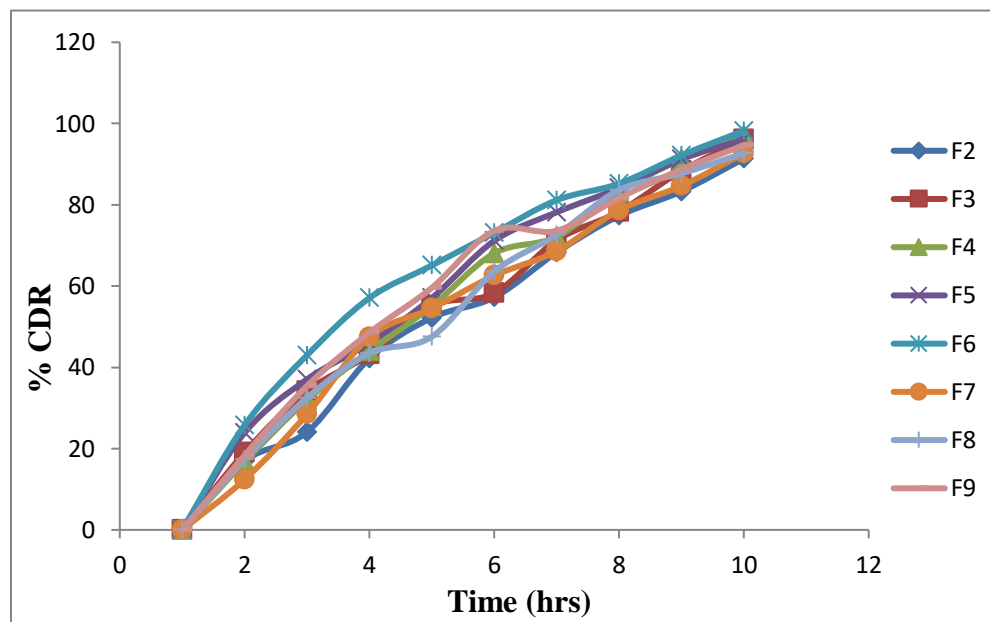


Figure 21

In-vitro release data of various mucoadhesive buccal film of Amitriptyline HCl (F1-F9)

Table 6

Permeability data of films

Formulation Code	F1	F2	F3	F4	F5	F6	F7	F8	F9
0	0	0	0	0	0	0	0	0	0
0.5	18.72	22.82	23.23	26.35	28.54	33.22	24.84	28.08	28.53
1	33.25	36.21	42.08	42.73	46.95	52.85	42.09	45.92	44.92
2	44.08	42.89	45.85	54.98	53.88	59.65	45.91	56.74	58.74
3	47.86	54.72	56.72	63.54	65.18	72.32	56.72	64.56	68.54
4	57.71	62.51	68.54	68.48	74.32	82.18	68.54	72.38	75.32
5	65.52	72.31	79.36	74.33	75.29	85.14	69.52	75.35	82.16
6	72.34	73.34	75.29	83.16	86.13	85.95	77.32	82.18	86.15
7	76.31	86.15	89.13	87.14	88.95	91.97	81.19	85.15	88.97
8	84.16	87.98	88.99	86.95	92.95	97.75	82.13	87.95	92.98

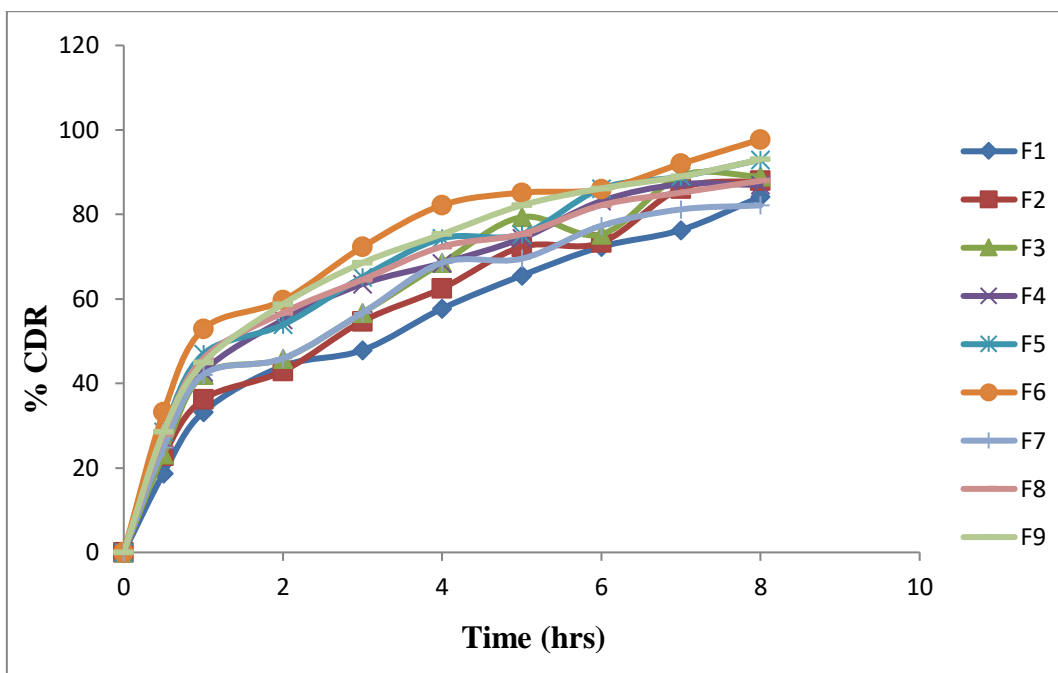


Figure 22
Permeability of various mucoadhesive buccal film of Dosulepin HCl

Table 7
Percentage drug content of optimized formulation F6 during stability studies

Trial No.	1st Day	After 4 weeks	After 6 weeks	After 12 weeks
I	96.22	97.32	97.96	98.15
II	98.26	97.41	98.06	98.06
III	98.23	97.43	98.11	98.18
Mean	98.23 ± 0.02	97.39 ± 0.04	98.04 ± 0.06	98.13 ± 0.05

Table 8
In vitro release data of optimized formulation F6 during stability studies

Time (in hours)	% CDR			
	1 st Day	After 4 weeks	After 6 weeks	After 12 weeks
15m	23.00	24.22	23.84	23.84
30m	43.92	44.46	42.12	43.74
1h	55.94	58.05	55.82	53.86
2h	69.89	69.95	67.96	65.96
3h	76.96	76.85	76.96	74.84
4h	84.26	85.96	83.88	84.89
5h	93.12	92.54	92.87	93.52
6h	95.68	96.88	96.71	98.00

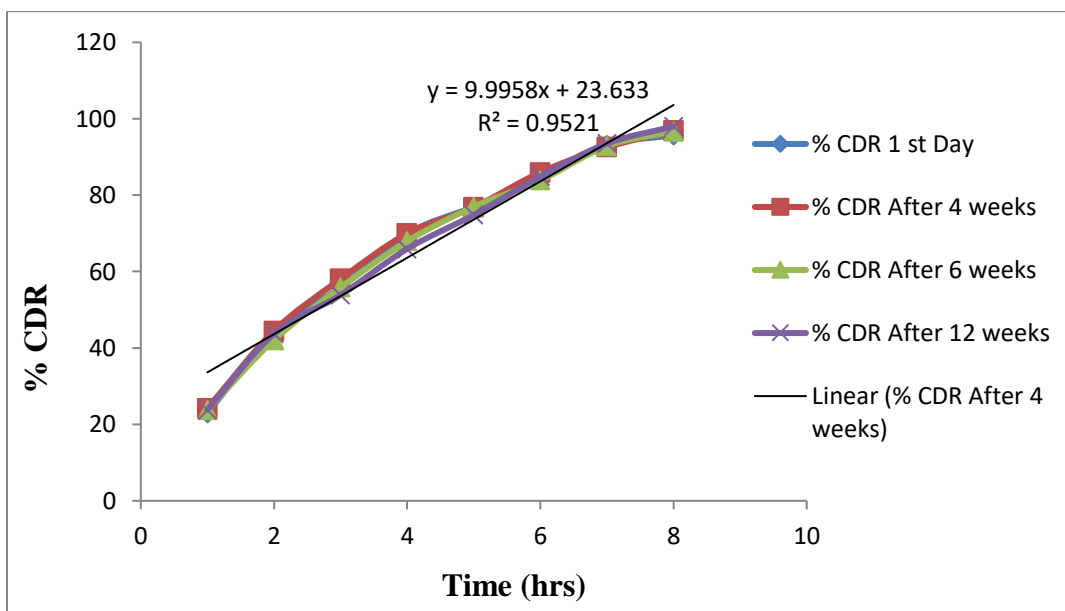


Figure 23

In vitro release of optimized formulation F6 during stability studies

Permeation Kinetics:

The drug release kinetics for the optimized formulation was calculated and the results obtained are presented in table .

Table 9

Release kinetics of Mucoadhesive buccal films of Amitriptyline HCl (F1 to F5)

Model	Equation	F 1		F 2		F 3		F 4		F 5	
		R ²	m	R ²	m	R ²	M	R ²	m	R ²	M
Zero order	Mo-Mt=kt	0.655	69.4	0.939	1123	0.007	15.93	0.202	72.88	0.928	1414
First order	InM=InMo	0.494	0.061	0.540	0.067	0.257	0.038	0.352	0.044	0.438	0.062
Higuchi's Matrix	M ₀ -M _t = kt ^{1/2}	0.516	4508	0.767	7420	0.023	212.0	0.189	515.5	0.803	9618
Korsmeyer-Peppar	log (M ₀ -M _t) = log k + n log t	0.835	2.354	0.884	2.545	0.572	1.709	0.663	1.813	0.806	2.517

Table 10

Release kinetics of Mucoadhesive buccal films of Amitriptyline HCl (F6 to F9)

Model	Equation	F 6		F 7		F 8		F 9	
		R ²	m	R ²	m	R ²	M	R ²	M
Zero order	Mo-Mt=kt	0.917	15.49	0.949	154.4	0.932	1603	0.812	1.312
First order	InM=InMo	0.481	0.052	0.465	0.051	0.379	0.060	0.248	0.231
Higuchi's Matrix	M ₀ -M _t = kt ^{1/2}	0.798	1057	0.848	1067	0.344	0.057	0.241	0.183
Korsmeyer-Peppar	log (M ₀ -M _t) = log k + n log t	0.835	2.032	0.827	2.033	0.910	11379	0.821	1.257

CONCLUSION

All the formulation showed acceptable quality control property formulation F6 having polymer concentration HPMC K100 showed better drug release rate over 7 hours thus formulation F6 was found to be the most promising formulation based on

acceptable evaluation property and the In-vitro drug release rate of 98.24%. Based on the FTIR studies appear to be no possibility of interaction between the Amitriptyline HCl and polymers of other excipients used in the films. DSC Studies was confirmed that there is no interaction between drug and selected polymers. Stability studies were conducted for the optimized formulation as



per ICH guidelines for 90 days which revealed that the formulation was stable. The result suggests that the developed mucoadhesive buccal film of Amitriptyline HCl could perform better than conventional dosage form leading to improved efficacy and better patient compliance.

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Conflict of Interest: The authors attest that they have no conflict of interest in this study.

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ETHNOMEDICINAL TREATMENT AGAINST SCIATICA BY THE PRIMITIVE AND VULNERABLE TRIBAL GROUPS OF VISAKHAPATNAM DT., ANDHRA PRADESH

Koteswara Rao J¹, M. Krishna Rao²

¹Department of Botany, Govt. Degree and PG College, Puttur, Tirupati Dt., A.P.

²Department of Botany, Pithapur Rajah's Govt. College (A), Kakinada

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ABSTRACT

Present study yielded 10 ethnomedicinal plant species covering as many genera and families used to cure sciatica by the PVTGs of Visakhapatnam district. Habit-wise analysis showed the dominance of trees and climber with 4 species each followed by shrubs and herbs one species each. Four plant species and 10 practices were found to be new or less known. Phytochemical investigations are needed for further use.

KEYWORDS Ethnomedicine, Sciatica, Primitive Tribal Groups, Visakhapatnam, Andhra Pradesh

INTRODUCTION

There are 550 tribal communities in India of which 93 were recognized as Primitive Tribal Groups (PTGs) by the Government of India as per Dhebar Commission. They live in inaccessible habitat in the hilly terrains with low literacy rate, stagnant or decreasing populations and practicing podu or shifting cultivation. In Andhra Pradesh, eight communities viz., Chenchus, Kolams, Konda redds, Savaras, Thotis, Khonds, Porjas and Gadabas are recognized as PTGs and the last three are present in the Visakhapatnam district. Visakhapatnam district with an area of 11, 161 Km² (4.1% of the area of the state) is one of the north eastern coastal districts of Andhra Pradesh. The study area lies between 17°-34' 11" and 18°-32' 57" northern latitude and 18°-51' 49" and 83°-16' 9" in eastern longitude. It is bounded on the north partly by Orissa state and partly by Vizianagaram district, on south by East Godavari district, on west by Orissa state and east by Bay of Bengal. The entire agency track covers 6, 298 Km² i. e., 56.4% of the total geographical area of the district. The total population of Andhra Pradesh according to 2001 census is 76,210,007 of which tribals constitute 5, 024,104 accounting for 6.59% of the total population. The total population of Visakhapatnam district is 3,832,336 of which the tribals are 557, 572 (14.55%). The primitive tribal groups constitute 126,778 (3.30%). The scheduled areas extend over 31,485.34 Km² which is about 11% of total area of the state with 5,938 villages.

Though there are ethnomedicinal studies published in literature exclusive studies on piles (Kumar et al. 2017, Kumari 2020, Rao et al. 2011, Prabhat Rai and Lalramghinglova 2010, Bhatt and Negi 2006) are not many necessitating the present investigation which is the first of its kind among the primitive tribal groups.

MATERIAL AND METHODS

Interviews were conducted with PTGs at their dwellings during 2008-2011. During oral interviews specific questions were asked and the information supplied by the informants was noted. The data were verified in different villages among the interviewers showing the same plant sample and even with the same informants on different occasions. The knowledgeable informants were taken to the field and along with the collection of plants for the voucher specimens, the use of plants as given by the tribal informants was noted. Field trips were selected in such a way so as to cover the selected areas in different seasons of the year.

The first field trip of the study area was completely devoted to get acquaintance with the local chiefs, priests, vaidhyas, herbal doctors, headman, elderly people. Subsequent field trips were meant for gathering information on medicinal plants used by them, the method and time of collection, ingredients used, mode of application, dosage and duration were recorded.

In 95 pockets of the study area, 139 vaidhyas and practitioners were consulted. Each medicinal practice was cross checked with at least 3-4 informants. It has become very difficult to elicit information on medicinal practices. Frequent visits and rapport gained their confidence on the integrity of the work and some revealed the practices with method of preparation and dosage. The voucher specimens were collected and deposited in the Herbarium, Department of Botany, Andhra University, Visakhapatnam. Plant identifications were made with the help of Flora of the Presidency of Madras (Gamble, 1915-1935) using the field observations and Flora of Visakhapatnam district, Andhra Pradesh (Rao and Kumari, 2002).



Enumeration

The plants are arranged in an alphabetical order with their botanical name along with Family, vernacular name (VN), English name(E), voucher number, parts used, method, mode and duration of treatment.

Annona reticulata L. (Annonaceae) VN: Ramaphalam E: Bullocks heart of India 9206

*Bark paste, *Jatropha curcas* bark paste and root pastes of *Clerodendrum viscosum* and *Solanum torvum* mixed with half tea glass of water is administered daily twice till cure.

Argyreia nervosa (Burm. f.) Boj. (Convolvulaceae) VN: Gumada mada, E: Elephant creeper 9076

*Nut paste mixed with half tea glass of water is administered on fullmoon, half-fullmoon and again fullmoon days.

Callicarpa macrophylla Vahl (Verbenaceae) VN: Chinna bodiki chettu 9243

*Root paste mixed with half tea glass of water is taken orally on full moon, half moon and full moon days.

Commelina erecta L. (Commelinaceae) VN: Osso 9260

Leaf paste along with stem bark paste of *Oroxylum indicum* mixed with castor oil is applied on affected parts.

Cyclea peltata (Lam.) Hook.f. & Thoms. (Menispermaceae) VN: Ginnedimada E: Pataroot 9084

*Tender leaves along with tender leaves of *Woodfordia fruticosa* is grounded and the extracted soup is given in doses of two spoonfuls twice a day for 3 days.

Hoya pendula R. Br. (Asclepiadaceae) VN: Thiga pappu 9041

Leaf paste mixed with half tea glass of water is taken orally twice a day till cure.

Litsea deccanensis Gamble (Lauraceae) VN: Naramamidi E: Yellow laurel 9225

Bark paste is applied on the effected parts.

Polygonum glabrum Willd. (Polygonaceae) VN: Osso 9362

*Root paste mixed with half tea glass of water is administered twice a day for 3 days. It is also anointed over the body.

Psidium guajava L. (Myrtaceae) VN: Jama E: Guava tree 9332

*Three tender leaves are taken without aspiration, grounded and mixed with half tea glass of water is administered twice a day for 2 days.

* ***Vitis heyneana*** Roem. & Schultes (Vitaceae) VN: Mediki dumpa 9109

Tuber paste mixed with half tea glass of water is administered twice a day for 3 days.

RESULTS AND DISCUSSION

Sciatica can cause pain in the lower back that spread to the hip, buttock and leg. It is caused by pressure on the sciatic nerve from a herniated disc. Sciatica occurs most frequently in people 30 to 50 years age (Kumari, 2020).

The present paper deals with 10 species of plants covering as many genera and families used by the primitive and vulnerable tribal groups (PVTGs) of North Coastal Andhra Pradesh for curing sciatica. Habit-wise analysis showed the dominance of trees and climber with 4 species each followed by shrubs and herbs one species each. Plant part-wise analysis showed the

usage of leaf in 4 practices followed by stem bark and root in 2 each, nut paste and tuber in 1 each. Four plant species and 10 practices were found to be new or less known (Jain 1991, Kirtikar and Basu 2003). Seven practices involve single plant only and three each involves two and three plants.

CONCLUSION

The traditional knowledge system in India is fast depleting. There is an urgent need to inventor and record all ethnomedicinal information among the primitive and vulnerable tribal groups before it is completely lost. It is hoped that the information gathered from the PVTGs will provide further lead for developing new herbal formulations. Phytochemical investigations are needed for further use. Due to continuous use of various plant species for medicine most of them are getting eroded leading to their extinction. Therefore, it is necessary to document such knowledge and conserve them for value addition in future.

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RELATIONSHIP BETWEEN STUDENTS' ACADEMIC SELF-EFFICACY AND ACADEMIC ACHIEVEMENT IN SELECTED POLYTECHNICS IN NIGERIA

Dr Joseph E. Ogbu¹, Dr Goddy Chukuma², Dr Charles Thompson²

Department of Social Development, College Administrative Studies and Social Sciences, Kaduna Polytechnic.

²Department of Social Development, College Administrative Studies and Social Sciences, Kaduna Polytechnic.

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ABSTRACT

This study finds out the relationship between students' academic self-efficacy and academic achievement in selected polytechnics in Nigeria. A descriptive survey method was used. The population for the study consisted of Chief lecturers and final year students of selected polytechnics in Nigeria. Out of a total population of 623 HND II Polytechnic students of the selected polytechnics in Nigeria, 271 were involved. Out of a total population of 168 chief lecturers, 109 of them were involved in the study. This brings the total number of participants to 380. Krejcie & Morgan sample size table cited in Ogbu, (2010) was used to determine the representativeness of the sample frame. Purposive sampling method was used in selecting the participants from the two population groups. The primary instrument was Likert Scale questionnaire. It is tagged Students' Self-efficacy and Academic Achievement Questionnaire (SSEAAQ). The four null hypotheses were tested using chi square test at 5% level of significance and appropriate degree of freedom. Research results showed that there is a significant positive relationship between academic self-efficacy- and cognitive engagement of polytechnic students. And that there is a significant positive relationship between academic self-efficacy and academic achievement of polytechnic students in selected polytechnics in Nigeria. And also that there is a significant positive relationship between deep processing and academic achievement of polytechnic students in selected polytechnics in Nigeria. And lastly that there is significant positive relationship between persistence and academic achievement of polytechnic students in selected polytechnics in Nigeria. It was recommended among others that polytechnic lecturers should formulate programs and activities that will develop and maintain self-efficacy among students, develop activities that will also boost their cognitive engagement and interest in their studies. And that polytechnic lecturers should set high standard, aspirations and expectations for students by evolving programs aimed at encouraging and boosting student's confidence to enhance their academic achievement.

KEY WORDS: *Academic, Self-efficacy, Academic self-efficacy, Achievement, Academic achievement*

INTRODUCTION

Receiving a quality education is an important cornerstone in achieving the general objective of polytechnic education which involves promoting vocational and technical education and development, technology transfer, and skill development which are the key goals of polytechnic education, which will help the nation's socioeconomic development. Polytechnic education in Nigeria aims at providing technical and practical-oriented training to meet the manpower requirements for the industrial, agriculture, commercial and economic development of Nigeria.

To achieve the lofty objective of polytechnic education in Nigeria, it is imperative that polytechnic students have the tools they need to be successful, tools that include self-efficacy and motivation. For some polytechnic students however, motivation is not always intrinsic. Research has indicated that the relationship between students' self-efficacy and academic

achievement is an important factor in the educational sector (Hanre & Pianta, 2021). In fact, one of the most powerful weapons that polytechnic students should strive to develop in order to effectively acquire vocational and technical skills is confidence, determination and the spirit of perseverance which are elements of self-efficacy. Students who tend to lack such attributes may likely have little or no interest in sustained academic pursuit which certainly affects better achievement outcomes (Fan & Williams; Hanre & Pianta, 2021).

Polytechnic students' academic activities and achievements, like those of all other students, tend to increase by their self-efficacy. This submission has been confirmed by Zimmerman, Bandura and Martinez-Pons, (1992), that academic achievement involves self-efficacy belief of students, which can regulate their learning. Additionally, the learning environment plays a significant role in heightening and maintaining student self-efficacy and interest in academic activities. When students feel a sense of control and



security in the classroom, they are more engaged because they approach learning with enthusiasm and vigour and become active participants in their own education (Baker, Grant & Morlock, 2018).

The lack of academic achievement among polytechnic students is ubiquitous. There are numerous reasons why Nigerian polytechnic students may lose interest in school, and self-efficacy is one of the key factors. Considering that students spend about twenty-five percent of their waking hours in a classroom, it is essential that polytechnic students have a strong confidence in themselves and high spirit of I-can-do-it. This creates a problem for both the teacher and the student. Throughout an average school day, teachers frequently overhear students complaining about an assignment, a class, or even a teacher. If students have positive relationships with their teachers, they will be more engaged and thus more motivated throughout each of their classes. Consequently, the relationship between polytechnic students' academic self-efficacy and academic achievement in selected polytechnics in Nigeria is the thrust of this study.

Problem Statement

Regardless of a student's actual ability, self-confidence form certain expectations for the students based on a number of variables. It is apparent that some polytechnic students possess the necessary skills and ability to cope with the rigours of academic activities but lack the confidence in themselves. Some students tend to lack the believe in their capabilities to organize and execute the courses of action required to manage prospective situations. Such lack of self-confidence and disbelief could undermine the student's determination and perseverance.

Some polytechnic students have apparently failed examinations, performed poorly, or withdrawn even though they have high IQ and all the necessary attributes needed for academic achievement. This is quite worrisome as one wonders if poor academic self-efficacy has any bearing with students' cognitive engagement, academic achievement, deep processing, and persistence towards success. This is what the study is out to find out in order to make appropriate recommendations that will help to achieve the objectives of polytechnic education in Nigeria.

Research Hypotheses

The following null hypotheses are generated and will be tested at 0.05 level of significance:

Ho1: There is no significant relationship between academic self-efficacy and cognitive engagement of polytechnic students in selected polytechnics in Nigeria.

Ho2: There is no significant relationship between academic self-efficacy and academic achievement of polytechnic students in selected polytechnics in Nigeria.

Ho3: There is no significant relationship between deep processing and academic achievement of polytechnic students in selected polytechnics in Nigeria.

Ho4: There is no significant relationship between persistence and academic achievement of polytechnic students in selected polytechnics in Nigeria.

LITERATURE REVIEW

The Meaning of Self Efficacy

Self-efficacy refers to people's judgments about their capability to perform particular tasks. Task-related self-efficacy increases the effort and persistence towards challenging tasks; therefore, increasing the likelihood that they will be completed. Self-efficacy beliefs are an important aspect of human motivation and behavior as well as influence the actions that can affect one's life. Regarding self-efficacy, Bandura (1995) explains that it refers to beliefs in one's capabilities to organize and execute the courses of action required to manage prospective situations. More simply, self-efficacy is what an individual believes he or she can accomplish using his or skills under certain conditions (Pajares, 2019).

According to Bandura cited in Hanre and Pianta, (2021), self-efficacy affects both learning and performance in students in the following ways:

- i) It affects the goals that students choose. For example, students with low levels of self-efficacy are more likely to set lower goals for themselves than students with higher self-efficacy.
- ii) It impacts learning as well as the efforts students exert on the task at hand. For instance, when students have high self-efficacy, they are more likely to work harder to learn a new task as they will be more confidence than a student with low self-efficacy.
- iii) It influences the persistence for which a student will attempt to learn a new and difficult task. Students who are high in self-efficacy are thought to be more confident and therefore will persist in their efforts when learning a new task even when encountering a problem. The present study is anchored on this theory.

The Meaning of Academic Self-Efficacy

Self-efficacy, also called perceived ability, according to Zimmerman, Bandura and Martinez-Pons (1992), refers to as the component of self-concept that concerns individual beliefs in their capabilities and competencies to handle a given task. If learners possess the ability to successfully perform task, then that task will be attempted. The task will be avoided if it is perceived to be too difficult. Although inefficacious individuals usually avoid challenging tasks, when they do attempt them, they give up more easily than individuals with high efficacy. When inefficacious individuals fail, they attribute the unsuccessful result to a lack of ability and tend to lose faith in their capabilities. When they succeed, they are more likely to attribute their success to external factors. If students master a challenging task with limited assistance, their levels of self-efficacy rise.

Individuals who possess a high degree of self-efficacy are more likely to attempt challenging tasks, to persist longer at them, and



to exert more effort in the process. If highly efficacious individuals fail, they attribute the outcome to a lack of effort or an adverse environment. When they succeed, they credit their achievement to their abilities. It is the perception that their abilities caused the achievement that affects the outcome rather than their actual abilities. Four factors determine self-efficacy: enactive mastery experience, vicarious experience, verbal persuasion, and physiological and emotional states (Bronfenbrenner & Bronfenbrenner, 2015).

The Meaning of Academic Achievement

Orth, Robins and Widaman (2012) defined academic achievement as the extent to which a student, teacher or institution has achieved their educational goals. Therefore, academic achievement is an outcome of education which has a special importance, for the students, teacher, institutions, and the people around the student as well as the attainment of success of a student in his/her school work among his classmates. Academic achievement, which is measured by examination results, is one of the major goals of a school. Schools are established with the aim of imparting knowledge and skills to those who go through them.

In their own contribution, Alexander, Entwisle and Horsey (2017), view academic achievement as the level of performance in a particular field of study, whereby higher scores indicate better achievement and lower scores reveals poor achievement. Academic achievement could also be seen as an end product of learning. Academic performance is affected by various conditions existing at the time of learning as well as the conditions intervening between learning and use (Cataldi, Laird, & Kewalramani, 2019). Croninger and Lee (2011) explained that the term academic achievement refers to the performance or accomplishment of students in academics or learning task. It is used to indicate the degree of success attained in some general or specific area of academic task. In other words, academic achievement is an educational outcome of students learning at the end of a course.

Theoretical Framework

Self-efficacy Theory

Self-efficacy was developed by Albert Bandura as part of a larger theory i.e the Social Learning Theory which has progressed into the Social Cognitive Theory (Wentzel, 2013). In these two theories, the role of cognition in motivation and the role of the situation are largely ignored. According to Bandura cited in Wentzel, (2013), Social Cognitive Theory takes on an agent-like perspective to change, development and adaptation. Bandura describes an agent as someone who intentionally influences one's functioning and life circumstances. In this view, people are self-organizing, proactive, self-regulating, and self-reflecting. They are contributors to their life circumstances not just products of them.

The Self-system Model

The self-system processes model helps to explain the mechanism by which the social environment of a school influences student

self-efficacy, academic engagement and academic achievement. The essence of socialization is to develop self-regulation of one's own behavior (Baker, Grant & Morlock, 2018). In the development of self-regulation, it is important to help children internalize the values and rules of the society. It is believed that children are more likely to internalize and adopt values and rules when their relationships with the socialization agents are nurturing and supportive (Dika & Singh 2020).

Self-determination Theory (SDT)

According to the tenets of self-determination theory (SDT) as propounded by Hughes, Cavel and Willson (2020), social contexts that support an individual's psychological needs (i.e., competence, relatedness, and autonomy) promote motivated actions by facilitating the internalization of extrinsic motivation. There is an important distinction between motivation, self-efficacy and engagement. If to be motivated" is to be moved to do something, then to be engaged is to do something in a broader sense. Despite the distinction, the theory facilitates an understanding of the reasons behind student engagement. Support for the psychological needs of human beings (i.e., competence, relatedness, and autonomy) is critical in internalizing extrinsic motivation as well as maintaining intrinsic motivation. In other words, the primary reason that people are willing to do uninteresting activities is that these activities are valued by significant others with whom they feel connected or have a sense of relatedness.

Relationship between Self-Efficacy and Academic Achievement

A huge amount of research has attempted to identify important factors to student success by assessing the relations among many psychological and academic variables. Few studies have used different methods to propose and test models that can be used to understand the relations among factors that influence student academic success (O'Connor, Dearing & Collins, 2011). Education has a broad aim of preparing students for useful living within the society and developing in students' skills and knowledge that would make them function effectively in the society.

In his opinion, Wentzel (2012) sees education as a means that supplies people with specific skills and therefore it enables them to perform their tasks effectively. Wentzel further stressed that the better the performance of an individual is the more competitive and rewarded the individual is the more competitive and rewarded the individual will be. Many factors have greatly influenced academic achievement of individuals. Researchers like Ryan, Stiller, and Lynch (2014) explain that attitude leads to achievement and abilities are needed for successful performance. Similarly, Wentzel (2013) confirmed that intellectual capability, and motivation are significant factors on academic performance. Self-efficacy refers to personal confidence in one's abilities for a successful accomplishment of a certain task as Murray and Malmgren, (2015) put it. Murray and Malmgren, (2015) concluded that self-efficacy influences behavior, choice and commitment in



a task, the energy spent in performing it, and the level of the performance.

METHODOLOGY

The study utilized the descriptive survey method. The population for the study consisted of Chief lecturers of selected polytechnics in Nigeria totaling and final year students. The names of the polytechnics selected are Akanu Ibiam Federal Polytechnic, Unwana, Ebonyi State; Auchu Polytechnic, Edo State; Federal Polytechnic Bauchi; Federal Polytechnic, Daura, Katsina State, Federal Polytechnic Kaura Namoda, Zamfara State; Federal Polytechnic, Nekede, Imo State; Kaduna Polytechnic, Kaduna; Yaba College of Technology, Lagos State; Airforce Institute of Technology, Kaduna.

Out of a total population of 623 HND II Polytechnic students of the selected polytechnics in Nigeria, 271 were involved. Out of a total population of 168 chief lecturers, 109 of them were involved in the study. This brings the total number of participants to 380. Krejcie & Morgan sample size table cited in Ogbu, (2010) was used to determine the representativeness of the sample frame (see appendix III). Purposive sampling method was used in selecting the participants from the two population groups. In applying it, lecturers teaching HND II students and all the HND II students were involved because, as HND II lecturers, they are aware of the To test null hypothesis 1, correlation analysis using Pearson's r was used. The result is presented in table 1:

Table 1: Person Moment Correlation Analysis on the Relationship between Academic Self-efficacy and Cognitive Engagement of Polytechnic Students in selected Polytechnics in Nigeria.

Source	N	Mean	SD	df	r	p
Academic self-efficacy	380	82.286	12.929	378	.518"	.000
Cognitive Engagement	380	111.236	13.553			

**-. Correlation is significant at the 0.05 level (2-tailed). $r^2 = .268$

The result of the Pearson correlation analysis in table 1 showed that there is significant positive relationship between academic self-efficacy and cognitive engagement of polytechnic students in selected polytechnics in Nigeria reason being that the p value of 0.000 is lower than the 0.05 alpha level of significance while the r value of .518 ($r = .518, p = .000$) at 378 df. The r^2 statistic for this relationship is .268 which suggests that 26.8% of variance in student's academic self-efficacy can be accounted for by cognitive engagement. Therefore, the null hypothesis which stated that

academic self-efficacy of the students and how it relates to the students' academic achievement, and as HND II students in their final year, they have the knowledge and awareness of their academic self-efficacy and the relationship between that and their academic achievements.

The primary instrument was the questionnaire. The questionnaire was a Likert five-point scale questionnaire of Strongly agree, Agree, Undecided, Disagree and Strongly disagree which was developed by the researcher. It is tagged Students' Self-efficacy and Academic Achievement Questionnaire (SSEAAQ). It was validated by experts in the field. Pilot test was used to establish its reliability.

Frequency counts and simple percentages were used to determine the responses of the respondents on their personal data while mean was used to analyze the data emanating from the research questions. The hypotheses were tested using chi square test at 5% level of significance and appropriate degree of freedom.

RESULTS AND DISCUSSION

Hypotheses Testing

Hypothesis 1: There is no significant relationship between academic self-efficacy and cognitive engagement of polytechnic students in selected polytechnics in Nigeria.

The result is presented in table 1:

there was no significant relationship between academic self-efficacy and cognitive engagement of polytechnic students in selected polytechnics in Nigeria is rejected.

Hypothesis 2: There is no significant relationship between academic self-efficacy and academic achievement of polytechnic students in selected polytechnics in Nigeria.

To test null hypothesis 2, correlation analysis using Pearson's r was used. The result is presented in table 2:

Table 2: Person Moment Correlation Analysis on the Relationship between Academic Self-efficacy and Academic Achievement of Polytechnic Students in selected Polytechnics in Nigeria.

Source	N	Mean	SD	df	r	p
Academic self-efficacy	380	82.286	12.929	378	.564"	.000
Cognitive Engagement	380	44.092	4.759			

**-. Correlation is significant at the 0.05 level (2-tailed). $r^2 = .318$



The result of the Pearson correlation analysis in table 2 on the relationship between Academic Self-efficacy and Academic Achievement showed that there is a significant positive relationship between Academic Self-efficacy and Academic Achievement of polytechnic students in selected polytechnics in Nigeria. The outcome shows that the p value of 0.000 is lower than the 0.05 alpha level of significance while the r value of .564 ($r=.564, p=.000$) at 378 df. The r^2 statistic for this relationship is .318, which suggests that 31.8% of variance in student's academic achievement can be accounted for by student's

academic self-efficacy. Therefore, the null hypothesis which stated that there was no significant relationship between academic self-efficacy and academic achievement of polytechnic students in selected polytechnics in Nigeria is rejected.

Hypothesis 3 : There is no significant relationship between deep processing and academic achievement of polytechnic students in selected polytechnics in Nigeria.

To test null hypothesis 3, correlation analysis using Pearson's r was also used. The result is presented in table 3:

Table 3: Person Moment Correlation Analysis on the Relationship between deep processing and academic achievement of Polytechnic Students in selected Polytechnics in Nigeria

Source	N	Mean	SD	Df	r	p
Deep Processing	380	18.728	4.054	378	.434**	.000
Academic Achievement	380	44.092	4.759			

** - Correlation is significant at the 0.05 level (2-tailed). $r^2 = .206$

The outcome of the Pearson correlation analysis in table 3 on the relationship between deep processing and academic achievement showed that there is a significant positive relationship between deep processing and academic achievement of polytechnic students in selected polytechnics in Nigeria. The p value of 0.000 is lower than 0.05 alpha level of significance while r value of .454 ($r = .454, p=.000$) at 378 df. The r^2 statistic for this relationship is .206, which suggests that 20.6% of variance in student's academic achievement can be accounted for by student's deep processing of information. Therefore, the null hypothesis which stated that there was no significant relationship between deep processing and

academic achievement of polytechnic students in selected polytechnics in Nigeria is rejected.

Hypothesis 4: There is no significant relationship between persistence and academic achievement of polytechnic students in selected polytechnics in Nigeria.

To test null hypothesis 4, correlation analysis using Pearson's r was also used. The result is presented in table 4.

Table 4: Person Moment Correlation Analysis on the Relationship between Persistence and Academic Achievement of Polytechnic Students in selected Polytechnics in Nigeria.

Source	N	Mean	SD	Df	r	p
Persistence	380	24.152	5.247	378	.211**	.000
Academic Achievement	380	44.092	4.759			

** - Correlation is significant at the 0.05 level (2-tailed). $r^2 = .044$

The result of the Pearson correlation analysis in table 4 on the relationship between persistence and academic achievement showed that there is significant positive relationship between persistence and academic achievement of polytechnic students in selected polytechnics in Nigeria because the p value of 0.000 is lower than the 0.05 alpha level significance while the r value of .211 ($r=.211, p=.000$). The r^2 statistic for this relationship is .044, which suggests that 4.04% of variance in student's academic achievement can be accounted for by student's persistence. Therefore, the null hypothesis which stated that there was no significant relationship between persistence and academic achievement of polytechnic students in selected polytechnics in Nigeria is rejected.

CONCLUSION

By way of conclusion, there is a significant positive relationship between academic self-efficacy and cognitive engagement, between academic self-efficacy and academic achievement, between deep processing and academic achievement and between persistence and academic achievement of polytechnic students as indicated by the responses of lecturers and students of the selected polytechnics in Nigeria. It is thus important that these variables are enhanced among polytechnic students as much as possible.

DISCUSSION

The study finds a significant positive relationship between academic self-efficacy- and cognitive engagement of polytechnic



students ($r = .518, p = .000$). This result corroborates previous findings by Arabzadeh, Shafy Nadery, Salami and Bayanati (2012) in their study on the effects of teaching self-efficacy on students' cognitive engagement. It was reported that teaching of self-efficacy has had a significant effect on student cognitive engagement. Teaching self-efficacy enables the students to positively employ cognitive strategies and to guide their own learning. Similarly, research by Akomolafe, Ogunmakin, and Fasooto (2013) on the role of academic self-efficacy, academic motivation and academic self-concept in predicting secondary school students' academic engagement demonstrates that academic self-efficacy, academic motivation and academic self-concept significantly predicted students' academic engagement and performance ($r = 0.72, \sim\text{adjusted} = 0.56$). The result also showed that 56% of the variance in the academic engagement of secondary school students was accounted for by the linear combination of the three variables. In terms of the magnitude of contribution, academic self-efficacy made the most significant contribution to academic engagement followed by academic self-concept and academic motivation respectively.

Findings also show a significant positive relationship between academic self-efficacy and academic achievement of polytechnic students ($r = .564, P = .000$). The present finding is in corroboration of Tenaw (2013) who investigated the level of students' self-efficacy, gender difference in self-efficacy and achievement and also relationships between self-efficacy and achievement for second year students in the fall of 2013 in Analytical Chemistry I (ACI) at DebreMarkos College of Teacher Education (DMCTE). The study indicated that students' level of self-efficacy is medium (50.08), and there is a statistically significant relationship between self-efficacy and achievement ($r = 0.385, p = 0.01$).

It was also found out that there is a significant positive relationship between deep processing and academic achievement of polytechnic students ($r = .454, p = .000$). This finding is in line with previous researches which consistently found that deep (meaningful) processing strategies leads to greater performance on achievement measures over the materials studied than shallow strategies. Student's academic achievement is therefore, positively influenced by their cognitive strategies they employ to guide their learning (Garcia & Pintrich, 1994; Greene & Miller, 1996; Kardash and & Amlund, 1991; Miller, Greene, Montako, Ravindran, & Nicholls, 1996; Atherton, 2011; Pintrich & Garcia, 1991; Abbing, 2013).

The study also found a significant positive relationship between persistence and academic achievement of polytechnic students ($r = .211, p = .000$). This finding is in line with other researchers' view who more recently, studied aspects of cognitive engagement, such as students' investment in learning, perseverance in the face of challenges; and use of deep rather than superficial strategies. They concluded that students who are cognitively and behaviorally engaged will attend to the task at hand and simultaneously manage their learning like thinking

about similar tasks they have done, realizing when they need to ask for help, using problem-solving strategies (Pintrich & DeGroot 1990; Miller et al 1996; Abbing 2013; Wang & Eccles 2013)..

RECOMMENDATIONS

The following recommendations are made based on the findings of the study;

1. Since it was found out that academic self-efficacy was positively and significantly related to students' cognitive engagement, polytechnic lecturers should formulate programs and activities that will develop and maintain self-efficacy among students, develop activities that will also boost their cognitive engagement and interest in their studies.
2. Findings of the study proved that academic achievement was positively and significantly related to students' academic self-efficacy. Polytechnic lecturers are thus implored to set high standard, aspirations and expectations for students by evolving programs aimed at encouraging and boosting student's confidence to enhance their academic achievement. This should be done, by formulating realistic, specific measurable and relevant educational goals for student's environment to build their effort, confidence, and general academic achievement.
3. The findings of the study proved that cognitive engagement was positively and significantly related to students' academic achievement. Consequently, students should be encouraged by their lecturers and parents to be meaningfully engaged in learning activities through interactions with others and worthwhile tasks.
4. Deep processing of information has been found to help students acquire and retain information needed for a successful academic activity in the classroom. It is therefore recommended that lecturers should engage students in tasking classroom activities like problem solving which will encourage deep processing of information and consequently enhance academic achievement.
5. Since persistence was found to correlate with students' academic achievement, lecturers and parents should encourage their wards to persist even when faced with daunting academic challenges or failure. This can be done by the National Board for Technical Education (NBTE) to introduce parents-educational programs in polytechnics to improve parent's involvement in the educative process of their children for better academic achievement.
6. Although students' who cognitively process information in a shallow manner reported good level of academic self-efficacy, it is recommended that psychologists and counsellors should create awareness, educate, sensitized and encourage polytechnic students to process information deeply which would help not only for the sake of writing and passing exams but for long term memory retention.
7. Since processing information in a deep manner enhances good academic performance in school in contrast to



shallow processing, efforts should be made by lecturers to encourage deep cognitive processing more than rote learning.

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VARIATION OF SUPERFICIAL PALMAR ARCH: A CASE REPORT

Dr. Prasanna S¹, Dr. Sushma P Patel², Dr. Monika Singh J G³

¹Associate Professor, Department of Rachana Shareera

²Final Year PG Scholar, Department of Rachana Shareera

³Final Year PG Scholar, Department of Rachana Shareera

Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan, Karnataka

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ABSTRACT

The hand in the humans is abundantly supplied by the blood by two anastomotic arches, there are superficial and deep palmar arch. The knowledge of variations in the arterial supply of hand has reached the practical importance. Superficial palmar arch is an arterial arcade and a dominant vascular structure in the palm. These two arcades are formed by the anastomosis between two main arteries of forearm ie. radial and ulnar artery and their branches. Superficial palmar arch is defined as the anastomosis between superficial branch of ulnar artery and superficial palmar branch of radial artery with the ulnar artery as the main feeding vessel. Superficial palmar branch shows variation in formation at the radial side. In this study we have recorded the variation which would help in clinical and surgical implications.

KEYWORDS: Superficial palmar arch, Ulnar artery, Radial artery, Anastomosis

INTRODUCTION

Arterial arch of palm is formed by the terminal parts of ulnar and radial arteries on reaching the palm, anastomose with each other to form superficial and deep palmar arch.

Superficial Palmar Arch(SPA) is a dominant vascular structure of the palm and is located deep to the palmar aponeurosis. It ensures the suitable blood supply to the entire region of hand, thus it maintains the integrity of the tissue.

The ulnar artery accompanied by ulnar nerve on its medial side, enters the palm superficial to the flexor retinaculum and on the radial side of the pisiform bone. Beneath the Palmaris brevis the artery divides into superficial and deep branches. The superficial branch is the direct continuation of the ulnar artery and forms the main contribution of the palmar arch¹.

AIMS AND OBJECTIVES

To review the anatomy of Superficial Palmar Arch.

To study the variation in formation of Superficial Palmar Arch.

MATERIALS AND METHODS

A female adult human cadaver hand was dissected in the Department of Rachana Shareera, Sri Dharmasthala Manjunatheshwara college of Ayurveda and Hospital, Hassan in the regular practical classes of Academic curriculum.

At the wrist joint, a horizontal incision was made. Another incision was made vertically from the centre of horizontal incision all the way up to the third metacarpo phalangeal joint. Along the root of the fingers, a horizontal incision was done and the skin flaps were reflected laterally. Then palmar aponeurosis was visible. After removal of the palmar aponeurosis, the superficial palmar arch and its branches and digital branches of the median and ulnar nerves of palm were visible. By dissecting the surrounding adipose tissue, the arch and its branches were made evident. Arteries were colored with red acrylic paint mixed with quick fix and amyl acetate. Nerves and its branches were colored yellow.

CASE REPORT

A 92 year old female cadaver was procured by Body Donation Cell of Department of Rachana Shareera, Sri Dharmasthala Manjunatheshwara college of Ayurveda and Hospital, Hassan on 12-10-2021, which was taken for regular practical classes of Academic curriculum. While dissection of hand it was found that there was Variation in the Palmar Arches. The Variation was noted and separated from the surrounding structures, painted, photographs were taken and documented.

SUPERFICIAL PALMAR ARCH²

Superficial Palmar Arch is an arterial arcade which lies beneath the palmar aponeurosis and in front of long flexor tendons, lumbrical muscles and palmar digital branches of median nerve. The arch is formed by the superficial terminal branch of the ulnar



artery and completed on the lateral side by one of the following arteries.

1. Superficial palmar branch of radial artery;
2. Arteria princeps pollicis;
3. Arteria radialis indicis; or
4. Arteria nervi mediana which accompanies the median nerve.

The convexity of the arch is directed distally on a level with the distal border of outstretched thumb.

Branches

Four Palmar Digital Arteries arise from the convexity of the arch. The most medial digital branch passes along the ulnar side of the little finger. The remaining three branches from the **common palmar digital arteries** which proceed distally to the web between the fingers, where each joins with the palmar metacarpal artery of the deep palmar arch and then divides into **two proper palmar digital arteries** to supply the adjacent fingers.

Therefore, the superficial palmar arch does not supply the radial side of index finger and both sides of index finger and both sides of the thumb.

DISCUSSION

In the description of the branches of superficial palmar arch, there are four palmar digital arteries. During the dissection, the first branch was found is the medial digital branch which passes along the ulnar side of little finger. The second common palmar digital artery passes distally to the web between the little and ring fingers and then divides into two proper digital arteries to supply the adjacent fingers. The third common palmar digital artery passes distally to the web between ring finger and middle finger and then

it divides into two proper digital arteries to supply adjacent fingers. The fourth common palmar digital artery, that which has to pass distally to the web between the middle finger and index finger and should divide into two proper digital arteries to supply adjacent fingers but it showed variation when it proceeds distally, it passes to the radial side of index finger and there is no division of two proper palmar digital arteries to supply the adjacent fingers.

To see for the branches which supply the web between index finger and middle finger, further dissection has been done to look for the deeper structure. The branches of the radial artery were noted and it showed a variation. In the interval between the first dorsal interosseous and adductor muscle, the radial artery gives off two branches-Arteria Princeps Pollicis and Arteria Radialis Indicis. The Arteria Princeps Pollicis further divides into two Palmar Digital branches to supply the two sides of the thumb. Arteria Radialis Indicis supplies the radial side of the index finger. But here the variation found was, the Radial Artery gives off a single branch, which again divides into two branches. In that the medial branch supplies the radial side of the index finger and lateral branch divides into two Palmar Digital branches to supply the two sides of the thumb. Further dissection was continued to look for other branches, among those Second metacarpal artery was supplying web between index finger and middle finger.

After the complete dissection it was found that the radial side of the index finger was supplied superficially by a branch of the Superficial Palmar Arch and Deep branch of the Radial Artery. There was no supply for the web between the middle and index finger by Superficial Palmar Arch but it was supplied by a branch of Deep Palmar Arch.

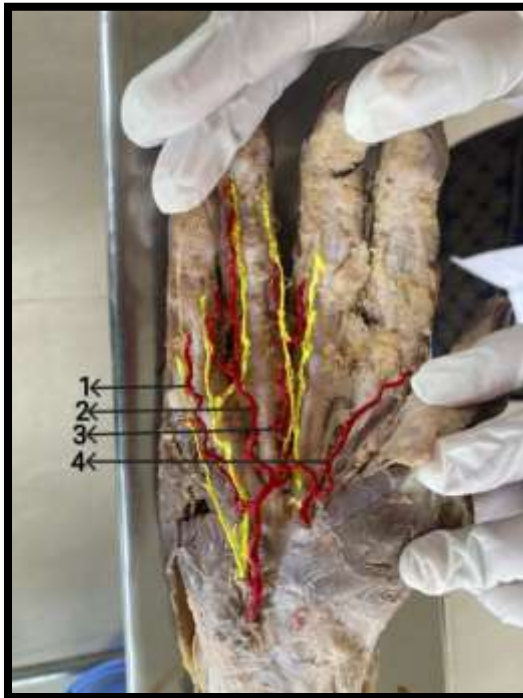


Figure 1-SPA showing variation

1. First branch of SPA
2. Second branch of SPA
3. Third branch of SPA
4. Fourth branch which shows variation and supplies radial side of index finger

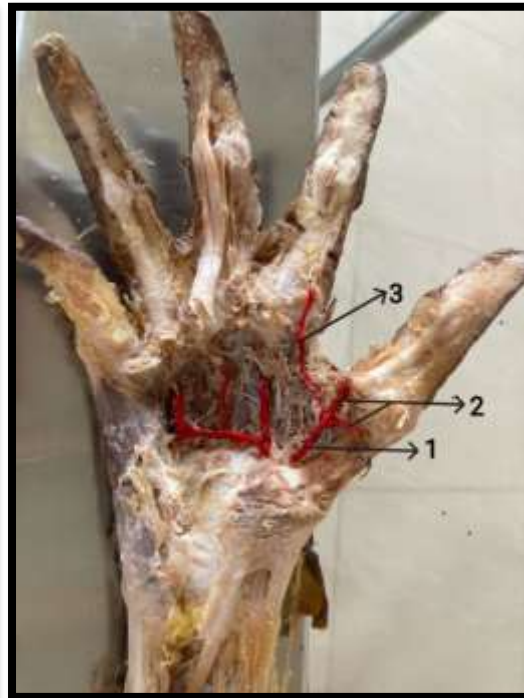


Figure 2 - Radial artery showing variation

1. Single branch of Radial Artery
2. Lateral branch of Radial artery which divides into two Palmar Digital branches to supply the two sides of the thumb
3. Medial Branch of Radial artery which supplies the radial side of the index finger

CONCLUSION

Clinicians should be aware of these variations while performing hand surgeries such as vascular graft applications, arterial repairs and free pedicle flaps, as SPA is usually involved in these procedures and most traumatic occurrences involving the hand. The Ulnar artery may be at risk for injury in cases with Ulnar skin flaps. The ineffective use of hand and finger movements might be caused by disruption of an entire blood supply. The major vascular structure of the palm is the SPA. For surgeons working on reconstructive hand procedures and the restoration of functional anatomy of the hand, understanding the variation in its pattern is crucial. In order for the clinicians to be aware of these anomalies and thereby treat the patients, it is critical that substantial anatomical deviations be reported on regular basis.

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COMPUTATIONAL APPROACH TO THE MOLECULAR CATALYSIS BY 3D TRANSITION METALS BY DFT SPECTROSCOPIC WITH MOLECULAR DOCKING

Chandralekha Sing*, Dr. Kratika Daniel
Oriental University Indore,

ABSTRACT

Metal structures play an important role in agriculture, pharmacy and industry. Ligand, a metal surrounded by a set of ions or molecules, is used to prepare complex substances called Schiff bases. Two approaches are particularly popular within the molecular docking community. One approach uses matching technique that describes the protein and the ligand as complementary surfaces. The second approach simulates the docking process in which the ligand-protein pairwise interaction energies are calculated. Both approaches are outlined below. Shape / shape complementarity methods describe the protein and ligand as a set of features that make them dockable. Two approaches are particularly popular within the molecular docking community. One approach uses matching technique that describes the protein and the ligand as complementary surfaces. The second approach simulates the docking process in which the ligand-protein pairwise interaction energies are calculated. Both approaches are outlined below. Shape complementarity Geometric matching/ shape complementarity methods describe the protein and ligand as a set of features that make them dockable

KEY WORDS- Metal structures, Ligand, ligand-protein, complementarity, dockable, molecular docking, Geometric matching.

INTRODUCTION

Metal structures play an important role in agriculture, pharmacy and industry. Ligand, a metal surrounded by a set of ions or molecules, is used to prepare complex substances called Schiff bases which are products of the dissolution of essential amines and aldehydes or ketones ($RCH = NRC$, also representing alkyl and / or aryl substituent's. Augmentation of biological activity

was reported by implementation of transition metals into Schiff bases [19]. Schiff bases played an influencing role in development of coordination chemistry and were involved as key point in the development of inorganic biochemistry and optical materials [20]. Schiff bases have been utilized as synthons in the preparation of a number of industrial and biologically active compounds.

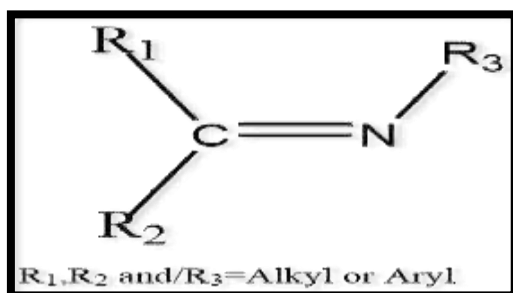


Fig.1 General Structure of Schiff base



Fig.2 3D Structure of Schiff base

Metal complex with Sulphadiazine drug moiety

The sulfonamides and their structurally related derivatives, such as the sulfamates and sulfamides, possess the general formula $A-SO_2NHR$, in which the functional group is either directly bound to an aromatic, heterocyclic, aliphatic, or sugar scaffold (of type A), or appended to such a scaffold via a heteroatom, most frequently oxygen or nitrogen (leading thus to sulfamates and sulfamides, respectively) [25,26,27,28]. It interferes with PABA (p-aminobenzoic acid) in the biosynthesis of tetrahydrofolic acid, which is a basic growth factor essential for the metabolic process of bacteria.

Swiss ADME studies

To be effective as a drug, a potent molecule necessarily reach its target in the body in sufficient concentration, and stay there in active form long enough for the expected biologic events to occur. Drug development involves assessment of ADME increasingly earlier in the discovery process, at a stage when considered compounds are numerous but access to the physical samples is limited. In that context, computer models constitute valid alternatives to experiments. Here, we present the new Swiss ADME web tool that gives free access to a pool of fast yet robust predictive models for physicochemical properties, pharmacokinetics, drug-likeness and medicinal chemistry

friendliness, among which in-house proficient methods such as the BOILED-Egg, iLOGP and Bioavailability Radar.

Swiss ADME studies of Manganese Complex

To be effective as a drug, a potent molecule must reach its target in the body in sufficient concentration, and stay there in a bioactive form long enough for the expected biologic events to occur. Drug development involves assessment of absorption, distribution, metabolism and excretion (ADME) increasingly earlier in the discovery process, at a stage when considered

compounds are numerous but access to the physical samples is limited. In that context, computer models constitute valid alternatives to experiments. Here, we present the new Swiss ADME web tool that gives free access to a pool of fast yet robust predictive models for physicochemical properties, pharmacokinetics, drug-likeness and medicinal chemistry friendliness, among which in-house proficient methods such as the BOILED-Egg, iLOGP and Bioavailability Radar.

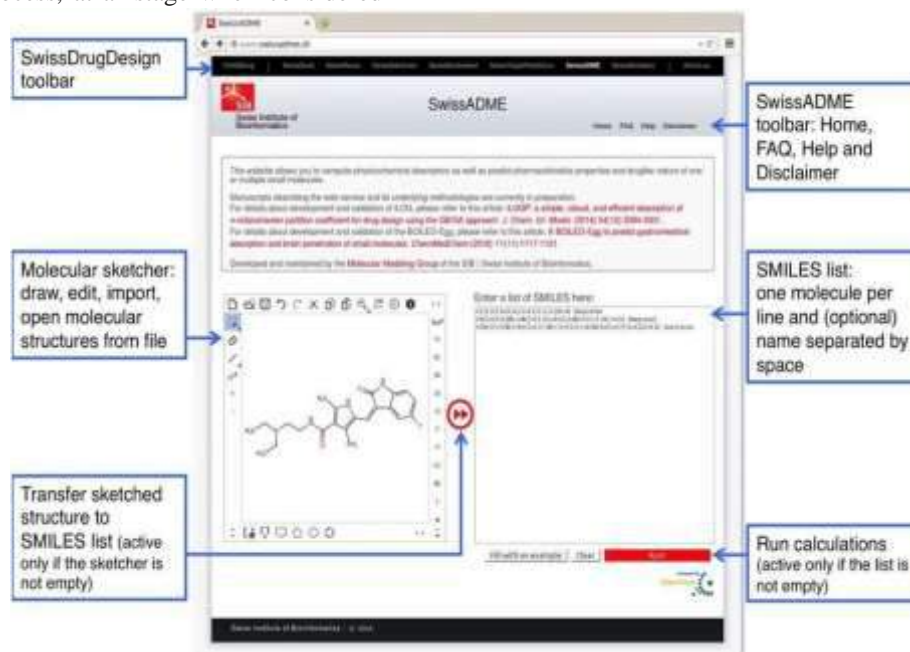


Figure 3: Web page allows the user to navigate within the different Swiss Drug Design tools

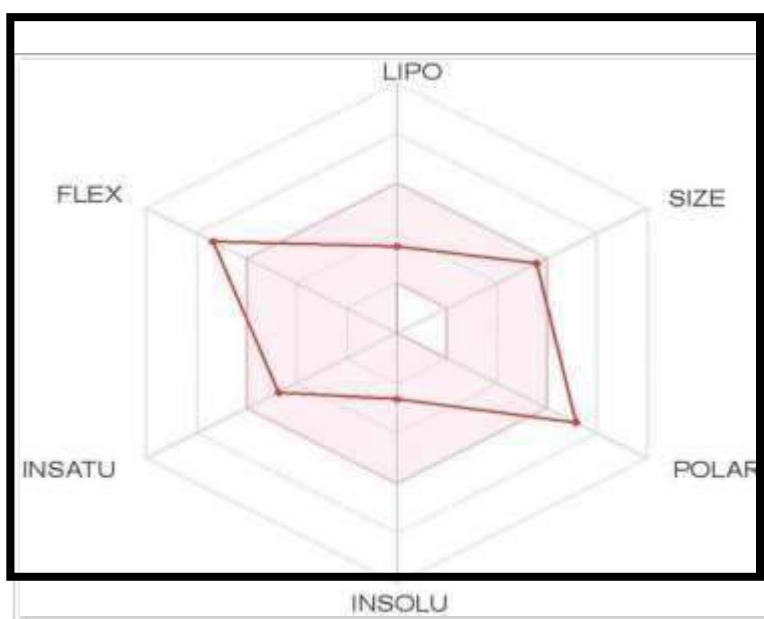


Figure 4: A physicochemical range on each axis was defined by descriptors adapted and depicted as a pink area in which the radar plot of the molecule has to fall entirely to be considered drug-like

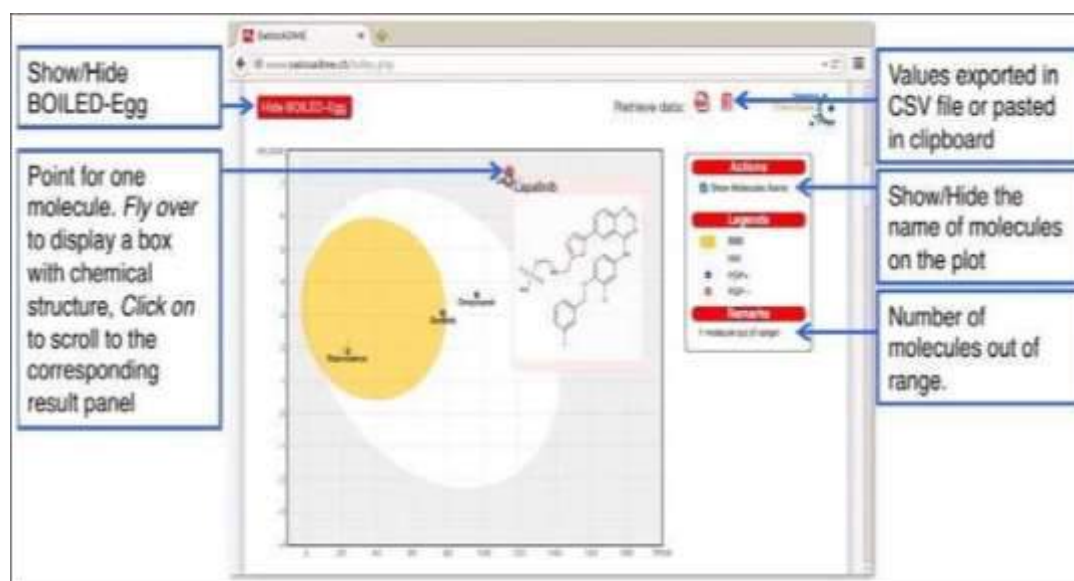


Figure 5: the “Show BOILED-Egg” red button appears below the sketcher to display the graphical output on the same page

Table.1 Tabular presentation of biophysical parameter of manganese metal complex

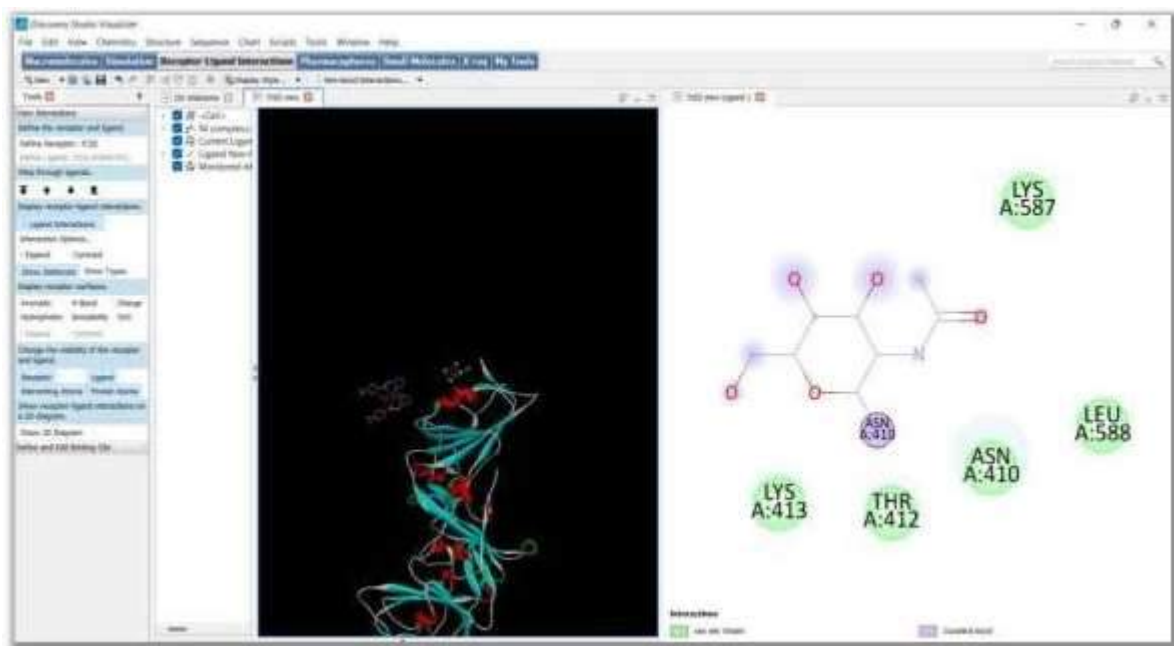
Physicochemical Properties	
Formula	C ₂₃ H ₂₅ MnN ₁₀ O ₈ S ₂
Molecular weight	688.57 g/mol
Num. heavy atoms	44
Num. arom. heavy atoms	24
Fraction Csp ³	0.04
Num. rotatable bonds	13
Num. H-bond acceptors	13
Num. H-bond donors	3
Molar Refractivity	163.13
TPSA	292.78 Å ²
Lipophilicity	
Log <i>P</i> _{o/w} (iLOGP)	0.00
Log <i>P</i> _{o/w} (XLOGP3)	2.64



Property	Model Name	Predicted Value	Unit
Absorption	Water solubility	-2.854	Numeric (log mol/L)
Absorption	Caco2 permeability	-0.017	Numeric (log Papp in 10 ⁻⁶ cm/s)
Absorption	Intestinal absorption (human)	8.034	Numeric (% Absorbed)
Absorption	Skin Permeability	-2.735	Numeric (log Kp)
Absorption	P-glycoprotein substrate	Yes	Categorical (Yes/No)
Absorption	P-glycoprotein I inhibitor	No	Categorical (Yes/No)
Absorption	P-glycoprotein II inhibitor	No	Categorical (Yes/No)
Distribution	VDss (human)	0.291	Numeric (log L/kg)
Distribution	Fraction unbound (human)	0.24	Numeric (Fu)
Distribution	BBB permeability	-2.204	Numeric (log BB)
Distribution	CNS permeability	-4.546	Numeric (log PS)
Metabolism	CYP2D6 substrate	No	Categorical (Yes/No)
Metabolism	CYP3A4 substrate	No	Categorical (Yes/No)
Metabolism	CYP1A2 inhibitor	No	Categorical (Yes/No)
Metabolism	CYP2C19 inhibitor	No	Categorical (Yes/No)
Metabolism	CYP2C9 inhibitor	No	Categorical (Yes/No)
Metabolism	CYP2D6 inhibitor	No	Categorical (Yes/No)
Metabolism	CYP3A4 inhibitor	No	Categorical (Yes/No)
Excretion	Total Clearance	2.321	Numeric (log ml/min/kg)
Excretion	Renal OCT2 substrate	No	Categorical (Yes/No)
Toxicity	AMES toxicity	No	Categorical (Yes/No)

Table no.2: Molecule properties:

Descriptor	Value
Molecular Weight	640.563
LogP	-0.711
#Rotatable Bonds	4
#Acceptors	15
#Donors	9
Surface Area	229.210



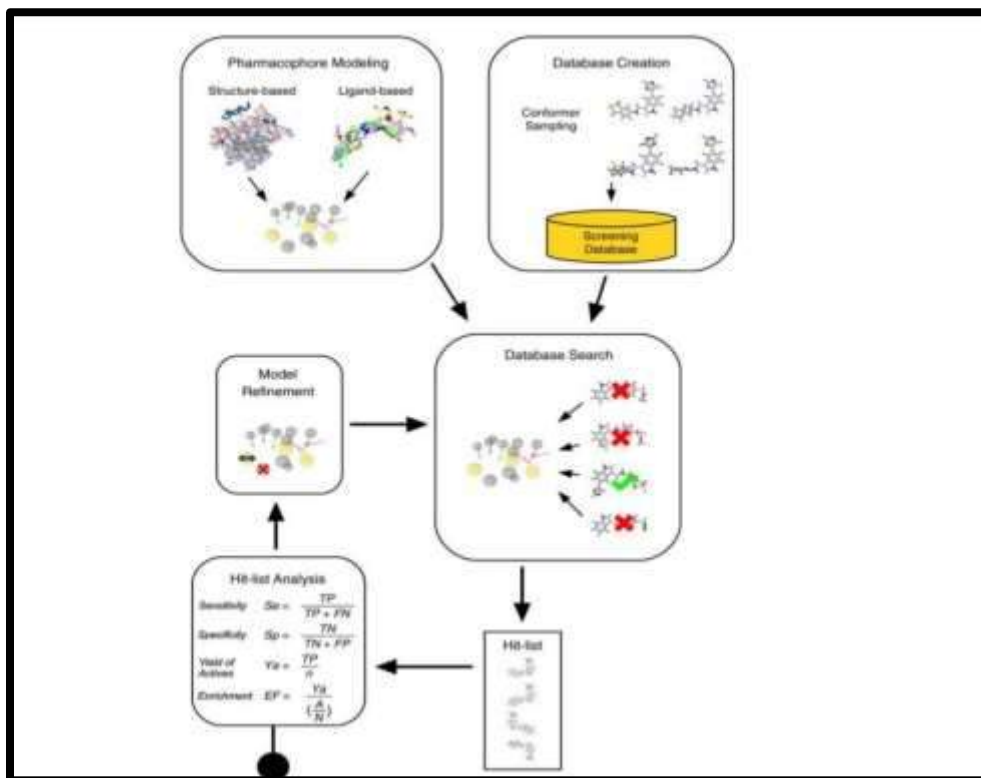
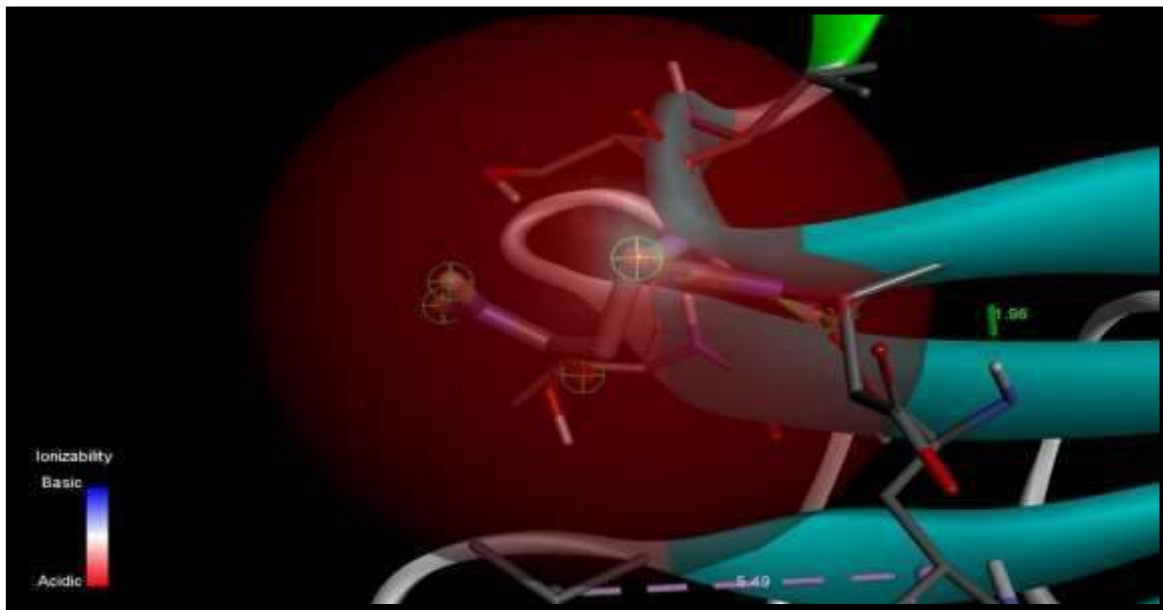


Fig.7 3D Pharmacophore-based virtual screening workflow.

MOLECULAR DOCKING RESULTS

The protein structure and a database of ligands serve as inputs to a docking program. The success of a docking program depends upon the two components such as search algorithm and scoring function. Searching Conformational Space The search space consists of all possible orientations and conformations of the protein paired with ligand. With present computing resources, it is impossible to exhaustively explore the search space this would enumerating all possible distortions of each molecule and all possible rotational and translational

orientations of the ligand relative to the protein at a given level of granularity. Most docking programs in use account for flexible ligand, and several are attempting to model a flexible protein receptor. Each "snapshot" of the pair is referred as a pose. Scoring Functions The scoring function takes a pose as input and returns a number indicating the likelihood that the pose represents a favorable binding interaction. Most scoring functions are physics based molecular mechanics force fields that estimate the energy of the pose; a low (negative) energy indicates stable system and thus a likely binding interaction.



Drug complex dock with receptor pdb file 7c02 having certain types of results showing various graphical representation. In docking results showing maximum binding affinity of drug complex.

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SYNTHESIS AND CHARACTERIZATION OF SOME SULPHA CONTAINING METAL COMPLEX AND THEIR BIOLOGICAL IMPLICATION

Mamta Choudhary, Dr. Kratika Daniel
Oriental University Indore,

ABSTRACT

Here, we present the new SwissADME web tool that gives free access to a pool of fast yet robust predictive models for physicochemical properties, pharmacokinetics, drug-likeness and medicinal chemistry friendliness, among which in-house proficient methods such as the BOILED-Egg, iLOGP and Bioavailability Radar. Easy efficient input and interpretation are ensured thanks to a user-friendly interface through the login-free website <http://www.swissadme.ch>. Specialists, but also nonexpert in cheminformatics or computational chemistry can predict rapidly key parameters for a collection of molecules to support their drug discovery endeavours.

KEYWORDS: SwissADME, *alpha* containing metal complex, pharmacokinetics, cheminformatics.

1. INTRODUCTION

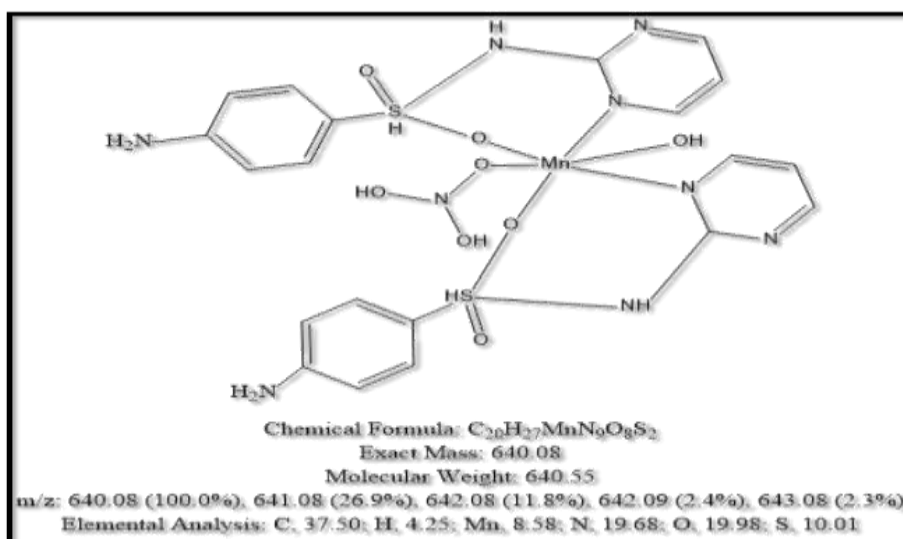
Drug development involves assessment of absorption, distribution, metabolism and excretion (ADME) increasingly earlier in the discovery process, at a stage when considered compounds are numerous but access to the physical samples is limited. In that context, computer models constitute valid alternatives to experiments. Here, we present the new SwissADME web tool that gives free access to a pool of fast yet robust predictive models for physicochemical properties, pharmacokinetics, drug-likeness and medicinal chemistry friendliness, among which in-house proficient methods such as the BOILED-Egg, iLOGP and Bioavailability Radar. During the time- and resource-consuming processes of drug discovery and development, a large number of molecular structures are evaluated according to very diverse parameters in order to steer the selection of which chemicals to synthesize, test and promote, with the final goal to identify those with the best chance to become an effective medicine for the patients. The

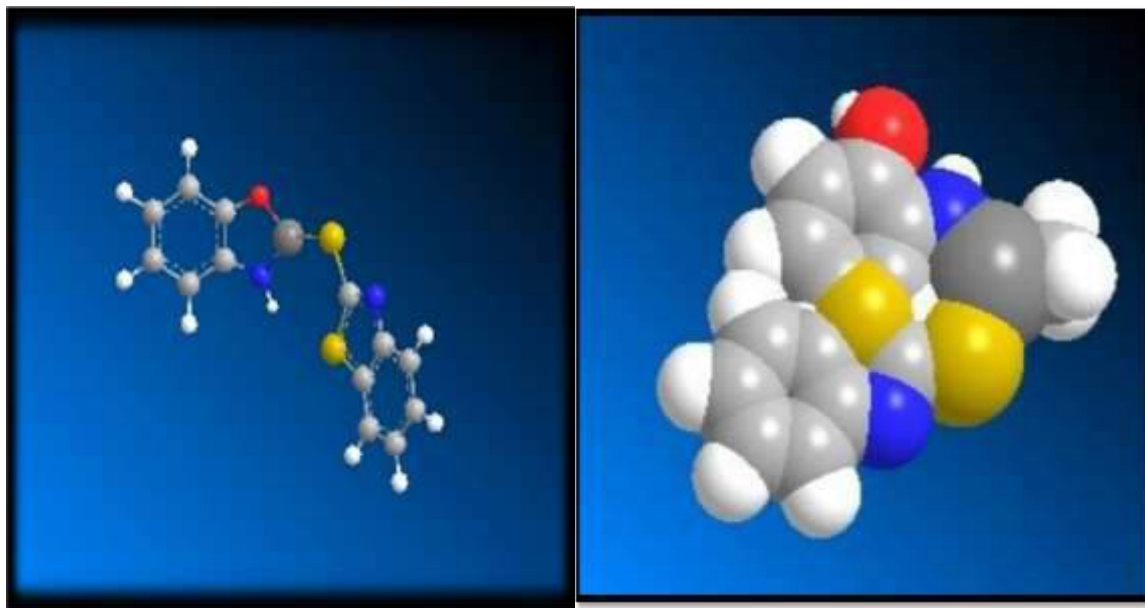
molecules must show high biological activity together with low toxicity. Equally important is the access to and concentration at the therapeutic target in the organism.

2. SYNTHESIS AND CHARACTERIZATION OF MN METAL WITH SULPHA DRUG COMPLEX

To a solution of Sulfadiazine (4-amino-N-(2-pyrimidinyl) benzenesulfonamide), (0.590 g, 2mmol) in 23 ml of methanol was treated with a methanolic solution of Manganese (II) nitrate (0.245 g, 1mmol). The reaction mixture was stirred on a magnetic stirrer. The light brown crystalline product formed after 7-8 hrs were collected by filtration. The solid was washed several times with methanol (50 mL), then with diethyl ether (30 mL) and finally dried in a vacuum. Mol. Formula (Complex 1),

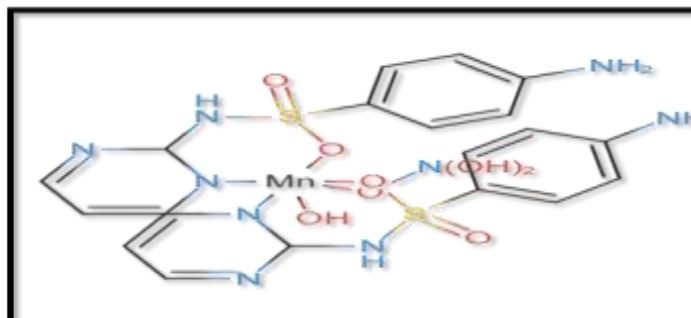
MnC₂₀H₂₀N₁₀S₂O₁₁: Mol. Wt. 700.93, M.P. 2760C, Yield: 0.192g. Colour: Pale brown.





- I. Predicted ADME properties of Mn containing(4-amino-N-(2- pyrimidinyl) benzenesulfonamide) through pkCSM

Molecule Depiction



Molecule Properties

Descriptor	Value		
Molecular Weight	640.563		
LogP	-0.711		
#Rotatable Bonds	4		
#Acceptors	15		
#Donors	9		
Surface Area	229.210		
Property	Model Name	Predicted Value	Unit
	Water solubility	-2.854	Numeric (log mol/L)

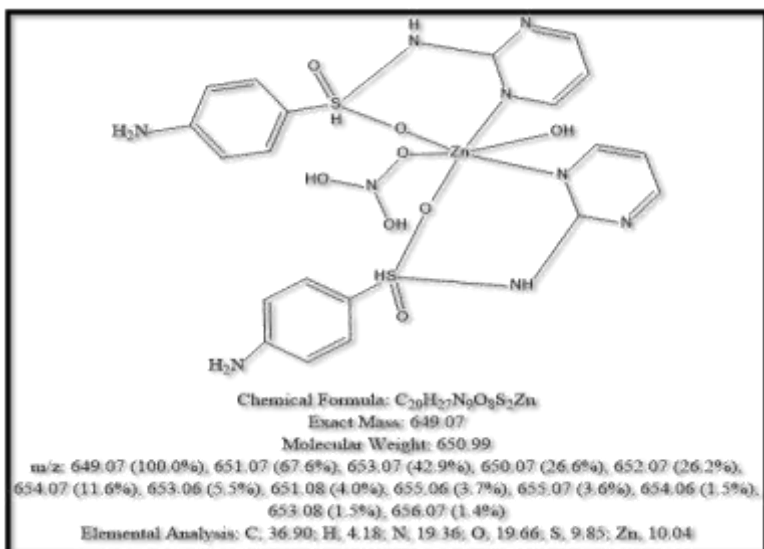


Absorption			
Absorption	Caco2 permeability	-0.017	Numeric (log Papp in 10 ⁻⁶ cm/s)
Absorption	Intestinal absorption (human)	8.034	Numeric (% Absorbed)
Absorption	Skin Permeability	-2.735	Numeric (log Kp)
Absorption	P-glycoprotein substrate	Yes	Categorical (Yes/No)
Absorption	P-glycoprotein I inhibitor	No	Categorical (Yes/No)
Absorption	P-glycoprotein II inhibitor	No	Categorical (Yes/No)
Distribution	VDss (human)	0.291	Numeric (log L/kg)
Distribution	Fraction unbound (human)	0.24	Numeric (Fu)
Distribution	BBB permeability	-2.204	Numeric (log BB)
Distribution	CNS permeability	-4.546	Numeric (log PS)
Metabolism	CYP2D6 substrate	No	Categorical (Yes/No)

3. SYNTHESIS AND CHARACTERIZATION OF ZN METAL WITH SULPHA DRUG COMPLEX

To a solution of Sulfadiazine (4-amino-N-(2-pyrimidinyl) benzenesulfonamide), (0.590 g, 2mmol) in 23 ml of methanol was treated with a methanolic solution of Zinc sulphate (0.245 g, 1mmol). The reaction mixture was stirred on a magnetic

stirrer. The light brown crystalline product formed after 7-8 hrs were collected by filtration. The solid was washed several times with methanol (50 mL), then with diethyl ether (30 mL) and finally dried in a vacuum. Mol. Formula (Complex 1), ZnC₂₀H₂₀N₁₀S₂O₁₁: Mol. Wt. 650.99, M.P. 2760C, Yield: 0.192g. Colour: White.



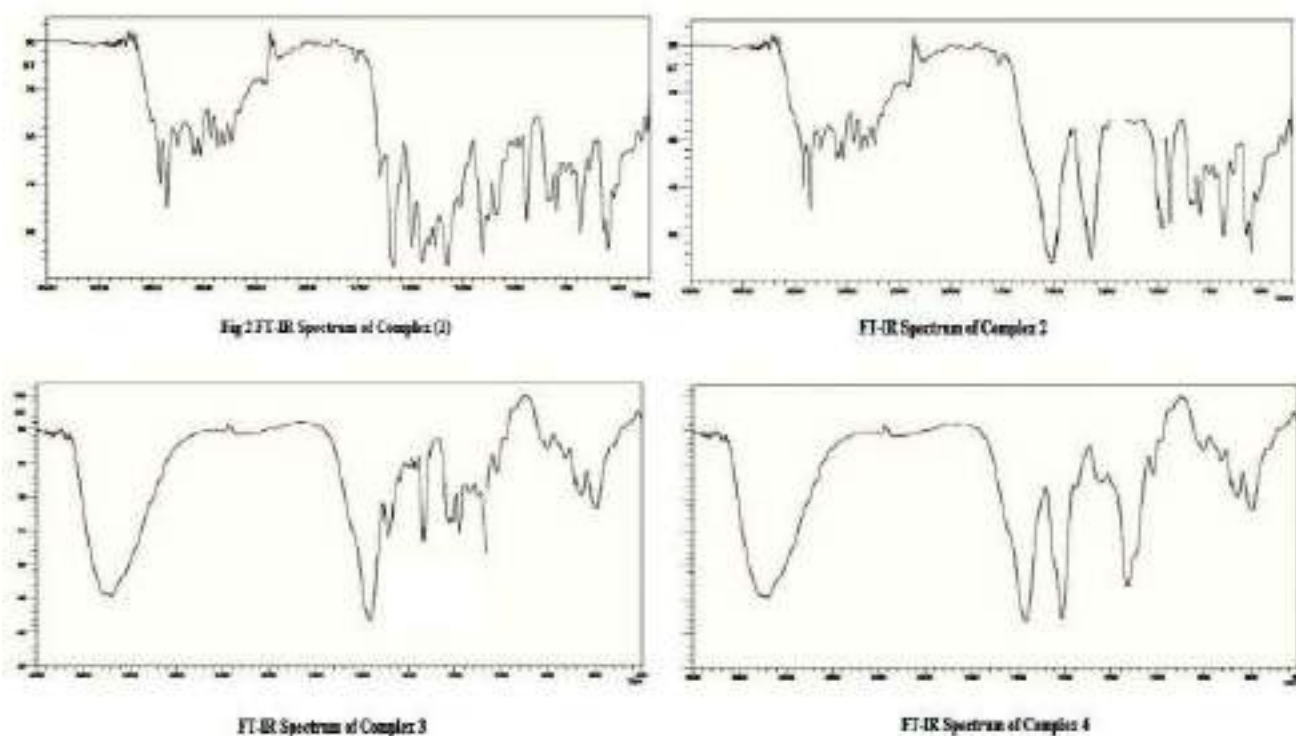
Descriptor		Value	
Molecular Weight		651.015	
LogP		-0.711	
Rotatable Bonds		4	
Acceptors		15	
Donors		9	
Surface Area		229.372	
Property	Model Name	Predicted Value	Unit
Absorption	Water solubility	-2.854	Numeric (log mol/L)
Absorption	Caco2 permeability	-0.017	Numeric (log Papp in 10-

Drug/Complexes Melting Point Conductivity

Table 3: Analytical data of Sulfadiazine and their Metal complexes

Drug/Complex	Melting Point	Conductivity
Sulfadiazine	253	0.88
MnC ₂₀ H ₂₀ N ₁₀ S ₂ O ₁₁	276	0.56
ZnC ₂₀ H ₂₀ N ₁₀ S ₂ O ₁₁	290	0.56
CoC ₂₀ H ₂₀ N ₁₀ S ₂ O ₁₁	281	0.39
CuC ₂₀ H ₂₀ N ₁₀ S ₂ O ₁₁	310	0.78
NiC ₂₀ H ₂₀ N ₁₀ S ₂ O ₁₁	347	0.32

FT-IR Spectra



Assignment	Sulphadiazine Cm-1	Complex - 1 Cm-1	Complex - 2 Cm-1	Complex - 3 Cm-1	Complex- 4 Cm-1	Complex- 5 Cm-1
N-Hof NH2	3425(vs)	3420	3410	3331	3419	3429
N-H(Sy)	3360	3355	3357	3355	3268	3362
SO2-N	1325	1342	1411	1370	1408	1350
Moiety						
SO2-N	1155	1126	1133	1120	1103	1128
S-N	945	973	1018	979	980	977
C=N	1652	1680	1610	1627	1611	1640

5. BIOLOGICAL EVALUATION

a. Antimicrobial studies

The invitro antimicrobial activity of sulfadiazine and its metal Complexes 1-5 was evaluated against gram positive, gram negative bacteria and fungi. The antimicrobial activities of all complexes were measured by measuring inhibition zone observed around the tested material. All metal complexes show increased zone of inhibition when compared with the ligand sulfadiazine against bacteria and fungi under study. Complexes 3, 4 and 5 were active against both gram positive (staphylococci) and gram negative (E.coli and pseudomonousauerginosa) bacteria, whereas Complexes 1 and 2

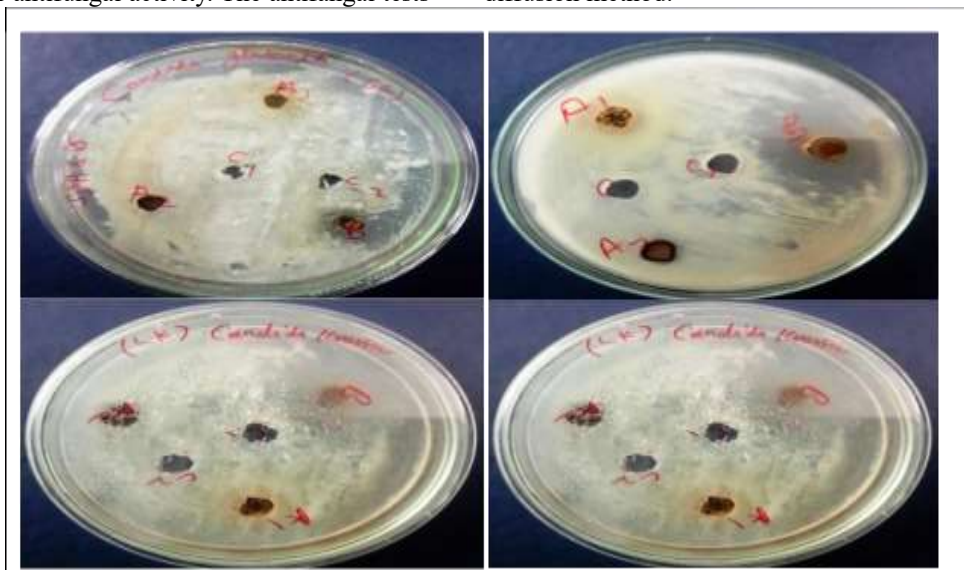
show lesser activity (a). Except Complex 3, Complexes 1, 2, 4 and 5 exhibit lethal antifungal activity towards Candida Albicans, whereas Complexes 3, 4 and 5 were found to be active against aspergillus flavus. On comparing the antibacterial and antifungal activities of the metal complexes, it is observed that at the concentration level of 10ppm, Complexes 3 and 4 gave promising results. It could be observed that the metal complexes have shown promising results compared to the ligand sulfadiazine drug. The increased inhibition activity of the metal complexes can be explained on the basis of Tweedy's Chelation theory[54].



b. Antifungal Activity

The compounds synthesized during the present investigation were screened for their antifungal activity. The antifungal tests

were conducted on four common microorganisms such as, *C.albicans*, *M.audouinii*, *A.niger*, and *T.mentagrophytes*. The antifungal activity of the compounds was assessed by disc-diffusion method.



Systematic diagram representing the Antifungal activity in various complexes

6. SUMMARY & CONCLUSION

The present work focuses on the synthesis, characterization and biological studies of transition metal complexes (1-5) containing sulfadiazine drug as ligands. The structural information obtained from these complexes is in agreement with the data reported in this paper based on the elemental and thermal analyses. The IR and thermal studies confirmed the presence of water molecule and nitrate ion in the coordination sphere of $[M(SD)_2(H_2O)(NO_3)] \cdot NO_3$. All the complexes have octahedral coordination in which the metal ions are coordinated to sulfadiazine molecule as bidentate ligand, water molecule and nitrate ion as monodentate ligands. The probable structure of metal complexes were shown below in chart-1. Cyclic voltammetry studies of the metal complexes (1,3-5) and complex 2 revealed the irreversible and quasi-reversible one electron transfer redox processes respectively. Antimicrobial study reveals that metal complexes have more biological activity than the free ligand. The antimicrobial activity of sulfadiazine drug enhanced upon complexation with metal ions particularly for Copper(II) and Zinc(II) ion.

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CONTEMPORARY ISSUES OF PHYSICAL DIMENSIONS ON GEOGRAPHICAL LOCATIONS: AN OVERVIEW

Dr. Upendra Abhimanyu Pathade

K.K.W Arts, Science and Commerce College, Pimpalgaon B. Tal. Niphad Dist. Nashik (M.S)

ABSTRACT

Geography is a discipline concerned with understanding the spatial dimensions of environmental and social processes. Geographical studies understanding the interacting system comprising all humanity and its natural environment on the surface of the Earth. Cultural geographers have been drawn much more into theories of language and studies of signifiers and symbols. Humanistic geography sought to reassert the importance of people and raise them from their status as 'pale entrepreneurial figures'. It introduced a new focus on subjective values and qualitative meanings that affected people's behavior. It proposed the importance of the image and the perceptions of geographical space that people held as mental maps, shaped by their circumstances and experiences. Present study carried out geographer's view of space with location and its impact on human behavior or commodity.

KEYWORDS: Geography, Spatial dimensions, Humanity, Natural Environment, Geographical Space

A. INTRODUCTION

The natural environment has always been an integral part of geography, and physical geography can be defined as its study. The geo-ecosphere can be subdivided into six component spheres, each of which has attracted its own specialist physical geographers. The topography of the Earth's land surface can be seen as the focus for geomorphology. The integration of geography as a single discipline, which was explicit and strong through the earlier decades of the 20th century, has become less so in modern times. Physical and human geographers tend to follow different agendas and refer to different academic literature due to greater specialization. Physical geographers investigate not only variation from place to place in the various spheres but also the interactions between the different spheres and their changes through time.

Although physical geography is defined by its emphasis on spatial patterns and spatial processes in the geo-ecosphere, human activity also plays a major role. The increasing human impact on the natural environment makes it more challenging to differentiate a natural geo-ecosphere from the anthroposphere. Most of the Earth's surface and its component spheres are impacted by both natural and human disturbances of various types. Agriculture now regularly affects around 45% of the Earth's terrestrial surface, forestry some 10%, transportation 5%, urban development 3%, and mineral extraction 1%. All of physical Geography is concerned with human environmental impacts, or that there is a physical environmental basis to all of human geography, but that the nature of the interaction must always be considered. The earliest geographies were often

descriptions of lesser-known parts of the world to inform a 'home population'.

Herodotus, for example, wrote about the different places in the Roman world, of their natural environments and their cultural occupation. In physical geography, global processes, such as climate change and the carbon cycle, including the impact of 'greenhouse gas' emissions on global warming, are increasingly setting the research agenda. Rapid communication, corporate business, and international agencies are paving the way for a new global human geography. Present study carried out the contributions of geographers and their enhancement for locational study.

A. HYPOTHESIS

Boundaries are drawn by examining human characteristics, a process known as regional geography. One fundamental concept of geography is from a long time ago since mapping in geographic space has a lengthy history. Philosophers of Greece, historians of Rome, and Sumerian cartographers all wrote on fundamental ideas related to geography. Geographical conceptions were not unified into a single subject area, despite their empirical matter-of-factness making them a noticeable component of the expansion of knowledge.

B. OBJECTIVES

This study report aims to focus on the following goals:

1. To understand the emergence of geographical conceptions of places.
2. To analyze fundamental ideas
3. To understand what a geo-ecosphere is



4. To understand space's new direction
5. To understand the effects of humans from the Holocene to the Anthropocene.

C. METHODOLOGY

Various sources, including published and unpublished works, have been consulted for the data and information. Assessments of secondary data for various time periods. Results were gathered, processed, and summarized to provide decision makers with an effective assessment of educational effectiveness through planning and designing.

D. SIGNIFICANCE OF THE STUDY

The reporting and portrayal of the Earth's surface in this research has huge implications for the history of science and is a significant contribution to the field of geographical exploration. Historically speaking, there hasn't been much difference between the advancement of geography and science as a whole.

DESCRIPTION OF STUDY

Today, geography affects us in many different ways; the phrase "geography is everywhere" aims to capture the unique aspect of geography. Whatever is stated in terms of latitude and longitude, a spatial grid-referencing system, or just the distance from home, school, or work, it all has a location on Earth. We travel across the surface of the Earth, going from one geographic area to another. Some of our travels are short and regular, like the daily commute to work or school, while others are longer and less frequent, like trips on holiday or visits to distant relatives. Writers such as Sumerian cartographers, Roman historians, and Greek philosophers. Geographical knowledge, with its factual objectivity, noticeable contribution to the expansion of knowledge, but its different ideas were not combined to form a single, cohesive theme. A subfield of geography that focuses on (a) characterizing, explaining, and analyzing the distribution of the environment's biogeochemical components; (b) interpreting environmental systems at all spatial and temporal scales at the interface of the lithosphere, atmosphere, biosphere, and society; and (c) figuring out how resilient these systems are to disturbances, including human activity.

Geographers Contextual Studies-

- a) The first Professor of Geography at Oxford, Hallock Mackinder, created his "Geographical experiments," which combined the environmental and social sciences.
- b) Karl Ritter and Alexander Von Humboldt highlighting the characteristics of the Earth's surface that produced the natural landscape and the identification of global regions. As he traveled, Humboldt noted variations in pressure, temperature, the earth's magnetic field, and the distribution of plants across different geographic locations.
- c) French geographers had a keen interest in areas and cultural landscapes that represented customs and lifestyles.

- d) In order to account for altering the earth's surfaces, Charles Darwin developed statics.
- e) Thomas Huxley (1877) explored the idea of causal relationships between the natural elements of the environment within an especially referenced context—the Thames basin in South Eastern England.
- f) Regarding the "Cycle of Erosion," William Morris Davis The reaction of landscapes to predicted future environmental change, past rates of landscape change, and how they adapt to shifting conditions are all given far more weight in contemporary theories of landscape evolution.
- g) According to Christaller, goods customers in a market town would travel to the closest center that provided that specific product in order to circumvent distance restrictions. The simplest and most mechanistic explanation for human behavior was his nearest center hypothesis.

Geographies 'Core' Concept

Since geography has always been a part of space analysis, this serves as the first fundamental idea. Geographical space includes direction that completes the interrelationships of various locations on the Earth's surface, distances calculated in various ways, and position, or where we are on the surface in reference to geographical coordinates. The three fundamental ideas of geography are environment, location, and space. The combination of spatial variation over the surface of the Earth with the unique characteristics of places and the interactions between people and their environments constitutes the essence of geography (shaded). All three have coexisted and form the basis of geography, however at different points in the field's history, one or more of the fundamental ideas may have received greater attention than the others.

Modern Geographical Exploration

Thus, although different from the times of Christopher Columbus, David Livingstone, or Robert Falcon Scott, modern geographic exploration and discovery are no less significant. Still, there are expeditions like the ones conducted by the Royal Geographical Society to the Wahiba Sands of the Sultanate of Oman in the 1980s, the Mulu rainforest of Sarawak in the 1970s, and the Mato Grosso of Brazil in the 1960s. Although their exploratory goal is still there, they are now frequently referred to as "research projects." For instance, the Wahiba Sands Project sought to study the sand sea of the Wahiba Sands as a whole geoecosystem, encompassing the sands, biological resources, and human population. Maybe the primary distinction between it and the conventional approach was that it resulted.

Human Impacts – From Holocene to Anthropocene

Beginning roughly 5,000 years ago, during the mid-Holocene, the biosphere, pedosphere, hydrosphere, and troposphere underwent notable changes in terms of their extent, intensity, and rate of change. In 2000, "Paul J. Crutzen" and "Eugene Stoermer" coined



the word "Anthropocene" to refer to a new geological period in which human influences on Earth's geo-ecology predominate. About the last 200 years of the Holocene are covered by it. The number of humans on Earth has climbed to over 6 billion throughout the Anthropocene, and there has never been more extensive human exploitation of the planet's resources. Today, more synthetic nitrogen is given to soils each year as fertilizer than is organically fixed in soils. The amount of sulfur dioxide released into the atmosphere by burning fossil fuels and tropical forest fires has increased to twice the amount that occurs naturally. In the previous 200 years, atmospheric concentrations of two significant greenhouse gases—methane and carbon dioxide—have risen by roughly 150% and 30%, respectively.

E. CONCLUSION

The study of geography has enormous educational value since it equips graduates with the versatile knowledge and broad range of abilities (numeracy, literacy, and graphicacy) needed for a wide range of professions. An examination of the natural and human phenomena in space. Physical characteristics are correlated with physical dimensions for categorization or distinction. There are clear potentials in geography related to environmental concerns. First, there are the advantages that come with having a thorough understanding of the biophysical environment. Physical geographers must reconstruct, measure, monitor, model, map, and predict patterns, processes, and changes in the biophysical environment in the past, present, and future. Furthermore, there exist concomitant prospects for human geographers to investigate the economic, political, social, and cultural aspects of the human environment and the evolution of the human environment.

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HERBAL LOTION: A NATURAL SKINCARE SOLUTION

Kadam Vaishnavi, Vishal Rasve, Dr.Sanjay Garje , Dr.Gaffar Sayyed

ABSTRACT

Herbal lotions have gained popularity in recent years due to their perceived natural and safe properties compared to synthetic skincare products. This abstract explores the formulation, benefits, and efficacy of herbal lotions in skincare routines. It discusses the key ingredients commonly found in herbal lotions, such as aloe vera, chamomile, and lavender, known for their soothing and nourishing properties. Furthermore, it examines the potential benefits of herbal lotions, including hydration, inflammation reduction, and antioxidant protection.

KEYWORDS: Herbal Cosmetic, Herbal Lotion, Aloe Vera, honey, comphor, Neem, almond, carrot

INTRODUCTION

Herbal cosmetics are formulated using permissible cosmetic ingredients with one or more herbal ingredients to provide defined cosmetic benefits. Lotions, in this context, are liquid preparations for external application without friction, typically applied directly to the skin with the help of an absorbent material like cotton wool or gauze. The rising demand for natural products and extracts has increased the popularity of herbal cosmetics among consumers seeking natural alternatives in their skincare routines.

Enhancing beautification involves using lotions not only for cleansing and removing oily secretions but also for improving blood circulation, providing emolliency, extending astringency, enhancing skin freshness, bleaching, and offering medicinal properties. Herbal lotions, typically applied without friction, benefit from finely split insoluble matter, as particles approaching colloidal dimensions are gentler on inflamed areas and more effective on infected surfaces. Various ingredients can be incorporated into lotions to enhance dispersion and emphasize cooling, soothing, drying, or protective properties.

Cosmetics play a crucial role in addressing skin concerns such as wrinkles, acne, and oil control. Formulations targeting different skin ailments, including skin protection, sunscreen, anti-acne, anti-wrinkle, and anti-aging, utilize diverse materials to achieve desired effects. This study focuses on herbal plants used in herbal lotions, exploring their benefits and activities in cosmetics preparation.

In traditional Ayurveda, herbs and plants have long been employed to treat various diseases. Skin lotions serve to protect the skin against different environmental factors, forming a vital aspect of skincare routines aimed at maintaining skin health and beauty.

Lotion benefits for skincare:

1. Rehydration: They help rehydrate dry skin, making it smoother and softer.
2. Targeted Treatment: Herbal lotions can replenish extra dry or rough spots on the skin, providing targeted treatment.

3. Pleasant Sensation: They feel and smell good, enhancing the overall sensory experience.
4. Relaxation: Herbal lotions can contribute to relaxation, promoting a sense of well-being during use.
5. Skin Softening: They soften the roughest parts of the body, such as elbows and knees.
6. Enhanced Glow: Herbal lotions can make the skin glow, giving it a healthier appearance.

Advantages of herbal lotion

1. Ease of Manufacture: They are easy to manufacture, making them accessible for both producers and consumers.
2. Availability: Herbal lotions are readily available and can be found in a wide variety of plants, catering to diverse preferences and needs.
3. Non-allergenic: They typically do not provoke allergic reactions and have minimal to no negative side effects, making them suitable for sensitive skin types.
4. Compatibility: Herbal lotions easily integrate with both skin and hair care routines, offering versatility in usage.
5. Pharmacological Effects: Extracts from plants in herbal lotions retain their pharmacological properties, providing additional benefits beyond skincare.

Use of ingredients in lotion:

1. Aloe Vera
2. Lemon
3. Almond
4. Honey
5. Sandalwood
6. Termeric
7. Comphor

1. Aloe vera

Aloe vera indeed has numerous benefits for the skin. Its stimulation of fibroblasts leads to increased collagen and elastin production, making the skin more elastic and reducing wrinkles. Additionally, its cohesive effect on epidermal cells softens the skin. It belongs to the liliaceae family and is commonly used in cosmetics for lotions due to its healing



impact on skin wounds, moisturizing properties, and antimicrobial effects. Its cooling action can also help prevent sunburn. Overall, aloe vera serves as a moisturizer to treat or prevent various skin issues such as dryness, roughness, itchiness, and minor irritations.



Lemon: Citrus lemon is too known as a lemon. It belong to the family Rutaceae.

Kingdom –Plantae

Family –Rutaceae

Genus –Citrus

Species -C. limon

Uses of Lemon

It have a antifungal property
It helps in the skin lightening



Almond
Helps to achieve soft and smooth skin.
Protects our Skin from Future Damage and keeps it healthy.

Reduce the dry and rough skin, making it Bright and Clear.
Honey



Honey
Uses
Gloning skin
Great moisturizer
Antibacteria



Sandalwood
It's widely used in skincare and beauty products due to its effectiveness in treating various skin issues such as blemishes, rashes, and acne. Its cooling properties also help in removing tan and dullness from the skin. Additionally, sandalwood acts as an astringent, deodorant, disinfectant, stimulant, and tonic, making it beneficial for skin care, soothing inflammation,

softening the skin, and improving blood circulation. It's particularly useful for oily skin as it has astringent properties.



Termeric

is indeed utilized in skincare and cosmetics for its natural coloring properties. It's often combined with milk for internal consumption and applied topically as a lotion in Indian traditions to enhance skin beauty. Additionally, it's believed to impart a glow to the skin and protect against harmful microorganisms when applied to the bride and groom's skin before wedding ceremonies in parts of South Asia. Furthermore, curcumin has been studied for its ability to inhibit unwanted hair growth on female skin, including limiting the growth of facial hair.



Comphor

Camphor indeed possesses a fresh, clean, and piercing aroma. Its cooling effect on the skin can help reduce inflammatory conditions, making it beneficial for oily skin types, acne, burns, and ulcers. Additionally, cold compresses with camphor can be effective for treating bruises and sprai



Ideal properties of Herbal Lotion:

1. They should give cooling effect on application
2. They should be free from particles.
3. They should produce emollient effect.
4. They should not cause any skin toxicity.
5. They should be compatible with skin pH.

Marketed Products





Herbal cosmetics offer a natural alternative, providing nutrients and antioxidants for healthy skin without adverse reactions. This research suggests that herbal lotions can help avoid skin problems.

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CONCLUSION

The present work focus on the potential of herbal extracts from cosmetic purposes. The uses of cosmetic have been increased in many folds in personal care system.



FREIBERG INFRACTION SCOPING REVIEW

**Bryam Esteban Coello García¹, Sebastián Cardoso Gives², Lucy Paulette Zumba Ríos³,
José Javier Ordóñez Cabrera⁴, Jessica Vanessa Sibri Lazo⁵,
Andrea Estefania Lopez San Martín⁶, Leidy Mariela Ordóñez León⁷,
Carolina de la Nube Chasi Inga⁸, Tatiana Katherine Flores Ochoa⁹,
Katherine Cecibel Barzola Suárez¹⁰.**

¹Postgraduate Doctor in Orthopedics and Traumatology at Faculdade de Ciências Médicas Minas Gerais. Belo Horizonte - Brasil. ORCID <https://orcid.org/0000-0003-2497-0274>

²General Practitioner at "Corporación Municipal para la Educación y Salud de Melipilla" Melipilla, Región Metropolitana de Santiago, Chile ORCID <https://orcid.org/0009-0003-2002-2477>

³General Practitioner, Faculty of Medical Sciences, Universidad Católica de Cuenca. Azuay- Ecuador ORCID <https://orcid.org/0000-0003-1868-4167>

⁴General Practitioner at "Hospital Básico Misereor Gualaquiza". Morona Santiago- Ecuador ORCID <https://orcid.org/0000-0003-2146-4739>

⁵General Practitioner at "Clínica Latino", Faculty of Medical Sciences, Universidad de Cuenca. Azuay- Ecuador ORCID <https://orcid.org/0000-0003-1657-698X>

⁶General Practitioner at "Clínica Hospital Niño Josué", Faculty of Medical Sciences, Universidad Estatal de Guayaquil. Ecuador ORCID <https://orcid.org/0009-0009-9133-4359>

⁷General Practitioner at "SOLCA Machala", faculty of Medical Sciences, Universidad Católica de Cuenca. Ecuador ORCID <https://orcid.org/>

⁸General Practitioner at "Hospital Aida León de Rodríguez Lara", faculty of Medical Sciences, Universidad de Cuenca. Azuay- Ecuador ORCID <https://orcid.org/0000-0003-3123-4718>

⁹General Practitioner at "Hospital Misereor Ministerio de Salud Pública". Gualaquiza, Morona Santiago- Ecuador ORCID <https://orcid.org/0009-0003-9338-4989>

¹⁰General Practitioner at "Hospital Misereor Ministerio de Salud Pública". Gualaquiza, Morona Santiago- Ecuador. ORCID <https://orcid.org/0009-0004-3264-3251>

Corresponding Author: Bryam Esteban Coello García **Address:** Rua Tiradentes 266. Campo Belo. Minas Gerais. Brasil **Postal Code:** 37270-000

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SUMMARY

Introduction: Freiberg's infringement is an osteochondrosis of the metatarsal bone heads, primarily of the second or third metatarsal. It is usually a chronic and progressive process that gradually causes pain and loss of normal function of the metatarsophalangeal joint. Objective: to detail the current information related to Freiberg's disease, etiology, epidemiology, pathophysiology, clinical history, evaluation, differential diagnosis, treatment, prognosis, complications and postoperative period.

Methodology: a total of 32 articles were analyzed in this review, including review and original articles, as well as clinical cases, of which 26 bibliographies were used because the other articles were not relevant for this study. The sources of information were PubMed, Google Scholar and Cochrane; the terms used to search for information in Spanish, Portuguese and English were: Freiberg infraction, Freiberg disease, metatarsalgia, osteochondrosis.

Results: Freiberg's disease is the only osteochondrosis that is more frequent in women with a ratio of 5:1 in relation to men. Bilateral involvement is reported less than 10% of the time. The involvement primarily involves the second metatarsal in 68% of cases, the third metatarsal in 27% and the fourth metatarsal in 3% and the fifth is rarely affected.



Conclusions: Freiberg disease is an osteochondrosis of the metatarsal bone heads, commonly found in second or third metatarsals and common in women and athletes. Osteochondroses are a group of disorders resulting from a lesion of the epiphysis that modifies endochondral ossification and generates irregularity in the articular surface. The pathophysiology of Freiberg's disease is multifactorial. Affected individuals present with pain and swelling located in the affected metatarsal head area of the forefoot. Diagnosis can be confirmed by physical examination and radiographs. Conservative treatment should first be attempted to relieve symptoms and decrease epiphyseal deformity to restrict progression to arthritis regardless of the severity of the disease. There are a number of surgical techniques described for the treatment of Freiberg's disease if conservative treatment fails.

Key words: bone infraction, Freiberg's disease, metatarsalgia, osteochondrosis, metatarsals.

INTRODUCTION

Freiberg's disease is caused by a bony infraction of the metatarsal head; the exact etiology is still uncertain. Freiberg's infringement is an osteochondrosis of the metatarsal bone heads, primarily of the second or third metatarsal. The pathology is more common in women and athletes. Since its description in 1914 by Freiberg, several classifications and methods of treatment of the pathology have been created. Although the head of the second metatarsal is the most frequently involved, Freiberg's disease can attack any of the five metatarsal heads. It is usually a chronic, progressive process that gradually leads to pain and loss of normal function of the metatarsophalangeal joint. Classifications are usually based on vascular influence and radiographs. The objectives of management are early identification to indicate and place the affected individual in conservative therapy to achieve healing and prevent progression to advanced arthritis(1-6).

The following are some important concepts.

Osteoarthritis (OA) is a degenerative disease of the articular cartilage, a chronic inflammatory arthropathy that affects articular elements such as subchondral bone, synovial membrane, hyaline cartilage and others. Osteochondritis is a variety of disorders of the epiphysis and apophysis, which have in common that they begin with an incomplete interruption of their blood circulation. Osteochondrosis is a degeneration or necrosis of an ossification center followed by its regeneration, especially in children. Osteonecrosis are lesions generated by a complete and definitive interruption of the blood supply, an example could be avascular necrosis of the lunate bone, also known as lunatomalacia. Ischemia or bone infarction is the arrest of arterial circulation(7-9).

The etiology, epidemiology, pathophysiology, clinical history, evaluation, differential diagnosis, treatment, prognosis, complications and postoperative course of Freiberg's disease are described below.

METHODOLOGY

A total of 32 articles were analyzed in this review, including review and original articles, as well as cases and clinical trials, of which 26 bibliographies were used because the information collected was not sufficiently important to be included in this study. The sources of information were Cochrane, PubMed and Google Scholar; the terms used to search for information in

Spanish, Portuguese and English were: Freiberg infraction, Freiberg disease, metatarsalgia, osteochondrosis.

The choice of bibliography exposes elements related to Freiberg's disease, etiology, epidemiology, pathophysiology, clinical history, evaluation, differential diagnosis, treatment, prognosis, complications and postoperative period.

DEVELOPMENT

Etiology

Freiberg's disease is an osteochondrosis involving the metatarsal heads. Osteochondroses are a group of disorders resulting from an epiphyseal lesion that modifies endochondral ossification and generates irregularity in the articular surface. There are multiple potential explanations for Freiberg's disease, however, the most widely accepted are microtrauma, vascular involvement and systemic disorders. Some systemic conditions linked to the development of Freiberg's disease are systemic lupus erythematosus, hypercoagulability and diabetes mellitus. In addition, a genetic component is thought to be involved, as the condition has been reported in identical twins.

There are now studies describing Freiberg's infraction as the first clinical sign of Sneddon's syndrome, which is an unusual vasculopathy associated with livedo racemosa and various ischemic strokes(10-12).

Epidemiology

Freiberg's disease is the only osteochondrosis that is more frequent in women with a 5:1 ratio in relation to men. Bilateral involvement is reported less than 10% of the time. The involvement primarily involves the second metatarsal in 68% of cases, the third metatarsal in 27% and the fourth metatarsal in 3% and the fifth metatarsal is rarely affected. The dominant foot is affected 36% of the time. The age of presentation is between 11 and 17 years, however it can be seen in women in the seventh decade(5,10,13,14).

Pathophysiology

The pathophysiology is multifactorial and can be caused by trauma, alteration of the biomechanics of the foot, systemic disorders and arterial insufficiency. The pathologic origin of articular osteochondrosis originates in 3 steps, as described by Omer:

Intra-articular and periarticular soft tissues become swollen and congested.

There is irregularity of the epiphyseal contour.

Replacement of necrotic tissue(3,4,15).

Clinical History

Patients present with pain and swelling located in the area of the affected metatarsal head of the forefoot. They report a sensation of walking on something hard, such as a stone. The onset of symptoms is usually gradual, with no specific acute episode. Sufferers describe that their symptoms are worse when walking, particularly when barefoot or wearing shoes with high heels. A short course of steroids following foot trauma may be associated with an atypical presentation of acute Freiberg's disease(14).

The involved toe may be swollen on physical examination, usually being more evident near the metatarsophalangeal joint. Elevation (dorsiflexion) of the toe may be appreciated. In more chronic or advanced stages, sagittal or coronal plane malalignment may form, such as hammertoes or cruciate deformities. Range of motion at the metatarsophalangeal joint is decreased and crepitus may be palpable. A callus may develop under the head of the involved metatarsal on the plantar fat pad. The Lachman digital test can be performed, which assesses joint instability and is divided according to the amount of dorsal translation of the proximal phalanx in relation to the metatarsal head and in comparison to the contralateral foot. The test is abnormal when the joint is dorsally subluxed, which will usually reproduce the pain of the affected individual(16-18).

Figure 1. Anteroposterior and oblique views of the metatarsophalangeal joint, radiograph of the right foot showed a flattened and sclerotic head of the second metatarsal, as well as an irregularity of the articular surface.



Source: Inokuchi R, Iwashita K, Jujo Y, Takao M. Freiberg's disease(19).

Evaluation

The diagnosis of Freiberg's disease can be confirmed by physical examination and radiographs. On radiographs of the loaded foot, mild changes may be found in the early stages of the presentation of the pathology (noted by a widening of the joint space due to effusion) that may be shown 3 to 6 weeks after the onset of

symptoms. As the pathology progresses, bone density in the subchondral region increases and the metatarsal head flattens. Oblique radiographs allow a better evaluation of the dorsal aspect of the metatarsal head, achieving a full assessment in identifying flattening of the metatarsal head in subtle cases. As the disease progresses, later findings include central joint depression, free



bodies and metatarsal head sclerosis. In addition, reactive thickening of the metatarsal diaphysis may be found as a late response to abnormal stress. The final stages of this disease show joint space narrowing and arthrosis(4,14,20,21).

Although usually described intraoperatively by structural changes seen in the metatarsal head by Smillie, these features are radiographically evident and have been adapted non-operatively. The staging system presents 5 stages:

1) Cleft fracture in the ischemic epiphysis, the cancellous bone in the fracture appears sclerotic. Compared to the adjacent metaphysis, the epiphysis shows the absence of blood supply.

2) Absorption of the cancellous bone occurs proximally, the central cartilage sinks into the head while the margins and plantar cartilage remain intact. This results in an altered contour of the articular surface.

3) Further absorption occurs and the central portion sinks deeper, forming larger bilateral projections. The plantar cartilage remains intact.

4) The central portion remains sinking, so the plantar hinge gives way. The peripheral projections fracture and fold over the central portion. The anatomy cannot be restored.

5) There is osteoarthritis with flattening and deformity of the metatarsal head. Only the plantar portion of the metatarsal cartilage preserves the original contour of the head. The free bodies are reduced in size and the metatarsal shaft is thickened and dense.

MRI can also be used to assess these individuals and can aid in the early detection of Freiberg's disease when radiographs are normal. MRI will show alterations in the marrow signal with an edema-like signal located in the head of the affected metatarsal. As the disease progresses, osteonecrosis-like alterations are generated and seen in other anatomic parts. Alterations include a hypointense signal on T1-weighted images and mixed hypointense and hyperintense signals on T2-weighted images with flattening of the involved metatarsal head, best seen on sagittal images. Nuclear medicine bone scans are useful to assess at early presentation or when there are no appreciable changes on radiographs. The first changes on bone scans are a photopenic surface surrounded by increased radiotracer uptake and a pattern typical of early avascular necrosis. In later stages, they will be diffuse hyperactivity secondary to revascularization, bone repair and progression to arthritic involvement of the metatarsophalangeal joint(14,20,21).

Treatment

Conservative treatment should be attempted initially to relieve symptoms and decrease epiphyseal deformity to restrict progression to arthritis regardless of the severity of the disease. Activity modifications, protected weight-bearing such as a stiff-soled shoe, fracture boot or cast, in addition to modifications in footwear use and anti-inflammatory medications are used in this early treatment. Modifications in footwear use can be with metatarsal bar orthoses created to relieve the painful metatarsal head, which has been shown to help sufferers respond without long-term disability. The use of bisphosphonates is a new

alternative that shows promising results. A single injection of 5 mg of intravenous zoledronic acid followed by 70 mg weekly of oral alendronate for 1 year has removed symptoms and slowed the progression of early stage avascular necrosis of the second metatarsal head(14,20,22).

Most individuals with Smillie stages 1 to 3 have a good response to conservative treatment and show successful long-term results, however, there are a number of surgical techniques described for the treatment of Freiberg's disease, if conservative treatment fails, these are usually reserved for those with Smillie stage 4 and 5 disease. At the moment there is not much consensus on which procedure should be performed primarily. According to Carmont et al, surgical alternatives have been divided into two categories: altering abnormal physiology and biomechanics or restoring joint congruency/arthritic sequelae found in the later stages of the disease. Procedures aimed at restoring joint congruency are debridement, osteotomy, grafting and arthroplasty. Procedures aimed at modifying abnormal physiology are central decompression and corrective osteotomies. Among the various joint preserving procedures, Gauthier's osteotomy is probably the most popular and has the longest reported follow-up, this procedure is an intra-articular dorsal closure wedge osteotomy, in which diseased cartilage is removed and healthy plantar cartilage is redirected into the central joint. This technique was free of complications and showed a high satisfaction rate in all individuals(11,14,23).

As the pathology progresses, treatment may require a joint-destructive procedure. As with other procedures, an effort must be made to remove the avascular portion. However, this may result in significant shortening of the metatarsal. Therefore, interpositional arthroplasty is among the procedures of choice for advanced disease. The procedure involves the interposition of a soft tissue autograft, extensor digitorum longus tendon, extensor digitorum brevis tendon or allograft into the compromised joint. The technique reduces the requirement for artificial implants while maintaining finger length, with a success rate of about 90%(24,25).

Modified Weil osteotomy is thought to be a useful method for the treatment of Freiberg's disease, in the early and even later stages. It improves pain symptomatology as well as improving function by shortening the metatarsals and restoring metatarsal phalangeal joint congruency(1).

Differential Diagnosis

Depending on the clinical presentation, we have several such as neuroma, stress fracture, plantar plate tear or other inflammatory arthritis such as rheumatoid arthritis or gout. Radiographs allow us to distinguish these entities. The classic finding of Freiberg's disease is flattening of the metatarsal heads on radiography which confirms the diagnosis(14).

Prognosis and Complications.



Generally, individuals with Smillie stages 1 to 3 respond adequately to conservative management and have great success. Individuals who show high grades usually undergo surgery to restore joint congruence and limit progression to arthritis. Possible complications include progression to advanced arthritis with associated pain and limited range of motion(14).

Postoperative.

Postoperative protocols change according to the wide variety of surgical techniques available. Individuals undergoing joint preserving techniques, such as Gauthier dorsiflexion wedge osteotomy, are usually allowed partial heel weight bearing or a forefoot offloading shoe for 3 weeks following surgery, however, individuals undergoing joint destructive procedures may not be required to be weight bearing for a short period of time. Physical therapy is indicated after the affected individual is fully weight-bearing. A rehabilitation approach that includes metatarsophalangeal joint range of motion and walking retraining is recommended(14,26).

CONCLUSIONS

Freiberg disease is an osteochondrosis of the metatarsal bone heads, commonly found in the second or third metatarsal and common in women and athletes. Osteochondroses are a group of disorders resulting from a lesion of the epiphysis that modifies endochondral ossification and generates irregularity in the articular surface. The pathophysiology of Freiberg's disease is multifactorial. Affected individuals present with pain and swelling located in the affected metatarsal head area of the forefoot. Diagnosis can be confirmed by physical examination and radiographs. Conservative treatment should first be attempted to relieve symptoms and decrease epiphyseal deformity to restrict progression to arthritis regardless of the severity of the disease. There are a number of surgical techniques described for the treatment of Freiberg's disease if conservative treatment fails.

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NALANDA: UNRAVELING THE LEGACY OF BUDDHISM AND ITS MAGNIFICENT TEMPLE

Bhante Dr. Chandrakitti (Champalal)

Assistant Professor and HOD, Department of Buddhist Studies, Swami Vivekanand Subharti University, Meerut (U.P.), India

ABSTRACT

This research paper delves into the historical and cultural significance of the ancient Buddhist monastery of Nalanda and its temple complex. Nalanda, situated in present-day Bihar, India, was once a vibrant center of learning and Buddhist scholarship, attracting students and scholars from across Asia. The paper explores the history of Nalanda, its role in the spread of Buddhism, and the architectural splendor of its temple, shedding light on its enduring legacy in shaping Buddhist philosophy and education.

KEYWORDS: *Nalanda, Buddhism, History, Buddhist Temple, Philosophy, Education*

INTRODUCTION

Nalanda, nestled in the fertile plains of Bihar, India, holds within its ancient ruins the echoes of a bygone era when it stood as a bastion of knowledge and enlightenment. Established as a center of Buddhist learning and scholarship, Nalanda emerged as a beacon of intellectual and spiritual prowess, attracting seekers of wisdom from far and wide. This paper endeavors to unravel the rich heritage of Nalanda, with a particular focus on its Buddhist temple complex, and illuminate its profound significance in the development and dissemination of Buddhist thought.

The origins of Nalanda can be traced back to the early centuries of the Common Era, during the flourishing period of Buddhism in India. It is believed that the site was initially a humble vihara, or monastery, founded by devout monks seeking solitude and spiritual contemplation. Over time, under the patronage of Buddhist kings and rulers, Nalanda evolved into a renowned center of learning, drawing scholars and students from across Asia.

The allure of Nalanda lay not only in its serene surroundings but also in the scholarly atmosphere that permeated its hallowed halls. Here, amidst verdant gardens and tranquil courtyards, monks and scholars engaged in rigorous intellectual pursuits, delving deep into the teachings of the Buddha and exploring the intricacies of Buddhist philosophy. The curriculum at Nalanda encompassed a wide range of subjects, including metaphysics, logic, ethics, and linguistics, making it a comprehensive center of Buddhist education.

The prominence of Nalanda reached its zenith during the Gupta and Pala dynasties, when it flourished as a vibrant hub of Buddhist scholarship. Emperors such as Ashoka and Kumaragupta I lavished their patronage upon the monastery, endowing it with royal grants and privileges. As a result, Nalanda

attracted renowned scholars like Nagarjuna, Aryadeva, and Dharmapala, whose profound insights and scholarly contributions enriched Buddhist thought and philosophy. However, it was not only the intellectual pursuits that distinguished Nalanda but also its architectural splendor. The temple complex at Nalanda, with its majestic stupas, towering viharas, and sprawling libraries, stood as a testament to the grandeur of Buddhist architecture. Every stone and sculpture bore witness to the devotion and craftsmanship of the artisans who painstakingly crafted these edifices.

The significance of Nalanda transcended geographical boundaries, attracting students and scholars from distant lands such as China, Korea, Japan, Tibet, and Southeast Asia. These visitors, drawn by the fame of Nalanda and the allure of Buddhist teachings, undertook arduous journeys to study under the esteemed masters who resided within its walls. The exchange of ideas and knowledge that took place at Nalanda fostered a vibrant intellectual milieu, enriching both the students and the teachers alike.

HISTORICAL BACKGROUND OF NALANDA

The historical background of Nalanda traces back to the origins of Buddhism in ancient India and its subsequent development as a prominent center of learning and scholarship. Situated in the present-day Indian state of Bihar, Nalanda emerged as a celebrated monastery and seat of Buddhist education during the early centuries of the Common Era.

The origins of Nalanda can be traced to the 5th century CE when it was established as a modest vihara, or Buddhist monastery, by devout monks seeking solitude and spiritual contemplation. Over time, the monastery grew in size and stature, attracting a community of monks and scholars dedicated to the study and practice of Buddhism. The tranquil surroundings of Nalanda,



nestled amidst lush greenery and serene landscapes, provided an ideal setting for meditation and intellectual inquiry.

Nalanda's ascent to prominence was propelled by the patronage of Buddhist kings and rulers who recognized its potential as a center of learning and scholarship. One of the earliest patrons of Nalanda was Emperor Ashoka, the Mauryan ruler who embraced Buddhism and propagated its teachings throughout his empire. Ashoka's support for Nalanda laid the foundation for its subsequent growth and development as a renowned seat of Buddhist education. Another significant patron of Nalanda was Kumaragupta I, a Gupta emperor who reigned during the 5th century CE. Kumaragupta's patronage played a pivotal role in elevating Nalanda to prominence, endowing it with royal grants and privileges that attracted scholars and students from far and wide. Under his patronage, Nalanda flourished as a center of Buddhist learning and scholarship, nurturing some of the most illustrious minds of the time.

However, it was during the Gupta and Pala dynasties that Nalanda reached the zenith of its glory. The Gupta period, often regarded as the golden age of Indian civilization, witnessed a flourishing of art, literature, and philosophy, with Nalanda emerging as a vibrant hub of intellectual activity. Scholars such as Nagarjuna, Aryadeva, and Dharmapala, renowned for their profound insights into Buddhist philosophy, made significant contributions to Nalanda's scholarly legacy.

The Pala dynasty, which succeeded the Gupta dynasty, further enriched Nalanda's intellectual milieu through their patronage and support. The Pala kings, known for their fervent devotion to Buddhism, extended their patronage to Nalanda, endowing it with vast land grants and resources. Under their rule, Nalanda witnessed a period of unprecedented growth and prosperity, attracting scholars and students from across Asia. During this golden age, Nalanda emerged as a renowned seat of Buddhist education and philosophy, attracting scholars and students from distant lands such as China, Korea, Japan, Tibet, and Southeast Asia. The exchange of ideas and knowledge that took place at Nalanda fostered a vibrant intellectual milieu, propelling the monastery to the pinnacle of academic excellence.

The historical background of Nalanda reflects its evolution from a modest vihara to a celebrated center of Buddhist learning and scholarship. The patronage of Buddhist kings and scholars, including Emperor Ashoka and Kumaragupta I, played a crucial role in shaping Nalanda's destiny and establishing its reputation as a beacon of intellectual and spiritual enlightenment.

ROLE OF NALANDA IN THE SPREAD OF BUDDHISM

The role of Nalanda in the spread of Buddhism is of profound significance, as it served as a magnet for scholars and students from India and abroad, fostering a rich exchange of ideas and knowledge that contributed to the dissemination and

advancement of Buddhist philosophy and education. Nalanda's reputation as a center of learning transcended geographical boundaries, attracting scholars and students from various parts of India and beyond. The allure of Nalanda lay in its scholarly atmosphere and rigorous academic curriculum, which appealed to seekers of wisdom from diverse cultural backgrounds. Scholars from regions such as China, Korea, Japan, Tibet, and Southeast Asia were drawn to Nalanda in pursuit of Buddhist knowledge and enlightenment.

The curriculum at Nalanda encompassed a wide range of subjects, reflecting the comprehensive nature of Buddhist education at the monastery. Students at Nalanda were exposed to a rigorous program of study that included Buddhist philosophy, logic, metaphysics, ethics, linguistics, and medicine. The diversity of subjects offered at Nalanda catered to the varied interests and aspirations of its students, providing them with a holistic education that combined intellectual inquiry with spiritual contemplation.

One of the distinguishing features of Nalanda was its emphasis on the study and interpretation of Buddhist scriptures. Scholars at Nalanda devoted themselves to the translation and preservation of Buddhist texts, ensuring their dissemination and accessibility to future generations. The efforts of Nalanda scholars in translating Buddhist scriptures into languages such as Sanskrit, Chinese, Tibetan, and Pali played a crucial role in the spread of Buddhism beyond the borders of India.

Moreover, Nalanda scholars made significant contributions to the advancement of Buddhist philosophy through their scholarly pursuits and intellectual debates. The monastery served as a forum for the exchange of ideas and the exploration of complex philosophical concepts, fostering a spirit of inquiry and critical thinking among its scholars. Figures such as Nagarjuna, Aryadeva, and Dharmapala, who studied and taught at Nalanda, made seminal contributions to Buddhist philosophy, shaping its development and evolution over time.

The impact of Nalanda's scholarship extended far beyond its walls, influencing the course of Buddhist thought and education across Asia. The insights and teachings that emanated from Nalanda reached distant lands such as China, Korea, Japan, Tibet, and Southeast Asia, shaping the intellectual and spiritual landscape of these regions. The enduring legacy of Nalanda lies not only in its architectural splendor but also in its role as a beacon of knowledge and enlightenment that continues to inspire seekers of wisdom to this day.

ARCHITECTURE AND DESIGN OF THE NALANDA TEMPLE

The architecture and design of the Nalanda Temple complex exemplify the grandeur and magnificence of Buddhist architectural principles and design elements. Situated amidst sprawling grounds in the ancient town of Nalanda, the temple



complex encompassed a variety of structures that served both religious and educational purposes.

The layout of the Nalanda Temple complex was carefully planned to accommodate the diverse needs of its residents and visitors. At its heart lay the main temple structure, which served as the focal point of religious worship and communal gatherings. Surrounding the main temple were numerous viharas, or monastic cells, where monks and scholars resided and pursued their studies. These viharas were arranged in a grid-like pattern, with narrow pathways connecting them to the central temple and other communal areas.

In addition to the viharas, the Nalanda Temple complex also featured lecture halls, libraries, and study rooms where scholarly discussions and debates took place. These spaces were designed to facilitate intellectual inquiry and the exchange of ideas among the monastery's residents. Lecture halls were adorned with intricate carvings and decorative motifs, creating an atmosphere conducive to learning and contemplation. Stupas, or sacred mounds, were another prominent feature of the Nalanda Temple complex. These monumental structures served as symbols of enlightenment and were often adorned with elaborate carvings and inscriptions. Stupas at Nalanda were surrounded by landscaped gardens and pathways, providing pilgrims and visitors with opportunities for meditation and reflection.

The architecture of the Nalanda Temple complex was deeply influenced by Buddhist architectural principles, which emphasized simplicity, symmetry, and harmony with nature. Buildings were constructed using locally sourced materials such as brick, stone, and wood, reflecting the sustainable and eco-friendly ethos of Buddhist philosophy. The layout of the temple complex was designed to promote a sense of order and tranquility, with buildings arranged in accordance with sacred geometrical principles.

Artistic and sculptural embellishments adorned the walls and facades of buildings throughout the Nalanda Temple complex, depicting Buddhist iconography and themes. Intricately carved reliefs depicted scenes from the life of the Buddha, including his birth, enlightenment, and parinirvana. Images of Bodhisattvas, celestial beings revered for their compassion and wisdom, adorned shrines and altars, inspiring devotees with their serene presence.

The artistic embellishments at Nalanda reflected the diverse cultural influences that shaped the region, including Indian, Chinese, and Southeast Asian artistic traditions. Skilled artisans and craftsmen employed a variety of techniques, including stone carving, stucco work, and mural painting, to adorn the temple complex with exquisite works of art. The architecture and design of the Nalanda Temple complex stand as a testament to the ingenuity and creativity of ancient Indian architects and artisans. The layout of the temple complex, influenced by Buddhist architectural principles, provided a harmonious and conducive

environment for religious worship, scholarly inquiry, and contemplative practice. Artistic embellishments throughout the complex celebrated the rich tapestry of Buddhist iconography and themes, inspiring awe and reverence among visitors and devotees alike.

THE DECLINE AND REVIVAL OF NALANDA

The decline and revival of Nalanda represent a poignant chapter in the history of one of the world's most renowned centers of learning and scholarship. From its zenith as a vibrant hub of Buddhist education and philosophy to its eventual decline under the weight of external pressures and internal challenges, Nalanda's journey reflects the ebb and flow of history. Several factors contributed to the decline of Nalanda, ultimately leading to its abandonment and gradual decline. One significant factor was the series of invasions and raids that plagued the region during the medieval period. Nalanda, located in the heart of the Indian subcontinent, became a target for invaders seeking to plunder its riches and subdue its inhabitants. The repeated attacks by foreign forces, including the Turkic invasions in the 12th century, inflicted irreparable damage on Nalanda's structures and infrastructure, disrupting its academic activities and undermining its influence.

Political instability also played a role in Nalanda's decline, as rival kingdoms vied for control over the region, leading to conflicts and power struggles. The shifting political landscape weakened Nalanda's position as a center of learning, making it vulnerable to external threats and internal strife. Additionally, the waning of Buddhist patronage, as rulers and elites embraced alternative religious and philosophical ideologies, further marginalized Nalanda and hastened its decline.

Despite its abandonment and neglect, Nalanda remained a symbol of India's ancient intellectual heritage, inspiring generations of scholars and historians. In the 19th century, British archaeologists rediscovered the ruins of Nalanda buried beneath layers of earth and vegetation, sparking renewed interest in its history and significance. Archaeological excavations conducted at the site revealed the extent of Nalanda's architectural splendor and scholarly legacy, shedding light on its contributions to world civilization. The rediscovery of Nalanda prompted efforts to conserve and preserve its ancient ruins, ensuring that future generations could appreciate its historical and cultural significance. Restoration projects undertaken by government agencies and international organizations helped to stabilize the crumbling structures and protect them from further decay. Today, the ruins of Nalanda stand as a UNESCO World Heritage Site, a testament to the enduring legacy of one of the world's oldest universities.

In modern times, the establishment of the Nalanda University represents India's commitment to reviving its ancient intellectual heritage and reclaiming its status as a center of learning and scholarship. Founded in 2010, the Nalanda University seeks to revive the spirit of inquiry and dialogue that characterized its



ancient predecessor, offering programs of study in fields such as Buddhist studies, philosophy, history, and environmental studies. The university aims to foster cross-cultural exchange and collaboration, bringing together scholars and students from diverse backgrounds to explore pressing issues facing humanity in the 21st century.

The decline and revival of Nalanda underscore the resilience of human endeavor and the enduring power of knowledge and learning. Despite facing numerous challenges and setbacks, Nalanda continues to inspire awe and admiration as a symbol of India's ancient intellectual heritage and a beacon of hope for future generations. Through conservation efforts and the establishment of institutions like the Nalanda University, India seeks to honor the legacy of Nalanda and ensure that its teachings and ideals endure for generations to come.

CONCLUSION

In conclusion, Nalanda stands as an enduring symbol of the intellectual, cultural, and spiritual legacy of Buddhism, not only in India but also across the globe. Its magnificent temple complex, with its architectural splendor and scholarly atmosphere, serves as a poignant reminder of the pivotal role played by Nalanda in the dissemination of Buddhist philosophy and the advancement of human knowledge. Despite facing numerous challenges and setbacks over the centuries, Nalanda continues to inspire awe and admiration as a testament to human resilience and the enduring power of knowledge and learning. The ruins of Nalanda, with their timeless wisdom and architectural grandeur, continue to attract scholars, historians, and pilgrims from around the world, seeking to unravel the mysteries of this ancient seat of learning.

Through continued research and preservation efforts, Nalanda's legacy lives on, inspiring generations with its profound teachings and timeless ideals. As we strive to honor the heritage of Nalanda and preserve its cultural and intellectual treasures for future generations, we also reaffirm our commitment to the values of inquiry, dialogue, and enlightenment that have characterized this revered institution throughout its storied history. In the hearts and minds of those who seek wisdom and understanding, Nalanda remains a beacon of light, guiding us on a journey of discovery and self-discovery. May its teachings and ideals continue to inspire and uplift humanity for generations to come, reminding us of the enduring power of knowledge, compassion, and the pursuit of truth.

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LEUKOPLAKIA OF THE BLADDER. (Literature Review)

R.R. Sakhatalieva

Andijan State Medical Institute, Associate Professor (PhD) of the Department of Urology

SUMMARY

This article describes the concepts, prevalence, risk factors and etiology of leukoplakia of the bladder. It has been established that leukoplakia of the bladder is a typical expression of metaplasia of the transitional epithelium into squamous epithelium with keratinization, caused and maintained by chronically occurring inflammatory and neurotrophic processes in the bladder. This disease occurs exclusively in female patients aged 16-80 years, with an average age of 32.6-39.5 years. The causes of leukoplakia of the bladder are a violation of the embryonic development of the bladder mucosa, the presence of a specific infection (tuberculosis, syphilis), hypovitaminosis of vitamin A, B, inflammation, hormonal imbalance, as well as the destruction of the normal glycosaminoglycan layer of the urothelium under the influence of urogenital infection.

KEY WORDS : *bladder, leukoplakia, frequency, risk factors, etiology, morphology.*

1. DEFINITION AND PREVALENCE OF LEUKOPLAKIA OF THE BLADDER

First description of leukoplakia (cholesteatoma) belongs to R. Okitansky in 1861 year. Later year O her reported by I.M. Pelican, which pointed out the ability of leukoplakia to cancerous transformation. Scientists have described leukoplakia of the bladder as appearing on mucous membrane silver-white or mother-of-pearl flat plaques various sizes and forms [10] A.P. Frumkin also points to the possibility of malignancy of leukoplakia: "Leukoplakia of the bladder is a typical expression of metaplasia of the transitional epithelium into squamous epithelium with keratinization, caused and maintained by chronic inflammatory and neurotrophic processes in the bladder. In some cases, the keratinizing epithelium covers significant spaces, leaving only relatively small clearings of normal-colored mucous membrane with dilated vessels, or occupies only individual areas of the bladder mucosa. The edges of the leukoplastic film are mostly cases are raised and separated, creating the false impression of being able to capture such film with forceps and remove from the mucous membrane of the bladder. Keratinizing epithelium Maybe Also encrusted phosphate salts, while losing characteristic silvery color .

IN foreign literature use the term " squamous" metaplasia". Domestic clinicians enjoy more narrow term "leukoplakia" mucous membrane shell urinary bubble [10] Under the term "leukoplakia," clinicians combine all forms of squamous cell metaplasia of the epithelium [14]. Leukoplakia of the bladder is areas of flat whitish spots - plaques on the mucous membrane of the bladder, often during endoscopy resembling the picture of "melting snow". [eleven]. In the modern world, leukoplakia is a pathological process that is characterized by a violation of the basic functions of stratified squamous epithelium: the absence of glycogen formation and the occurrence of keratinization, which are normally absent [8]. Thus: leukoplakia of the bladder is a pathological condition of the mucous membrane of the bladder, which is an area of squamous

metaplasia of the urothelium with keratinization of the integumentary layer. This is an altered mucous membrane of the bladder, which is a squamous metaplasia of the epithelium with varying degrees of keratinization in the form of foci of whitish plaque, clearly delimited from the unchanged mucosa [10,22]

It should be noted that under the term ohm "leukoplakia" in some scientific and medical sources refers to precancerous bladder diseases [8]. By data literature during cystoscopy in 63.6–100% of patients with persistent dysuria and chronic pelvic pain discover leukoplakia With location V cervix urinary bubble and vesical triangle [2]. By data authors, engaged studying given Problems, at urethroscopy at 65-100% sick with persistent dysuria and pain symptoms localized in pelvis, changes in the mucous membrane are detected urinary bubble which is yourself squamous metaplasia epithelium With various degree of keratinization (leukoplakia of the bladder) [6,21]. Researchers of several scientific discoveries [2,6] have found that this disease occurs exclusively in female patients aged 16-80 years, with an average age of 32.6-39.5 years. When assessing the results of cystoscopy, hyperemia, edema, and the presence of epithelial metaplasia were revealed. Leukoplakia in the form of squamous metaplasia of the epithelium with varying degrees of keratinization was found in in the form of foci of white, loose plaque on the mucous membrane. According to research conducted by Notova G. K, the incidence of leukoplakia decreased with age - 71% in the younger, 50% in the middle and 11% in the older age group. When assessing the frequency of occurrence exacerbations of chronic cystitis, it was revealed that frequent exacerbations (3 or more per year) were more typical for young and middle-aged women. Thus, in the younger age group, exacerbations chronic cystitis were identified V 69% cases, V average - V 59% cases, A V the eldest - only V 25%. The results obtained showed that the frequency of exacerbations of cystitis, as well as the incidence of metaplasia in women of different age groups, decreased with increasing age; therefore, you can do conclusion that metaplasia



is characteristic of younger ages, and its appearance can be associated with more frequent exacerbations of cystitis.

2 . RISK FACTORS AND ETIOLOGY OF BLADDER LEUKOPLAKIA

Al- Shukri S.H. and co-authors [2] indicate that in the development of diseases such as chronic cystitis and overactive bladder, age-related factors play an important role, such as a decrease in estrogen levels in postmenopausal period, impaired microcirculation in the wall of the bladder. The authors also trace the connection between the severity of symptoms of bladder overactivity , pain syndrome And availability leukoplakia urinary bubble at women. The results they obtained showed that the frequency of exacerbations of cystitis, as well as the incidence of metaplasia in women of different age groups decreased with increasing age , therefore, it was made conclusion that metaplasia is characteristic of younger ages, and its appearance can be associated with more frequent exacerbations of cystitis. [18]

According to some authors , main The trigger point in the development of leukoplakia of the bladder is the long-term persistence of infectious agents in the urinary tract, resulting in damage to the urothelium and metaplasia develops. [9]. The very etiology of this disease , squamous cell metaplasia, accounts for 56-68% of all chronic cystitis. [17] According to Terlizzi , a well-known lower urinary tract infection that occurs in 98% of cases of E. coli causes obvious changes in tissues urinary bubble: colonization periurethral And vaginal regions; upward penetration V clearance urinary bubble And height cells E.coli V urine V form plankton; surface adhesion and interaction With system protection epithelium urinary bubble

There are also opinions that the development of leukoplakia of the bladder is influenced by such factors as estrogenic failure, neurogenic causes, viral diseases, allergies factors.

Chronic cystitis is often accompanied by the development of squamous metaplasia of the epithelium of the bladder mucosa, sometimes with keratinization (leukoplakia), which is detected in more than 60% of cases of all forms of chronic cystitis . The process of metaplastic transformation of the epithelium can also spread to the urethra. It was noted that leukoplakia of the urinary bladder is associated with the most treatment-resistant forms of chronic cystitis, But its mechanisms development remain not before end studied.

It is assumed that infection is the causative factor of urothelial damage and the formation of metaplasia, while further alteration occurs outside dependencies from infections, leading To stand up dysuria [11]. These the data correlate with modern ideas about disturbances in the regulation of cellular proliferation and differentiation under conditions of chronic inflammation or irritation with a change in the direction of determination of the cambial stem cell and subsequent her differentiation [8].

Leukoplakia is the most common histological form of chronic inflammation of the bladder and is detected in 50–82% of patients admitted to the clinic for chronic recurrent cystitis [22].

There is evidence of growth in women menopausal frequency of occurrence disorders urination V dependencies from duration postmenopause. This contacts with a decrease in estrogen levels and against this background - involution of the transitional epithelium of the bladder and urethra, while the properties mucosa, including resistance to infectious agents. Consequently , in women menopausal period, old age is additional hormone factor, predisposing To violations urine emission And development chronic cystitis [1]. Feature currents cystitis V this age group is the development of inflammation phenomena, symptoms lower urinary ways without colonization of the urinary system with pathogenic microflora which, however, can join, aggravating state sick [19]

Historically, defects in the embryonic development of the bladder mucosa, the role of a specific infection (tuberculosis, syphilis), and vitamin A hypovitaminosis were considered as the causes of the development of squamous metaplasia. Recently, the most probable theories of the origin of leukoplakia of the bladder are inflammatory, hormonal imbalance (the influence of estrogens) the result of thermal, chemical exposure; disturbance of microcirculation in the wall of the bladder as well as destruction of the normal glycosaminoglycan layer of the urothelium under the influence of urogenital infection (Ch . trachomatis , U. urealyticum , N. gonorrhoeae , M. genitalium , Tr . vaginalis , Herpes simplex I , II).

According to Tushar Pandey Eratinizing squamous metaplasia in men is rare in urological practice with a frequency of 1:10,000. In regions where schistosomiasis is rare, it usually occurs due to chronic irritation of the inflamed bladder mucosa by bacteria. Risk factors include chronic catheterization, neurogenic bladder, vitamin A deficiency, urinary fistula, and bladder outlet obstruction. There have been reports of keratinizing squamous metaplasia progressing to squamous cell carcinoma or concomitant squamous cell carcinoma.

A.Yu. Kolmakov in 2016 described the impact of schistosome eggs (*Schistosoma haematobium*), on the bladder mucosa. The most common cause is genitourinary schistosomiasis (MS) with one of the most well-known and dangerous complications - schistosome bladder cancer (sBC). When performing cystoscopy, areas of squamous metaplasia always had clearly defined boundaries, representing thickened, slightly raised whitish spots with characteristic changes in the mucous membrane, described in detail in 1991 by E.G. Aslamazov – “sand spots” and specific granulomatous ulcerations of the urothelium . Visually , the surface of the mucous membrane was encrusted with phosphates, and the surrounding areas were intensely hyperemic. When such a picture was visualized, a biopsy of the mucous membrane was performed. The incidence of metaplasia was directly dependent on the stage of the tumor process.

The term “ verrucous ” leukoplakia refers to histological ones, but when describing the cystoscopic picture, it well reflects the thickness of the affected area. The roughness in this case is rough, reminiscent of the surface of a tongue, and the color is



cloudy white. Often such leukoplakia occurs in patients with cervical cancer or with mixed infections [7]. In chronic cystitis, the entire mucous membrane of the bladder is involved in the pathological process, the area of the bladder triangle and the bladder neck is most affected [20]. According to Tsareva A.V. [22] There are no exact statistics on the prevalence and incidence of bladder leukoplakia.

According to various authors, when i s t o c k o p i i at 63.6 - 100 % A patient with persistent dysuria , chronic pelvic pain is found to have leukoplakia located in the bladder neck and vesical triangle [5,15]. Leukoplakia is detected in 60–67% sick, located V clinic With diagnostic chronic cystitis. Disease covers mostly women of working age (from 20–50 years), much reducing quality life of patients, contributes to the development of a neurosis-like state, leading to loss of ability to work. [3.8]

CONCLUSIONS

Leukoplakia of the bladder is a typical expression of metaplasia of the transitional epithelium into squamous epithelium with keratinization, caused and maintained by chronic inflammatory and neurotrophic processes in the bladder.

This disease occurs exclusively in female patients aged 16-80 years, with an average age of 32.6-39.5 years.

The causes of leukoplakia of the bladder are a violation of the embryonic development of the bladder mucosa, the presence of a specific infection (tuberculosis, syphilis), hypovitaminosis of vitamin A.B., inflammation, hormonal imbalance , as well as the destruction of the normal glycosaminoglycan layer of the urothelium under the influence of urogenital infection.

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COMMUNITY RESPONSE TO DENGUE: A SURVEY ON TREATMENT PRACTICES IN PICHANDAMPALAYAM, ERODE, TAMILNADU

Bernaitis.L¹, Shanthi T.M¹, Menaka M², Aro Ancy Jeffi C³, Akilandeshwari G³

¹Reader, Department of Noi Nadal Including Microbiology, Nandha Siddha Medical College, Erode, Tamilnadu-638052

²Professor, Department of Varmam, Pura maruthuvam and Sirappu Maruthuvum, Nandha siddha medical College, Erode, Tamilnadu-638052

³Undergraduate Students, Nandha Siddha Medical College, Erode, Tamilnadu -638052

Address of Correspondence Author: Dr. Bernaitis L, Associate Professor, Department of Microbiology, Nandha Siddha Medical College, Erode, Tamilnadu- 638052.

ABSTRACT

Background : Dengue-an acute viral illness caused by RNA virus belonging to Flaviviridae family, capable of infecting humans and causing diseases. These infections maybe asymptomatic or may lead to classic dengue fever (DF) or dengue Haemorrhagic fever (DHF) or dengue shock syndrome. *Aedes aegypti* acts as the primary vector. Recently DF and its severe forms have become major global public health concerns. Proper management of the disease becomes an inevitable factor. This article focuses about the survey of siddha in the management of dengue outbreaks among the peoples of Pichandampalayam.

Materials and Methods: A Public survey was conducted with 450 people during October to November 2021. Information regarding the socio-demographic details and medication practices used during dengue outbreaks were collected by using semi - structured questionnaire.

Result: Among the 450 participants, 63.3% of people were in between the age of 10-35. 56% of the people preferred siddha medications, 37.9% preferred allopathy, 2% took Homeopathy, and 4.1% Ayurveda treatment. 21.1% of people took allopathy along with siddha medicines. 72.6% people took precautionary medicines in siddha like Nilavembu kudineer.

Conclusion: Survey shows that many people preferred siddha medication and most of the non -affected people took precautionary medications showing that, Siddha medicine play a very crucial role in management of DF. Still many people need awareness about the management of DF in Siddha system of medicine.

KEYWORDS: Dengue fever, Survey, Siddha medication, Precautionary medicine, Management, Communicable disease.

INTRODUCTION

Dengue fever, the world's fastest spreading mosquito-borne viral illness, poses a significant health risk in India. This RNA virus, belonging to the Flaviviridae family, has four serotypes – DEN 1, 2, 3, and 4. While all four exist in India, DENV 1 and 2 are currently most prevalent [1,2]. Dengue infections can range from asymptomatic to life-threatening, manifesting as classic dengue fever (breakbone fever), dengue hemorrhagic fever (DHF), or dengue shock syndrome (DSS) [3].

The *Aedes aegypti* and *Aedes albopictus* mosquitoes are the primary culprits transmitting the virus. According to the World Health Organization (WHO), an estimated 50-100 million people contract dengue annually, with 5 million cases progressing to DHF. Globally, 3.9 billion people in 128 countries face the risk of infection, with over 100 countries experiencing endemic dengue and DHF [4,5].

India faces a particularly steep rise in dengue cases due to several factors. Urbanization, with its unplanned growth, creates

ideal breeding grounds for *Aedes aegypti* mosquitoes, which thrive in small pockets of clean water [6]. Improper water storage practices in rural areas further exacerbate the problem. Additionally, a lack of awareness among the public contributes to outbreaks. Dengue is now endemic in 35 Indian states, with a fatality rate of 0.16%. Tamil Nadu leads the nation in reported cases, followed by Kerala, Karnataka, Punjab, and West Bengal [7,8].

This article explores the growing threat of dengue fever in India, examining the epidemiological factors driving its spread and the role Siddha medicine, a traditional Indian medical system, can play in managing the disease [9].

However, in the fight against this disease, traditional medical systems like Siddha are playing an increasingly important role [10].

Siddha, a highly popular traditional medical system in South India, boasts a rich history of treating various ailments,



including fevers. Siddha texts classify fevers into 64 distinct types based on causative factors, symptoms, and imbalances in the body's three humors (thirithodam). Dengue, in particular, is often compared to "pitha suram" within the Siddha framework[11].

This article aims to delve into the contribution of Siddha medicine to community health, specifically its role in treating and preventing viral fevers like dengue[12]. We will examine the case of Tamil Nadu, where the government actively promoted Nilavembu kudineer, a Siddha herbal formulation, as a preventive measure during dengue outbreaks. Furthermore, we will explore the core principles of Siddha medicine, including its emphasis on developing potent polyherbal formulations with long shelf life and its focus on promoting cell regeneration and longevity[13,14]. By examining these aspects, we can gain a deeper understanding of how Siddha medicine can be a valuable tool in managing the ongoing threat of dengue fever[15,16]. This article focuses about the survey of siddha in the management of dengue outbreaks among the peoples of Pichandampalayam.

MATERIALS AND METHODS

A Public survey was conducted with 450 people during October to November 2021. Information regarding the socio-demographic details and medication practices used during

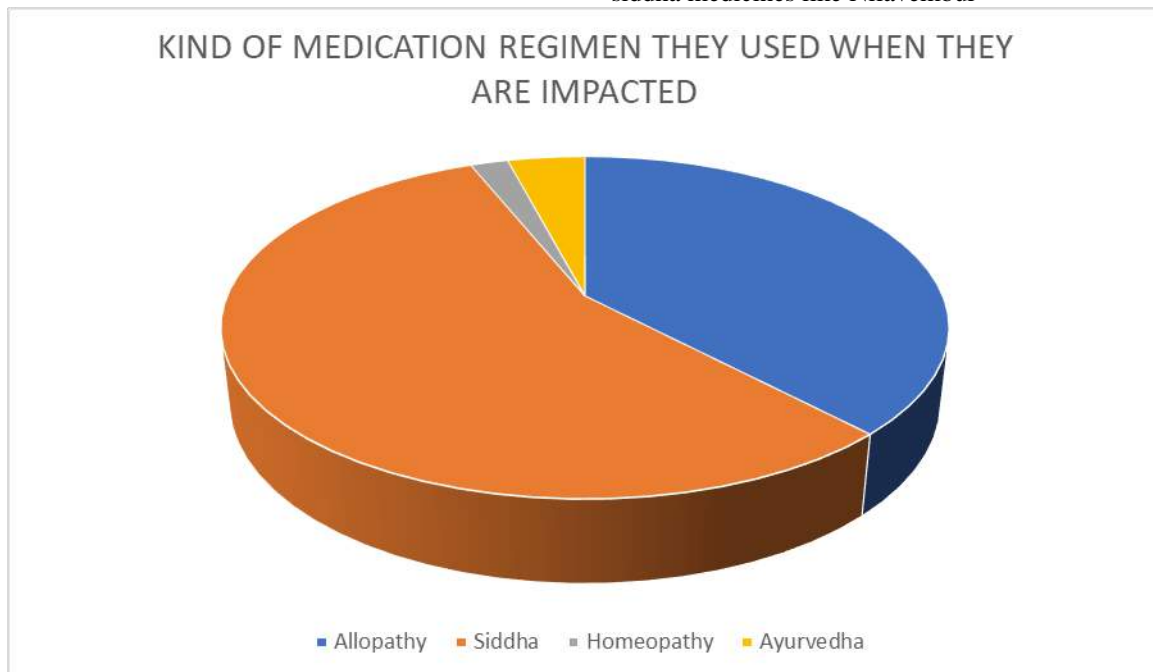
dengue outbreaks were collected by using semi – structured questionnaire.

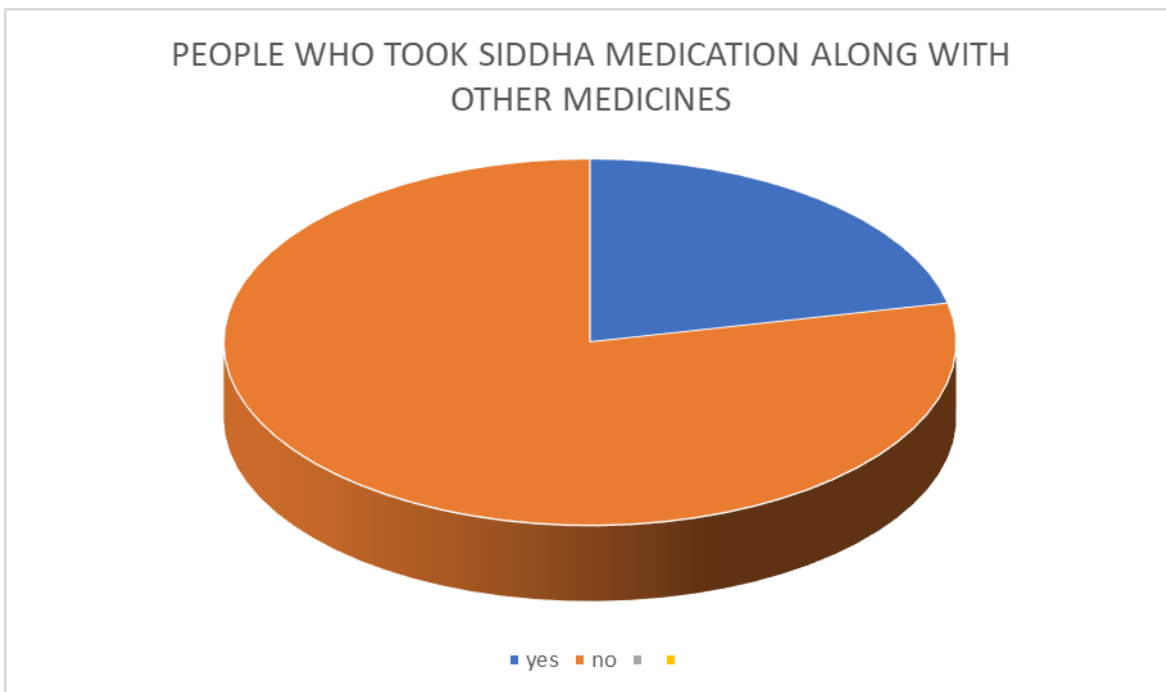
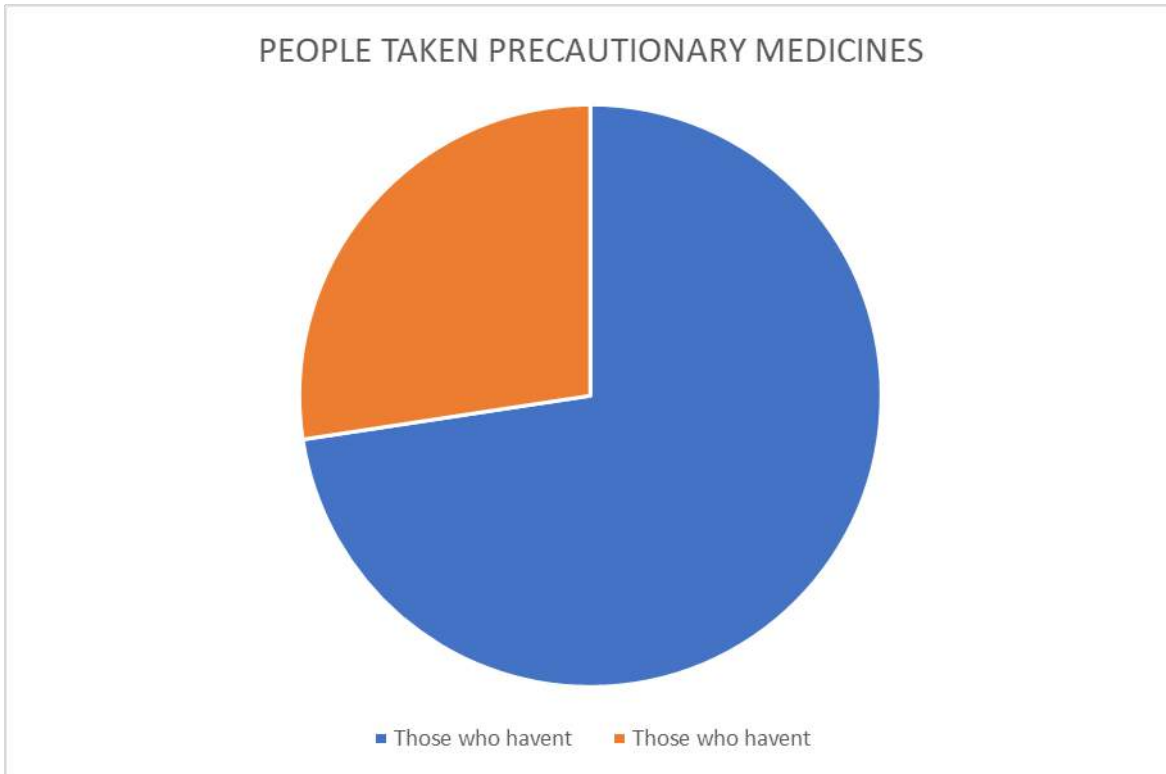
STUDY AREA

It is a village located in Erode District in Tamil Nadu. Its elevation is 272meters above the sea level. Its humidity is 87%. Wind E at 5km per hour. its normal temperature ranges from 26 to 28degree celcius. The first 2 months of the year has pleasant monsoon but in march the temperature begins to rise persisting till the end of may. By the month of september, the monsoon rains begin to fall. The north east monsoon sets vigorously during october and november which is the peak period for dengue as they provide suitable condition for breeding of mosquitoes.

DESCRIPTIVE ANALYSIS

A public survey was conducted in the village Pichandampalayam. Its population is about 2800 and 450 people participated in this survey. The age group between 0-10years is 1.2%, 10-20years is 34.6%, 20 -30years is 30.2%, 35-50years is 19.5% and above 50years is 14.5%. Among the number of participants 37.1% is male 62.3% is female and 0.6% is transgender. Type of system of medicine when they got affected are allopathy- 37.9% , siddha – 56%, homeopathy – 2% and ayurvedha – 4.1%. 21.1% of people took allopathy along with siddha medications. 72.6% people took precautionary siddha medicines like Nilavembur





RESULTS

The survey revealed a predominance of young adults, with 63.3% of participants falling between the ages of 10-35. Interestingly, 56% of the respondents favored Siddha medications for managing dengue, followed by allopathy (37.9%), homeopathy (2%), and Ayurveda (4.1%). Notably,

21.1% opted for a combination of allopathic and Siddha treatments. Furthermore, a significant 72.6% of those unaffected by dengue reported using preventive Siddha medicines like Nilavembu **kudineer**.



DISCUSSION

The survey highlights a strong preference for Siddha medicine in managing dengue outbreaks within the Pichandampalayam community. A significant portion of the unaffected population also utilizes preventive Siddha remedies, suggesting a belief in their efficacy. These findings underscore the crucial role Siddha medicine plays in dengue management for this community[17].

However, the study also suggests a gap in awareness. While many residents embrace Siddha treatments, a portion of the population still relies solely on allopathic medicine. Further efforts to educate the community about the potential benefits of Siddha in managing dengue, particularly its preventive applications, could be highly beneficial.

LIMITATIONS

This study is limited by its focus on a single community, potentially affecting the generalizability of the findings. Further research on a larger scale is needed to gain a more comprehensive understanding of Siddha's role in managing dengue across different populations.

In conclusion, this study sheds light on the significant role Siddha medicine plays in dengue management within the Pichandampalayam community. It also highlights the need for increased awareness about the potential benefits of this traditional system of medicine in combating this widespread public health concern.

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HARMONICS REDUCTION TECHNIQUES IN ELECTRICAL POWER SYSTEM

Dr. Reeta Pawar

Dept. of Electrical & Electronics Engineering, Madhyanchal Professional University, Bhopal

ABSTRACT

In the presented paper, the analysis of harmonics is done in loads particularly in non-linear loads like welding machine, induction motor, dc drives and ac drives computers, printers, TVs, servers. The harmonics reduces the power quality of the system and machine efficiency also. The harmonics are analysed by making the use of fast flourier transform technique. The harmonic analyser is used to detect the presence of harmonics in the electrical load and if detected than shows the presence of harmonics in the form of voltage and current waveform in the harmonic analyser which is capable of detecting harmonics up to ninety-nine level.

KEYWORDS- harmonic detection, harmonic analyser, welding machine, ac drive, dc drive.

INTRODUCTION

With the growing application of instrument such as power electronic equipment in the large manufacturing industries has led to very serious problems like generation of harmonic distortion, poor power factor and low voltage profile in the transmission and distribution side of the power system [12]–[4]. Among all the power electronic devices, power converter is the main electronic device that is responsible of injecting harmonics in the power system [14], [6].

Besides power electronic devices, the application of non-linear load also plays a crucial role in generating harmonics in the electrical power system. The injection of capacitor banks in the distribution system is also responsible for generating harmonics in the system. These harmonics not only reduce the voltage profile of the distribution line but also reduce the life of the electrical apparatus or appliances. Various type of loads like welding machine, induction motor etc are greatly responsible for producing harmonic current and voltages in the system. Therefore, it is very important to eliminate or mitigate such disturbing harmonics distortion from the system. In present several types of active filters are introduced for eliminating harmonics from the system so that the overall power quality can be improved of the power system [7]–[9].

WHAT IS HARMONIC DISTORTION?

We can understand the word harmonic like the integer which multiplies fundamental frequencies is known as “Harmonics”. Here, harmonic is a type of signal whose frequency is an integral multiple of the reference signal. In another way, it can be defined as the ratio between the frequency of the signal and the frequency of the reference signal.

EXPERIMENTAL SETUP OF PROPOSED SYSTEM

The system comprises of an analyzing unit preferably a harmonic analyzer installed in the system for analyzing the presence of

harmonic disturbance in the electrical load, wherein the analyzing unit comprising an LCD screen that displays harmonics up to 99th order and the harmonics are analyzed by using Fast Fourier Transform (FFT) technique [10], [11]. Fig.1 shows the schematic diagram of harmonic analyzer. When harmonics are generated in the nonlinear electrical load, the analyzing unit analyzes the presence of harmonic disturbance by implementing Fast Fourier Transformation (FFT) technique.

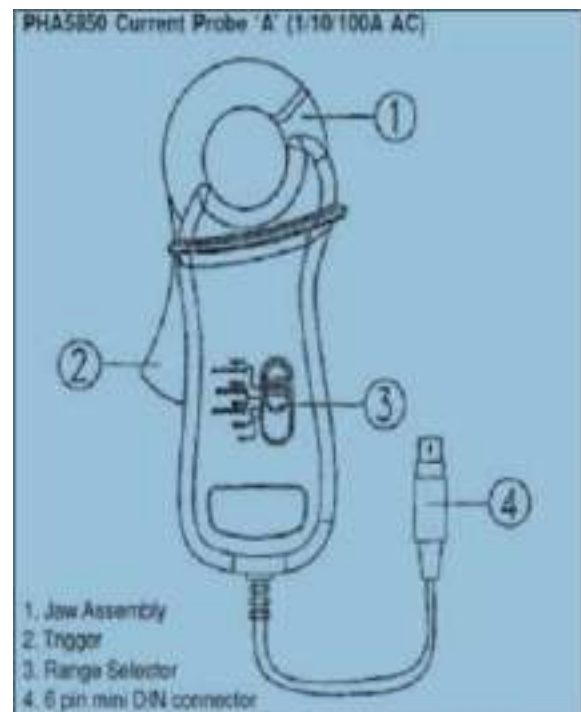


Fig.1 Harmonic Analyser



The main advantage of using FFT technique over Discrete Fourier Transform (DFT) technique is that the Fast Fourier Transform (FFT) has high accuracy rate and is very fast in response. The FFT plays important roles in the analysis, design, and implementation of discrete signal processing.

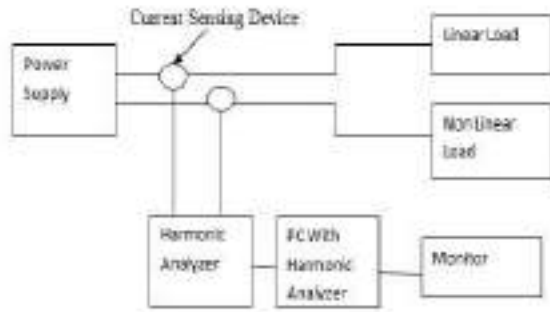


Fig.2 Block diagram of proposed system

FOURIER ANALYSIS

The analysis of harmonics is the process of calculating the magnitudes and phases of the fundamental and high order harmonics of the periodic waveforms. The resulting series is known as Fourier series. It establishes a relation between a function in the domain of time and a function in the domain of frequency.

The Fourier's theorem states that every no sinusoidal periodic wave can be decomposed as the sum of sine waves through the application of the Fourier series, given the following conditions:

1. The integral over one period of the function is a finite value.
2. The function possesses a finite number of discontinuities in a period.
3. The function possesses a finite number of maxima and minima in a period.

HARMONIC SOURCES

Harmonics are the result of nonlinear loads which give a non sinusoidal response to a sinusoidal signal. The main sources of harmonics are:

- Arc furnaces and other elements of arc discharge, such as fluorescent lamps. Arc furnaces are considered as voltage harmonic generators more than current generators. Typically all harmonics (2nd, 3rd, 4th, 5th,...) appear but the odd harmonics are predominant with typical values with regard to the fundamental harmonic:
- The third harmonic represents 20%, and the fifth harmonic represents 10%.
- The seventh harmonic represents 6%, and the ninth harmonic represents 3%.
- Magnetic cores in transformers and rotating machines require third harmonic current to excite the iron.
- The inrush current of transformers produces second and fourth harmonics.

- Adjustable speed controllers used in fans, pumps, and process controllers.
- Solid-state switches which modulate control currents, light intensity, heat, etc.
- Controlled sources for electronic equipment.
- Rectifiers based on diodes and thrusters for welding equipment, battery chargers, etc.
- Static reactive power compensators.
- DC high voltage transmission stations.
- AC to DC converters (inverters).

RESULT AND CONCLUSION

Fig.2 shows the block diagram of proposed system. During the supply of electrical power when linear or non-linear load is connected to the system, the system undergoes with the low voltage profile due to presence of harmonic current on the load side. the harmonic analyzer is connect in parallel to the line of the load for sensing the abnormal current and harmonics. After detecting various types of harmonics produced by non-linear loads, the pc is connected to the harmonic analyser to insert fast Fourier transform technique for further analyses and monitor is used to display the number of harmonics at a time. Fig.3 shows the output waveform obtains by harmonic analyzer after implementing fast Fourier transform techniques. This proposed system is very helpful in detecting the order of harmonics in the power system.

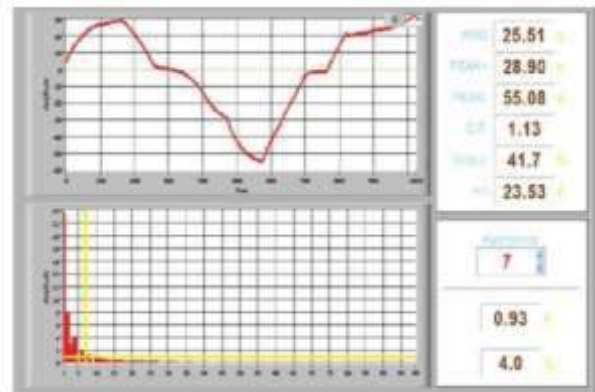


Fig.3 Output waveform of harmonic analyser

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SPIRITUAL LEGACY OF BURHANUDDIN MAHMUD BUKHARI

Xushvaktov Yusuf Baxtiyor ugli

Doctoral Student of the Department of ICESCO, International Islamic Academy of the Republic of Uzbekistan.

ABSTRACT

This article examines sources about the life of jurist Burhanuddin Mahmud Bukhari and his scientific heritage. Also in the main part of the article are works written about the scientist's proportions.

KEYWORDS: *Sadr family, Oli Moza, "al-Muhit", Fars, Sarakhs, Hidayat.*

INTRODUCTION

Burhanuddin Mahmud Bukhari spoke a lot about his spiritual heritage although it is reported in the sources, the information about his personality and his family, which became famous in the East under the name of Oli Moza, is almost unknown. Although Burhanuddin Mahmud Bukhari lived in Bukhara and Samarkand during his life. Although he lived and created, based on the information provided in the scholar's works, it was determined that he was born in 551/1156 in the present city of Margilan.

MAIN PART

Old Bukhara cultivated many great scholars in its pure land. The works left by them have been recognized as important sources in the Islamic world for several centuries. Due to the productive work of scholars, this city was considered worthy of the honor of "Qubbatul Islam" ("Dome of Islam").

Mahmud Bukhari, a follower of the Hanafi school, is one of the mature representatives of Bukhara madrasahs. His full name is Abulmahamid Mahmud ibn Muhammad ibn Dawud Lu'lu'i Bukhari Ifsanji, and he was one of the prominent figures of his time. He worked as a methodological scientist.

There is not much information about Alloma in the sources. Books such as Tarajim and Tabaqat contain brief information about his year of birth, teachers, and works. They record that the scholar was born in Bukhara in 627 Hijri (1230 AD) and died in Mog in 671 Hijri (1272 AD). He was executed during the invasion of Bukhara.

Also, his family, known as Oli Moza or Sadrs in Bukhara and Samarkand, played an important role in Burhoniddin Mahmud Bukhari's growing up and becoming famous in the field of jurisprudence.

Before Burkhaniddin Mahmud Bukhari's family moved to Bukhara, they were known as "Oli Moza" and "Bani Umar ibn Marwan". It can be seen from this that there are hypotheses that the dynasty goes back to the Umayyad Umar ibn Abdulaziz ibn Marwan (d. 719), who is recognized as the fifth caliph.

Burhoniddin Mahmud Bukhari's work in Samarkand is notable for being known as a jurist. In Bukhara, the tension between the family of Oli Moza and the local scholars and Qilich Arslan Khan Osman (1202-1212), who was considered the khan of the last Karakhanids, caused the family to settle in Samarkand.

Sources confirm that his works were mostly written in Samarkand, and the first copies of his masterpiece "al-Muhit" were copied by the calligraphers of this city. For example, the calligrapher Abulfath Abdulqahir ibn Abu Bakr ibn Ali Marginani made "al-Muhit" into a book form at the Amiriya madrasa in Samarkand in 1262-65.

Burkhaniddin Mahmud Bukhari's teachers are mainly jurists from his own family. Alloma received the basic knowledge from his father, Sadr Said. Historian Tamimi mentions his son Mahmud and the author of the famous work "al-Hidayat" Burkhaniddin Marginani as prominent students of Sadr Said's father.

Burkhaniddin Mahmud Bukhari mentioned the following Hanafi scholars from Movarounnahr who were his contemporaries in his work "al-Muhit". Their cousin Muhammad ibn Husamuddin Sadr Shahid (known as "Sadrul Jahon"; died in 1170), Hasan ibn Mansur Ozigandi Fargani (known as "Fakhruddin Qazikhan"), the author of "Fatawa al-Qazi Khan" famous, died in 1196), Abu Hafz Aqili (died in 1200), Imam Burhoniddin Marginani (died in 1197), Yusuf ibn Ahmad Najmuddin Khorazmi (died in 1237), Abu Bakr ibn Alauddin Kosani (died 1191), Ahmad ibn Said Hasiiri (died 1298), Zahiruddin Kabir Ali ibn Abdulaziz Marginani (died 1222), the author of Fatawa al-Zahiriya.

Tarajim sources mention the grandfather of Burhoniddin Mahmud Bukhari (d. 1124) with names such as "Abu-s-Sudur", "Sadrul-Kabir", "Burhanul-Kabir", "Burhanul-Aimma", "Sadrul-Moza". Kafawi: "He was from Persia, that's why he spoke Persian." He also issued fatwas in Persian and Arabic," he said. However, information about the scientific heritage created by Burhanul Kabir and his personality is rare in the



sources. Although there is information about his commentary on the work "al-Jame' as-saghir" created by Muhammad Shaybani, this commentary has not reached us. Sources mention that Burhanul Kabir married the sister of Sultan Sanjar.

Burhanul Kabir, the grandfather of Burkhaniddin Mahmud Bukhari, was appointed to the position of "Sadr" and "Qazi al-Quzat" in Bukhara in 1101. The service of the Oli Moza family in the development of culture, science and education, as well as the science of jurisprudence in Bukhara can be seen in the example of their establishment of the "Khizonat al-kutub" library in the "Sikkat ad-Dakhkan" neighborhood. Burhanul Kabir, Sadr Shahid and his brother Sadr Said contributed a lot to the enrichment of this library. Many Bukhara jurists wrote their works using the sources of this library.

Burkhaniddin Mahmud Bukhari's masterpiece "al-Muhit" has been published several times. The first major edition of "Al-Muhit" was made by Ahmed Izzu Inoya (Cairo, 2003) in the form of a ten-volume book with an average of 500-550 pages each. The author of the second major edition of "Al-Muhit" was Abdulkarim Sami Jundi, who published the work in nine volumes (each volume averages 500-550 pages).

It is known that after the conquest of the Mongols, the development of Islamic sciences was observed in the Ottoman state, and the city of Istanbul was turned into the center of Islamic sciences. In the consistent development of the Hanafi sect in this region, the importance of a number of works written by the jurists of Movarounnahr became significant. For example, to date, there are 66 manuscript copies of "al-Muhit" in the libraries of Bayazid, Sulaymaniyah, and Koprulu in Turkey. These manuscripts are of different sizes and were copied by calligraphers in different periods.

The high place of the Mowarunnahr dynasty in the development of Hanafi science can be proved by the scientific legacy left by Burhoniddin Mahmud Bukhari alone. It is worth noting that all jurisprudence works of the Hanafi school written before the beginning of the 20th century widely used the works and fatwas of the jurists of Oli Moza. In the years of independence, researches were conducted on the scientific heritage of scholars.

It is not known where Alloma's grave is. According to some sources, "Mahmud Bukhari was martyred during the Mongol Tatar invasion. His body was destroyed along with those who were executed. This information means that his grave is unknown.

The scientist is one of the successors of Marginani school of jurisprudence. Most of his teachers are directly and indirectly related to Imam Marginani, the author of Hidayah. He learned from scholars such as Imam Burhonuddin Zarnuji, Imam Abu Abdullah Muhammad ibn Ahmad Qazini, Imam Sirajuddin Qazini, Imam Badriddin Kardari, Imam Humayduddin Zarir, Hafizuddin Kabir Bukhari. The last four of the listed teachers are the students of Burhanuddin Marginani's student Shamsuddin Muhammad ibn Abdusattar Kardari. Imam Zarnuji was directly a disciple of Imam Marginani.

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SHIAS OF CENTRAL ASIA AND THEIR CHARACTERISTICS

Tokhtiev Shukhrat Rustamovich PhD.

Senior Lecturer, "IRCICA Chair for Islamic History and Source Studies" at the International Islamic Academy of
Uzbekistan 11, A.Kadiri, Tashkent, 100011, Uzbekistan
Orcid:0009-0002-0894-229X

ABSTRACT

The article is devoted to a review of the history and culture of the Shiite communities of Central Asia, in particular Uzbekistan, which profess Shiism, from the Isnaasharid (Ismamite) and Ismaili interpretations. The historically proven centuries-old contradictions of Shiites and Sunnis sometimes took the form of not only confessional, political or diplomatic conflicts. They seriously influenced the mutual perceptions of Muslims of two confessional directions within Islam, which sometimes resulted in an almost physical hostility to Sunnis and Shiites. The hostility of these two confessional areas of Islam prompted their bearers to apply the label "wrong" in relation to each other. And sometimes it was difficult to separate simple confessional rejection from political confrontations, which, in turn, often became an occasion for mutual military expansion, bloody clashes, etc. Now, despite the prevailing predominantly Sunni-Hanafi religious environment, Shiites from time immemorial keep the features of religious ritual and their confessional self-identification. The article also discusses some historical data on the resettlement and penetration of Shiite currents in Central Asia.

KEYWORDS: Irani, Persian, Marvi / Mavri, Samarkand, Bukhara, Sunnits, Shiites, Imamites, Ismailites, Pandjab

INTRODUCTION

From the 16th century to the 20s of the 20th century, in particular, due to the wars and invasions caused by the religious and ideological rivalry between the Sunni rulers of Movarounnahr and the Iranian Shiites, and the political, religious, economic and social situations in Iran and its neighboring countries, the arrival of Shiite representatives to Central Asia was observed. . Since these Shiite representatives mainly come from Iran, in Central Asia, especially in the territory of the present Republic of Uzbekistan (except for Iranian Jews), they are called by the ethnographic term Irani (Pers. Iranian).

But Irani is a generic ethnic term that does not mean that all Shiites belong to a single "sub-ethnic" group¹. Among the Shias we know as Iranian (depending on the city of origin) we can also find those who call themselves Marvi/Mavri (from Marv), Sabzevari (from Sabzevar), Mashhadi (from Mashhad), Giloni (from Gilon), Mozandaroni (from Mozandaron), Nisoï (from Niso)².

THE MAIN PART

Iranians are divided into Tajik and Turkic speakers according to language signs. For example, O.A. Sukhareva, who

conducted research on the history of the cities of the Bukhara Khanate, writes that according to the Tajik-speaking Persian language and anthropological type of the city of Bukhara, it is different from the descendants of the red-headed people of Samarkand, who speak the Turkic language and are considered to have been transferred to the emir Shahmurad³ (1785-1800). We conducted research in Samarkand in January 2007 and witnessed this in the speech of the Iranian population living and working in and around the Panjab Mosque.

In relation to the ethnic (or "sub-ethnic") group that we know as Iranians, O.A. Sukhareva used the words "Persian" and "Persian" in her published work on the history of the cities of the Bukhara Khanate and proposed to include the term "Persian" in the literature as the official name of this group⁴. O.A. Sukhareva expresses her opinion that after the "massacre of Shias" in 1910, that is, when relations between Sunnis and Shias in Bukhara became tense, the Shias adopted the name Persian because the words "Iran" and "Marvi" were used in a derogatory and hostile spirit⁵.

Professor I.I. Zarubin commented that, regarding the division of Shias into *Persians* or *Iranians*, the district civil commissioner in the Pamirs used the word *Iranian* in reference to people who were deported from Marv. I.I. Zarubin writes that they, those deported from Merv (all Shias enslaved and sold in

¹ The term "Subethnik" ("Subethnos") is used here to refer to a group separated from a particular nation or ethnos for geographical or political reasons [13, p. 197-199].

² Babadžanov B.M. On the history of the naqšbandīya muğaddīya in Central Maāwarā'nnahr in the late 18th and early 19th centuries // Muslim culture in Rissia and Central Asia from the 18th to the early 20th centuries. – Berlin, Klaus, Schwartz, Verlag. 1998. – Pp. 385-413.

³ Ganiyev, A., & Zinatullayev, Z. (2020). TAX AND ZAKAT COLLECTION SYSTEM OF THE BUKHARA EMIRATE DURING THE 19TH CENTURY. *Theoretical & Applied Science*, (10), 313-317.

⁴ Suxareva O.A. *Kvartal'naya obshina poznefeodalnogo goroda Buxari*. – T.: Nauka. 1976. – P. 365

⁵ Suxareva O.A. *Kvartal'naya obshina poznefeodalnogo goroda Buxari*. – T.: Nauka. 1976. – Pp. 82-83/



the slave markets of the Bukhara Khanate) call themselves *Iranians*, do not mix with the Tajiks, but despite their language and religion differences, their dress and lifestyle are similar to the Tajiks⁶.

In addition to the *Iranians*, I.I. Zarubin speaks about the Persians living in the cities of the Trans-Caspian region. For example, in the 1926 census, I.I. Zarubin puts the number of *Iranians* in Samarkand region at 11,282 and the number of *Persians* at 654⁷. That is, here referred Shia representatives are called by two – *Iranian* and *Persian* – ethnic names.

Information about this can be found in other literature as well. For example, in the book “Multinational Uzbekistan: historical and demographic aspect” in the census, which began in 1926, we can see that the ethnic composition of Uzbekistan was 9.2 thousand *Iranians* and 9.8 thousand *Persians*. Subsequent calculations, in 1939 and 1959, show that neither the *Iranians* nor the *Persians* are a separate ethnic group, and therefore it is difficult to know their number. However, among those registered in 1970 and in 1979 and 1989, only the name of the Persians occurs, and we see that their number has doubled compared to the previous registered periods. For example, in 1970, 15.5 thousand Persians were registered⁸, meanwhile between 1979 and 1989, 20.0 thousand Persians were registered in Uzbekistan⁹.

F.D. Lyushkevich, who conducted a study on the ethnic group of *Iranians* (as cited in the 1926 census), does not specify to whom he referred to the Persians cited by I.I. Zarubin [9, p. 39]. However, both I.I. Zarubin and those who registered in 1926 used the word *персы* / Persians in the early twentieth century to refer to Iranians seeking asylum and lucrative employment in Central Asia, particularly in Uzbekistan¹⁰. The word *Iranian* was widespread among the local Shias at that time. Although only the word *Persian* was used in the 1970, 1979, and 1989 censuses, many Shias who have lived in present-day Uzbekistan for centuries call themselves *Iranians*. Even we may find the word *Iranian* can be found next to the word “Nationality” in their passports. However, in the documents of the younger generation, we can see that according to their wishes, the word Uzbek is indicated in the “Nationality” aspect. This process is a natural phenomenon (not organized on the “initiative” of government agencies). At the same time, *Iranians* do not evaluate their “ethnic conversion” negatively. Therefore, such a process of “ethnic assimilation” is natural.

However, the Iranians have preserved their traditions and even restored all their customs during independence, and there is no evidence of interference or obstruction in this process by the relevant institutions of the state.

In the survey of Iranians in the “Panjob” and “Khoja Soat” neighborhoods in Samarkand that was conducted in 2007, Ishakov Yusuf (was born in 1953, nationality is Iranian), deputy imam of the Panjob mosque, and Gulyamov Ravshan (Ravshan strongman, born in 1960), chairman of the Iranian-Uzbek Friendship Society and Cultural Center, said that as well as Iranian Shias, Russian-speaking Azerbaijani Shias also lived in Samarkand. Moreover, they were called as *pirsiyon* (*Persian*), and that some of them had *Persian* in their passports instead of Azerbaijani. According to 1995 data, 93% of the population of Azerbaijan believe in Shi'ism¹¹. Currently, considering Central Asia there are about 60,000 Azerbaijanis in Uzbekistan, about 78,000 in Kazakhstan¹², and about 20,000 in Turkmenistan, Kyrgyzstan and Tajikistan¹³. Due to the regime of the Soviet Union and the Stalinist policy pursued, people of this Azerbaijani nationality moved to other socialist republics located in the Central Asian region as representatives of the nation, such as: *Russians*, *Armenians*, *Chechens*, etc. The politics and situation of the Soviet era was not left unnoticed by the worldview, beliefs and traditions of the Azerbaijanis who came to Central Asia. For example, in 2007-2011 Gadjeva Sakina Fikretovna, a bachelor's degree student in international relations at the Tashkent State Institute of Oriental Studies said that when her uncle died, her family, along with her neighbors, who were Armenians and Russians, performed Christian rites, and buried his body under the sounds of music. “Now we, the Azerbaijanis, understand that we are Muslims”- Sakina Gadjeva added. Obviously, the cultural and enlightenment centers established in the countries where Shias live are of great importance for the Shias of Azerbaijan to understand themselves as Muslims. Consequently, such centers are located in Turkmenbashi (formerly Krasnovodsk) in Turkmenistan, Almaty in Kazakhstan, Bishkek in Kyrgyzstan, Dushanbe in Tajikistan, Navoi, Samarkand, Tashkent, and Fergana Valley in Uzbekistan. The first cultural center of Azerbaijanis in Uzbekistan was opened in 1989 in “Gardashlyk” (“Brotherhood”) in Tashkent and then another in Samarkand region¹⁴.

The life of the Iranian-Shias of Central Asia, especially Uzbekistan, during the Soviet Union was distinguished by its

⁶ Zarubin I.I. *Spisok narodnostey Turkestanskogo kraya*. – L.; 1925. – P. 8.

⁷ Zarubin I.I. *Naselenie Samarkandskoy oblasti*. – L.; 1926. – P. 24.

⁸ اقوام مسلمان اتحاد شوروی (Muslim communities of the Soviet Union). Compiled by Shirin Akiner, translated by Muhammad Hussein Oriya. In *Persian*. - Tehran, Scientific and Cultural Publications Company, 1367/1988. – Pp. 448-452.

⁹ Ata-Mirzaev O., Gentshke V., Murtazayeva R. *Uzbekistan mnogonatsionalniy: istoriko-demograficheskiy aspekt*. – T.: Izd. medisinskoy literaturi imeni Abu Ali Ibn Sino, 1998. – Pp. 54-68, 144-151.

¹⁰ Mahdi Sanoyi "Nehovandi". جایگاه ایران در آسیای مرکزی (Iranian places in Central Asia). - Tehran, International Faith Publishing

House, 1376/1997. – Pp. 76; Aliyeva F. *Samarkandskie iransi. centr-asia.narod.ru/iran* 20.06.2006-09:46 AM.

¹¹ *Countries of the World: Encyclopedic Reference*. - Smolensk, Rusich, 2002. – P. 13.

¹² *Islam na territorii bivshey Rossiyskoy imperii. Ensiklopedicheskiy slovar. Pod redaksiyey S.M.Prozorova*. – M.: Izdatelskaya firma «Vostochnaya literatura» RAN, 2006. T. I. – P. 175.

¹³ *inform.kz/rus/article/2207169; planeta-imen.narod.ru/imenaz/azerbajjan; podrobno.uz/cat/calche/Azerbajdzantsi v Uzbekistane*

¹⁴ *forum.turan.info/showthread; chrono-tm.org*



uniqueness. First of all, there are Shias, along with representatives of other religions and nationalities, as a result of the process of Sovietization, their knowledge about Shiism has been preserved in a vague form, or rather, in the form of certain (apparently simplified) religious rituals. Many researchers have met them in this form. For example, according to B. Bobojonov and A. Mominov during the scientific research in Samarkand, even the “new” religious leaders of Samarkand in the early 1990s did not have extensive knowledge about Shiism, moreover, about its internal currents and factions. Although, according to other historical sources, Shiites may have heard of the religious leader in Iran – Ayatollah¹⁵, marja al-taqlid Ruhullo Mousavi Khomeini (1979-1889) and his follower Sayyid Ali Khomani (1989-present).

Therefore, at that time, when the Soviet era was coming to an end, it was appropriate to talk about the historical-ethnic self-awareness as an Iranian, and the religious awareness (as a result of the atheistic policy) was so forgotten that it is correct to talk about the Iranians as a separate religious and even ethnic group. would not come. In the period of the Soviet Union, the group self-consciousness of Iranians was preserved in the standards raised by the reality of the Soviet era, and in ethnic mutual feelings through certain rituals and ceremonial gatherings. But Iranians, at any level, joined the local population – Uzbeks, Tajiks and other national and ethnic groups, and worked side by side with them.

In Central Asia, especially in Uzbekistan, the majority of Iranians live in Samarkand. Samarkand became a major refuge for Iranians after the bloody clashes between Shias and Sunnis in Bukhara in 1910. Many Iranians at the time, according to the information given by the original Iranians, ran away from Bukhara and took refuge in colonized Samarkand. They were accustomed to the situation here and were able to survive with their hard work and ingenuity. As a result, the “Dargam” Canal in Samarkand was built by the Iranians. The people of Samarkand remembered this channel as “Iranian stream”. Later, around this canal, the neighborhoods of Iranians such as Punjab (Five Streams, River), Khoja Soat, Lolazor, Topkhana, Mingtut, Bogishamol, Slave Garden (now Flower Garden), Bekmahallya were formed. From 1928 to 1930, in this place of Samarkand there was the district of “Eron bogishamoli” (Iranian garden)¹⁶.

The common occupations of Iranians living in Central Asia, especially in the territory of present-day Uzbekistan, were weaving silk (shoibofi), making confectionery products (kannodi), selling medicinal spices (attori) and jewelry making (zargari). By now, we can find Iranians working in different areas of the country¹⁷.

DISCUSSION

¹⁵ Ayatullah ("Miracle of Allah") and Marja al-Taqlid ("Object of Imitation") are titles given to prominent and high-ranking clerics in the Shia world.

¹⁶ Aliyeva F. Samarkandskie iransi. *centr-asia.narod.ru/iran* 20.06.2006-09:46 AM.

In 2007, when we went to Samarkand to conduct research on the history, lifestyle and culture of the Iranian population of the city, we stayed at the “Tomaris” hotel located in the Iranian district of Samarkand, and we were the first to witness the use of Turkish words by Iranians in their daily conversations. In an interview with Alieva Fatima Sattorovna, assistant professor of the Department of History of Uzbekistan, Ph.D., who is from Iran, she said that representatives of different nationalities live in Iran - Persians, Azerbaijanis, Kurds, Iranians from Samarkand are from Iranian Azerbaijan, i.e. that they come from the region of Azerbaijan (Oston-e Azarbaydjon) of Iran and that they use Turkic words because the Azerbaijani language is close to the Uzbek language, as well as in the process of the all-Union census held in 1970, 15,457 Iranians were registered in Uzbekistan, of which 12,202 spoke Uzbek as their mother tongue said that his speech was recorded. It is also interesting that some Iranians consider themselves to be representatives of the Imamite movement based on the Jafari school of Shiism. That is, the cases of linguistic assimilation did not turn into religious conversion of Iranians. Ethnographically, this process is particularly noteworthy.

In her research, Fatima Alieva writes that many scientific and cultural figures from Iran have appeared in Uzbekistan. For example, poet and prose writer Abulqasim Lohuti, lithographer Ibrahim Sultan from Khiva, a participant in the revolutionary movement in the Bukhara Emirate, later historian Professor Aliev (may be the father of the author), orientalist-pedagogues K. Shitfar, A. Tabataboi, D. Eftekor, M. Tageev, Iranian scholars Latif Halilov and A. Patsun, director Syed Ali Okhonzoda, artist Rashid Fayzi, former consul of the Republic of Uzbekistan in Thailand Parviz Aliev. We can add the People's Artist of Uzbekistan Mrs. Nasiba Abdullaeva among them. Among the Azerbaijanis, it is worth mentioning Alisher Navoi state academician and ballet theater director, People's Artist of Uzbekistan and Azerbaijan F. Safarov, writer A. Najafov, artist of the Academy of Arts of Uzbekistan Yu. Husaynov¹⁸.

Currently, while talking about the main architectural heritage of the Iranians of Uzbekistan, it is impossible not to mention the Punjab mosque and madrasa in Samarkand during the Soviet Union, which was called “Punjab Mosque of the Religious Society of Samarkand, UzSSR, Ogyi Mirhasan”. The madrasa was built in the 19th century with a mosque and its minaret, which have not survived to us, and the architect was Khwaja Abduraim. This complex was built on the waqf land of a person named Hajibobo Abduokhunbek. The Punjab Madrasah was established in 1908, where students studied religious and secular sciences. Until 1924, the building was kept in good condition and used for its intended purpose. Since 1924, the madrasa (like many religious institutions of the Soviet Union) has been adapted for various organizations and offices, and since then the building has been reworked. In 1939-1943,

¹⁷ Aliyeva F. *Iransi Samarkanda // Uzbekistanskiy gumanitarniy jurnal «Obshchestvennoe mnenie. Prava cheloveka» №1 (13), – T.; 2001. – Pp. 123-125; Aliyeva F. Samarkandskie iransi. centr-asia.narod.ru/iran* 20.06.2006-09:46 AM.

¹⁸ Aliyeva F. *Samarkandskie iransi. centr-asia.narod.ru/iran* 20.06.2006-09:46 AM.



the madrasa housed a vocational school. Later, the building was used for various offices - construction, trade, warehouse, post office. By 1990, the Panjab Madrasah, together with the Murad Awliya Memorial Complex, built by the ancestors of the Iranians in Samarkand, passed into the hands of its real owners, the Shia Muslims. From March 10 of this year, the "Cultural Center of Iranians" was established in the Punjab Madrasah. In 1997, instead of the mosque adjacent to the madrasa, a new mosque was built and opened in 1999. In addition, the control of the Punjab tomb, 50 meters away from the Punjab mosque and madrasa, was also handed over to the Iranians. It is said that it is a cemetery of brothers, in addition to Iranians, Arabs, Jews and Kurds are buried. According to information given to us by Iranians from Samarkand, there are 9 Iranian mosques in the city, of which only two are open because they are registered. In Bukhara, only one such mosque (the mosque located on Samarkand Street, Bukhara) is open¹⁹.

In **conclusion**, Iranians living in the territory of Uzbekistan were kept here as one of the peoples. Iranians have managed to maintain their religious and ethnic identity while becoming much closer to the local peoples. This situation is more common in Uzbekistan than in the countries of Central Asia. In addition, due to the existing conditions, the contribution of Iranians to the culture and science of Uzbekistan is indisputable. These processes are interesting from an ideological (ethnological or historical) point of view, as well as from an ideological point of view. That is, ethnic groups such as Iranians were able to adapt to local conditions and even show their respective effects on these conditions. So, while we observe a limited process of assimilation of Iranians (especially from the aspects of language and culture), this ethnic group has preserved its own characteristics (identity). In the future, ethnologists must study such factors more widely and more deeply. In particular, we think that it is an urgent issue to determine the reasons and types of adaptation of Iranians to different conditions.

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EXPLORING HOME-BASED LEARNING: PERSPECTIVES AND EXPERIENCES OF GRADESCHOOLERS IN A PRIVATE ELEMENTARY SCHOOL

Lodyvina G. Angeles, PhD

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ABSTRACT

This qualitative study delved into the experiences of grade school students within a private elementary school setting during the period of home-based learning. Utilizing semi-structured and structured interview techniques, twelve participants were engaged to gather rich insights into their encounters. Thematic analysis served as the primary method for data interpretation. The research revealed that modular learning presented considerable hurdles for students.

The shift to home-based learning appeared to diminish opportunities for socialization and peer interaction, given the limitations on direct engagement with teachers and classmates. Students encountered difficulties in managing time and maintaining focus without the direct supervision of teachers. Understanding modular learning materials proved to be challenging, particularly without timely clarification from educators. Moreover, restricted access to essential resources hindered students' active engagement in the learning process.

This study sheds light on the implications of home-based learning in the context of private elementary schools. It emphasizes the urgent necessity for educational institutions and educators to address these challenges effectively, thereby enhancing the overall learning experience for students during periods of home-based education.

INTRODUCTION

In the wake of the global COVID-19 pandemic, the landscape of education underwent a significant transformation, compelling institutions worldwide to suspend physical operations and transition to online and modular learning. This shift, as documented by UNESCO (2020), affected over 1.7 billion students globally, including 28,451,212 students in the less economically developed nation of the Philippines (Pitagan, 2021).

This unprecedented crisis prompted a necessary adaptation in teaching and learning methods, giving rise to challenges and opportunities for both educators and students. As the traditional classroom setting gave way to home-based learning, students with varying mindsets navigated the transition differently. The concept of a growth mindset emerged as a key factor, with resilient students adapting more readily to the novel learning environment (Porkhel S. and Chhetri R., 2021).

The closure of educational facilities prompted a reliance on alternative methods such as online, modular, and distance learning, presenting challenges that impacted students' exploratory learning capabilities (Abuhassna et al., 2020). Scholars, including Finol (2020) and Mallillin et al. (2020), delved into the effects of distance learning on learner satisfaction, academic achievements, and the independent learning journeys facilitated by modules, worksheets, and textbooks.

This research, titled "Exploring Home-Based Learning: Perspectives and Experiences of Grade Schoolers in a Private Elementary School" delves into the experiences of elementary students navigating home-based learning. The study aims to shed light on how modular learning not only modified the curriculum but also brought innovation to teaching and learning methods for elementary students. It explores the adjustments made by students, addressing academic challenges, experiences, and coping mechanisms during the transition from traditional to modular home-based learning.

Understanding the challenges and advantages of modular home-based learning is crucial for aspiring educators, especially in the context of the evolving educational landscape. Insights from this study provide essential knowledge for anticipating and mitigating potential student challenges. This understanding equips educators with strategies to enhance student engagement, motivation, and independence in the context of a modular setup—an increasingly relevant aspect of education influenced by factors like the COVID-19 pandemic and the demand for adaptable learning modalities.

Statement of the Problem

The primary objective of this study was to investigate the challenges and experiences of Grade 6 students from a private elementary school in the Division of Cabanatuan City during the height of the pandemic's impact on home-based learning. To address this objective, the research sought to answer the following specific questions:

1. How did the participants perceive home-based learning?
2. What academic challenges or experiences did grade-schoolers encounter during the implementation of home-based learning?
3. Which strategies did the participants employ to manage and adapt to home-based learning?
4. What were the implications of the findings for basic education?

METHODOLOGY

Research Design

The research employed a qualitative method, particularly the phenomenological approach. Pathak, Jena, & Kalra (2013) note that the qualitative method serves to understand individuals' beliefs, experiences, attitudes, behaviors, and interactions, producing non-numerical data. Concurrently, phenomenological research is a qualitative research approach that aims to discern and delineate the universal essence of a phenomenon. This



approach delves into the everyday experiences of individuals, sidelining the researchers' presuppositions about the phenomenon. Thus, phenomenological research centers on lived experiences, seeking profound insights into individuals' interpretations of those experiences (Bliss, 2016). Essentially, the phenomenological research design postulates that individuals apply a universal framework to comprehend their experiences. The task of the researchers is to interpret participants' feelings, perceptions, and beliefs to elucidate the core essence of the phenomenon, often through investigations or interviews.

In this study, the qualitative method facilitated a deeper understanding of how elementary students, specifically those in

grade 6, navigated the challenges they encountered during Home-Based Learning.

Respondents

The study's respondents comprised twelve Grade VI students enrolled in the academic year 2022-2023 at Amazing Grace Christian School. The data gathered were derived from their experiences during the initial outbreak of the COVID-19 pandemic. These students were categorized based on their academic performance: above average, average, and below average.

For a clearer representation of the research, the subsequent table illustrates the distribution of the 12 respondents among the Grade VI students of Amazing Grace Christian School.

Table 1. Respondents of the Study

Respondent 2	Above Average
Respondent 3	Above Average
Respondent 4	Above Average
Respondent 5	Average
Respondent 6	Average
Respondent 7	Average
Respondent 8	Average
Respondent 9	Below Average
Respondent 10	Below Average
Respondent 11	Below Average
Respondent 12	Below Average

Research Instrument

For this research, in-depth interviews were conducted among the twelve respondents. The questions, both structured and semi-structured, revolved around perceptions, experiences, and the effects of home-based learning, as well as strategies employed to cope with this mode of learning.

Upon obtaining consent from the adviser and the parents, responses from the participants were recorded to ensure that every detail shared during the interview was documented. All data was handled with the utmost confidentiality.

Data Collection

To collect the necessary data on perceptions, experiences, challenges, and coping strategies associated with home-based learning, structured and semi-structured interviews were carried out with the twelve participants. Prior to this, approval was secured from the School Directress and the Grade VI teachers. Due to the advice of the directress, considering the area was not yet declared COVID-free, the parents of the twelve participants were also approached, and their responses were submitted in written form.

RESULTS AND DISCUSSION

In this research, a thematic analysis approach was employed to investigate the experiences of elementary students in a private school during home-based learning. Thematic analysis, a qualitative research method, allowed the research team to identify, analyze, and report patterns or themes within the data, providing a deeper understanding of participants' perspectives. (Creswell 2014).

The study revealed several significant themes related to students' perceptions and experiences with home-based learning. The first major theme, "Face-to-face classes can explain the lesson better," highlighted that students felt a stronger connection to the material in a traditional classroom setting. Participants expressed the value of direct interactions with teachers, immediate feedback, and engaging in peer discussions, emphasizing the effectiveness of face-to-face instruction. Some participants cited challenges in understanding lessons without personal guidance from teachers.

Another cluster theme, "Home-Based Learning is Challenging," emerged from students' experiences during the transition to online and modular learning. Challenges included difficulties in staying focused, distractions, and the absence of teacher guidance. The study also indicated that students appreciated the flexibility of time management offered by home-based learning, allowing them to allocate time according to their preferences.

The third significant theme, "Family became my support system in Learning," highlighted the crucial role of families in facilitating students' academic pursuits during home-based learning. Participants acknowledged the support, guidance, and involvement of their family members in various aspects of their education, emphasizing the positive impact of family engagement on student motivation and accountability.

Overall, the research provided valuable insights into the challenges and advantages of home-based learning for elementary students. It emphasized the importance of understanding students' perspectives and the role of families in supporting academic endeavors during this unconventional learning environment.



	Theme	Sub Themes	Description	Significant Statements
1	Difficulty in the comprehension of the lesson	Comprehension	Students were not able to understand well because no one explained the lesson properly. There's no teacher that can explain the lessons.	Participant 1: <i>"I think being a student that learns on a home-based learning is ok. But I also think that face-to-face is better since you can really understand the lesson."</i> Participant 2: <i>"Sa aking pananaw, ang modyular na pag-aaral ay may maganda at di-magandang naidudulot. Ang magandang dulot ng modyular na pag-aaral ay tipid sa transportation at ang di-magandang dulot nito para sa akin ay di mapaliwanag ng mabuti ang aralin."</i> Participant 3: <i>"Ang pananaw ko ay mahirap dahil walang gurong personal na magturo at magpaliwanag ng mga aralin."</i> Participant 7: <i>"Hindi maganda ang naging epekto sa akin dahil hindi ko rin naman naiintindihan dahil walang nagpaliwanag ng maayos sa aralin."</i> Participant 8 <i>"Bilang student, ang aking pananaw ay mas naging mahirap po unawain ang lesson. Mas mainam pa din po ang face-to-face na pagtuturo."</i>
1.1	Sufficient time to study the lesson/module	Sufficient time	Students take their time answering the activities' and complete their tasks.	Participant 1: <i>"I would take my time answering my modules because I have enough time answering my modules than face-to-face classes unless the teacher gave us a deadline."</i> Participant 11: <i>"I would read books while listening to music, or when I can't read, I would go walk my dog outside."</i>
1.2	Difficulty in focusing on their studies	Difficulty in focusing	The students found the home-based learning difficult because they are used to face-to-face interaction with the teacher.	Participant 1: <i>"I found it a little bit difficult to stay focused on my modules because I was used to being in a face-to-face where there are teachers you can ask questions to."</i> Participant 5: <i>"Nahirapan ako dahil nasanay ako sa face to face na pag-aaral"</i> On the other hand, Participant 8: <i>"Difficult po gawa na din po na hindi ako masyadong natuturuan ng aking magulang dahil sila po ay may trabaho."</i>
1.3	Lack of guidance from the teacher	Lack of guidance	Found home-based learning challenging because no one teaches them the lessons that they do not understand.	Participant 6: <i>"Hindi dahil hindi ko kasama ang mga magulang ko dahil sila ay nagtatrabaho lagi lang ako nasa loob ng bahay at nalulungkot."</i> Participant 7: <i>"Hindi madali mag modyol lalo na kung isa lang mas maganda pa rin ang may guro na magtututo sayo para mas maintindihan mo ang iyong aralin."</i> Participant 8:



				<i>"Hindi po madali. Mas mainam po na may mag guide po."</i>
1.4	Support from family	Support	Family helped and supported them in answering their modules and also discussed the lesson they found hard to answer.	<p>Participant 2: <i>"Ang tumutulong sa akin noong ako ay nag-aaral ay ang aking nanay. Ito ang naging bonding namin ng nanay."</i></p> <p>Participant 7: <i>"Ipinaliwanag sa akin ni Mami or ni Tita kung paano ang gagawin kapag hindi ko na talaga alam o hindi ko na maintindihan."</i></p> <p>Participant 9: <i>"Yes, my family is helping me and teaching me during online classes. My mother is helping me with my assignments and explaining the previous lesson that we just discussed during an online class."</i></p>

	Theme	Sub Themes	Description	Significant Statements
2	Independent learning	Independent	Faced academic challenges like not understanding the lesson, independent learning can cause struggling in learning.	<p>Participant 1: <i>"I faced academic challenges in the implementation of home-based learning like not understanding lessons sometimes, etc."</i></p> <p>Participant 3: <i>"Kailangan kong matuto mag-aral ng mag-isa sa bahay."</i></p> <p>Participant 6: <i>"Naging hamon sakin dapat matuto ako araling mabuti na hindi umaasa palagi sa magulang"</i></p> <p>Participant 7: <i>"Walang nagtuturo na guro upang maintindihan ko ang aralin."</i></p>
2.1	Insufficient time to accomplish the activities	Insufficient time	They cannot finish the tasks given to them because, most of the time, they do not understand the lesson.	<p>Participant 3: <i>"May pagkakataon na nauubusan akong oras sa pag sagot dahil hindi ko naiintindihan ang aking sagutan."</i></p> <p>Participant 6: <i>"Opo lalo na ang subject na math dahil kulang sa oras..."</i></p> <p>Participant 7: <i>"Nahihirapan ako sa iba dahil kinulang sa oras ko dahil may araw na madami ang binigay na modyul."</i></p> <p>Participant 9: <i>"I had a hard time understanding the teacher's explanation and answering exercises because of the time limit."</i></p> <p>Participant 12: <i>"Minsan nahihirapan ako sa module dahil kaunti lang ang oras."</i></p>
2.2	Difficulty in understanding the lesson	Difficulty understanding	Not understanding the lesson is challenging for students because some of them were not able to fully understand the lesson given to them.	<p>Participant 1: <i>"Yes, sometimes. The things that made it harder for me was not understanding some of the lessons or questions."</i></p> <p>Participant 3: <i>"Hirap ako sa modyul dahil may mga salita akong hindi pamilyar."</i></p>



				Participant 4: "Minsan nahihirapan ako kasi minsan hindi ko alam alam ang lesson pero kiung hindi ko alam ang lesson isearch ko top sa youtube."
2.3	Difficulty in understanding complex subject	Complex subject	Based on the learners, mathematics subject gives them a hard time understanding it.	Participant 4: "Math ang hindi ko masyado naaral kase ung math ang pinaka mababa sa card ko." Participant 6: "Subject na math dahil mas naiintindihan ko kung sa loob ng eskwelahan..." Participant 8: "Math kaya po siguro di ko natutunan mas maganda face-to-face." Participant 9: "Math was my problem; it was hard for me."
2.4	Appropriate time for learning	Appropriate time	Not all the time is the best way to do their modules; students prefer answering their work and activities every morning while their mind is still fresh.	Participant 2: "Sa umaga po dahil po para fresh ang aking isipan." Participant 3: "Tuwing umaga ko ito sinasagutan upang wala na akong isipin na sasagutan."
2.5	Lack of guidance	Guidance	They tend to struggle and are not confident answering their modules when no one is around to teach and explain to them what to do because some are busy.	Participant 1: "Not really. When you need help, no one can help you because they are mostly busy or doing something." Participant 2: "Nahihirapan po ako kapag walang nagpapaliwanag sa akin o walang internet." Participant 5: "Di gaano mas gusto ko ang face-to-face na pag-aaral."
2.6	Utilized gadgets as a tool for learning	Utilized gadgets	Gadgets like cell phones and laptops are great help during this time to make communication and to do all the work that is needed to be done.	Participant 2: "Opo ang aking cellphone, ipad at laptop." Participant 3: "Oo ang gamit ko ay cellphone para mag search sa internet." Participant 4: "Mayroon akong gadget kapag gumagawa ng module dahil minsan hindi ko alam ang sagot..." Participant 7: "May gadyet naman ako at nakakatolong naman sakin at medyo nahihirapan din." Participant 8: "Yes po mas madali po magsagot using gadgets." Participant 10: "Opo gadget ang isa sa gabay na tumulong upang masagutan ang modyul." Participant 11: "I only use my phone when I really need help in studying sometimes so I can get the answers right."



	Theme	Sub Themes	Description	Significant Statements
3	Parents as a learning facilitator	Parents	Having a family member as a mentor when seeking assistance.	Participant 7: "Magpaturo sa magulang." Participant 8: "Humingi ng tulong sa aking magulang." Participant 9: "I was doing self-learning with the help of my family."
3.1	Time management and organization	Time management	Having a to-do list makes them responsible and able to manage their time properly.	Participant 3: "Gumagawa ako ng to-do list tuwing gabi para sa umaga po ay handa at magawa ko na ang aking to-do list." Participant 4: "Gumagawa ako ng listahan ng gagawin araw-araw para maayos ang aking modules."
3.2	Organization of tasks/activities	Organization	Students tend to make to-do lists for their modules and organize their time to answer them.	Participant 1: "I make a to-do list every day, and yes, I do set a timer so I can have enough for each subject." Participant 2: "Ako ay gumagawa ng to-do-list at checklist kapag gumagawa ng modyul. Naglilimita ako ng oras para sa paggawa ng modyul."
3.3	Support from family	Support	Students seek help from their parents regarding the lesson that they do not understand.	Participant 2: "Ako ay humihingi ng tulong sa aking magulang at ipinapaliwanag nila yung aralin kung saan ako nahihirapan." Participant 3: "Lumalapit saaking magulang kung saan ang aking di maintindihan." Participant 6: "Ang mommy ko, binabalikan namin palagi ang libro sa gabi at pinapaliwanag niya."
3.4	Conducive learning environment at home	Conducive learning	They tend to seek out peaceful and quiet places or rooms when it is noisy in order to focus on their work.	Participant 2: "Humahanap po ako ng tahimik na lugar para doon ako gagawa modyul." Participant 6: "Pumupunta ako sa kwarto para mapokus ako sa pag-aaral." Participant 7: "Umaalis at pumupunta sa tahimik na lugar." Participant 12: "Umaalis po pumupunta sa tahimik na lugar."

Analysis

This study indicates that the utilization of modules promotes self-directed study, aligning with existing literature emphasizing the advantages of autonomous learning and modular materials (Nardo, 2017). Modular resources offer students a structured learning path, empowering them to assume responsibility for their education and progress at their own pace. Furthermore, modular learning offers convenience by enabling students to access materials at their convenience, from any location.

Nevertheless, the study's outcomes unveil a prevailing preference among students for traditional learning methods, despite the benefits associated with modular learning. This inclination isn't surprising, given the entrenched nature of traditional learning

within our educational framework, to which students are accustomed. Additionally, traditional learning fosters crucial peer and teacher interactions, integral to the learning process. The study also underscores the inherent challenges of home-based learning, demanding self-discipline and motivation from students, which can prove daunting. Moreover, students may contend with distractions and a lack of requisite resources and support, hindering their academic progress.

The implications drawn from the study highlight the multifaceted challenges students face in a home-based learning environment. Distractions and noise disrupt concentration, leading students to seek alternative study spaces, which may isolate them further. The absence of immediate teacher and peer support impedes collaborative learning and may increase the burden of learning



solely on students. This shift to independent learning can exacerbate struggles for some students, potentially resulting in slower progress or gaps in understanding. Ultimately, the findings underscore the critical importance of addressing the quality of education and the overall learning experience in home-based settings to ensure equitable access to learning opportunities.

In sum, the study underscores the advantages of modular learning in fostering independent study but also underscores the hurdles associated with home-based learning and the prevailing preference for traditional methods among students. These findings necessitate careful consideration by educators and policymakers, urging them to evaluate the merits and demerits of diverse learning modalities and tailor their approaches to meet the diverse needs of students.

CONCLUSIONS

Based on the findings, the following are concluded:

1. Face-to-face classes are seen to be more effective for learning. While self-paced learning can be advantageous, home-based education presents several challenges, necessitating crucial family support for success.
2. Some individuals struggle with unsupervised study or lack of assistance, while others encounter difficulties due to time constraints or internet connectivity issues. Conversely, a growing number of students now consider technology and devices indispensable to their educational endeavors.
3. Students frequently turn to their parents for assistance with their modules, often creating daily to-do lists for their modules on a daily basis. Many students express a greater comfort level approaching their parents for aid compared to seeking help from teachers or peers. Additionally, in noisy environments, students tend to seek out quiet spaces or rooms to better concentrate on their tasks.
4. Implications were drawn from the findings of the study.

Based on the proceedings of the research, the following are recommended:

1. School administrators need to assess and adjust strategies to offer enhanced support for students during home-based learning. This could involve developing effective methods, integrating interactive and engaging activities, and ensuring consistent communication and availability for student assistance.
2. Students should proactively take measures to minimize distractions while learning from home. This includes creating a dedicated study area free from noise and disruptions, establishing a structured routine to facilitate focused work, and employing time management techniques. Additionally, maintaining or improving coping strategies to navigate potential feelings of isolation and stress associated with home-based learning is important. This might entail practicing self-care activities like regular exercise, taking breaks, and engaging in relaxation exercises.
3. Parents are encouraged to actively participate in their children's education by providing guidance and monitoring their progress. Regular communication with teachers can help address any challenges or difficulties encountered during the learning process.

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ATTITUDE OF POST GRADUATE STUDENTS TOWARDS SOCIAL SCIENCE RESEARCH

Subhadarshini Behera¹, Puja Barick²

¹Faculty, Maharaja Sriram Chandra Bhanjdeo University, Odisha

²Faculty, Maharaja Sriram Chandra Bhanjdeo University, Odisha

ABSTRACT

The main objectives of this study are to find out the attitude of post graduate students towards social science research. This study was conducted on 120 students studying in various Department of MSCB University, Baripada. A self-developed rating scale 'Attitude towards Research Scale' was used to collect data from post graduate students. The finding of the study focused not only on overall attitude but also male and female students towards social science research. There is a significant difference between post graduate students studying in professional course and general course on attitude towards social science research. Suggestions were given on the basis of obtained finding of the study.

KEYWORDS: Attitudes, Post graduate students, Social science research.

INTRODUCTION

Research is a scientific and systematic search for pertinent information on a specific topic. In fact, research is an art of scientific investigation to solve the problems which we faced in our life. But the research conducted by the teachers to solve the teaching learning problem related to students and school environment is called educational research. Research is conducted on various disciplines and it has high potentiality to develop concrete solution of a problem of that field only. Educational Research is conducted to improve the teaching practice of teachers rather than the production of knowledge. But the research on social science provides a scope for the social scientist to produce new knowledge on social science. So it is necessary to know the attitude of students towards social science research though it has significant impact on the development of the country. A study by Wishkoshki et al (2022) found that students studying at undergraduate level had positive attitude towards social research. Students having pre-medical background were found to have significantly better attitudes towards the research (Butt & Shams, 2013). A study conducted by (Woolf, 2017) found that attitude of students influenced on the experience of social social science research methods.

OBJECTIVES OF THE STUDY

1. To study the attitude of post graduate students towards social science research.

2. To study the significant difference in attitude towards social science research between male and female post graduate students.
3. To study the significant difference in attitude towards social science research between general and professional post graduate students.

HYPOTHESES OF THE STUDY

1. There exists a significant difference in attitude between male and female post graduate students towards social science research.
2. There exists a significant difference in attitude between general and professional post graduate students towards social science research.

METHODOLOGY OF THE STUDY

Descriptive survey method is used in this study. The sample consists of 120 post graduate students studying in various departments from Maharaja Sriram Chandra Bhanja Deo University (Erstwhile North Orissa University), Baripada, Mayurbhanj, Odisha, India. A self-developed questionnaire is used for data collection to analyze the attitudes of Post graduate students towards social science research. This tool consisted of 35 items. The 5 point rating scale as Strongly Agree, Agree, undecided, disagree and Strongly disagree were used to rate the items. The reliability of the tool is 0.65, which is found by product moment correlation method.



ANALYSIS AND INTERPRETATION

Table 1 Significance of difference in attitude between male and female post graduate students towards social science research

Dimension	Groups	N	Means	SDs	t-ratio	Level of Significance
Attitudes towards Social Science Research	Male	50	123.63	5.84	2.50	.05
	Female	70	126.98	6.08		

(Table Value at **.01 level** - 2.58 and at **.05 level** - 1.96)

It is shown from **Table 1** that the mean scores of male and female student' on their attitude towards social science research are 123.63 and 126.98 with SDs 5.84 and 6.08 respectively. The *t*-ratio come out from two groups is 2.50, which is significant at .05 level of significance. This shows that there is a significance difference between male and female post graduate students

attitudes towards social science research. So the hypothesis-1 "There exist a significance difference between male and female post graduate students attitudes towards social science research" is, accepted.

Table 2 Significance of difference in attitude between general and professional course post graduate students towards social science research

Dimension	Groups	N	Means	SDs	t-ratio	Level of Significance
Attitudes towards Social Science Research	General	80	124.64	5.81	2.58	.01
	Professional	40	127.99	6.07		

(Table Value at **.01 level** - 2.58 and at **.05 level** - 1.96)

It is shown from **Table-2** that the mean scores of general and professional course post graduate student' on their attitude towards social science research are 124.64 and 127.99 with SDs 5.81 and 6.07 respectively. The *t*-ratio come out from two groups is 2.58, which is significant at .05 level of significance. This shows that there is a significance difference between general and professional courses post graduate students attitudes towards social science research. So the hypothesis-2 "There exist a significance difference between general and professional course post graduate students attitudes towards social science research" is, retained.

FINDINGS AND DISCUSSION OF THE RESULT

Research findings are provided meaningful information and knowledge to the related field and this study also has some systematic and meaningful information. There is not only a significant difference between male and female Post graduate students attitude towards social science research but also professional and general Post graduate students attitudes towards social science research. The findings of the study shows that maximum students were said about research is a time taking, complicated process and needs experts to carry it. So it is suggested that the university teachers, authorities, and students to do research according to the needs and abilities, fund and time. Further, the supervisor should guide to the students effectively. Post graduate students deal with research procedures and activities should be given content which is relevant to their real needs, capacity and requirements.

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FACEBOOK'S ACQUISITION OF WHATSAPP

Yusha Abidi

Student, School of Business, Galgotias University

ABSTRACT

This research paper examines the landmark acquisition of WhatsApp by Facebook, one of the most significant transactions in the history of technology mergers and acquisitions. The paper delves into the background of both companies, the motivations behind the acquisition, and the details of the deal itself. It explores the implications of the acquisition for the companies involved, as well as for the broader tech industry, including its impact on user privacy, data security, and competition in the messaging app market. Furthermore, the paper discusses the regulatory scrutiny and controversies that surrounded the acquisition, highlighting the complex legal and ethical issues it raised. Through a comprehensive analysis, this paper provides valuable insights into the multifaceted dimensions of Facebook's acquisition of WhatsApp and its lasting effects on the digital landscape.

INTRODUCTION

The acquisition of WhatsApp by Facebook in 2014 marked a pivotal moment in the evolution of the tech industry, reshaping the landscape of mobile messaging and social networking. With WhatsApp's user base surpassing 400 million at the time of acquisition and Facebook's dominance in the social media realm, the \$19 billion deal garnered widespread attention and scrutiny. This introduction sets the stage for a detailed examination of the acquisition, aiming to elucidate its motivations, implications, and consequences for both companies and the digital ecosystem at large. In this paper, we embark on a comprehensive exploration of Facebook's acquisition of WhatsApp. We begin by providing background information on both companies, tracing their trajectories leading up to the acquisition. We then delve into the strategic rationale behind Facebook's decision to acquire WhatsApp, analyzing the synergies, opportunities, and challenges that drove the deal. Additionally, we scrutinize the terms of the acquisition agreement, shedding light on the financial and structural aspects of the transaction. Furthermore, this paper investigates the immediate and long-term implications of the acquisition for Facebook, WhatsApp, and the broader tech industry. We examine how the integration of WhatsApp's messaging platform into Facebook's ecosystem impacted user engagement, market dynamics, and competitive dynamics. Moreover, we assess the implications of the acquisition for user privacy, data security, and regulatory oversight, considering the heightened scrutiny surrounding Facebook's handling of user data. Throughout our analysis, we aim to provide a nuanced understanding of the multifaceted dimensions of Facebook's acquisition of WhatsApp. By critically examining the motivations, implications, and consequences of this landmark transaction, we seek to illuminate the intricate interplay between corporate strategy, market dynamics, and societal concerns in the digital age.

Facebook WhatsApp Meta

Facebook and WhatsApp are two tech behemoths that have significantly shaped the digital landscape in recent years. Facebook, founded by Mark Zuckerberg in 2004, started as a social networking platform for college students and quickly expanded to become the largest social media network globally. With billions of active users, Facebook has revolutionized communication, information sharing, and digital advertising. On the other hand, WhatsApp, founded by Jan Koum and Brian Acton in 2009, emerged as a leading messaging app, known for its simplicity, security features, and widespread adoption. WhatsApp's end-to-end encryption and cross-platform functionality have made it a popular choice for individuals and businesses alike, boasting over two billion users worldwide. In 2014, Facebook made headlines with its acquisition of WhatsApp for \$19 billion, solidifying its position in the messaging space and signaling its strategic ambitions in mobile communication.

Reason for Acquisition of WhatsApp By Facebook

Facebook saw WhatsApp not just as a growing adversary but as a possible killer of the social media app. As per Porter's 5 forces analysis, WhatsApp was becoming a threat of substitutes for the company. WhatsApp was growing steadily in its percentage of market reach beating out popular mobile apps. So, Facebook saw both vulnerability and opportunity in WhatsApp and acquired it for a whopping \$19B in 2014. By doing so, the company also kept WhatsApp out of the hands of other tech rivals. In 2014, WhatsApp had over 500 million MAUs, and the service added more than 1 million users per day. WhatsApp users sent 500 million pictures back and forth per day, about 150 million more than Facebook users. WhatsApp was a growing juggernaut in the messaging app wars of the early 2010s. WhatsApp was actively used in developing markets where internet connectivity is sparse. Facebook wanted to leverage this and gain traction in developing countries especially Asia. WhatsApp was transcending Facebook Messenger in engagement time and therefore



was a big threat to the social media giant. WhatsApp does a lot more than “text-messaging.” It allows users to send photos, videos, and voicemails to each other. In short, it allows users to do a lot of what Facebook does. Thus, increasing engagement time on WhatsApp was a big nightmare for the company. WhatsApp was already replacing SMS communication, dominating the mobile market in many countries worldwide. FB focuses a lot on mobile communication and WhatsApp was the right partner to achieve its ambitious goals.

Impact of Facebook's Acquisition Of WhatsApp

Facebook's acquisition of WhatsApp has had a significant impact on the social media landscape. This acquisition has allowed Facebook to expand its user base and increase its dominance in the social media market. The acquisition of Instagram in 2012 gave Facebook a strong foothold in the mobile photo-sharing market, which was rapidly growing in popularity at the time. By integrating Instagram's features and user base into its own platform, Facebook was able to capture a younger demographic that was less active on its core platform. Instagram's success also put pressure on other social media platforms to focus on visual content and mobile-friendly design. WhatsApp, acquired by Facebook in 2014, provided the company with access to a massive user base of over 1 billion people, primarily outside the United States. This acquisition gave Facebook a strong position in the messaging market, which was increasingly becoming the preferred mode of communication for many users, particularly in emerging markets. The acquisition of these companies has also raised concerns about Facebook's dominance in the social media market and the potential for antitrust violations. Critics argue that Facebook's acquisitions of Instagram and WhatsApp have reduced competition and stifled innovation in the social media industry. Overall, Facebook's acquisition of Instagram and WhatsApp has had a significant impact on the social media landscape, giving Facebook a stronger position in mobile photo-sharing and messaging while raising concerns about its dominance in the industry.

Challenges During Facebook's Acquisition Of WhatsApp

By paying \$4 billion in cash of the total \$19 billion purchase price, Facebook just used up 35% of its cash on hand as of 12/31/13. Less cash means less cushion to weather downturns, less capacity to do more acquisitions of, e.g., Tinder, Pinterest, etc. Figuring out how Facebook Messenger and WhatsApp will co-exist (or have the former subsumed into the latter). WhatsApp's users are suboptimal because it has a low percentage of free spending, wealthy customers, especially compared to companies like Apple. One of WhatsApp's blog post reads in part “Here's what will change for you, our users: nothing.” So no ads ever. WhatsApp's data sharing policies were a big talk as users were concerned that their privacy will be breached. Critics were concerned about the impact on user privacy and data security, as well as the potential for Facebook to gain too much control over the messaging market. Additionally, there were concerns about how the acquisition might affect competition in the social media and messaging space. Overall, the proposed acquisition faced a range of regulatory, privacy, and competitive challenges.

Specifics of The Acquisition Of WhatsApp

When Facebook announced its plans to acquire WhatsApp in February 2014, WhatsApp's founders attached a purchase price of \$16 billion: \$4 billion in cash and \$12 billion remaining in Facebook shares. This price tag is dwarfed by the actual price Facebook paid: \$21.8 billion. Facebook agreed to pay \$19.6 billion—adding \$3.6 billion to the original price as compensation to WhatsApp employees for staying on board at Facebook. However, Facebook share prices soared to \$77.56 from \$68 when the regulatory approval process concluded in October. By then, the agreed-upon 184 million Facebook shares inflated the final sale price by an additional \$1.7 billion. WhatsApp's six-month revenue for the first half of 2014 totaled \$15.9 million, and the company incurred a staggering net loss of \$232.5 million. However, the majority of that loss was for share-based compensation.

Facebook's Performance after the Acquisition

Facebook's financial performance following the acquisition of WhatsApp showcased both strengths and challenges. While the acquisition expanded Facebook's user base and engagement metrics significantly, translating these gains into direct revenue proved to be a complex endeavor. WhatsApp, with its user-centric approach and emphasis on privacy, initially had no advertising revenue model, which contrasted with Facebook's primary source of income. However, over time, Facebook implemented strategies to monetize WhatsApp without compromising its user experience or privacy standards. One notable approach was introducing WhatsApp Business, a separate platform tailored for businesses to communicate with their customers. This allowed Facebook to explore avenues for generating revenue through premium services, such as customer support and advertising, targeted specifically at businesses. Moreover, the increased user engagement facilitated by WhatsApp's integration into Facebook's ecosystem indirectly contributed to the company's overall advertising revenue growth. By offering advertisers access to a broader user base across multiple platforms, including WhatsApp, Facebook was able to attract more advertising spending and bolster its financial performance. Despite these efforts, challenges remained, particularly regarding regulatory scrutiny and privacy concerns. Facebook's handling of user data, combined with WhatsApp's own privacy controversies, attracted regulatory attention and fines, impacting the company's financial performance and reputation. Overall, while the acquisition of WhatsApp initially posed challenges in terms of monetization, Facebook's innovative strategies and integration efforts enabled it to leverage WhatsApp's user base and technology to drive financial growth and diversification. However, ongoing



regulatory challenges underscore the importance of balancing monetization objectives with user privacy and regulatory compliance to sustain long-term financial success.

CONCLUSION

Facebook's acquisition of WhatsApp stands as a landmark event in the evolution of the tech industry, signaling a strategic shift towards mobile messaging and communication. The acquisition enabled Facebook to expand its user base, enhance its technological capabilities, and strengthen its position in the global digital landscape. By integrating WhatsApp's extensive reach and innovative features into its ecosystem, Facebook tapped into new markets and engagement opportunities, driving growth and diversification. However, the acquisition also brought challenges, particularly in terms of monetization and regulatory scrutiny. Facebook faced difficulties in translating WhatsApp's user base into direct revenue streams, requiring innovative approaches to monetization while preserving the platform's user-centric ethos. Additionally, regulatory scrutiny and privacy concerns surrounding Facebook's handling of user data, compounded by WhatsApp's own privacy controversies, underscored the importance of navigating regulatory challenges and maintaining user trust. Moving forward, the success of Facebook's acquisition of WhatsApp hinges on its ability to balance monetization objectives with user privacy and regulatory compliance. By leveraging the synergies and opportunities created by the acquisition while addressing regulatory concerns and privacy considerations, Facebook can sustain its long-term growth and innovation trajectory. In essence, Facebook's acquisition of WhatsApp represents a strategic bet on the future of mobile messaging and communication, highlighting the transformative power of strategic acquisitions in shaping the digital landscape. As technology continues to evolve, the lessons learned from this acquisition will continue to inform Facebook's strategic decisions and influence the trajectory of the tech industry as a whole.

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INSTITUTIONAL WELFARE AND RESILIENCE INITIATIVES FOR DEPLOYED MILITARY PERSONNEL AND FAMILIES: THEORY AND PRACTICE. A CRITICAL REVIEW OF LITERATURE

Lieutenant Colonel Frankline O. Omuse, PhD (C)¹, Professor Catherine Gachutha²

¹Serving Officer of The Kenya Defence Forces, Mental Health Champion and Doctoral Candidate, Department of Business Administration, School of Business, Kenyatta University.

²Counselling Psychologist, Director Kenya Institute of Business and Counselling Studies.

This paper is a special dedication to the Late Chief of Defence Forces, General Francis Omondi Ogolla and Spouse Aileen Kathambi Ogolla for their contribution towards improvement of welfare matters for Service Personnel and their families within the Kenya Defence Forces. RIP General.

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ABSTRACT

The recent unprecedented levels of deployment of troops in operations in the Horn of Africa region has dramatically changed the Military families' growth due to the large number of troops being deployed. Families get affected by deployment-related family separation, combat injury, and death. With continued involvement in operations, there is a deep concern over parental deployment and its impact on the well-being of military families. Parental absence or loss invokes emotional uncertainty and ambiguity in the family. Through Institutional Resilience programmes, family members can successfully adapt to the situation with significant adversity or trauma through interactions with environmental factors such as community environment, the population, and risk factors. This paper therefore reviews extant conceptual and theoretical literature on common resilience programmes, proposes a theoretical framework for transition and wellbeing of military personnel and their families, proposes a definition for the construct 'social welfare' and makes recommendations on resilience and welfare initiatives for adoption by the Disciplined Forces and other organizations with employees in conflict prone areas in the Horn of Africa.

KEY WORDS: Peacekeeping, Resilience, Welfare, Wellbeing, Counselling, Communication.

1.0 INTRODUCTION

The last two decades have seen increased terror activities in the Horn of Africa leading to massive troops' deployment. Military families' growth has been changed dramatically by this unprecedented level of deployment tempo. Families have been affected by deployment-related family separation, combat injury, and death. With continued involvement in Operations both within a country and across the international borders, there is a deep concern over parental deployment and its impact on the well-being of military families. Though there is extensive literature on the effects of parental absence due to changes in the family such as parental divorce, illness, death, and incarceration, little is known about the effects of parental absence created by work requirements. Among work-related parental absence, military deployment stands out due to its unique characteristics, including the frequency, duration and its hazardous nature.

To better understand the current state of how military families cope with parental and/spousal deployment, it is important that military leaders conduct a comprehensive assessment of the impact of deployment on families. Research from previous conflicts and relevant civilian literature can also be included in the review.

Children's reactions to deployment-related parental absence vary by age, developmental stage, and other individual and family factors. Though the focus of recent studies has shifted to older children's adjustment to parental deployment, young children (infants and preschoolers) are still most impacted by parental deployment. The non-deployed parent/caregiver's psychological health is positively associated with children's successful coping with deployment-related stress. This finding suggests that programs for the non-deployed spouses may indirectly but powerfully contribute to the well-being of children of the deployed Service members.

The literature on spouses and children of USA DoD war veterans suggested that dependants of wounded Service members are at risk for emotional and behavioral problems. There is no published comprehensive research on the impact of parental death on military children; civilian research on child bereavement has mixed results. Future research is necessary to better understand the trajectory of military children's bereavement over the span of childhood.



Another area of concern is the increasing diversification of military families. Despite increase in children of dual-military couples and single family parents within most militaries, they have not been the primary subject of assessment or research. More data analyses are necessary to understand the unique needs and challenges that children of these subgroups within military families might experience in face of parental deployment.

1.1 Statement of the Problem

Getting personal affairs in order prior to a deployment is necessary, but preparing service members' families for the possibility of deployment is an equally critical aspect of preparedness. Proper preparation can make the entire deployment less stressful for the entire family and can help them become more self-sufficient.

During a deployment, service members and their families face many challenges. Although families do not have to cope with the direct emotional trauma of the possibility of hostile fire, spouses and children face other emotional and material hardships while service members are away. Good communication is essential to preparing service members and their families to handle these challenges.

No matter how prepared service members and their families are before the deployment, no one can predict all of the issues that may come up or how the time in theatre will affect them. Building a family's ability to adapt well to unexpected changes and events can help service members and their families to better manage stress and feelings of anxiety.

It is acknowledged that though studies on the impact of parental separation on family life have been carried out in many parts of the western world, there is limited scholarly work on the military resilience initiatives and military families' wellbeing in the Horn of Africa countries and particularly in Kenya. It is believed that the knowledge shared in this paper will promote both the theorizing and practice of social welfare and administration within the security sector and in any other organization with employees working in conflict prone areas.

This study is guided by the following research objectives: First, to review the extant literature on common resilience programmes for military personnel and their families. Secondly, to establish existing conceptual and empirical gaps in extant literature on resilience programmes for military personnel and their families. Thirdly, to make recommendations based on the identified gaps in conceptual and empirical literature on other programmes for adoption by militaries and other organizations in conflict prone areas in the Horn of Africa. The paper also seeks to propose a theoretical framework for transition and wellbeing of military personnel and their families. Lastly, based on the proposed theoretical framework, the paper seeks to propose a definition of the concept 'social welfare' with an aim of extending the extant understanding to new frontiers that will not only inform empirical work but also the practice of social welfare and administration within the security sector.

2.0 REVIEW OF LITERATURE

In order to respond to the objectives of the study, this paper presents a summary of the extant conceptual literature on welfare, resilience programmes, welfare models and case concepts. It is followed by a theoretical review which discusses the theories upon which the study is anchored.

2.1 The Problem of Definition and Terminology

The scope of the term "welfare" (well-being, but also social security) has never been precisely defined or clearly justified; its use is not unified and if the term is not correctly defined now by scholars, the same problem will persist into the future. The term itself was only slowly accepted, and some other variations were also used. In Great Britain, such terms as "societal state", "societal service state", "social security state," "full employment state" as well as "welfare capitalism" were applied. They were, in general, characterized as: Social welfare, which broadly refers to the collective and sometimes sociable provision or receipt of welfare; Economic welfare, which usually describes those forms of welfare that are secured through the market or the formal economy; and State welfare, which refers to social welfare provided through the agency of the state" (Bailey, 1994). Definition-related disputes over this term have always been quite intense, as proved by the large discussion that has been summarized, for example in the works of Richard M. Titmuss, Bruce Q. Madison and a number of other authors.

In its broadest sense, the idea of 'welfare' refers to 'well-being', or what is 'good' for people. Understood more narrowly, it can be taken to refer to the provision of social services - principally health care, housing, social security, education and social work. The connection between the two uses rests in the role of social services as 'the provision of welfare'. Part of the purpose of social services is, ideally, altruistic - 'doing good' to people. There are curative approaches: people who have something wrong with them receive 'treatment' to put it right. Social services can be developmental: a society in which individuals are valued should have the facilities to help them realize their potential. And social services may protect people; the 'safety net' which the services provide help to remove the uncertainty associated with need, a protection against for example the problems of old age, disability or poverty. However, the provision of welfare is not necessarily for the benefit of the recipients alone.

Townsend (1976, p.28) suggests that 'social services are those means developed and institutionalized by society to promote ends which are wholly or primarily social'. In many ways, measures which benefit the individual person are important for society: societies are, after all, made up of people. But there are also aims which can be seen as more for the benefit of the whole society than for any person within it. The social services can, for example, reinforce economic policy. They can be seen as a way to achieve equality or social justice. They may be an instrument of social change. They can also, conversely, be a means of maintaining social order. The provision of welfare is contentious. There are



many different and conflicting views of what is good for the individual or society.

2.2 Characteristics of Military Family Life

Military family life is characterized by unique demands such as separation, risk of injury or death of the Service member, long work hours and shift work, frequent relocation, unique organizational culture and norms, and family separations due to military deployments, unaccompanied assignments, field exercises, and training (Segal, 1986). While overseas residency and frequent moves may bring positively unique experiences into children's lives, some aspects of military family life are also considered stressors that are not often found in the civilian family life. Since Hill's (1949) landmark study of post WWII family reintegration, family separation due to military deployment has been recognized as a major stressor on family dynamics, parenting, and children's well-being and development (Jensen, Martin, & Watanabe, 1996; Peebles-Kleiger & Kleiger, 1994).

2.3 Unique characteristics of Combat Deployments vs. Routine Deployments.

Military deployments can be categorized into routine deployments and operational/combat deployments. Routine deployment is scheduled, non-combat deployment, which is most often inevitable in the military career, including planned training exercises or missions, peacekeeping operations, and unaccompanied overseas tours of duty. This type of deployments is most likely to have a clear deployment plan, including duration and location. Operational/combat deployment is either combat-support or combat missions, which often have ambiguity and uncertainty in terms of duration, location, or both (Wiens & Boss, 2006). This ambiguous nature of deployment can cause a high level of stress in the family (Boss, 1999). Consequently, the impact of deployment on families differs between combat deployments and routine deployments.

Family separation due to deployment is a major stressor for military children. Deployment brings the absence of a parent figure in the lives of military children (Levai, Kaplan, Ackermann, & Hammock, 1995). Parental absence/loss invokes emotional uncertainty and ambiguity in the family. This sense of ambiguity introduced by loss or absence of a family member is termed "ambiguous loss" by Boss (1999), and later applied to research on parental deployment on adolescents (Heubner, Mancini, Wilcox, Grass & Grass, 2007; Heubner, Mancini, Bowen, & Orthner, 2009). Heubner et al. (2007) note: "A family member may be physically absent but psychologically present, or a family member may be physically present but psychologically absent; both of these situations thwart people's desire for certainty and may become an obstacle in healthy patterns of development" (p.112).

2.4 Mitigating the Negative Effects of Parental Deployment-Promoting family resilience

Much of the attention tends to be drawn to negative impacts of parental deployments on children. There is however a growing

body of literature on families' strengths and coping skills developed as a result of family separation due to deployments. This positive growth and adaptation that families exhibit in response to a stressful life event is termed "resilience" (Wiens & Boss, 2006; Boss, 2002, 2005; Cozza et al., 2005). Resilience is a process in which the individual successfully adapts to the situation with significant adversity or trauma through interactions with environmental factors such as community environment, the population, and risk factors (Fergus & Zimmerman, 2005).

Resilience in children is closely linked to the following three key elements: child's personal characteristics (e.g., easy temperament and cognitive functions), positive parent-child relationships, and community-level support (e.g., neighborhood, schools, communities) (Condly, 2006; Huebner & Mancini, 2005; Luthar, 2006; Aisenberg & Herrenkohl, 2008). Recognizing that eliminating aggravating factors does not always provide positive outcomes, research on military children must focus on what positively contributes to children's successful coping with parental deployment.

2.5 Case Concept- USA DoD Family Programs to Support Military Children

The USA DoD provides a wide array of family support programs and services that address life challenges and promote the readiness of Service members and their families. It offers a wide variety of high quality, age-appropriate school-age and youth programs on and off the military installation. At every U.S. military installation worldwide where the command officially sponsors, Family Advocacy Program (FAP) sponsors and coordinates activities to promote better parenting and child safety and prevent child abuse. As a program to prevent child abuse and neglect in military families, FAP also offers the New Parent Support Program (NPSP), which is a home visitation program for high-risk parents.

Additionally, the military Services have established on-going partnerships with nationally recognized youth development organizations such as the Boys & Girls Clubs of America, USDA 4-H Youth Development and the National Military Family Association. These community-based organizations offer well-established, research-based programs that are affordable and easily accessible for Service members and their families. Partnerships with local school systems also provide support to children and youth with a deployed family member.

2.6 Social welfare frameworks and models

The intensive engagement in operations by militaries world over and the contemporary social challenges faced as a result of the engagements have led to militaries promulgating a number of policy frameworks/models to prescribe general resilience welfare opportunities and programmes for Service Personnel and their dependants.

An understanding of the welfare framework/model adopted by an institution is critical in ensuring successful implementation of a welfare programme. Ledemel (1989) in his PhD Thesis, 'The Quest for Institutional Welfare and the Problem of the Residuum:



The case of income maintenance and personal social care policies in Norway and Britain; 1946-1966', critically analysed three different welfare models as proposed by Professor Richard Morris Titmuss. Richard Morris Titmuss was Professor of Social Administration at the London School of Economics (LSE). His publications on welfare and social policy helped to shape the development of the British Welfare State and influenced thinking about social policy worldwide.

According to Professor Titmuss, there is a distinction between three contrasting models or functions of social policy of Residual, Handmaiden and Institutional Redistributive. The challenge that organizations face is not the choice between universalist and selective social services. The challenge resides in the question: what particular infrastructure of universalist services is needed in order to provide a framework of values and opportunity bases within and around which can be developed socially acceptable services aiming to discriminate positively, with the minimum risk of stigma, in favour of those whose needs are greatest. The welfare models proposed the following approaches:

2.6.1 The Residual Model

The Residual approach sees the function of social services as one of dealing only with people who are unable to help themselves. Social services form a safety-net under the economic system, and only when the natural channels of welfare - the private market and the family - break down should social welfare come into play, and then only temporarily. Social work becomes residual when its nature is 'reactive or gap-filling'. It acts when the problem is obvious and needs immediate action. Residual social works takes

care of the poor and underprivileged in society. Such welfare programmes are always funded by philanthropic individuals belonging to the middle and upper class. Examples of residual social work include services for victims of domestic violence, orphanages, mental institutions, emergency evacuation, housing, food stamps and rent subsidies.

2.6.2 The Handmaiden Model

The Handmaiden idea rests on the view that social services are functional to other institutions and thus social needs and challenges should be met on the basis of merit, work performance and productivity.

2.6.3 The Institutional Redistributive Model

The Institutional Redistributive sees social welfare as a major integrated institution in society, providing Universalist services outside the market on the principle of need. This model focuses on giving each person equal opportunity to be supported, no matter their circumstances. Government funded social services are some of the best examples of this type. They include free education, social security programmes, medical services, government funded scholarships programmes and housing subsidies. These services do not distinguish the need of one individual from the other and can be availed to anyone who wants it.

Another scholar, Mishra (1981) outlines three common sets of views, which he refers to as 'residual', 'institutional' and 'socialist'.

Table 1.1 Mishra's Three Models of Welfare

ATTITUDE TO:	RESIDUAL	INSTITUTIONAL	SOCIALIST
State intervention	Minimal	Optimal	Total
Need as basis of provision	Marginal	Secondary	Primary
Range of services	Limited	Extensive	Comprehensive
Population covered	Minority	Majority	All
Level of benefits	Low	Medium	High
% of national income spent on welfare	Low	Medium	High
Means testing	Primary	Secondary	Marginal
Clients	Paupers	Citizens	Members of society
Status of clients	Low	Medium	High
Orientation	Coercive	Utilitarian	Solidaristic
Role of non-state services	Primary	Secondary	Marginal

Source: Mishra (1981, pp 101-134)

Mishra's presentation shows these models as differing not so much in fundamentals as in degree. This reflects a common view of the historical sequence through which the British 'welfare state' was formed. It seems possible to slide from one model into the next - consistent with the view that the 'welfare state' is a stage on the road to socialism. But a description of a process of changing views and policy cannot easily be extended to a discussion of principles. It is difficult to see how one could slide from one principle to another - from the individual model of freedom to a social model, or from a view of justice as based in desert to one based in need.

On closer examination, a contradiction arises between Titmuss' and Mishra's Institutional models, the impression that is created in Mishra's model of a progression is largely based on a misinterpretation of the meaning of 'institutional welfare'. Institutional welfare does not treat needs as 'secondary', and does not cover only the 'majority' of the population. In Titmuss's descriptions of the institutional model (1974), everyone is seen as liable to be in need at some point, and so everyone benefits, as a citizen, through the provision of social services which guarantee essential care. This principle is fundamental to the idea of the 'welfare state'. Clearly, if institutional welfare was interpreted in this way, it would overlap with Mishra's 'socialist' model.



2.7 Issues arising from conceptual review

From the above conceptual review, it is clear that the scope of the term “welfare” has never been precisely defined or clearly justified; its use is not unified. The term itself was only slowly accepted, and some other variations were also used. The term has been used interchangeably with other terms such as “societal state”, “societal service state”, and “social security state” (Bailey, 1994). This therefore demands that the author proposes a definition of the term ‘social welfare’ with an aim of extending the extant understanding to new frontiers that will not only inform empirical work but also the practice of social administration and military studies.

Secondly, the reviewed conceptual literature has also indicated that the understanding of the difference between promotion of economic wellbeing and the social wellbeing underlies distinction between the different models of welfare. Both the residual and the handmaiden models are based on a subordination of the social to the economic wellbeing. The two models provide short-term financial assistance as opposed to the institutional model and Mishra’s socialist which aims at achieving long-term social wellbeing. This therefore clearly illustrates that in developing a framework for welfare support, a framework anchored on the Institutional Redistributive or socialist model will develop programmes aimed at supporting integration of the welfare system in the organisation where a wide range of services can be provided based on the gaps and needs of Service Personnel and their dependants for the long-term welfare. It is upon the Institutional welfare model therefore that the author shall propose a theoretical framework for promotion of organizational welfare.

Thirdly, it is also clear from the review that much of the scholarly work relating to welfare have been carried out in the western world. This state of affairs justifies without much emphasis the need for more scholarship in the field of social administration and military studies within the African set up.

3.0 REVIEW OF RELEVANT THEORIES

The conceptual discussion has paid attention to the nature of social welfare in the military context. The discussion has also raised issues that call for an examination of the relevant theories that can explain this phenomenon of social welfare and resilience among military personnel and their families. The paper thus considered the postulates and contributions of: The Optimality theory of Pareto, Equal Satisfaction Capacity Theory, Compensation Principal Theory and Social Welfare Function Theory.

3.1 Optimality theory of Pareto

The first person to discuss how to measure a community’s welfare is Pareto and he had pointed out two important factors which are, income distribution and two, production order (pattern). He was not able to study the income distribution since there was no precise information about this and so he had focused on the effects of production order on the community’s welfare.

According to Pareto, if an event happens to increase even one person’s welfare without lowering the others’, then it means that the overall welfare is increasing. And the optimum point at which the welfare is sustained is where there is this opportunity to raise even one person’s welfare. However, to maximize the communities’ welfare two things are important; the existence of full competitive conditions and the pricing mechanism. If these two having been mentioned above do not exist, then a different approach is applied.

3.2 The Equal Satisfaction Capacity Theory

Pigou had mentioned the welfare that was measured by money. Pigou solved the problem of welfare maximization, not by management techniques as Pareto did, but rather by income distribution. According to Pigou’s observation, a certain product would have the same effect and benefit for all individuals. Hence, he stated the theorem ‘Equal Satisfaction Capacity’. On the other hand, he assumed that as the bulk of the product increased, the satisfaction level decreased. According to Pigou in order to maximize overall welfare, income should be absolutely equally distributed. However, he had objected in the sense that equal income distribution would prevent capital stock and decrease the total production. Another criticism was raised by positivists saying that equal satisfaction capacity was subjective and it did not rely on any certain science.

3.3 Compensation Principal Theory

New economics of welfare depends on the compensation principal. This theory discusses welfare theory from the income distribution point of view. It is impossible to measure the social welfare in this case, but there are three circumstances which need to be considered. These occur when the productivity and hence, income increases in the economy. All individuals’ incomes may rise, some individuals’ income may rise whereas others income may not change and Some individuals’ income may have risen whereas others’ income may have decreased.

In the first two of these circumstances, it is obvious that the social welfare has increased, but it is the third one which needs to be considered and, at this point Hicks-Kaldor’s principal comes along. When the individuals whose income have risen compensate the others’ income loss and if they are still in better condition after this exchange, then it can be said that overall income has risen.

3.4 Social Welfare Function Theory

According to this theory, every economical factor which has an effect on communities’ welfare can be expressed as a function. Social welfare function has complemented the logic and the mathematical side of the economics of welfare. The theory proposes the development of frameworks aimed at supporting integration of the welfare system within the organisation

3.5 Issues arising from theoretical review

From the above theoretical review, the literature has clearly indicated that the understanding of the difference between the



various welfare theories is based on the respective theories' promotion of economic wellbeing and the social wellbeing. This underlies distinction between the different theories of welfare. The Optimality theory of Pareto, Equal Satisfaction Capacity Theory and the Compensation Principal Theory are based on a subordination of the social to the economic wellbeing.

Similar to the residual and handmaiden models of welfare, the Optimality theory of Pareto, Equal Satisfaction Capacity Theory and the Compensation Principal Theory support short-term financial assistance as opposed to the Social welfare function theory which aims at achieving long-term social wellbeing. This therefore clearly illustrates that in developing a framework for welfare support, a framework anchored on the Social welfare function theory will develop programmes aimed at supporting integration of the welfare system in the organisation where a wide range of services can be provided. It is upon this theory therefore that the study is anchored.

4.0 EMPIRICAL LITERATURE REVIEW

There is a growing body of literature that looks at the psychological effects that children of a deployed parent-soldier may face. Chartrand, Frank, White, and Shope (2008) reported in their study that in comparison to non-deployed military parents, the children of a deployed parent were significantly more likely to demonstrate both internalizing and externalizing symptoms. Some of the symptoms in such children include: emotional reactivity, anxiousness, depression, somatic complaints and withdrawal; attention difficulties, and aggression.

In another study carried out by Flake, Davis, Johnson, and Middleton (2009), the researchers evaluated the psychological risk of deployment on a child between the ages of 5 and 12 from a sample of 101 Army personnel with children. The percentage of children at risk was 2.5 times higher than national norms. A large percentage (42%) of the non-deployed parents reported significant parental stress and children of parents with such high levels of stress were about seven times more likely to score at high risk for psychosocial problems.

The study indicated that parents receiving support from military welfare organizations were less likely to report psychosocial problems in their child. Children of college-educated parents were also less likely to experience such problems. There were however other factors including the deployed parent's rank, the child's sex, and race/ethnicity which were unrelated to the psychological effects of deployment.

Additionally, a growing body of research suggests that military deployments might be associated with increased rates of domestic violence and child maltreatment both during the deployment and upon return of the service member compared to the pre-deployment period (Gibbs, Martin, Kupper, & Johnson, 2007; Rentz et al., 2006). Gibbs et al. (2007) examined the association between combat-related deployment and rates of child maltreatment in families of enlisted soldiers in the U.S. Army

who had one or more substantiated reports of child maltreatment. They reported that the overall rate of child maltreatment, including moderate to severe maltreatment was higher during the times when the soldier-parents were deployed compared with the times when they were not deployed.

Rates of child neglect were nearly twice as great during deployment. Among female civilian spouses, the rate of maltreatment during deployment was more than 3 times greater, the rate of child neglect was almost 4 times greater, and the rate of physical abuse was nearly twice as great. However, other studies do not consistently show that deployment is definitely associated with increased potential for domestic violence. Newby et al. (2005) evaluated whether a military deployment of 6 months predicted domestic violence against the wives of deployed and nondeployed soldiers during the post-deployment period. While they concluded that deployment was not a significant predictor of domestic violence during the first 10 months of the post-deployment period, they reported that younger wives and those who were victims of pre-deployment domestic violence were more likely to report post-deployment domestic violence.

Few studies have specifically examined the effects of maternal deployment on dimensions of child vulnerability. Kelley et al. (2001) examined whether children with Navy mothers exhibited higher levels of internalizing and externalizing behavior difficulties than children in civilian families. They found that Navy children with deployed mothers exhibited higher levels of internalizing behavior than children with nondeployed Navy or civilian mothers on measures of loneliness, peer relationships, fear of negative evaluations, and self-esteem. Navy children whose mothers experienced deployment were more likely to exhibit clinical levels of internalizing behavior than Navy children with nondeployed mothers or civilian children. Group differences, however, were modest and overall mean scores were in the normal range. While their findings did not suggest greater pathology in children of Navy mothers, they did suggest practitioners should be particularly attentive of deployed mothers and their children.

4.1 Issues arising from empirical review

The evidence from the work cited above strongly suggests that children are increasingly vulnerable to their parent(s) being deployed, particularly those that have earlier evidence of problems related to psychological adjustment or those who live in families that have previously been in contact with child protective service agencies due to allegations or findings of child maltreatment. Such factors are critical for professional social workers or case managers involved with such children or families to assess and monitor during periods of parent deployment.

Secondly, it is also evident from the above empirical review that the emotional strength of the un-deployed parent determines the level of resilience demonstrated by the children. The more emotionally stronger an un-deployed parents remains, the better it is for the children. This calls on the need for the un-deployed parents to seek assistance whenever they are in need, including



actively engaging and bonding with children during periods of deployment to ensure psychological well-being of their children. Thirdly, the empirical review points out that most of the studies carried out and the extant literature relates to children of a deployed male parent. This is an indicator of biased studies as less has been done in relation to the impact of deployment on children of a deployed female parent. However, the few existing studies like the one by Kelley et al. (2001) to examine whether children with Navy mothers exhibited higher levels of internalizing and externalizing behavior difficulties than children in civilian families revealed similar results. They found that children with deployed mothers exhibited higher levels of internalizing behavior than children with non-deployed mothers on measures of loneliness, peer relationships, fear of negative evaluations, and self-esteem.

5.0 THE CALL FOR A THEORETICAL FRAMEWORK

According to Nachmias and Nachmias (2008), a theoretical framework supports a theory in a research study, introduces and

describes the theory that explains why the research problem under study exists. It permits the researcher to evaluate assumptions more critically, forces the researcher to address questions of why and how, connects the researcher to existing knowledge and permits the researcher to intellectually transit from simply describing a phenomenon that have been observed to generalizing about various aspects of that phenomenon. The current study proceeds to suggest a theoretical model for guiding empirical work in military studies.

5.1 The suggested Theoretical Framework

In light of the conceptual, theoretical and empirical gaps identified in the review, this study presents the following theoretical framework that will assist in finding out the influence and the linkage among institutional resilience programmes and family wellbeing of military personnel and their families. The proposed theoretical framework proposes a number of relationships that are considered critical in understanding the phenomenon for purposes of theorizing empirical work and practice in military science and military strategic studies. The next section discusses these relationships.

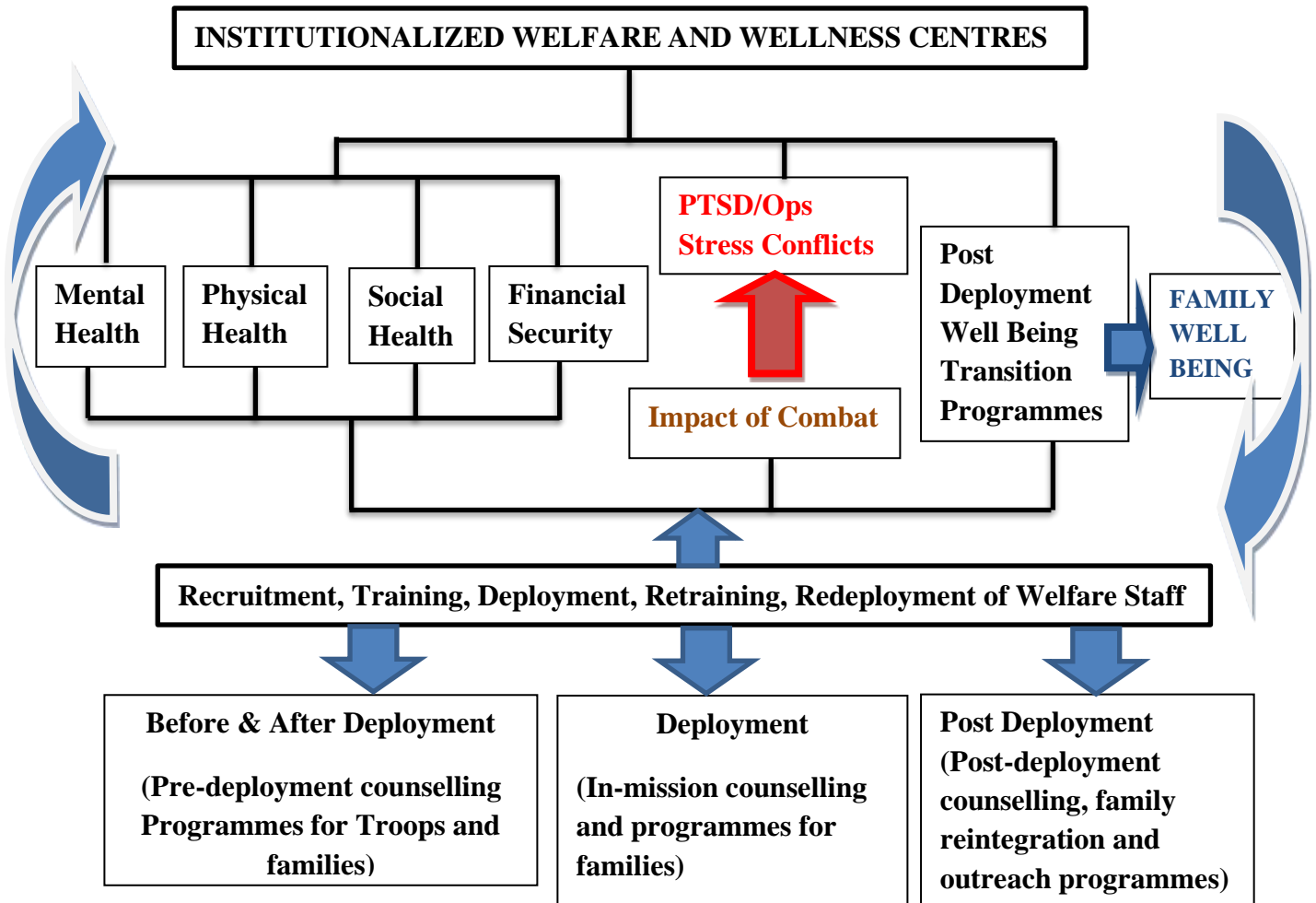


Figure 1.1. A Theoretical Framework for Transition and Wellbeing of Military Personnel and families. Source: Researcher (2024).



5.1.1 Understanding Resilience

Resilience has a bearing on the morale of both the service member and the family in terms of the motivation to persist amidst challenging circumstances. Resilience may also be defined as, ‘...the ability to recover from or adjust to misfortune or change.....’ It thus refers to the ability of an individual to cope in difficult situations. Resilient individuals experience more hope, positivism and optimism overall and are thus better able to cope with demands. They are able to easily get through tough times. These individuals are able to learn new skills and knowledge, and are less likely to become mentally or physically ill during adversity. It is good to note that institutional efforts towards promoting resilience for military families and soldiers pending deployment are beneficial to both the military family and the organization itself.

5.1.2 Resilience Initiatives in Peace time

Different organizations require different wellness and welfare programmes aimed at promoting the employees’ well-being. Such wellness programmes are meant to ensure that the soldier and his/her family are physically, mentally, socially and financially healthy. Physical training programmes including gym for example, ensure that employees are physically healthy while inter departmental sporting competitions promote interactions among employees hence contributing to the social wellbeing within the organization. Regular medical checks and quality medical services promote both the soldier’s and family’s health, while existence of counselling and welfare centres ensure psychological well-being of the soldiers and their families.

5.1.3 Pre-deployment

Service members preparing for a deployment should keep in mind that their spouses are making adjustments and preparations as well. Besides the emotional stress of being separated physically from their partner for a long period of time, spouses will also have to take over all of the household responsibilities. Service members and their spouses may go through a range of emotions while preparing for, being on, and returning from deployment. It is important for both service members and spouses to recognize that these feelings are normal and that it will help to talk through feelings and expectations. The more service members and their spouses work together to understand each other and the feelings and concerns that they have regarding a deployment, the easier it will be for both to manage the separation and address any problems as they arise.

Organizations must put in place pre-deployment training and counselling programmes for personnel awaiting deployment as well as their families. Such programmes may be carried out by trained counsellors and social workers in well-resourced welfare centres. In most cases, such programmes may favour families living within military establishments and their environs. However, organizations need to design programmes in liaison with other welfare institutions targeting families residing far away from such military establishments.

5.1.4 Psychological support for overseas Deployment (Deployment Phase)

One other method to manage psychological effects arising from peacekeeping among military personnel is the application of a model similar to the Royal Netherlands Policy of the Land Army on psychological support for overseas operations. This policy comprises a number of steps: the first being the initial or intake selection for regular soldiers. This policy outlined that selection of troops for deployment should be based on among other things on personality tests and a psychological stability and try to filter out the high-risk groups among troops to be deployed.

The second step involves education and counseling on stress and social support. This is preferably done by the psychologist who accompanies the unit as a field psychologist when the unit is sent abroad. In this process of counseling attention ought to be paid to the family back at home. This education consists of training and lessons on stress management.

The third step involves the support provided by a field clinical psychologist in the area of operations. Each unit of battalion size has a so-called social coordinating committee. This committee comprises the unit medical doctor, the chaplain, the welfare officer, the personnel officer. Once the unit is assigned duties abroad, the unit is accompanied by a field clinical psychologist. The field clinical psychologist in this context has three tasks: he is an advisor to the commander; he supports the key personnel; and he acts as a counselor or therapists when necessary.

The fourth step involves family support. Here, clinical psychologists or established military committees on counseling provide psychological assistance that could enable families to be prepared for the oncoming deployment. These committees are comprised of partners or parents of soldiers deployed in AU/UN operations, and help each other in difficult times, in meetings and through so called telephone circles.

Step five is focused on psychological debriefing. This takes place after each serious traumatic incident has occurred. Here, the clinical psychologist or the key functionary in the unit, conducts a debriefing. Moreover, a psychological debriefing takes place before the personnel return home after their duty abroad. This is normally done in the area of operations and in the Units, but if necessary, with personnel deployed individually as UN monitors for example, the Debriefing should be done immediately after return to the home country. During these debriefing meetings written material must be handed out on possible delayed effects and when future problems arise.

Step six is about reintegration. Reintegration should begin on the eighth week after returning home. The soldiers are invited to take part in a reintegration meetings guided by the social service of the army. This is done in units. During these meetings the soldiers discuss their adaptation to normal life, in work and family, the so-called reintegration process, and the problems they are confronted with. Together they try to find solutions to their predicaments.



The seventh step involves an active, personal approach where psychologists are deployed together with soldiers to provide an 'aftercare questionnaire', to people drastically affected by PTSD. This could be done approximately nine months following their return. The home front of the servicemen or women also receives a questionnaire.

Step eight is the Veteran Care stage. Veteran care is the responsibility of the Defence Forces, even though the veterans are no longer part of that Defence Force. In veteran care the military provides an active approach, an outreach to the veterans. It carries out surveys of possible problems the veterans have encountered and offer help. The help offered by the army is as accessible as possible. That is, there are no barriers. A veteran in need of support can approach his own psychotherapist. Step nine involves a repeat of all lessons learned above. Last, but not at least in step ten, there is the systematic evaluation of all steps mentioned above.

5.1.5 Post Deployment Outreach Screening Programme

Another preventive intervention mechanism for psychological effects arising from peacekeeping operations is the implementation of Outreach, Assessment, and Diagnosis of PTSD. In this intervention early screening to identify PTSD and other stress situations is critical. Once PTSD has been diagnosed, referral for treatment is done. Immediate referral assists to reduce suffering and reduced serious impairment in future.

There is need to integrate mental health screening and diagnoses into primary care this because soldiers who encountered trauma during peacekeeping operations are likely to seek medical care for a general medical ailment. During these checks medical practitioners may refer someone to care. There are two models for integrating mental health into primary care that can address this problem. The first is a model of co-located collaborative care between a mental health provider and primary care physician. In this model, if the primary care physician believes the patient has PTSD, that same day she or he can refer the patient to a mental health clinician located in the same building. The second approach is a case management model, in which a primary care physician can refer patients to a mental health provider, and will conduct ongoing phone follow-up to encourage continued engagement in the treatment process and to assist in negotiating needed adjustments in the treatment plan. KDF are in the process of implementing a similar module.

6.0 CONCLUSION

Strides are continuously being made to improve welfare for Service Personnel and their families. Militaries have developed operational frameworks and Standard Operating Procedures (SOPs) as a guide for general administration and management of social welfare centres aimed at promoting the implementation of resilience welfare programmes. Some of the welfare and resilience programmes include the following: Open family days for families of deployed and deceased service members; Annual

commemoration days to honor the fallen heroes; Dependants counseling programmes conducted at various welfare centres; Sports/recreation and mentorship programmes for youths and children during long holiday; Job placement for qualified and deserving Orphans; and Post-burial visits to the bereaved families to check on their wellbeing.

Other resilience programmes may include: Consideration for spousal employment within the Defence Forces, its agencies or other government departments and establishment of rehabilitation centres for both physical and psychological rehabilitation.

Finally, in case of loss of a spouse, then the counseling sessions for military families need to clearly point out on two key issues relating to the role of the surviving parent in promoting child adjustment to loss of a parent; Positive Parent-Child relationship and Parent functioning after the Loss of a spouse; First, Positive parent-child relationship. Civilian literature has found that positive parent-child relationships with the surviving parent promotes child adjustment to loss of their parents (Brown et al., 2007; Luecken, 2000). Raveis, Siegel, & Karus (1999) found that the surviving parent's ability to openly communicate with children significantly helped lowering the levels of depression and anxiety in the school-age children who lost a parent from cancer. Second, Parent Functioning after the Loss. Research repeatedly indicated the importance of the competence of the surviving parent in ensuring positive adjustment of the child (Kalter, et al., 2002; Worden & Silverman, 1992). Worden and Silverman (1996) found that the most prevailing predictor of child adjustment following the death of a parent was the level at which the surviving parent was able to function after the death. Parents who are overwhelmed with their own grieving and overburdened by additional family responsibilities may not be able to give their grieving children attention, consistent supervision and positive esteem enhancing interactions.

7.0 RECOMMENDATION

Family separation due to deployment is a major life event, which could cause a great deal of stress for military spouses and children. To date, published studies have relied heavily on cross sectional research, which does not allow scholars to capture the fluid process of child adjustment to parental deployment throughout childhood. Longitudinal studies focusing on frameworks of life trajectories of children are recommended to better understand how parental deployments affect the healthy development of military children cognitively, socially, and emotionally and how their resilience can be promoted to cope with deployment-related stress.

The literature reviewed in this paper suggests that the current knowledge and data on the impact of parental deployment on military children must address the needs, concerns, and issues derived from the diversity in today's military families and their changing needs. Despite the paucity in the extant literature, there is more evidence of growing interest amongst military scholars and practitioners on the need to improve social welfare initiatives as a means of building resilience for military families.



Lastly, based on the proposed theoretical framework, the paper sought to propose a definition for the concept 'social welfare' with the aim of extending the extant understanding to new frontiers. The authors therefore proposed the following as a definition of the concept 'social welfare,' **'Institutionalized wellness initiatives by leaders in public, private and non-REFERENCES**

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TELEMONITORING IN SURGICAL NURSING: THE FUTURE OF PATIENT CARE

Divya George

Assistant Professor, Department of Adult Health Nursing, Mar Baselios College of Nursing, Kothamangalam

ABSTRACT

Telemonitoring, a form of telemedicine, holds great promise in revolutionizing patient care in the surgical setting. This review article discusses the role of telemonitoring in surgical nursing and its potential to revolutionize patient care in the future. Telemonitoring allows healthcare providers to remotely monitor patients' vital signs, symptoms, and other health parameters, enabling early detection of complications, timely interventions, and improved patient outcomes. This article explores the benefits, challenges, and future implications of telemonitoring in surgical nursing, emphasizing its role in enhancing patient care and optimizing healthcare delivery.

KEYWORDS: Telemonitoring, Telemedicine, Surgical Nursing, Patient Care, Remote Monitoring, Patient Outcomes, Healthcare Delivery

INTRODUCTION

Telemonitoring, a form of telemedicine, has emerged as a valuable tool in modern healthcare, presenting significant potential to transform patient care, particularly in the surgical setting. With advancements in technology, telemonitoring offers surgical nurses an innovative approach to monitor patients remotely, facilitating early detection of complications, timely interventions, and improved patient outcomes. This review article aims to discuss the role of telemonitoring in surgical nursing and its potential to revolutionize patient care in the future. It explores the benefits, challenges, and future implications of telemonitoring in surgical nursing, emphasizing its role in enhancing patient care and optimizing healthcare delivery.

TELEMONITORING IN SURGICAL NURSING: THE FUTURE OF PATIENT CARE

1. Definition and Scope of Telemonitoring

Telemonitoring, also known as remote patient monitoring, is a form of telemedicine that utilizes technology to monitor patients' health status from a distance. In the surgical setting, telemonitoring allows healthcare providers to remotely monitor patients' vital signs, symptoms, and other health parameters, enabling early detection of complications and timely interventions. Telemonitoring in surgical nursing is a significant advancement that provides real-time data, allowing for the continuous monitoring of patients beyond the confines of the hospital.

2. Benefits of Telemonitoring in Surgical Nursing

a. Early Detection of Complications

Telemonitoring enables the early detection of postoperative complications, such as hemorrhage, infection, or respiratory distress, by continuously monitoring patients' vital signs and symptoms. Early detection allows for prompt intervention, potentially preventing adverse outcomes and reducing hospital readmissions. For instance, continuous monitoring of a patient's vital signs postoperatively can alert healthcare providers to any

deviation from the normal range, such as sudden changes in blood pressure, heart rate, or oxygen saturation, allowing for immediate intervention.

b. Timely Interventions

By providing real-time data, telemonitoring allows surgical nurses and healthcare providers to intervene promptly in case of any abnormalities or deviations from the expected postoperative course. Timely interventions can prevent complications and improve patient outcomes. For example, if a patient's vital signs indicate signs of infection, telemonitoring allows healthcare providers to promptly initiate antibiotic therapy, preventing the progression of the infection and reducing the length of hospital stay.

c. Improved Patient Outcomes

Studies have shown that telemonitoring in the surgical setting leads to improved patient outcomes, including reduced mortality rates, shorter hospital stays, and decreased healthcare costs. By facilitating early detection and intervention, telemonitoring contributes to better patient care and satisfaction. For example, a study published in *Anaesthesia* observed that telemonitoring significantly reduced postoperative complications by allowing for the early detection of adverse events and prompt interventions, thereby improving patient outcomes and reducing the length of hospital stays.

3. Challenges and Limitations

a. Technological Challenges

One of the primary challenges of telemonitoring in surgical nursing is the need for reliable and secure technology infrastructure. Issues such as connectivity problems, data security, and interoperability between different systems can hinder the widespread adoption of telemonitoring. Overcoming these technological challenges requires investment in robust, user-friendly telemonitoring systems and ensuring that healthcare providers receive adequate training in using these technologies.



b. Training and Education

Surgical nurses and healthcare providers require comprehensive training and education to effectively use telemonitoring systems. Lack of familiarity with the technology and inadequate training can lead to suboptimal use and implementation of telemonitoring in surgical nursing. Therefore, investing in ongoing training programs is essential to ensure that healthcare providers are proficient in using telemonitoring systems and can maximize their benefits.

c. Legal and Regulatory Issues

Legal and regulatory issues, including licensure, liability, and reimbursement, pose significant challenges to the widespread adoption of telemonitoring in surgical nursing. Clear guidelines and policies are needed to address these issues and ensure the ethical and legal use of telemonitoring technology. Regulatory bodies need to establish guidelines to govern the use of telemonitoring, including issues related to data privacy, security, and informed consent.

4. Future Implications of Telemonitoring in Surgical Nursing

a. Remote Patient Monitoring

Telemonitoring has the potential to expand beyond the hospital setting, allowing for remote patient monitoring in the home environment. By monitoring patients remotely, surgical nurses can provide continuity of care, enhance patient safety, and reduce healthcare costs. Remote monitoring enables patients to recover in the comfort of their homes while still receiving high-quality care and frequent monitoring by healthcare providers.

b. Artificial Intelligence and Predictive Analytics

The integration of artificial intelligence (AI) and predictive analytics into telemonitoring systems holds promise in further enhancing patient care. AI algorithms can analyze patient data in real-time, predicting adverse events and alerting healthcare providers to intervene proactively. For example, AI algorithms can analyze patient data to identify patterns and trends that may indicate a deterioration in the patient's condition, allowing for early intervention and prevention of adverse events.

c. Personalized Medicine

Telemonitoring facilitates personalized medicine by providing individualized care tailored to each patient's unique health status and needs. By continuously monitoring patients' health parameters, surgical nurses can develop personalized care plans, leading to improved patient outcomes. For example, telemonitoring allows for the adjustment of treatment plans based on real-time data, ensuring that patients receive the most appropriate and effective care.

CONCLUSION

Telemonitoring, a form of telemedicine, holds great promise in revolutionizing patient care in the surgical setting. By allowing for remote monitoring of patients' vital signs, symptoms, and other health parameters, telemonitoring enables early detection of complications, timely interventions, and improved patient outcomes. Despite the challenges and limitations, telemonitoring has the potential to transform surgical nursing and optimize healthcare delivery. The future implications of

telemonitoring, including remote patient monitoring, the integration of artificial intelligence and predictive analytics, and personalized medicine, are vast. As technology continues to advance, telemonitoring will play an increasingly significant role in enhancing patient care and improving healthcare outcomes.

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URBANIZATION IN INDIA: AN EVALUATION FROM ENVIRONMENTAL PERSPECTIVES

Dr. Aakuthota Srinivasulu

Assistant Professor, Department of Public Administration & HRM, Kakatiya University, Hanamkonda – 506009

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ABSTRACT

Urbanization is a process taking place globally intertwined with economic development. Urbanization is a process that leads to the growth of cities due to industrialization and economic development, and that leads to urban-specific changes in specialization, labor division and human behaviors. Urbanization refers to general increase in population and the amount of industrialization of a settlement. The population is growing at the rate of about 17 million annually which means a staggering 45,000 births per day and 31 births per minutes. If the current trend continues, by the year 2050, India would have 1620 million populations. It includes increase in the number and extent of cities. It symbolizes the movement of people from rural to urban areas. Urbanization happens because of the increase in the extent and density of urban areas. The most emerging issues are climate changes, freshwater scarcity, deforestation, and fresh water pollution and population growth. Although it is impossible to restrict urbanization it has to be ensured that urbanization proceeds in the right path causing minimum impact on environment.

KEYWORDS: Urbanization, Environmental, Growth, scarcity, deforestation

I. INTRODUCTION

Urbanization and environment has evinced interest from a wide range of experts. The multidisciplinary gamut of the subject invokes the interest from ecologists, to urban planners and civil engineers, to sociologists, to administrators and policy makers, and finally the common man. This is because of the multitude of activities and processes that take place in the urban ecosystems every day. Urbanization is an ongoing phenomenon. It is the movement of population from rural to urban areas and efforts to reduce time and expense in commuting and transportation while improving opportunities for jobs, education, housing, and transportation. Living in cities permits individuals and families to take advantage of the opportunities of proximity, diversity, and marketplace competition. Urban ecosystems are the consequence of the intrinsic nature of humans as social beings to live together. Thus when the early humans evolved they settled on the banks of the rivers that dawned the advent of civilisations. An inadvertent increase in the population complimented with creativity, humans were able to invent wheel and fire, created settlements and started lived in forests too. Gradually, with the development of their communication skills by the form of languages through speech and script, the humans effectively utilised this to make enormous progress in their life styles. All this eventually led to the initial human settlements into villages, towns and then into cities. In the process humans now live in complex ecosystems called urban ecosystems.

Urbanization is a process that leads to the growth of cities due to industrialization and economic development, and that leads to urban-specific changes in specialization, labor division and human behaviors. The population is growing at the rate of about 17 million annually which means a

staggering 45,000 births per day and 31 births per minutes. If the current trend continues, by the year 2050, India would have 1620 million populations. Due to uncontrolled urbanization in India, environmental degradation has been occurring very rapidly and causing many problems like shortages of housing, worsening water quality, excessive air pollution, noise, dust and heat, and the problems of disposal of solid wastes and hazardous waste s.

Urbanization is a process taking place globally intertwined with economic development. The urban global tipping point was reached in 2007 when for the first time in history over half of the world's population 3.3 billion people were living in urban areas. It is estimated that a further 500 million people will be urbanised in the next five years and projections indicate that 60 per cent of the world's population will be urbanised by 2030. This rush to the cities, caused in part by the attraction of opportunities for wealth generation and economic development, has created the phenomenon of 'megacities': urban areas with a population of 10 million or more. This incredibly rapid growth of megacities causes severe ecological, economical and social problems. It is increasingly difficult to manage this growth in a sustainable way. It is recognised that over 70 per cent of the growth currently takes place outside the formal planning process and that 30 per cent of urban populations in developing countries are living in slums or informal settlements, i.e. where vacant state-owned or private land is occupied illegally and is used for illegal slum housing.

II. OBJECTIVES OF THE STUDY

The specific objectives set out for this study are as follows:

1. To analyse the trends of urbanization.



2. To examine the basic amenities in urban areas like percentage of urban households having access to safe drinking water, health facilities, electricity and sanitation.
3. To examine the impact of growing urbanization on the overall quality of human life.
4. To examine the impact of urbanization on environmental factors.

III. METHODOLOGY

The study is based on secondary sources which include various publications by government agencies as well as non-governmental organizations/bodies. The data from various NSSO rounds and various Censuses (Registrar General of India) has been used for the collection of relevant and reliable statistics. Apart from this various issues of Economic Survey, different volumes of statistical outlines of India and various reports of CMIE published from time to time has also been the other source of data collection. The data on pollution has been taken from the Compendium of Environment Statistics, Ministry of statistics and programme implementation (MOSPI), government of India and from the publications of the Central pollution Control Board.

Impacts of Urbanization on Various Components of Environment

Most of the major environmental problems of the next century will result from the continuation and sharpening of existing problems that currently do not receive enough political attention. The problems are not necessarily noticed in many countries or then nothing is done even the situation has been detected. The most emerging issues are climate changes, freshwater scarcity, deforestation, and fresh water pollution and population growth. These problems are very complex and their interactions are hard to define. It is very important to examine problems through the social-economic-cultural system. Even the interconnections between environmental problems are now better known, we still lack exact information on how the issues are linked, on what degree they interact and what are the most effective measures. One problem is to integrate land- and water use planning to provide food and water security (UN EP 1999).

IV. IMPACTS ON VARIOUS RESOURCES

Erosion and other changes in land quality

Rapid development can result in very high levels of erosion and sedimentation in river channels

Pollution

Pollutants are often dispersed across cities or concentrated in industrial areas or waste sites. Lead- based paint used on roads and highways and on buildings is one such example of a widely dispersed pollutant that found its way into soil. Burying tremendous amounts of waste in the ground at municipal and industrial dumps.

Water Resources

Natural vegetation and undisturbed soil are replaced with concrete, asphalt, brick, and other impermeable surfaces.

This means that, when it rains, water is less likely to be absorbed into the ground and, instead, flows directly into river channels.

Higher, faster peak flows change streams channels that have evolved over centuries under natural conditions. Flooding can be a major problem as cities grow and stream channels attempt to keep up with these changes.

Degraded Water Quality

The water quality has degraded with time due to urbanization that ultimately leads to increased sedimentation there by also increasing the pollutant in runoff.

Modification of Habitats

The fertilizers that spread across lawns finds its way into water channels where it promotes the growth of plants at the expense of fish. The waste dumped into streams lowers oxygen levels during its decay and cause the die-off of plants and animals.

Destruction of Habitats

There is also complete eradication of habitats as an outcome of urbanization and native species are pushed out of cities.

Creation of New Habitats

New habitats are also created for some native and non-native species. Cities also create habitats for some species considered pests, such as pigeons, sparrows, rats, mice, flies and mosquitoes. Urbanization has, for example, eliminated many bat colonies in caves, but has provided sites such as bridges for these species to nest.

V. CONCLUSIONS

Numerous development experts perceive urbanization as a challenge. However, history shows that no nation has thrived without it, and every prosperous nation is predominantly urban. Economic growth over the past six decades has been closely tied to urbanization, with the poorest nations remaining largely rural. Urban areas offer numerous advantages for enhancing living standards, thanks to the efficiencies and conveniences they provide in infrastructure and services. Yet, many urban areas still grapple with severe development issues, such as rampant poverty, food insecurity, and high rates of infant and child mortality. Given this context and the vast potential for progress in the near future, it's imperative for India to take immediate action. Achieving inclusive growth requires urbanization that is socially equitable, economically viable, and environmentally sustainable.

1. From this we can conclude that some causes of damage to the environment due to urbanization lies in the legislation and the regulating agencies if the country.
2. Failure of governance in today's cities has resulted in the growth of informal settlements and slums that constitute unhealthy living and working environment.
3. Serious attention should be given to the need for improving urban strategies, which promote efficiency in



resource use.

- 4.
5. Vehicular pollution control in metropolitan cities and other cities deserves top priority.
6. Urgent attention should be given to reduce the generation of solid waste at the sources through mandatory standards and regulation fee and tax incentives, and education and voluntary compliance.
7. In case adequate steps are not taken to prevent pollution and to improve the quality of life by providing more social amenities, the life of the urban dwellers of India may become more miserable this may be the cause of health hazards and worst devastation.

VI. SUGGESTIONS

1. Based on the study and in the light of the observations the following suggestions are made for achieving high level of urbanization with maintaining environmental quality so that sustainable development could be achieved in India:
2. Developing spatial pattern of urbanization suited to the socio-economic conditions of India. With a total urban population of 286 million and 35 metropolitan cities and metropolises, India's urban issues with all their related challenges and opportunities demand their firm place on the national agenda.
3. It is one of the key features of India's urbanization. Unplanned urbanization has resulted in the growth of slums in the cities dividing them into formal and informal settlements. The non-recognition of this fact has contributed to enormous strains on urban infrastructure. It is evident that if cities fail to deal constructively with poverty, poverty would seriously undermine the sustainability of cities.
4. Government should provide health, education, housing, and pension services for rural migrants in urban areas which is essential for promoting human capital movement from rural to urban areas or to the industrial sector.
5. Government should create employment opportunities for low-income communities through the promotion of micro-enterprise and public works and also encourage and facilitate the participation of slum dwellers in housing construction and shelter up gradation so that it will aim at improving the quality of life and making cities free from the worst features of slums.
6. It is essential to make the public aware of the formidable consequences of the Environmental Degradation, if not retorted and reformative measures undertaken would result in the extinction of life. It is essential to get the country acquainted with these challenges so that their acts may be eco-friendly.
7. Organisations like TERI, CPCB UNEP/ WHO, World Bank, CESE/IIT, EIA/EPCA/NEP/MoEF etc have carried out studies in the past to estimate the contribution of various sources towards the environment but the main problem is the lack of

environmental awareness among the people. What is needed is strict enforcement of these laws and creation of environmental awareness among the masses.

8. The environment noise levels are to be checked with prescribed noise standards for residential, commercial and industrial areas. If the noise exposure levels are higher, suitable noise control measures like personal protective equipment, installation of barriers, enclosures etc., need to be suggested.
9. The use of gaseous fuels, that is, CNG and LPG, ULSD and electricity (in the form of battery operated vehicles) for automobile applications should be encouraged. Vehicles using CNG proved to be economically viable, can help in reducing the levels of pollutant emissions and are quite cost effective.
10. Strengthening inter-sectoral development between State and the Centre. There should be good cooperation between State Pollution Control Board, Central Pollution Control Board, Municipal Administration, Ministry of Urban Development and Poverty Alleviation, and Ministry of Health and Family Welfare etc.
11. The Planning Commission should note that "addressing the problems posed by the urban transformation that is likely to occur" is among the four key challenges for the next Five Year Plan (2012-2017). The others are described as those of managing energy and water and of protecting the environment. Greater emphasis should be given on urban infrastructure creation and management and on the need to ensure that the growing cities are "liveable" as ignoring the above formidable challenges are perilous because the adverse implications are not long term or even medium term: they are likely to come and bite us only too soon.
12. Finally in order to make policies effective, apart from making people aware of environmental concerns, there is a need to augment the available human resources capacity so that the environmental issues are addressed properly. For this we need to look into the existing facilities in this regard at higher levels of education, participation of NGOs and the private sector.

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TO ASSESS SLEEP DISTURBANCE AND INTOLERANCE OF UNCERTAINTY MEDIATED BY EMOTIONAL INTELLIGENCE AMONG YOUNG ADULTS DURING A PANDEMIC OUTBREAK

Ananya S M

Assistant Professor, Department of MSc Clinical Psychology, Kateel Ashok Pai Memorial Institute of Allied Health Sciences

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ABSTRACT

Covid-19 Pandemic has created a lot of uncertainty in young adults. Daily lifestyle has changed a lot because of this uncertain situation especially sleep pattern has been disturbed. Hence, this study aims to examine the Sleep disturbance (improper sleep pattern) and Intolerance of uncertainty mediated (viewing uncertainty as negative) by Emotional intelligence (having awareness and regulating of one's and others' emotions) among young adults during a pandemic outbreak. An online questionnaire, including socio-demographics, the Pittsburgh Sleep Quality Index (PSQI), Intolerance of Uncertainty Scale (IUS), and Emotional Intelligence Scale (EIS), was administered to young adults (n=200). There is a significant positive correlation between sleep disturbance and intolerance of uncertainty (.367**), a significant negative correlation between sleep disturbance and emotional intelligence (-.329**), and Intolerance of uncertainty and emotional intelligence is negatively correlated (-.450**). On mediational analysis is revealed that emotional intelligence is partially mediating between Sleep disturbance and Intolerance of uncertainty. On Chi-square, it was seen that there is an association between Sleep disturbance and domicile and person's tested, covid positive in the past 1 year. Emotional intelligence has an association with family type. Sleep disturbance and Intolerance to uncertainty can be improved by enhancing Emotional intelligence.

KEYWORDS: Covid-19 Pandemic, Young adults, Sleep disturbance, Intolerance to uncertainty, and Emotional intelligence.

1. INTRODUCTION

On March 11, 2020, the World Health Organization (WHO) announced the outbreak of COVID-19 as a pandemic. Covid-19 is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which is a respiratory illness. This pandemic has not only been restricted to respiratory illness but has caused a devastating impact on various aspects of life. Economies have seen a setback, hospital infrastructure has fallen short, education institutions have shut down, social stigma and discrimination have been widespread in the community, lockdown, social distancing, and quarantine have made people still more stressed, anxious, helpless, and hopeless (Roy 2020). Most of the studies have shown the psychological impact of covid-19 on the Indian population (Chhetri 2021, Kumar 2021, Cold 2020, Varshney et al., 2020, Roy 2020).

This unexpected pandemic has created a sense of uncertainty, some can accept uncertainty whereas others can be vulnerable. Intolerance to uncertainty has been understood as an excessive tendency to find uncertain situations stressful and upsetting, to believe that unexpected events are negative and should be avoided, and to think that being uncertain about the future is unfair (Dugas et al., 2001). A study has shown that intolerance of uncertainty and mental wellbeing have a negative association. Intolerance of uncertainty and mental wellbeing have been

mediated by rumination and fear of COVID-19 (Satici et al., 2020). Another study showed that the greater IOU was positively correlated with poorer adolescent sleep quality, and this relationship was mediated by worry (Lin et al., 2017). A study was conducted to show that the feeling of uncertainty intensifies affective reactions, that is uncertainty during an emotional event makes unpleasant events more unpleasant and pleasant events more pleasant (Bar-Anan et al., 2009).

Sleep disturbance has comorbidity with most mental illnesses. Sleep disturbances encompass disorders of initiating and maintaining sleep, disorders of excessive somnolence, disorders of sleep-wake schedule, and dysfunctions associated with sleep, sleep stages, or partial arousals (Cormier, R. E. 1987). A study conducted on Chinese residents suggests that intolerance of uncertainty and perceived stress are critical factors in the relationship between COVID-19 uncertainty and sleep outcomes (Wu et al., 2021). A study has shown the ill effect of sleep deprivation on perceived emotional intelligence and constructive thinking skills (Killgore, 2008). Self-Reported Sleep Correlates with Prefrontal-Amygdala Functional Connectivity and Emotional Functioning (Killgore, 2013).

Emotional intelligence has been understood as the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to



use this information to guide one's thinking and actions" (Mayer & Salovey, 1989). Emotional intelligence has positive health benefits for both psychological and physical health. (Tsaousis, 2005).

2. METHOD

2.1 PARTICIPANTS

Total 209 responses were received through the google form. Among them, 5 responses were discarded due to age factors, and 4 responses were excluded as they have not given consent for participation. Of the initial responses, N= 200 responses were retained. Those who are within the age group of 18-25 years (Young adults), pursuing high school, pre-university, degree, master degree, MPhil, and Ph.D. in any stream of knowledge or are into jobs of any kind and internships and have been in a pandemic situation. Those who don't have access to the smartphone, are not Indian citizens, and those who do not know English were excluded from the study.

2.2 INSTRUMENTS

2.2.1 Sociodemographic Details:

A total of 200 participants' responses were considered for the study among which 125 responses were from females and 75 were from males. The average age of the participants was 23 years. Most of the responses were given by Postgraduate students (111) and Undergraduate students (82) few diploma studies and M.Phil. students have also responded. Few other socio-demographic details such as occupation, socio-economic status, family type, relationship status, and domicile were collected. Respondents were also asked if they (176=Yes and 24=No) or their family members (130=Yes and 70=No) had suffered from covid-19 infection.

2.2.2 Pittsburgh Sleep Quality Index (PSQI):

The PSQI is a 19-item self-report questionnaire designed to measure sleep quality and disturbances over 1 month. The first 4 items (fill-in-the-blank format) ask respondents about their usual bedtimes, wake times, sleep latency, and sleep duration. The remaining 14 items ask how often participants experienced certain symptoms within the past month (not during the past month, less than once a week, once or twice a week, 3 or more times a week). The 19 primary items yield a global sleep quality score, ranging from 0 (no difficulties) to 21 (severe sleep difficulties). The PSQI global score has good internal consistency (Cronbach's $\alpha = .83$) and equally good test-retest reliability ($r = .85$). The 7 component scores (subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medications, and daytime dysfunction) have more moderate internal consistency.

2.2.3 Intolerance of Uncertainty Scale, Short Form (IUS-12; Carleton et al., 2007):

The short 12-item version of the IUS (Carleton et al. 2007; Turkish version: Saricam et al. 2014) was developed to assess intolerance of uncertainty. The Turkish version of the IUS ($\alpha = .88$) is a two-factor scale that assesses prospective anxiety ($\alpha = .84$) and inhibitory anxiety ($\alpha = .77$). Each item is scored on a 5-point scale ranging from 1 (not at all characteristic of me) to 5 (entirely characteristic of me). Higher scores obtained from the scale indicate higher intolerance of uncertainty.

2.2.4 Emotional Intelligence Scale (EIS):

Emotional Intelligence Scale by Dr. Arun Kumar Singh and Dr. Shruthi Narain contains 31 items divided into 4 dimensions (understanding emotions, understanding motivation, empathy, and handling relations). Scoring is done separately for positive items (27) and negative items (4) using a scoring key, +1 is given to those responses which tallied with the answers in the scoring key, and 0 scores for those which don't tally. The reliability was found to be 0.86 alpha coefficients, which was significant at .01 level. This scale was correlated against the Emotional Intelligence Scale developed by Hyde, Pethé, and Dhar (2001). The concurrent validity was found to be 0.86, which was significant at .01 level.

2.3 PROCEDURE

Data was collected using google forms. Before collecting data, general instructions as to who can participate in the research, and some guidelines regarding the careful reading of questions, and honest responses were mentioned. Rights of Participants, confidentiality, and anonymity, potential risks, and discomforts of the study were informed to the participants. The researcher's identity and email addresses were shared in case of clarification of any doubt in the process of responding to the questionnaires. After the participants agreed to participate in the study by giving consent, they were asked to complete a survey packet that contained demographic questions, Pittsburgh Sleep Quality Index (PSQI), Intolerance of Uncertainty Scale (IUS), and Emotional Intelligence Scale (EIS).

2.4 DATA ANALYSIS

Correlational analysis was conducted to understand the relationship between Sleep disturbance, Level of intolerance to uncertainty, and emotional intelligence. To check if emotional intelligence acts as a mediator between sleep quality and level of intolerance to uncertainty a mediational analysis of Processv3.5 by Andrew F. Hayes was used in SPSS. Chi-Square test was conducted to find the association between Sociodemographic factors and sleep disturbance, Intolerance of uncertainty, and emotional intelligence.



3. RESULTS

Table-1: Showing the Gender, the Total number of participants, Mean and Standard deviation.

	Gender	N	Mean	Std. Deviation
Sleep Disturbance	Female	125	5.42	3.368
	Male	75	4.76	3.101
Intolerance of uncertainty	Female	125	35.23	10.348
	Male	75	35.55	10.402
Emotional Intelligence	Female	125	23.54	4.326
	Male	75	22.64	4.988

The descriptive statistics shows that there were 125 female participants and 75 male participants in this study. The mean and standard deviation of Sleep disturbance of the female group is 5.42 (SD=3.368) and the male group is 4.76 (SD=3.101). the mean and standard deviation of intolerance of uncertainty among

the female group is 35.23 (SD=10.348) and the male group is 35.55 (SD=10.402). The mean and standard deviation of emotional intelligence of the female group is 23.54 (SD=4.326) and the male group is 22.64 (SD=4.988).

Table-2: Showing the correlation between Sleep Disturbance, Intolerance of Uncertainty, and Emotional Intelligence.

		Sleep disturbance	Intolerance of uncertainty	of Emotional Intelligence
Sleep disturbance	Pearson Correlation	1	.367**	-.329**
	Sig. (2-tailed)		.000	.000
Intolerance of uncertainty	Pearson Correlation			-.450**
	Sig. (2-tailed)			.000

** . Correlation is significant at the 0.01 level (2-tailed), N=200

All the three variables that are sleep disturbance, intolerance of uncertainty, and emotional intelligence have a significant relationship at 0.01 level of significance. The table shows that there is a significant positive correlation between sleep disturbance and intolerance of uncertainty (.367**). There is a

significant negative correlation between sleep disturbance and emotional intelligence (-.329**). The relationship between intolerance of uncertainty and emotional intelligence is negatively correlated (-.450**).

Table- 3: Showing the results of mediation analysis relating to Emotional Intelligence (M) as a mediating factor between Sleep disturbance(X) and Intolerance to uncertainty (Y).

	Effect	se	t	P	LLCI	ULCI
Direct	.7732	.2054	3.7642	.0002	.3681	1.1783
Indirect	.3834	.1150	-	-	.1774	.6395
Total	1.1566	.2086	5.5437	.0000	.7452	1.5681

Note: se= Standard error, LLCI= Lower limit of class interval, ULCI= Upper limit of class interval.

In the indirect row, it can be noticed that the value of lower limit class interval (LLCI) and upper limit class interval (ULCI) i.e, .1774 and .6395 respectively. In which zero does not fall between these two values indicates that there is a significant relationship between Sleep disturbance and Intolerance of uncertainty via Emotional intelligence. Therefore, the effect value of direct with

the indirect effect that is .7732 and .3834, by comparing this value it is inferred that indirect effect is reduced. Hence, emotional intelligence is partially mediating between Sleep disturbance and Intolerance of uncertainty.

**Table-4: Showing the association between Sleep Disturbance and Sociodemographic Factors (i.e., gender, family type, relationship status, domicile, tested covid and family member tested covid)**

SLEEP DISTURBANCE					
Gender	High	Low	Value	df	Significance
Male	26 (13.0%)	49 (24.5%)	.411	1	.521
Female	49 (24.5%)	76 (38.0%)			
Family Type	High	Low			
Joint	11 (5.5%)	21 (10.5%)	.159	1	.690
Nuclear	64 (32.0%)	104 (52.0%)			
Relationship Status	High	Low			
In Relationship	14 (7.0%)	23 (11.5%)	.002	1	.962
Single	61 (30.5%)	102 (51.0%)			
Domicile	High	Low			
Rural	14 (7.0%)	51 (25.5%)	10.489	2	.005
Semi-Urban	24 (12.0%)	30 (15.0%)			
Urban	37 (18.5%)	44 (22.0%)			
Tested Covid-19	High	Low			
No	60 (30.0%)	114 (57.0%)	5.199	1	.023
Yes	15 (7.5%)	11 (5.5%)			
Family Member Tested Covid-19	High	Low			
No	43 (21.5%)	86 (43.0%)	2.692	1	.101
Yes	32 (16.0%)	39 (19.5%)			

An association was found between Sleep disturbance and Domicile (.005) and Person tested with covid-19 (.023). There is no association found between Sleep disturbance and gender

(.521), family type(.690), relationship status (.962), and family member tested covid-19 (.101).

Table-5: Showing the association between Intolerance of Uncertainty and Sociodemographic Factors (i.e., gender, family type, relationship status, domicile, tested covid and family member tested covid)

INTOLERANCE OF UNCERTAINTY					
Gender	High	Low	Value	df	Significance
Male	38 (19.0%)	37 (18.5%)	.342	1	.559
Female	58 (29.0%)	67 (33.5%)			
Family Type	High	Low			
Joint	16 (8.0%)	16 (8.0%)	.061	1	.805
Nuclear	80 (40.0%)	88 (44.0%)			
Relationship Status	High	Low			
In Relationship	18 (9.0%)	19 (9.5%)	.008	1	.930
Single	78 (39.0%)	85 (42.5%)			
Domicile	High	Low			
Rural	29 (14.5%)	36 (18.0%)	.620	2	.733
Semi-Urban	28 (14.0%)	26 (13.0%)			
Urban	39 (19.5%)	42 (21.0%)			



Tested Covid-19		High	Low			
No		84 (42.0%)	90 (45.0%)	0.41	1	.840
Yes		12 (6.0%)	14 (7.0%)			
Family Member Tested Covid-19		High	Low			
No		59 (29.5%)	70 (35.0%)	.746	1	.388
Yes		37 (18.5%)	34 (17.0%)			

Intolerance of uncertainty showed no association with gender (.559), family type(.805), relationship status (.930), domicile (.733), and Person tested with covid-19 (.840) and family members tested covid-19 (.388).

Table-6: Showing the association between Emotional Intelligence and Sociodemographic Factors (i.e., gender, family type, relationship status, domicile, tested covid and family member tested covid)

EMOTIONAL INTELLIGENCE					
Gender	High	Low	Value	df	Significance
Male	33 (16.5%)	42 (21.0%)	1.728	1	.189
Female	67 (33.5%)	58 (29.0%)			
Family Type	High	Low			
Joint	21 (10.5%)	11 (5.5%)	3.720	1	.054
Nuclear	79 (39.5%)	89 (44.5%)			
Relationship Status	High	Low			
In Relationship	19 (9.5%)	18 (9.0%)	.033	1	.856
Single	81 (40.5%)	82 (41.0%)			
Domicile	High	Low			
Rural	40 (20.0%)	25 (12.5%)	5.622	2	.060
Semi-Urban	22 (11.0%)	32 (16.0%)			
Urban	38 (19.0%)	43 (21.5%)			
Tested Covid -19	High	Low			
No	89 (44.5%)	85 (42.5%)	.707	1	.400
Yes	11 (5.5%)	15 (7.5%)			
Family Member Tested Covid-19	High	Low			
No	69 (34.5%)	60 (30.0%)	1.769	1	.184
Yes	31 (15.5%)	40 (20.0%)			

An association was found between Emotional Intelligence and Family type (.054). There is no association found between Emotional Intelligence and gender (.189), relationship status (.856), domicile (.060) person tested with covid-19 (.400) and family member tested covid-19 (.184).

4. DISCUSSION

There is a significant correlation among all three variables i.e., sleep disturbance, intolerance of uncertainty, and Emotional intelligence.

H1 Stated as “*There is no correlation between Sleep disturbance and Intolerance of uncertainty*” is rejected as the results revealed

that there is a significant positive correlation between sleep disturbance and intolerance of uncertainty (.367**). This indicates that persons with high intolerance of uncertainty will have high sleep disturbance and vice versa.

H2 Stated as “*There is no correlation between Sleep disturbance and Emotional Intelligence*” is rejected as the results show that there is a significant negative correlation between sleep disturbance and emotional intelligence (-.329**). This indicates that persons with high emotional intelligence have decreased sleep disturbance and vice versa.



H3 Stated as "There is no correlation between Intolerance of uncertainty and Emotional intelligence" is rejected as the results

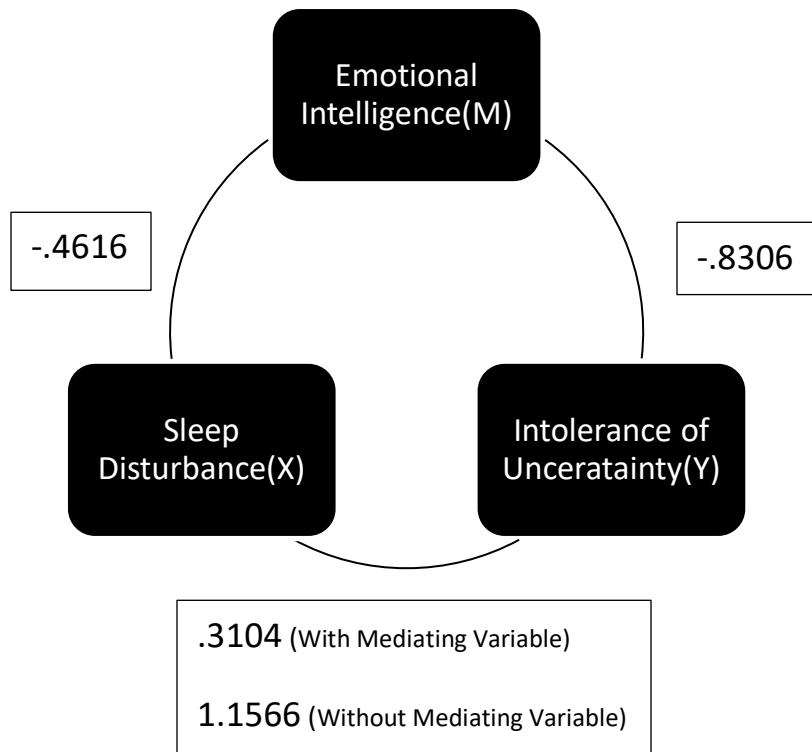
show that there is a significant negative correlation (-.450**) between intolerance of uncertainty and emotional intelligence.

Table-7: Showing the summary of correlation results.

Sleep Disturbance	Intolerance of Uncertainty	Positive Correlation (.367**)
Sleep Disturbance	Emotional Intelligence	Negative Correlation (-.329**)
Intolerance of Uncertainty	Emotional Intelligence	Negative Correlation (-.450**)

H4 Stated as "Emotional intelligence mediates between Quality of sleep and Intolerance of uncertainty" is accepted. On mediational analysis, it is revealed that there is a significant relationship between Sleep disturbance and Intolerance of

uncertainty via Emotional intelligence and emotional intelligence is partially mediating between Sleep disturbance and Intolerance of uncertainty.



Pictorial representation of mediational analysis.

On Chi-square, it was seen that there is an association between Sleep disturbance and domicile and person's tested, covid positive in the past 1 year. Emotional intelligence has an association with family type.

5. CONCLUSION

Sleep disturbance and Intolerance to uncertainty can be improved by enhancing Emotional intelligence.

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EXPLORING THE RELATIONSHIP BETWEEN WORK-LIFE BALANCE AND EMOTIONAL CONTENTMENT AMONG WORKING MOTHERS AND IN THEIR MOTHERHOOD

Sunitha. K. S.¹, Dr. Prashanth Talwar ²

¹ Research Scholar, Srinivas University, Mangalore, Karnataka, India.
OrcidID: 0000-0002-1849-9554

² Research Professor, Srinivas University, Mangalore, Karnataka, India.
OrcidID: 0000-0003-1081-5820

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ABSTRACT

Purpose: This research study aims to investigate the relationship between work-life balance and emotional contentment among working mothers and in their motherhood as well. This paper aims to explore how working mothers make sense and respond to their professional desires, responsibilities and expectations within the context of motherhood. It also seeks to explore what it takes for mothers to live up to their potential at work, what it takes for mothers to reach top positions in their field of work and the challenges they face.

With the growing number of mothers participating in the workforce globally, understanding how work-life balance influence their emotional well-being is essential for promoting overall family and societal harmony. Emotional contentment will be gauged by measuring positive and negative affect, life satisfaction, and overall emotional well-being. The ultimate attempt in this research is made to understand if mothers are really, emotionally content in their lives at the end of the day, and with the ultimate aim of pooling opinions as to which incentives, strategies or measures can help reduce the conflict between family life, work and emotional Contentment.

In this paper attempt was made to understand the WLB and Contentment of women from all walks of life in all sectors and in all industries. But hardly there were any who were really content and happy. It is hypothesized that a higher level of work-life balance will be positively associated with increased emotional contentment among working mothers.

Design: This research and study is taken from secondary data, like google scholar, Research Gate, Academia, literature review, journals books and blogs

Findings: The findings from this research will contribute to the existing literature by shedding light on the factors influencing emotional well-being among this particular demographic group. In all of the findings there was the absence of emotional contentment with the mothers. Its either just satisfied with the job and work -life balance or just managing with the challenges. But there is no real contentment in their lives really. The conclusions may assist employers, policy makers, and working mothers themselves in developing strategies and policies aimed at improving work-life integration and promoting emotional happiness, joy and fulfilment in their lives.

Originality Value: There is a deep exploration of the specific relationship between Work-life balance and emotional contentment among working mothers. The focus on emotional contentment specifically among working mothers is relatively limited in the literature. This research seeks to fill the gap by investigating how work-life balance, and various factors influence the emotional well-being of working mothers to achieve contentment.

Paper Type: Literature Review paper

KEYWORDS: work-life balance, emotional contentment, working mothers, well-being, family support, flexible work arrangements, autonomy.

1. INTRODUCTION

The introduction of the literature review paper on the topic "Exploring the relationship between work-life balance and emotional contentment among working mothers and in their motherhood" serves to provide context and background information regarding the subject matter. It aims to introduce the reader to the importance and relevance of studying the relationship between work-life balance and emotional

contentment among working mothers. The introduction highlight the significance of this topic in contemporary society and how it impacts the overall well-being of working mothers, if it all their contentment and fulfilment is achieved in their lives. The attempt is made to understand women and working mothers from all sector and all industries and in all walks of life if they are content an happy in leading their family life. [1]



There should be at least a percentage of joy and happiness.[2]
This is the aim and goal of the research.

1.1 Background

The background section of the literature review paper delves into the existing knowledge and research surrounding the relationship between work-life balance and emotional contentment among working mothers. It provides an overview of previous studies, theories, and conceptual frameworks that have explored this topic. Key findings and gaps in the current literature are also addressed, which help to underscore the need for further investigation.

1.2 Purpose of the Review

The purpose of the literature review is to critically analyse and synthesize the existing body of research on the relationship between work-life balance and emotional contentment among working mothers. It aims to identify empirical evidence, gaps, and inconsistencies in the literature, as well as provide a comprehensive understanding of the current state of knowledge in this area. The review serves as a foundation for the development of future research questions and hypotheses.

1.3 Scope and Structure of the Review

The scope of the literature review delineates the boundaries within which the research is conducted. It clarifies the specific aspects and factors related to work-life balance and emotional contentment that will be explored in the review. For example, the review may focus on the impact of flexible working hours, organizational support, childcare arrangements, or cultural norms on the emotional well-being of working mothers.[3] The review may also specify the types of sources that will be included, such as scholarly articles, empirical studies, and qualitative research.

2. CONCEPTUAL FRAMEWORK

The conceptual framework provides a theoretical foundation that guides the research and helps to structure the study. In this literature review paper, the conceptual framework aims to explore the relationship between work-life balance and emotional contentment among working mothers. It provides a framework for understanding the concepts and dimensions associated with work-life balance and emotional contentment.

2.1 Definition of Work-Life Balance and Contentment

Work-life balance refers to the equilibrium between work-related responsibilities and personal life, including family, leisure, and other non-work-related activities.[4] It encompasses the ability to manage and prioritize obligations and commitments in both domains to achieve overall satisfaction and more specifically, Contentment and well-being.[5]

2.2 Dimensions of Work-Life Balance and Contentment

Work-life balance consists of various dimensions that impact individuals' ability to balance their professional and personal lives effectively. These dimensions may include time balance, where individuals have enough time for work and personal activities; role balance, which refers to individuals' ability to fulfil their responsibilities in both work and personal domains

without conflict; and psychological balance, which involves maintaining a sense of well-being and fulfilment in both of these areas.[6]

2.3 Emotional Contentment: Definition and Importance

Emotional contentment refers to the state of happiness, fulfilment, and satisfaction individuals experience in their personal and professional lives. It encompasses positive emotions, such as joy, happiness, fulfilment, and a sense of overall well-being.[7] Emotional contentment is vital as it significantly impacts individuals' overall quality of life, mental health, job satisfaction, and overall happiness.[8]

2.4 Theoretical Frameworks

Theoretical frameworks provide a lens through which researchers can understand and analyse phenomena. In the context of exploring the relationship between work-life balance and emotional contentment among working mothers, several theoretical frameworks can be considered:

a) Role Theory: This theoretical framework suggests that individuals have multiple roles (e.g., being a mother, a professional), and the balance between these roles influences their emotional well-being.[9] It posits that conflicts and strains between different roles can affect emotional contentment.[10]

b) Conservation of Resources (COR) Theory: COR theory explains that individuals strive to acquire and maintain resources, including time, energy, and emotional well-being. An imbalance in allocating these resources between work and personal life can impact emotional contentment.[11]

c) Job Demands-Resources (JD-R) Model: JD-R model suggests that work-related demands (e.g., workload, work-related stress) and resources (e.g., autonomy, social support) influence individuals' well-being and job satisfaction. Work-life balance is seen as a resource that contributes to emotional contentment.[12]

d) Social Exchange Theory: This theoretical framework highlights the importance of the social exchanges' individuals engage in, including support from family, colleagues, and supervisors. Positive social exchanges can contribute to emotional contentment by fostering a supportive and harmonious work-life balance.[13] These theoretical frameworks provide guidance for understanding the relationship between work-life balance and emotional contentment among working mothers and help to frame the analysis of existing literature in the field.

3. FACTORS INFLUENCING WORK-LIFE BALANCE AND CONTENTMENT

3.1 Organizational Factors

Organizational factors play a significant role in determining work-life balance and contentment among working mothers. These factors include workplace policies, such as flexible work schedules, telecommuting options, and availability of childcare facilities.[14] Studies have found that organizations with supportive work-life balance policies and a positive



organizational culture tend to have higher levels of employee satisfaction and contentment. Additionally, factors such as workload, job autonomy, and opportunities for advancement also influence work-life balance and contentment among working mothers.[15]

3.2 Job-Related Factors

Job-related factors encompass elements such as job demands, job control, and job satisfaction. A demanding and high-pressure job can negatively impact work-life balance and emotional contentment as it may lead to increased stress and difficulty in fulfilling family responsibilities.[16] On the other hand, having control over one's job and being satisfied with it can contribute to a better work-life balance and emotional well-being.[17] Studies have shown a positive relationship between job satisfaction and the ability to effectively balance work and personal life.

3.3 Individual Factors

Individual factors refer to personal characteristics and traits that influence work-life balance and contentment. These factors include personality traits, coping mechanisms, self-efficacy, and perceived work-life balance. People with high self-efficacy are more likely to manage their work-life balance effectively and experience higher levels of contentment.[18] Similarly, individuals with effective coping strategies tend to better handle the demands of both work and personal life, leading to greater contentment.

3.4 Family Factors

Family factors play a crucial role in work-life balance and contentment among working mothers. These factors include spousal support, presence of young children, and the division of household and childcare responsibilities. Supportive spouses who share care giving and household responsibilities ease the burden on working mothers and contribute to a better work-life balance. Additionally, the age and number of children can also impact work-life balance, as the demands of raising young children require more time and attention.

3.5 Socio-cultural Factors

Socio-cultural factors refer to the societal and cultural norms, values, and expectations that influence work-life balance and contentment.[19] These factors can include cultural attitudes towards working mothers, availability of social support networks, and gender role expectations. In societies where working mothers are not stigmatized and are supported by policies and societal norms, they are more likely to experience a better work-life balance and emotional contentment. Additionally, the gendered division of labour and expectations regarding women's roles can impact work-life balance and contentment among working mothers.[20]

4. IMPACT OF WORK-LIFE BALANCE ON EMOTIONAL CONTENTMENT

4.1 Positive Impact

Research has consistently shown that achieving a good work-life balance positively affects emotional contentment among working mothers.[21] Studies indicate that when women can balance their work and personal life effectively, they

experience higher levels of emotional well-being and satisfaction. They report feeling happier, less stressed, and more fulfilled in their roles as both mothers and employees. Having time to engage in activities they enjoy, spend quality time with their families, and take care of their own well-being contributes to their overall emotional contentment.[22]

4.2 Negative Impact

On the other hand, when work-life balance is poor, it can have detrimental effects on the emotional contentment of working mothers. The struggle to juggle multiple responsibilities can lead to burnout, increased stress levels, and a decline in overall emotional well-being. This can result in feelings of guilt, inadequacy, and even depression.[23] The constant pressure to excel both at work and at home, without adequate time for rest and self-care, can significantly impact emotional contentment.

4.3 Mediating Factors

Various mediating factors influence the relationship between work-life balance and emotional contentment among working mothers. These factors can include the level of social support available, the flexibility of work arrangements, and the availability of childcare options. Supportive spouses, understanding employers, and access to quality childcare services play a significant role in mediating the effects of work-life balance on emotional well-being.[24] Additionally, personal factors such as one's own attitudes, coping mechanisms, and ability to set boundaries also contribute to mediating the impact on emotional contentment.

5. EXPERIENCES AND CHALLENGES OF WORKING MOTHERS

5.1 Multiple Role Strain

Working mothers often face significant challenges in balancing their numerous roles, including those of an employee, mother, spouse, and caretaker of the household.[25] These multiple roles can lead to role strain, where the expectations and demands from various domains often conflict with one another, causing stress and strain on their emotional well-being.

5.2 Work-Family Conflict

Work-family conflict arises when the demands and pressures from work interfere with family responsibilities, or vice versa, causing distress and dissatisfaction.[26] Working mothers may experience this conflict when they are unable to meet both work and family expectations simultaneously, leading to emotional turmoil.

5.3 Support Systems for Working Mothers

Having adequate support systems can help alleviate the challenges faced by working mothers. Support can come from spouses, family members, friends, or even employee assistance programs.[27] Access to affordable and quality childcare services also plays a crucial role in easing the burden on working mothers and enhancing their emotional well-being.



6. STRATEGIES FOR ENHANCING WORK-LIFE BALANCE

6.1 Organizational Interventions

Employers can implement various policies and interventions to support working mothers in achieving better work-life balance. This may include offering flexible work arrangements, such as telecommuting or flexible scheduling, providing maternity and paternity leave, and promoting a culture that values work-life balance.[27] These organizational interventions have been found to positively impact emotional contentment among working mothers.

6.2 Personal Strategies

Working mothers can adopt personal strategies to enhance work-life balance and emotional contentment. This may include setting boundaries between work and personal life, prioritizing self-care, practising effective time management, and seeking social support. Engaging in activities that promote personal well-being, like exercise, hobbies, and relaxation techniques, can also contribute to emotional contentment.

6.3 Government Policies

Government policies play a crucial role in supporting working mothers. Policies such as paid parental leave, affordable childcare options, and workplace flexibility laws can significantly enhance work-life balance and emotional contentment among working mothers. These policies provide women with the necessary resources and support to successfully balance their work and personal lives.

7. METHODOLOGY OF REVIEWED STUDIES

In this section, an overview of the methodology used in the reviewed studies will be discussed. This includes the research design, sample size, data collection methods, and data analysis techniques employed in the studies. It will provide insights into the quality and rigour of the research conducted in the field of work-life balance and emotional contentment among working mothers.

7.1 Literature Search Strategy

To identify relevant studies for the literature review, a systematic search strategy was employed. This involved searching various electronic databases, such as PubMed, PsycINFO, and Google Scholar, Academia and Research Gate using appropriate search terms and Boolean operators. The search strategy aimed to capture a wide range of studies on the topic, ensuring the inclusion of diverse perspectives and methodologies.

7.2 Inclusion and Exclusion Criteria

The inclusion and exclusion criteria used in selecting studies for the literature review will be outlined in this section. These criteria are typically based on factors such as the relevance of the study to the research topic, the publication year, the study design, and the availability of full-text articles. The inclusion and exclusion criteria help ensure that only high-quality and relevant studies are included in the review.

7.3 Analysis of Included Studies

The analysis of included studies involves examining and synthesizing the findings of the selected studies. This may include summarizing key results, identifying common themes or patterns, and comparing the findings across the studies. Various methods such as thematic analysis or meta-analysis may be used to analyse the data from the selected studies, depending on the nature and scope of the literature review.

RELATED LITERATURE SEARCH

Rajesh K. Yadav (2014) This study investigates the factors responsible for work life balance and job satisfaction level amongst the women employees working in banking and education sector. Employees are the greatest resource of an organization. Attracting and retaining the right people is critical to the success of an organization. When it comes to the human environment, it focuses on human aspects that influence an employee's performance and job satisfaction. Job satisfaction has been defined as the degree to which employees have a positive & effective orientation towards employment by the organization. Work determines a person's worth and place in society and it influences one's psychological identity and sense of well-being. The term "work" is being used to refer to paid work or employment. Work establishes one in the community of human kind. It links a person to others, advances the goals of culture, and gives purpose to one's existence. Work is a purposeful human activity which is directed toward the satisfaction of human needs and desires. [28]

Snehalata Singh (2016) In this study, it was seen that the healthy women can fulfil the multiple roles of having healthy children, income generation, ensuring the nutrition of family members etc. A significant difference was observed on life satisfaction among working and non-working mothers. The working mothers were found to be highly satisfied with their life as compared to non-working mothers. It seems that, in Bhopal's socio-cultural context, the working mothers have positive attitude towards life and try to develop healthy patterns of adjustment and capacity to deal with different and tough situations throughout their lives. This finding is strongly supported by a study of Kaur et al. (2012) who concluded in their study that females those who are working and married, are low on anxiety with higher life satisfaction. They perceived their life as challenging and secure. They felt comfortable with their life situations. Therefore, from the above result, hypothesis 2 which states that "Life satisfaction would be high among non-working mothers" is not accepted. [29]

Sobia Shujat, (2011) The Study was to examine the impact of work life balance on employee job satisfaction and to identify which factor of work life balance have more influence on employee job satisfaction in banking sector of Karachi. The research findings show that work life balance have not much impact on employee job satisfaction and some factors of work life balance such as employee intention to leave job, work pressure and long working hours have negative relation with employee job satisfaction and work life balance programs and



flexible working conditions have positive relation with employee job satisfaction. It is found out that the organizations can face multiple problems if their workforce satisfaction level is lower. The research findings show that work life balance have not much impact on employee job satisfaction and some factors of work life balance such as employee intention to leave job, work pressure and long working hours have negative relation with employee job satisfaction and work life balance programs and flexible working conditions have positive relation with employee job satisfaction. [30]

Mehraj Din Dar (2016) The study investigates job satisfaction among teachers working in government and private schools. The study of the teachers of district Ganderbal from both government and private schools of which sample of 100 teachers were selected from government and private schools. The findings of the study reveal that Government teachers at elementary level enjoy it better. The rest means to say the primary, high school as well in the private school nothing better. There was a lot of disparity between work-life balance and contentment with the rest of the working mothers.[31]

Malebo K. Makhuzza (2018) Women who work in skincare clinics have demanding jobs. Literature indicates that these working environments are labour intensive and emotionally demanding. The aim of this study was to explore and describe the perceptions of job-satisfaction factors for women working in skincare clinics in the northern suburbs of Johannesburg, South Africa. In this study, individual semi-structured interviews, based on the philosophy of Appreciative Inquiry, were conducted. Data was analysed through thematic coding and strict ethical considerations and trustworthiness were adhered to. From the identified themes, eleven recommendations were derived aimed at improving the job-satisfaction of women working in skincare clinics. [32]

Marisabelle Camilleri (2021) This paper aims to explore how mothers make sense and respond to their professional desires, responsibilities and expectations within the context of motherhood by, first and foremost, delving deeper into the compromises, if any, these mothers are constrained to do, to strike a balance between work and family life. Another aim of this paper is to explore if working mothers forfeit developing their careers further for motherhood responsibilities. What does it take for mothers to live up to their potential at work? Is there any lost potential in this regard? Are there any ways in which such a situation can be mitigated? Thirdly, this paper shall also identify what it takes for mothers to reach top positions in their field of work, the challenges they face and how easy or difficult it is to attain and maintain such positions. The aim is to pool opinions on which incentives, strategies or measures can help reduce any conflict between family life and work.[33]

Masduki Asbari (2020) This study aims to focus and measure the influence and impact of work-family conflict on job satisfaction and employee performance. Instead, it is also aimed to test the theme dieting effects of job satisfaction on the influences. The subject of this study were 1045 female

employees in Indonesia. Questionnaires were distributed via electronics to the respondents who were randomly selected among the female employees in Indonesia. Data collected were processed and analyses using SEM method with Smart PLS 3.0 software. The results of the analyses reported that work-family conflict is negatively and significantly influenced the job satisfaction. Interestingly, the findings also found that, work-family conflict is not significantly influenced directly on the female employee performance. But, work-family conflict has significantly indirectly influenced on performance through job satisfaction variable. [34]

Katarzyna Markiewicz, (2020) Significant positive correlations across almost all variables of job and marital satisfaction were observed. This means that the increase of marital satisfaction corresponds with the increase in job satisfaction, although the work/family conflict resulted in experiencing negative emotions at work. Moreover, the level of job satisfaction was higher than the level of family satisfaction. It was also found that the age and time spent at work proved to have a negative impact upon job satisfaction. Work-family facilitation proved to be crucial since its exclusion made the interface between all factors of family satisfaction and work insignificant. At the same time, the managerial women suffered from work/family conflict to a greater degree than did office workers. The study revealed also that the needs of older workers should be considered to maintain their work/life balance.[35]

Sanaz Aazami (2015) The workplace environment has a great influence on employees' health. Job dissatisfaction has been widely recognized as a workplace stressor that can influence employees' psychological and physical health statuses. However, job satisfaction is a multi-dimensional concept, and it is necessary to investigate its different facets and their unique consequences. Therefore, the aim of this study was to assess the relationship between the nine facets of job satisfaction and psychological health and somatic complaints. The results of this study show that there is a link between job satisfaction and psychological distress as well as four somatic complaints. Satisfaction with the nature of work was the strongest predictor for psychological distress, sleep disorders, headaches and gastro-intestinal problems. From the results of this study, we conclude that there is a link between job satisfaction and the health status of employees. In addition, job satisfaction levels vary across different dimensions and can even differ from an individual's feelings of global job satisfaction. Policies and practices should focus on improving working conditions to enhance the fit of the job and the employee. [36]

Jillard O. Mercado, (2019) The intent of this research was to study the extent of the work-life balance and the level of satisfaction among female teacher to determine if there is a significant relationship between these two variables. The results showed that the majority of the teachers answered "moderate extent" to the work-life balance under personal and work environment and mostly "satisfied" on the level of satisfaction. It was concluded that there was a significant relationship between the work-life balance and the level of satisfaction. The significant relationship between the work-life



balance and the level of satisfaction was tested in this study, and it was found that there was a relationship between the work-life balance and the level of satisfaction among women.[37]

Yunca Wang¹ (2017) This study examined the mediating effects of job satisfaction and life satisfaction on the relationship between work-family conflict and depression in professional women. A total of 443 professional women completed questionnaires that measured work-family conflict, job satisfaction, life satisfaction, and depression. Structural equation modelling (SEM) was adopted to test the mediating effect. bootstrap methods were used to assess the magnitude of the direct and indirect effects. SEM showed that job and life satisfaction partially mediated the relationship between work-family conflict and depression. The results of the bootstrap estimation procedure and subsequent analyses indicated that the indirect effects of job and life satisfaction on the relationship between work-family conflict and depression were also significant. The final model shows a significant relationship between work-family conflict and depression through job and life satisfaction.[38]

Balu & A. K. Poorani, Pandu, (2013) The most significant factor to influence work-life balance was feelings about work (for the IT employees sample result). Thus, increase in commitment, turnover intentions and satisfaction, the chances of achieving better Work-Life Balance increases. The other two significant positive relationships were found between absence from work and worklife balance, and family dependence and work-life balance (for the IT sector). It was expected that the work environment would enhance the work-life balance among employees. However, no significant relationship has been obtained between work environment and work-life balance, and workload and responsibility and work-life balance. The main reason for this could be because the sample size was not comprehensive enough to cover a large number of employees. The results indicate that there are differences in the perception regarding the need for work life balance policies based on their background. Bearing in mind this significance the employers need to design and implement WLB policies and practices which will enable the employees to balance their work and personal life needs. [39]

Ghina Rona Thifal (2021) This study showed that the balance of work-life and job satisfaction among working women in companies X and Y in Yogyakarta, Indonesia was a positive and significant relationship. This meant that the greater the balance between work and life among the respondents, the higher the job satisfaction and vice versa. The limitation of this research was limited problems explored in the research area. Furthermore, distribution of the questionnaire was directly because of the work load of the respondents. The questionnaire was entrusted to the human resource departments of the company in each office. It implied that the researchers could not ensure that all respondents fill out the questionnaire properly and according to their circumstances without bias. [40]

Munazza Mahmood (2018) It is a fact that women are effectively supporting men in financial perspectives since ages but different problems such as attitude and prejudice of society members adversely affect the utilization of their talent and working abilities. On the basis of findings it is concluded that status of working women and work-life balance is affected by many problems including work-load, family support, harassment, fear and anxiety etc. It is recommended that proper check and balance, equal chance of decision making and security level of the working women in their work place might be maintained for work-life balance of working women. [41]

Ahmed Umar Khan (2018) The findings of this study may have practical implications for workers, employers, management, managers, and the government by providing a clear understanding of the importance of a healthy work-life balance and its major impact on commitment and job satisfaction. It also takes into account the idea that leading a healthy, balanced life will contribute to lowering workplace stress and have an impact on the attitudes of workers who intend to leave their jobs. (Umar, 2018) [42]

S V Devi and Renuka (2018) In this study, the researcher advises the couple to communicate at least when they are largely free from their individual office responsibilities. This will help to lessen the difficulties in maintaining a perfect coordination to maintain a calm and understandable family life, which naturally improves the performance of women employees at their places of employment. The stressor may not even be a stressor if the female employee views it as something useful or even challenging rather than as a danger, according to the researcher. Therefore, they should educate kids how to control how they perceive the stressor and provide them the skills and confidence they need to enhance their lives and deal with all kinds of stress-ores. [43]

Delina and Raya (2013) state that, traditionally, women have been constrained to live their lives within the four walls of their homes. In this world of competition, women work together with men in every field of life along with performing their domestic responsibilities. This phenomenon has led women to experience a great challenge in maintaining WLB in the best possible way so as not to sacrifice one for the other.[44]

Lakshmi and Gopinath (2013) A study conducted by on women teachers' work lifestyle asserted that women have stood shoulder to shoulder to help their spouses by sharing the responsibility of earning in order to cope with the domestic financial burden. Since then, the subject of WLB among women has received greater attention. Hence, it has become particularly important and interesting to comprehend how women maintaining a good WLB enjoy a successful personal and professional life. It has also been observed that qualitative education and proper training centres have helped women to create an effective work-life balance.[45]

Mehta and Kundnani (2015) As for the changes in society from time to time, along with maintenance of work and



personal life relationships, are perceived as an important concern. In this social setup, women are not lagging in any field, so working women are given substantial obligations to maintain harmony in their work life. As a result, it is now challenging for working females to seek stability between their private and working lives. Today, many female employees are observed entering the workplace and competing with men in every aspect of work. In our society, this progress and the additional role played by women have not freed them from performing the duties of family care. The concept of WLB among women was inspired by this phenomenon. Due to this, WLB for female employees has drawn greater attention from various disciplines. [46]

Anitha and Maheswari (2014) A balanced lifestyle among teaching women revealed that, since social norms have changed, both genders share an equal burden on financial earnings to lead a happy family life; consequently, WLB among women has become a crucial topic. Therefore, it is now important to understand how women combine their personal and work lives. [47]

Gopinath and Lakshmi (2013) Research surveys show that the employment rate of women has increased dramatically in recent decades. Women overcome obstacles and have made their prominent and professional careers by occupying the topmost positions in various organizations. WLB aims to achieve two main objectives, namely achievement and enjoyment. Achievement refers to occupying a top position in an organization whereas enjoyment refers to living a peaceful and happy life with family. Therefore, when working women can succeed in their private and occupational lives, it is evident that they have maintained a proper and positive WLB. [48]

Sethi (2015) stated that, in our cultural norms and values, it is one of the most essential responsibilities of women to take care of their families. Therefore, in order to lead a healthy and stable life, working women have 4 of 12 play a dual role of a professional person and housewife in such a way that neither role is disturbed. Appropriately, this will benefit both families and organizations. In the banking sector, high work demands with long working hours have led to issues related to work-life imbalance and have created distress for women in all fields of employment. They must play dual roles in career building and happy families. [49]

Louise Wattis (2011) Research within this area has tended to focus on work life balance as an objective concept, which implies a static and fixed state fulfilled by particular criteria and measured quantitatively. Qualitative research on women's experiences reveals work life balance as a fluctuating and intangible process. This article highlights the subjective and variable nature of work life balance and questions taken-for-granted assumptions, exploring problems of definition and the differential coping strategies which women employ when negotiating the boundaries between work and family. [50]

Rohaizah Abd. Latif (2023) the study found a statistically significant positive relationship between work-family and job performance among working women. It also found that a

significant positive relationship exists between work-family balance dimension and job performance. Further, satisfaction balance is identified as the major contributor to job performance. It is anticipated that improving the work performance of women will not only increase organizational productivity but will also boost financial performance. As a result, the corporation and female employees have recommended that individuals focus on their engagement and satisfaction balance to improve their productivity or job performance. [51]

Jasmina ŽNIDARŠIČ, Miha MARIČ (2021) The knowledge of important impact of work-life balance, together with the understanding of the relations between the researched constructs of work-life balance, life satisfaction, job satisfaction and work engagement, can strengthen teachers' work engagement by respecting employees as actors in other roles and supporting work-family balance in the form of family-friendly policies and practices, and thereby contributes to the area of employee's behaviors and improves the teacher's productivity. findings show that an increase in work-life balance positively relates to life and work satisfaction and that life satisfaction leads to an increase in work engagement. [52]

Nidhi Saxena (2022) This paper explored the impact of work life balance on job satisfaction among married women employees in the banks of NCR. A sample of 300 married woman employees was taken and the data was gathered through questionnaire and analysed through Excel. In this paper we will concentrate on the changing needs of work life balance policies (WLBPs) especially for married women in Public and Private Banks to evaluate and redesign their current HR strategies to retain their existing employees and recruit new women professional in a competitive Banking Sector. [53]

Mandeep Kaur (2020) This study explains the Service sector contribution to the global output is more. The service factor itself is the largest part of the economy for the countries around the world, the worthy reason being urbanization, privatization and instant demand for final consumer services. Quality services being the ingredient for welfare of an economy, the primary and secondary sectors are directly dependent on the progress of services like banking, insurance, trade and commerce together with entertainment, social and personal aspects specifically in advanced economies. The service sector shows a complimentary role and accelerates the process of development through quality improvement and enhancement with efficiency of productivity and developmental activities. [54]

Secret Omar Shah (2018) A study conducted among many working women living in Delhi and its nearby areas, found that only 18-34% of married women continue with their professional career after having a baby. While lack of flexible working hours or crèche facilities do restrain their desire to work, most of the Indian working women suffer from a strong sense of guilt. Working women, unlike home-makers and housewives, often feel guilty at the prospect of losing quality



time with their baby. Constant shuttling between work and home leaves many women exhausted, hampering their quality time with their children. Society, too, constantly reminds the working mother of her shortcomings and how she needs to learn from her housewife counterpart about true motherhood. The comparison between the two never ends. This complex cocktail of guilt and family pressure makes women quit the workforce, leading to a feeling of uncertainty, dissatisfaction, guilt, and often a battered self-esteem. [55]

Uzma Hafeez (2015) The present study aims to examine the “impact of work life balance on job satisfaction amongst elementary school teachers of 21st century”. The paper in hand presents a concise summary of the literature on the value of work –life balance and job satisfaction. The key independent variables work-life balance; long hours of work, pressure/stress on work, intention to change jobs, flexible working conditions/environments which serves as an indicator of work-life balance while dependent variable job-satisfaction includes salary level, interpersonal relationship, spend time with family, balance between work and life, staff loyalty as it levers. The findings suggest that in schools work-life balance does not have much impact on teacher’s job-satisfaction. The reason of such results may be due to the uncertain circumstances, the huge rate of inflation and smaller numbers of job opportunities, lack of application of nationwide laws.[56]

Dr. B. Bhavya1 (2021) The present study aims to identify the relationship between job stress and job satisfaction among the working women in public sector organization, the problems pertaining to work life balance and to suggest preventive measures for managing work life balance. To perform surveys of working women in public sector 371 questionnaires were filled. On the other hand, comfort sampling can be used to execute interviews with working women of public sector to understand their place on their job balance, difficulties and improvements. [57]

Gayatri Pradhan (2016) This paper explores the ways in which working women balance their work and family life. There has been a growing concern over work-family issues and the notion of balancing these two domains due to an increasing number of women entering the world of paid employment. Such a discussion rarely comes into the picture in the case of men. A clear-cut demarcation between work and home is made with men being less involved in chores at home. The concept of workfamily balance has been used to explain the equilibrium between responsibilities at work and responsibilities outside paid work. Having a balance in the work and family domains implies that this equilibrium is in the required proportion for the concerned individual. Several studies have been conducted on work-family issues in Western countries, but findings from these studies cannot be projected to other countries since work and family roles are perceived differently in different countries. Work-family experience is not universal, but rather culture-specific which is evident in the literature. Thus, there is a need to analyse how working

women balance work family issues across different countries.[58]

M Shobhana (2017) The research attempts to gain insight into the role of a sample population of a women employee in different in occupation and in balancing in work and life in Tamil Nadu. The data was studied and analysed to explore and portray the sensitivity of women and their perception of society as well as to highlight their values, attitudes, and beliefs of women in formal organisation and primary family system. [59]

Farah Naaem (2014) The dual performance is a potent source of conflict. The studies pointed out that women faced unique challenges in the occupation arena, because of their gender. Women are caught in a conflict between sex role expectations and expectations of fulfilling one’s occupational potential. This article portray the dilemmas women professional suffer from ,when they are confronted with ideas and expectations of traditional societies at home and the demands conforming to the modern code of conduct at work place .The studies disclose that major segment women is struggling to balance these two most important forces in life. This article highlights the need for work life balance for working women of India. Both employees and employer benefit by this. Above studies show that now companies have started realizing the importance of work life balance and trying to reduce work stress level of women employees. This article also highlights some Strategies to overcome stress so that women employees can do work effectively and efficiently at her work place and home as well. [60]

Thangjam Ravichandra (2022) According the findings, measuring females' work-life balance solely based on employee and job-related characteristics is insufficient. The stud's findings differed from those of a previous study conducted in an Indian sector. However, any conclusions drawn from the findings of this study should be approached with caution, as the communicator appears to be indecisive in responding to the questionnaire. Despite the cover-up, we discovered that the average score for the bulk of the items assessed for work satisfaction, work-stress, and job related factors only ranges from 2.0 to 3.6 (on a scale of 1 to 5) satisfaction. We indicate that future studies should cover both sides of relatives and the work-lifestyles of a person are important. For working females, that is a current challenge. Blow-by-blow making plans and private endeavours could make a person’s lifestyle balanced. It is done whilst a person experiences gladly together along with her non-public lifestyles in addition to running lifestyles. Governance and the society together must proceed for concerning a female's work lifestyles stability to carry out their high-grade at each end. [61]

Sahana Maiya (2014) The present paper based on empirical work, provides a deep insight of work-life balance of working mothers in Public and Private sector. An experimental survey of an equal number of Public and Private sector employees were carried out. Both the sectors were evaluated on 6 sub scales viz: personal factors, balancing factors, organizational



support, motivational factors, career advancement and psychological factors. The results reveal the picture of difficulties faced in balancing the work demand and the life (family) responsibility. There was a great correlation between the difficulties faced and the balancing act to be performed. The significant results reflected in the areas of career advancement factors, organizational support and psychological factors. The study defines certain specific HRM interventions for better work-life balance. [62]

Kalva, I., & Shirayev, D. (2016) The aim of the research is to investigate the level of job satisfaction and its relation with satisfaction of basic vital needs (according to Maslow's needs pyramid) in working women – single and married. A positive correlation was found between the level of job satisfaction and the level of satisfied material needs and security needs in working women. Some differences were found between single and married working women in levels of job satisfaction: 31% of single working women were satisfied fully by their job (but only 4% of the married). It was shown that the need for communication is correlated neither with job satisfaction nor with civil status of women. The need for recognition was partially satisfied in both women's groups, even in the case of their satisfaction with job. So, a presence of work-life imbalance indirectly has been shown in the married women, who have to sacrifice a better paid job for the sake of having more free time for the family. [63]

Kumar, K., & Chaturvedi, R. (2018) The aim of this study is to investigate the role of gender ideology in determining women's work-life balance and their job-life satisfaction. Furthermore, it examines the mediating effect of work-life balance satisfaction, work-family conflict and family-work conflict on the relationships between gender ideology-job satisfaction, gender ideology-life satisfaction and gender ideology-turnover intention. Type and strength of association among research variables were analysed using correlation analysis while Regression analysis was used to check mediation effect. The result established partial and full mediation effects in maximum cases. [64]

Darakshan, N., & Islam, J. U. (2014) The study aims to investigate the level of Job Satisfaction among female faculties of central universities of Delhi, India. The study also investigates the effect of Occupational Stress and Work-Life Balance on Job satisfaction. A self-structured questionnaire is adopted to accomplish the research objectives through the responses from 120 female faculty members of two central universities of Delhi, India. Various statistical tools and methods such as descriptive statistics and regression analysis etc. have been used to analyse the data. This study makes a significant contribution to the existing body of knowledge by exploring the relationship between Occupational stress, Work-Life Balance, and Job Satisfaction. [65]

Jantzer, A. M., Anderson, J., & Kuehl, R. A. (2018) According to regression results, provision of workplace breastfeeding support, particularly providing adequate time for human milk expression, predicted work enhancement of personal life. Conversely, we found that as workplace support

diminished, employees perceived greater work interference with personal life. Results of path analysis further suggested that providing time for expressing milk improved job satisfaction via a partially mediated relationship where work enhancement of personal life acted as a mediator. These results suggest that employers can enhance the lives of their breastfeeding employees both at work and at home by providing workplace breastfeeding support, especially through providing time for expressing human milk in the workplace. [66]

Chitra Devi, (2012). Employees were able to develop distinct boundaries between paid work and private life. but in the modern world of work the two spheres of life are becoming more entangled the boundaries between work life and non-work life is blurring, resulting in work-life imbalance this imbalance is viewed seriously as it may have several unfavourable consequences for organization individual workers and their family. this study examines the relationship between work. life balance and life satisfaction and family satisfaction data was collected from 280 women employees working in BPOs at Chennai. the relationship between the variables was analysed using correlation. the result show that there is a positive relationship between work-life balance and life satisfaction and work life balance and family satisfaction. [67]

Haerani, S., Hamid, N. (2023) This research aims to determine the role of work-life balance in shaping job satisfaction and performance among female employees. The research method used is a qualitative method based on a review of previous research literature. The results of this study are based on the review or study of literature from national and international journals. The analysis of research journal results shows that work-life balance significantly influences job satisfaction and employee performance. Based on the results of research on female employees in various organizations, it is found that female employees need work-life balance, which will affect their job satisfaction and ultimately improve their performance. This research is limited to studying only female employees, and it is expected that future research will be more varied in terms of employee characteristics. [68]

Nordenmark. M., (2012) It was seen in this study that men and women who are self-employed experience a lower level of work-life balance than those employed and this result is found more in men than women. When job control and demands are held constant for the self-employed and the employed, self-employed women experience a significantly higher level of work-life balance than do employed women, but self-employed men experience a similar level of work-life balance as do employed men. Self-employed women have a slightly higher level of well-being than do employed women and the difference between the self-employed and the employed men is non-significant. When controlling for the level of job control, the relationship between self-employment and well-being is non-significant among women and is significantly negative among men. The results of this study confirm that the psychosocial working conditions are important because



demands and control in work influence work-life balance and well-being among self-employed men and women. [69]

Bryant, R. M., & Constantine, M. G. (2006). Many prior studies have reported that school counsellors are at risk for experiencing mental health difficulties (e.g., professional burnout) as a result of their participation in a wide variety of service-oriented roles. The majority of school counsellors are women, which underscores the importance of examining these individuals' unique work-related and life experiences. As such, this study explored the relationships among multiple role balance, job satisfaction, and life satisfaction in a sample of 133 women school counsellors. Findings revealed that multiple role balance and job satisfaction were each positively predictive of overall life satisfaction, even after accounting for the effects of age, years of experience as a school counsellor, and location of school environment. [70]

Fan, Y., & Potočnik, K. (2021) By highlighting the critical role of *both* childcare time *and* family finances in promoting working mothers' WLB satisfaction and job retention over time, our research contributes to the WLB literature that has predominantly emphasized time-based but neglected financial-based constraints and resources. We have found that working mothers may trade their childcare time for better family finances when they undertake a managerial role. Thus, becoming a manager serves as both a time-based demand and a financial-based resource for working mothers, which points to the *specific* rather than generic nature of contextual demands and resources. [71]

Chauhan, R., Maheshwari, N. (2020) The purpose of this research is to identify the relationship of Guna with emotional intelligence, work-life balance and job satisfaction of female professionals. Self-structured questionnaire was used to collect the primary data and analysed using descriptive statistics, Smart-PLS and SPSS 22.0 version. The finding of the study indicates that a significant relationship exists among Guna, emotional intelligence, work-life balance, and job satisfaction. The study provides theory-based empirical proofs of how Guna (personality traits) affects emotional intelligence, job satisfaction, and work-life balance. Hence, the findings of the study provide an accurate and comprehensive lens through which the future researches can be viewed. Though there were many studies conducted on emotional intelligence and work-life balance considering Guna, emotional intelligence, work-life balance, and job satisfaction together no literature was found. [72]

Devi, P. P.&, Rani, R. S., (2022) The study attempted to address the attitudes of female employees toward the impact of life satisfaction on work-life balance. The current study also included the responses of female employees to the factors that lead to work-life balance and imbalance. Work-life balance necessitates striking a balance between professional and personal obligations. As a result, it reduces friction between official and personal life. Work-life balance for women employees is highly desirable in the current scenario, and if there is no job satisfaction and consistency in life, it can create a dilemma for working women. This study presents and discusses the issues that women face when balancing their

work and family lives. This research was critical in determining the growing need for work-life balance policies for working women in India. [73]

Belwal, S., & Belwal, R. (2014). Women comprise 55% of the total workforce in Oman and contribute significantly in education, health, media, banking and other business sectors. Challenges such as work-life balance (WLB) constrain their Quality of Work Life (QWL). Omani Labour Law (OLL) grants some privileges to working women; however, there is an overgrowing need to address specific issues that women encounter while managing their work and family life. By resorting to in-depth interviews of selected top-level managers from government, public, and private sector organizations, this study aims to secure managers' perception of WLB and QWL-related issues and also their opinion about offering certain FFP-related benefits to the working women in Oman. The research recommends some collective efforts on three major fronts. Governmental interventions are needed to direct organizations to classify some jobs as 'Family Friendly'. Organizations need to observe healthy workplace practices. Families and societies need to exhibit a supportive outlook towards working women in Oman. [74]

Saleh, T. J. (2022) The work-life balance is studied with reference to the locus of control phenomenon. 200 working women were taken as a sample, from Pakistan in order to analyse the roles of internal and external locus of control in determining work-life balance. The data is obtained using questionnaires along with the consent form to ensure confidentiality and the purpose of the study was briefed. The responses obtained were analysed using Descriptive Statistics, Correlation, paired Sample t-test, Reliability analysis and Regression Analysis. The findings of the study demonstrated that women with external locus of control reported higher levels of satisfaction with respect to work-life balance whereas women with an internal locus of control reported slightly lower levels of satisfaction. It was because women with an internal locus of control tend to focus more on a child than work. Whereas women with an external locus of control manage work and family together. But working women with both internal and external locus of control are faced with stress that needs to be addressed. [75]

8. SUMMARY OF EMPIRICAL FINDINGS

This section will present a concise summary of the empirical findings from the reviewed studies. It will highlight the main findings related to the relationship between work-life balance and emotional contentment among working mothers.[76] The summary will address various factors, strategies, and their effects on work-life balance and emotional well-being.

8.1 Effects of Work-Life Balance on Emotional Contentment

This subsection will discuss the empirical findings regarding the impact of work-life balance on emotional contentment among working mothers.[77] It may include findings on the positive or negative effects of work-life balance on various aspects of emotional well-being, such as overall life satisfaction, happiness, stress levels, and mental health.[78]



8.2 Factors Influencing Work-Life Balance

Here, the literature review will outline the factors that influence work-life balance for working mothers. These factors may include individual factors (e.g., personal values, self-efficacy), organizational factors (e.g., workplace policies, support from supervisors), and societal factors (e.g., cultural norms, gender roles). [79] The review will summarize the key findings and highlight the most significant factors identified in the reviewed studies.

8.3 Strategies for Enhancing Work-Life Balance

This subsection will discuss the strategies or interventions identified in the reviewed studies that have been found to enhance work-life balance among working mothers.[80] These strategies may include flexible work arrangements, family-friendly policies, time management techniques, and self-care practices.[81] The review will summarize the various strategies and their effectiveness in improving work-life balance and emotional contentment.

9. CONCLUSION

9.1 Discussion and Implications

In this section, the literature review discussed the broader implications of the research findings and address the theoretical contributions that the reviewed studies have made to the understanding of work-life balance and emotional contentment among working mothers. Additionally, it will highlight the practical implications of the findings, providing recommendations for organizations and policy-makers to promote work-life balance and enhance the well-being of working mothers.

9.2 Theoretical Contributions

This subsection outlines the theoretical contributions of the reviewed studies to the existing literature. It may identify new concepts, models, or frameworks that have been proposed or tested, shedding light on the underlying mechanisms or processes related to work-life balance and emotional contentment. The review may also discuss any gaps or inconsistencies in the theoretical frameworks identified in the literature.

9.3 Practical Implications

Here, the literature review discusses the practical implications of the research findings. It will provide recommendations for organizations, employers, and individuals on how to improve work-life balance and promote emotional well-being among working mothers. These recommendations may include policy changes, organizational support programs, and individual strategies for achieving better work-life balance.

9.4 Gaps and Future Research Directions

This subsection will identify any gaps or limitations in the existing literature and suggest future research directions. It may highlight areas that require further exploration, such as under-represented populations, specific industries or professions, or methodological improvements. The review will discuss the significance of addressing these gaps and provide suggestions for future research studies to expand the

knowledge on work-life balance and emotional contentment among working mothers.

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WOMEN'S EDUCATION AS A SOLUTION TO CHILD MORTALITY: UZBEKISTAN

Viktoriya Kan

MSc in Applied Economics, WIUT

ABSTRACT

Development economics is one of the richest fields for research. Apart from macroeconomics, microeconomics, and finance, a sufficient number of experts dedicate their papers to examining and explaining different socioeconomic phenomena happening in people's lives. One of the most critical problems in modern society is child mortality. It has been prevalent at all stages of the world's history. On the other hand, in the 20th and 21st centuries of financial innovations and globalization, this problem should be less severe than it was formerly. The data from UNICEF shows that the child mortality problem remains as keen as it has always been. According to UNICEF's 2023 report on child mortality, around 5 million children and youths died due to unnatural reasons (UNICEF, 2018). The researchers argue that their deaths may have been averted in the case of proper care and living conditions. However, these factors do not rely entirely on children. The society and their families should guarantee their safety and well-being. Some experts assure that the possible key to solving child mortality is women's education. High-educated women are intelligent; they understand the importance of childcare. Educated women can also be income generators; families have enough money for food and health expenses (Doku et al., 2020). This paper conducts empirical research on the prevalence of child mortality in Uzbekistan. The main objective of this research is to examine the impact of women's education and other household parameters on child mortality in Uzbek families. The theoretical framework and ideas behind child mortality will be applied in practical econometric analysis by examining related literature. The data for this analysis has been downloaded from a respectful authority, the DHS program.

LITERATURE REVIEW

A sufficient number of development economists state that women's education can help improve child health and mortality issues. Pierce and Foster (2020) argue that schooling can improve children's welfare, increase survival chances, and solve gender discrimination and child mortality problems. The authors confirm that child mortality is highly prevalent in households with low-level educated mothers. The causes of death are mostly ignorance of essential health and safety, which are taught in primary schools. Thus, adequately educated mothers, with at least a primary level of education, are aware of child care. At the same time, child gender discrimination exists in families with uneducated mothers (Pierce & Foster, 2020). Poorly educated women mostly do household chores and sit with children while their husbands work. With several children and the only income earner, most households suffer from severe income constraints. The highest share of income is spent on food. Women's child preference is more for boys because sons will later grow up and earn money (Pierce & Foster, 2020). Thus, they spend more care and money on boys' health and education than girls. It can eventually solve the problem of child mortality since the majority of child and adolescent deaths originate from poor health and care, which are due to a lack of money. If these women had had a secondary education level, they could have been earning money with their husbands. Income constraints will loosen, and there will be enough money for all children, consequently reducing child mortality incidence as well as gender discrimination (Pierce & Foster, 2020). Keats (2018) states that women's education can indirectly impact child mortality through fertility preference. The researcher's statements correspond with the previous paper.

Based on findings from Uganda households, the author proves that uneducated women prefer to have more children to have more income earners later. High fertility is considered one of the key triggers of child labor, mortality, and poverty (Keats, 2018).

Money earned by the father will need to be more to feed several children. Once a child gets old enough to do agriculture or other self-employment work, he starts skipping school and concentrates more on earning money. Without proper education, this child, later an adult, will find only low-wage jobs and raise his children similarly. High fertility causes intergenerational poverty. On the other hand, highly educated women have low fertility preferences. If they work and earn money themselves, they comprehend that money should be spent equally on each child. Educating women increases their chances of finding a job and reduces the financial burden on their families, which will eventually lead to lower child mortality and poverty (Keats, 2018).

However, several economists are not optimistic about the negative influence of women's education on child mortality. Kumar, Patel, and Chauhan (2020) do not find a significant effect of women's educational attainment on the health and safety of their children. In societies where severe gender discrimination and child mortality are prevalent, education opportunities cannot guarantee that women will work. Women with education may prevent child mortality, but only if education is higher. Primary and secondary education levels do not significantly affect a child's well-being and survival chances (Kumar et al., 2020). In the majority of developing



countries, primary and secondary education is free. However, child mortality is still severe. With secondary education, women need help finding a well-paid job. Some work for low salaries and others are homemakers and sit with children. The authors also argue that higher education cannot effectively prevent child mortality. In Sub-Saharan and Asian countries, education for women is a good advantage from a marriage perspective (Kumar et al., 2020). Parents who can afford higher education do it to increase the marital value of their daughters. Once married, a sufficient number of women still do not work and remain at home. Kumar, Patel, and Chauhan (2020) conclude that higher education for women can fight child mortality if combined with other household and social factors. Ingutia, Rezitis, and Sumelius (2020) agree that education alone cannot effectively prevent child mortality.

Governmental authorities should encourage women to work even if they do not have proper education. The researchers are proponents of women's agriculture participation and land-owning. Ingutia, Rezitis, and Sumelius (2020) affirm that women's educational attainment positively influences child survival in the case of women's work. Theoretically, if the mother has an education and later works, it increases her family's and her children's welfare. However, some households do not permit their wives and daughters-in-law to work even if they have secondary or higher education (Ingutia et al., 2020). Thus, the child mortality problem remains the same.

On the other hand, well-educated women who own or rent land significantly reduce the likelihood of child mortality. In developing countries, people work in agriculture to grow food for their consumption. Educated women can utilize crops not

only for consumption but also for sale. They earn money; thus, the household can spend not only on food but also on healthcare and education of children. It will consequently decrease child mortality. Furthermore, women's land ownership increases their bargaining power in the household. Their opinions and decisions have more value when deciding on budget allocation (Ingutia et al., 2020).

METHODOLOGY

The data for this research has been requested from the DHS program (DHS, no date). The DHS program conducts surveys to analyze different socioeconomic and health conditions of households in developing countries. In Uzbekistan, this survey has been performed in two waves: the standard DHS survey in 1996 and a specialized health survey in 2006. The data for this paper has been reduced from the initial Uzbekistan DHS 1996. The individual dataset HIR has been chosen among seven data sections as it has all the required variables. The questionnaires were filled out by female household members only and included information about their health and that of their children. The dataset has been further shortened by restricting the age of these women, only variables from households with female interviewees younger than 35. This measure should guarantee that a child of this woman has died underage since children older than 35 women may have been adults by the time of the interview. Since the main objective of this research is to analyze the influence of regressors on child mortality, their mothers should be younger than 35. The number of observations is 3,185. The OLS regression model will be applied to identify the impact of independent variables on child mortality.

Variable	Type	Definition
<i>child alive</i>	dummy	1 if the household has not lost at least one child; 0 if not
<i>medu1</i>	dummy	1 if the mother has primary education level
<i>medu2</i>	dummy	1 if the mother has secondary education level
<i>medyears</i>	numerical	Number of years mother has studied
<i>lit</i>	dummy	1 if mother can read; 0 if not
<i>motherage</i>	numerical	Mother's age
<i>hhsiz</i>	numerical	Number of household members

The dependent variable, *childalive*, is a dummy variable. The DHS has provided women with specified questionnaires about their households, health, and children. These questionnaires ask if the household has ever lost at least one of their children. It takes 0 value if this household has lost one of their children prematurely, which is before the child turned 18, and 1 if it never did. The explanatory variables are household indicators mentioned in the literature review. The first dependent variable depicts the education level of the child's mother. The *medu1* and *medu2* variables are equal to one if the mother has primary and

secondary education, respectively. While producing these variables from the initial survey, *motheredu3* for higher education was also generated. However, it still needs to meet the regression outcomes and be included. The *years* variable is numerical and describes how many years the mother has studied. Another independent dummy variable is *lit*. It takes the value of 1 if the mother can easily read and 0 if not. *Motherage* is numerical and demonstrates how old the mother is at the time of the interview. *Hhsiz* is a numerical variable as well. It shows the number of members of the household.

$$y = \beta_0 + \beta_1 medu1 + \beta_2 medu2 + \beta_3 medyears + \beta_4 lit + \beta_5 motherage + \beta_6 hhsiz + u_i \quad \text{(Equation 1)}$$

Equation 1 describes a theoretical framework behind the relationship between child mortality prevalence and regressors above. After the econometric analysis is conducted, this model will present definite relationship signs and beta coefficients. The set of different statistical tests and graphical adds are

applied as a post-estimation check. These tests are the D'Agostino skewness and Jarque-Bera tests for normal distribution, the Breusch-Pagan test for heteroscedasticity, and the Variance inflation factor test for multicollinearity (see Appendices).



RESULTS

Regression Results

The following section presents the findings about the relationship between child mortality prevalence and mother and

$$childalve = -1.220 + 0.220medu1 + 0.169medu2 + 0.011medyears + 0.016lit + 0.060motherage + 0.12hhsize + u_i$$

According to the literature review, almost all independent variables affect child mortality prevalence. Both *medu1* and *medu2* prove that a mother's educational attainment positively affects the health and well-being of their children. Children of mothers with complete primary and secondary education have a higher chance of reaching adulthood. However, *medu1* shows no significant influence on child mortality. It can be addressed to the education system in Uzbekistan.

In contrast to many developing countries where child mortality is prevalent, Uzbekistan requires every person to study at school. Regardless of gender and place of residence, primary education is compulsory in Uzbekistan. Thus, almost all women have primary education, and the impact is positive but insignificant. The significant positive impact of mother education exists if the mother has a secondary education, *medu2*. Households with mothers having secondary education have 16% less chance of losing their children.

In the same way, the higher the number of years mothers studied, the lower the child mortality prevalence. The regression findings state that each additional study year decreases child mortality by 1.1. The ability of the woman to read and write also negatively impacts child mortality. Women who can easily read and write reduce child mortality by 1.6%. A woman's age also has a significant effect on child mortality prevalence. With women becoming one year older, child mortality decreases by 6%.

On the other hand, household size contrasts with the literature review. The papers from the literature review section mostly agree that the bigger the household, the higher the chance of child mortality. However, the current regression shows that big households positively affect child well-being. With the number of household members increasing by 1, there is a 1% less chance of losing a child. The proven effect is positive and can be explained by exploring Uzbek families. A sufficient number of Uzbek families have lived together for several generations. Grandparents, parents, children, and grandchildren tend to live together. At the same time, working family members share living costs, and there are more people to look after children apart from their parents.

In contrast to African and some Asian countries, where child mortality is also prevalent, lots of families consist of parents and several of their children. If both parents work, the older children look after their younger siblings. In Uzbek families, it is a typical case when even if parents both work, grandparents live with them and take care of children. Objectively, grandparents are more experienced and reliable tenders than children themselves, even if they are older. This social tradition may explain why household size positively affects children living in Uzbekistan.

household characteristics. The complete regression results are presented as a statistical table with coefficients and standard deviations for each variable (see Appendix 1 and 2). The regression algebraic equation is:

TESTS RESULTS

The data and variables should meet several requirements to ensure that regression analysis shows accurate and relevant results. The first condition that guarantees the OLS model's correctness is the normal distribution of data and residuals. Firstly, the graphs and charts are constructed to assess whether data is normally distributed visually. The Appendices 3 and 4 show the likeliness of current data to normal distribution. According to the graphs, the data does not perfectly fit the normal distribution trend (see Appendices 3 and 4). In Appendix 4, the blue line representing the current data does not perfectly follow the green line of normal distribution. Appendices 5 and 6 also demonstrate that data residuals do not accurately follow the expected trend. The D'Agostino skewness and kurtosis test is applied to check whether data is normally distributed. The test proves that data is normally distributed (see Appendix 7). Since probability χ^2 is higher than 0.05, the null hypothesis of normality cannot be rejected. Thus, data is normally distributed. Jarque-Bera test for normality also states that data is normal in distribution (see Appendix 8).

Another critical indicator of accurate OLS estimation is heteroscedasticity. If heteroscedasticity is prevalent in OLS analysis, the regression model cannot correctly estimate the relationship of variables. Breusch-Pagan test checks for heteroscedasticity in error variances. The null hypothesis in this test is that errors vary constantly, homoscedastic. Since the p-value 0.6048 is higher than 0.05, homoscedasticity cannot be rejected (see Appendix 9). Multicollinearity is one of the significant problems in regression estimation. It occurs when explanatory variables affect the dependent variable and influence each other—multicollinearity misrepresents regression results. Thus, coefficients may not state the relationship between variables correctly. STATA command `_pworth` states that there is a minor likelihood that variables are correlated with each other. Variance inflation factor test VIF confirms that explanatory variables are independent and uncorrelated (see Appendices 10 and 11). All STATA commands used in the analysis are included as a do-file in Appendix 12.

Policy Recommendation

The findings from the research are consistent with the literature. Women's education prevents child mortality. To fight child mortality, the government should give more power to women. First, the Ministry of Higher Education can propose education programs for women. It can be quotas and discount fees for higher education only for women, similar to military educational discounts for men who served in the army. Access to higher education is vital to solving the child mortality problem. With education, women can find well-paid jobs and earn money. With more funds, the share of



medical healthcare and children's education will also increase. Proper healthcare can prevent child mortality. When earning money, women also have more rights and decision-making power in the household when allocating family budgets. Government authorities can meet with parents to explain the long-run importance and advantages of education for women and stimulate women's higher education enrollment. The government can also create specialized monitoring groups to evaluate Uzbek women's family conditions. If women have difficulties finding a job, these groups can assist them.

CONCLUSION

Child mortality is one of the most severe socioeconomic phenomena. UNICEF and other international organizations are constantly looking for solutions to this problem. The majority of child and youth deaths could have been avoided with appropriate health care. This paper proves that women's education is essential in fighting child mortality. Educated women increase the chance of survival for their children. When a woman generates income with her husband, she loosens the budget constraint of their family. The household spends enough money on consumption, healthcare, and children's education. Eventually, educating women decreases child gender discrimination and poverty as well. The government should focus on finding a way to empower and educate women. It is crucial to ease women's access to higher education by offering quotas and discounts for studying. At the same time, the government should assist women in finding a job if they have difficulties after graduation. In the early stage, Uzbek families should be encouraged to educate their daughters and granddaughters by explaining the long-term effect of education on their welfare.

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APPENDICES

Appendix 1. OLS regression model

. reg childalive medu1 medu2 lit motherage medyears hhsize

Source	SS	df	MS	Number of obs	=	3,185
Model	395.309118	6	65.884853	F(6, 3178)	=	541.00
Residual	387.028716	3,178	.121783737	Prob > F	=	0.0000
				R-squared	=	0.5053
				Adj R-squared	=	0.5044
Total	782.337834	3,184	.245709119	Root MSE	=	.34898

childalive	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
medu1	.2195434	.1556025	1.41	0.158	-.0855482 .5246349
medu2	.1694913	.0366001	4.63	0.000	.0977291 .2412534
lit	.0161014	.0304623	0.53	0.597	-.0436265 .0758292
motherage	.0598163	.0010902	54.86	0.000	.0576787 .061954
medyears	.0107687	.0069465	1.55	0.121	-.0028513 .0243888
hhsize	.0121258	.0020553	5.90	0.000	.008096 .0161555
_cons	-1.21997	.1046638	-11.66	0.000	-1.425185 -1.014754

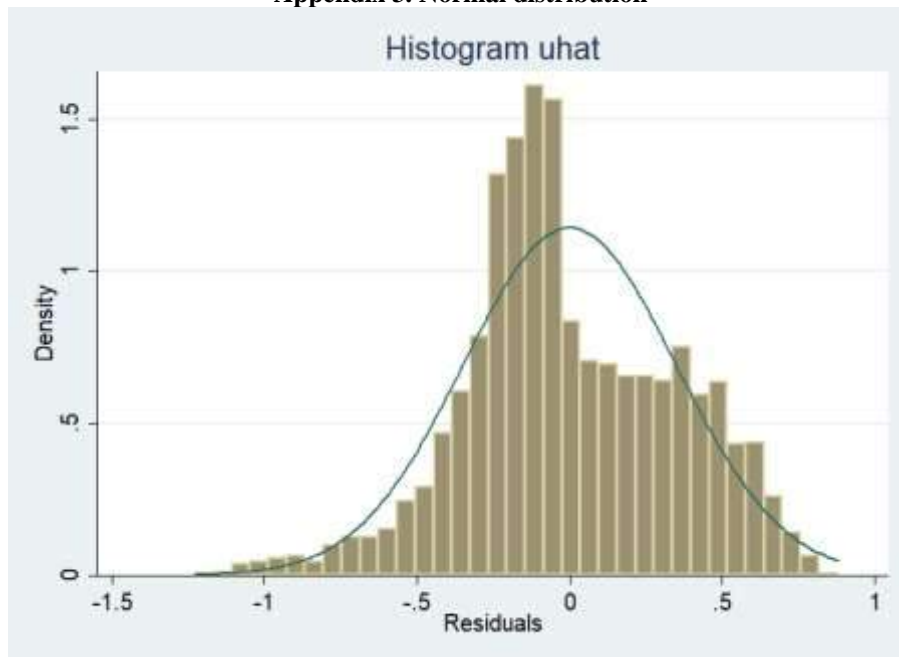
end of do-file

Appendix 2. OLS regression table

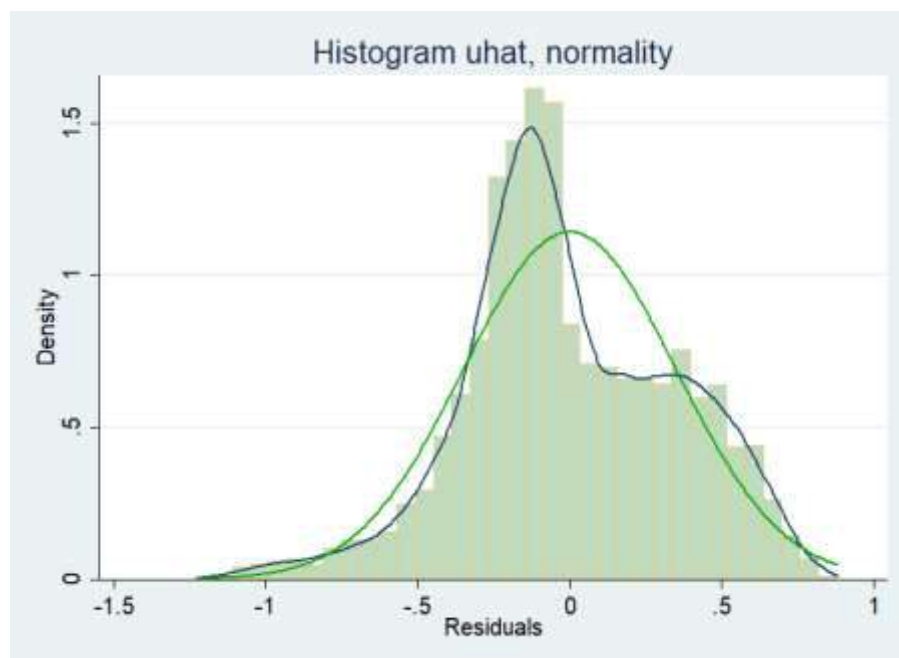
VARIABLES	(1) child alive
medu1	0.220 (0.156)
medu2	0.169*** (0.037)
lit	0.016 (0.030)
motherage	0.060*** (0.001)
medyears	0.011 (0.007)
hhsize	0.012*** (0.002)
Constant	-1.220*** (0.105)
Observations	3,185
R-squared	0.505

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Appendix 3. Normal distribution

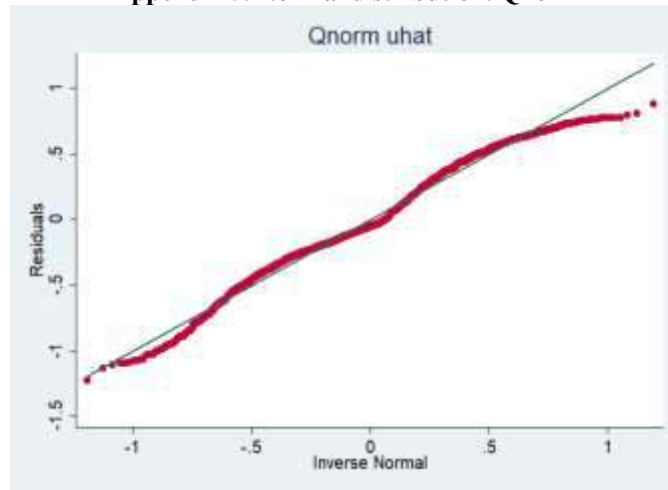


Appendix 4. Normal distribution, fitted

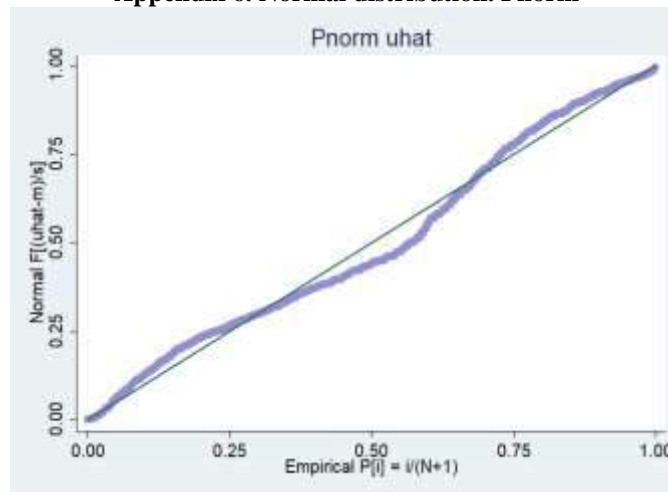




Appendix 5. Normal distribution. Qnorm



Appendix 6. Normal distribution. Pnorm



Appendix 7. Normal distribution test, D'Agostino skewness

. sktest uhat

Skewness/Kurtosis tests for Normality

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	joint Prob>chi2
uhat	3,185	0.2283	0.4342	2.06	0.3569

end of do-file

Appendix 8. Normal distribution test, Jarque-Bera

. jb uhat

Jarque-Bera normality test: 2.109 Chi(2) .3483

Jarque-Bera test for Ho: normality:

end of do-file



Appendix 9. Heteroscedasticity. Breusch-Pagan test

`. estat hettest`

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of childalive

chi2(1) = 0.27

Prob > chi2 = 0.6048

`. end of do-file`

Appendix 10. Multicollinearity

`. pwcorr childalive medu1 medu2 lit motherage medyears hhsize`

	childaliv	medu1	medu2	lit	motherage	medyears	hhsize
childalive	1.0000						
medu1	-0.0266	1.0000					
medu2	-0.0314	-0.1303	1.0000				
lit	-0.0041	-0.0556	-0.0673	1.0000			
motherage	0.7021	-0.0361	-0.1573	-0.0033	1.0000		
medyears	0.1322	-0.2083	-0.7904	0.0944	0.2656	1.0000	
hhsize	-0.0168	0.0160	0.0790	-0.0458	-0.1339	-0.0937	1.0000

Appendix 11. Variance inflation factor

Variable	VIF	1/VIF
medyears	3.84	0.260579
medu2	3.56	0.280646
medu1	1.39	0.720134
motherage	1.11	0.903920
hhsize	1.02	0.976373
lit	1.01	0.987250
Mean VIF	1.99	

Appendix 12. Do-file

*Generating variables
 *generating dependent variable
 gen childalive=
 tab b5_01, gen(ch1al)
 tab b5_02, gen(ch2al)
 tab b5_03, gen(ch3al)
 tab b5_04, gen(ch4al)
 tab b5_05, gen(ch5al)



```
tab b5_06, gen(ch6al)
tab b5_07, gen(ch7al)
tab b5_08, gen(ch8al)
replace childalive=0
replace child alive =1 if ch1al2==1 |ch2al2==1 | ch3al2==1 | ch4al2==1 | ch5al2==1 | ch6al2==1 | ch7al2==1 |
ch8al1==1
tab child alive
```

*generating independent variables

```
tab v025, gen(region)
tab region1
tab v106, gen(medu)
tab v108, gen(lit)
rename lit1 lit
drop ch1al1 ch2al1 ch3al1 ch4al1 ch5al1 ch6al1 ch7al1 ch8al1
rename v133 medyears
rename v136 size
tab v151, gen(hheadage)
tab hheadage1
rename hheadage1 hheadgen1
rename v152 hheadage
rename v012 motherage
rename region1 region
rename hheadgen1 hhhgen
```

```
save cw0645.dta
```

*Regression

```
use cw0645.dta
drop if motherage > 35
reg child alive medu1 medu2 lit motherage medyears size
ssc install outreg2
outreg2 using regression_results, replace excel dec(3)
```

*Tests

```
predict that, resid
hist uhat, norm
hist uhat, density normal
qnorm that
pnorm that
sktest
that
jb that
estat hottest
pwcrr child alive medu1 medu2 lit motherage medyears size
vif
```



CENOSPHERE BASED NANOCOMPOSITES FOR APPLICATION IN BUILDING MATERIAL

Dr. Sapana Madan^a, Archana Nigrawal^b

^aSchool of Civil Engineering, Faculty of Engineering & Technology, Madhyanchal Professional University Bhopal, Madhya Pradesh, India

^bOptical Nano materials Lab, Department of Physics, Maulana Azad National Institute of Technology, India

ABSTRACT

Cenospheres are waste products produced during the burning of coal to create electricity. These wastes can be combined with cementitious ingredients to create lightweight materials. Furthermore, the integration of these wastes can help to improve the thermal and acoustic qualities of cementitious materials. However, the addition of these cenospheres changes other features. This research provides a comprehensive analysis of the characteristics of cementitious materials that contain cenospheres. A brief description of the origin, physical features, and chemical properties of cenospheres was initially presented. The impact of cenospheres on physical, mechanical, and durability properties also addressed.

KEYWORDS: Cenosphere, Nanocomposites, Building Material

INTRODUCTION

The aspiration for cementitious materials with reduced density and improved thermal characteristics has prompted the development of lightweight cementitious materials. Lightweight cementitious materials are lighter, use less material, perform better thermally, and are less expensive than standard weight cementitious materials [1-2] defines lightweight cementitious materials as those having a dry density less than 1920 kg/m³. One method for producing lightweight cementitious materials is to employ lightweight aggregates/fillers.

There are several types of lightweight aggregates/fillers available, including expanded glass and pumice, that may be included into cementitious materials. However, the manufacture of the majority of these aggregates/fillers is energy-intensive and/or exerts enormous strain on the natural resources.

Cenospheres are one of the most promising waste materials for recycling into cementitious materials in order to make lightweight materials. Cenospheres, together with fly ash, are important wastes created by coal power stations [3-4]. Cenospheres are hollow particles generated when glass is rapidly cooled during coal combustion to generate electricity [5] The global output of fly ash is predicted to be over 600 million tonnes [6] Countries such as the United States, China, and India generate these wastes in enormous amounts annually, and a greater proportion of these wastes end up in landfills, where they present different environmental and safety hazards [7-12]

Cenospheres are one of the most important types of particles formed from coal fly ash and have a wide variety of possible applications. Cenosphere (Greek ceno = empty and sphaira =

sphere) is a thin-walled, hollow microsphere made mostly of aluminosilicate glass, mullite, quartz, and calcite, with iron oxides, calcium silicates, sulphates, and a variety of trace element inclusions. The cenosphere vacuum is often formed as a single concentric bubble, however tiny numerous bubbles can also be seen in the cenosphere wall. Plerospheres are cenospheres with voids filled with smaller particles (the Greek word pleres means full). It was summarised the existing information on the genesis of the cenosphere. [13-17] nonetheless, the problem of plerosphere development remains

Cenospheres can be employed in a variety of applications other than cementitious materials. Cenospheres can be employed in a variety of applications, including aeronautical materials, plastics, rubber, heat and sound insulators [17-23] However, despite the various prospective benefits of using cenospheres, one of the main disadvantages is their expensive cost. Cenospheres are around four times more costly than Portland cement, the principal binder in cementitious materials [12]. It was observed that a greater cenosphere percentage resulted in a considerable rise in the total cost of cementitious materials[23].

Descriptions of terms associated with Cenosphere Based Nanocomposites

Because of their superior compositional qualities and characteristics, Cenospheres can employed extensively in many different industrial applications. The byproduct of burning coal at a thermal power plant is a climatic zone. These are hollow, lightweight, inert spheres composed primarily of silicate and alumina. Depending on the kind of coal used for burning, the chromosphere's hues range from gray to white. Their density is



around 0.4-0.8 g/cm³ (0.014-0.029 lb/cu) and their buoyancy is further enhanced by the inert gases they contain.

The mechanical strength, small size, low density, high melting temperature, and thermal insulating qualities of the tiny ball of fly ash make it valuable. Specifically, cenospheres are perfect for giving paints or coatings qualities that resist corrosion and thermal insulation. Because of their many uses, heliospheres can be binders for thermosetting and thermoplastic materials. These are a few industries where cenospheres are used. One of the most often utilized materials in building is cenospheres. Sand, which is mainly used in building, can be replaced by it because of its low weight and low density.

Cenospheres are beneficial additions to concrete, offering a strength of 30 MPa at a density of 1.6 T / m³. It has a 40% reduction in sound transmission. Cenospheres are a common building material because they give floors, walls, and ceilings thermal insulation qualities. In order to create adaptable cenosphere by-products, new techniques and methods are also adopted in the building sector. For instance, to create the new catalyst in the methane oxidation process, magnetic cenospheres are employed.

CONCLUSION

It is impossible to increase construction efficiency without utilizing cutting-edge technological solutions and innovative building materials, such as cenosphere. As a result, understanding how cenosphere are incorporated into cementitious composites has a significant impact on their characteristics. In order to minimize mixture separation and improve water resistance, frost resistance, and abrasion resistance, cenosphere is advised for use in the technology. Development of building material with a complicated range of operational properties many of which are practically is now the actual path of research. This research provides a comprehensive analysis of the characteristics of cementitious materials that contain cenospheres.

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THE RELEVANCE OF RIGHT TO EDUCATION ACT. (RTE ACT.) 2009 FOR PROMOTING INCLUSIVE EDUCATION IN WEST BENGAL, INDIA

Dr. Ujjwal Paul

Assistant Professor (W.B.E.S.) in Education, Government College of Education, Banipur, North 24 Parganas,
West Bengal, India.

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ABSTRACT

This paper explores the position of Inclusive Education in India, visualising on the relevance of the Right to Education Act. (RTE) of 2009 in fostering inclusivity within the education system. Through an examination of the key provisions of the RTE Act. and an analysis of its implementation, this paper discusses the progress made and the challenges faced in ensuring equal access to education for all children, including those with disabilities and from marginalised communities. As the 'RTE Act 2009', the law that provide the learners from the ages of 6-14 years the right to education for eight years i.e. up to class VIII, now it is the time to take accretion again on the standing position of the right to education of children who are amongst children with special needs or 'children with disabilities'. A qualitative study has been conducted to understand the real scenario regarding the problems prevalent in the school for ensuring inclusiveness, the challenges faced by the teachers in reality who are the main responsible for ensuring inclusiveness in schools and the provisions of RTE Act, 2009 and also to explore the ways to resolve the situations as per the teachers' opinion and drawing on existing literature and empirical evidence, recommendations and suggestions for the betterment of inclusive scenario in school.

KEYWORDS: Inclusive Education, Right to Education Act (RTE) 2009, Child rights, marginalized communities, disabilities, School Education

INTRODUCTION

'Inclusive Education' is a concept ingrained in the principle that every child, despite of their background, 'abilities' or 'disabilities' has the right to access and participates in quality education on an equal basis with their peers. In India, the concept of inclusive education gained momentum with the enactment of the 'Right of Children to Free and Compulsory Education Act. 2009' or 'Right to Education Act' (RTE) in 2009. Inclusion is the endeavour to create convinced that 'diverse learner' – those with 'disabilities', different homes and family, different languages and cultures, life style, interests and ways of learning. Inclusive Education denotes that all children irrespective of their strengths and weaknesses will be part of the mainstream education (NCF-2005).

Emergence

Inclusive Education aims to provide 'equal opportunities' for all children, in spite of of their milieu or abilities, to learn together in mainstream educational settings. In India, the 'Right to Education Act.' (RTE) of 2009 is a milestone legislation that seeks to ensure 'free and compulsory education' for all children with age of 6 to 14 years old. The RTE Act. envisions a more inclusive education system, where every child has the right to quality education without discrimination. This paper examines the role of the RTE Act. in promoting inclusive education in India and assesses its impact on the education landscape. The World Declaration on

'Education for All' in 1990 gave promote heighten to the various processes place in the country. The 'Rehabilitation Council of India Act, 1992' initiated a preparation course for the development of trained personnel to retort to the needs of 'students with disabilities'. 'The National Policy for Persons with Disability, 2006', which attempts to elucidate the outline under which the state, civil society and private sector must manoeuvre in order to ensure a dignified life for 'persons with disability'. Most recent progression is the 'Right of Children for Free and Compulsory Education Act. 2009' which guarantees the 'right to free and compulsory education' to all children between ages six to fourteen. 'Chapter V' of the 'Persons with Disability (PWD) Act, 1995' ensures that every child with 'disability' is entitled to a 'free education up to the age of 18 years'. Observance in this, the Government of India had accelerated the new scheme of 'Inclusive Education' to achieve the target of 'Education for All' (EFA) by 2010 (NCERT, 2011). The marginalization actually leads to non-inclusion. So in the present context of marginalization and non-inclusion, it is necessary to rethink on some issue related to inclusive education (Chatterjee, 2003).

The brief of Right to Education Act. (RTE) 2009

The 'RTE Act. of 2009' mandates 'free and compulsory education for all children' in the 6 to 14 age group. It prohibits discrimination on the basis of gender, caste, religion or



disability. Additionally, the RTE Act includes provisions for the appointment of trained teachers, infrastructure development and the establishment of School Management Committees (SMCs) to ensure the effective implementation of the Act.

'Inclusive Education' can be traced back from 'National Educational Policy, 1986', which also recommended, "to integrate the handicapped with the general community at all levels as equal partners, to prepare them for normal growth with courage and confidence".

We can introspect ourselves by asking some questions like, what are the 'needs and challenges' for attainment the goal of 'inclusive education'? How will an 'inclusive environment' convene the 'needs of children with disabilities'? How 'quality education' can be successfully and efficiently disseminated 'for all children'?

Highlights of RTE Act, 2009

The 'Right of Children to Free and Compulsory Education Act, 2009' was enacted on 4th August, 2009 in the Parliament of India and the Act came into force on 1st April, 2010. The enactment of this Act brings a huge change in the 'Elementary Education' in India. The act is a milestone in the history of education related legislation in India. According to 'Section 5 of the Law' it has farm duties of the State to identify the children in their communities and ensure the 'enrollment', 'retention' and completion of 'elementary education' to access 'equity', 'quality education' to the privileged groups. Section 16 of the Act, provides that 'no child admitted in a school shall be held back in any class or expelled from school till the completion of elementary education (RTE Act., 2009)'. A report on the status of implementation of the Act was released by the Ministry of Human Resource Development on the one-year completion of the Act admit that 8.1 million children in the age group 6-14 years remain out of school (RTE Act., First Anniversary status Report, 2010). For This why for the exclusion now it is needed to promote inclusive growth and development.

Concept of Inclusive Education

The principle of inclusive education was adopted at the 'World Conference on Special Needs Education: Access and Quality' (Salamanca Statement, Spain 1994) and was restated at the World Education Forum (Dakar, Senegal 2000). In almost every country of the world in the field of education 'inclusive education' has emerged as a foremost issue. With the release of the 'Salamanca Statement' in 1994 (UNESCO), many developing countries going ahead to promote the 'inclusion of students with disabilities' into mainstream schools and modifying their education polices. According to UNESCO, 'inclusive education' is seen as "a process of addressing and responding to the diversity of needs of all learners through increasing participation in learning, cultures and communities, and reducing exclusion from education and from within education." Within an 'inclusive education approach', learning situations are encouraged where individual needs are met and every student has an opportunity to do well. Today, more and more schools are embracing

inclusion beliefs and values and putting into practice structures that will permit each student to learn in an environment that welcomes diversity (Govinda, 2011). The entire general classroom teacher should be included in a team and help each other in teaching, planning and counselling. There would be a number of constrains unlike general classroom, but teacher should face it courageously with their experiences, expertise, enthusiasm in an extra caring manner and RTE Act., 2009 also ensure this fact. The majority of children with disabilities still remain out of school.

Objectives

1. To understand the conceptual precision about the Inclusive Education along with the 'Right to Education (RTE) Act, 2009' with its objectives.
2. To study the prospects and challenges of Right to Education Act, 2009 among secondary school teachers of West Bengal to enhance Inclusive Education.
3. To identify the challenges to the implementation of Right to Education Act, 2009 among secondary school of West Bengal and possible ways in which the challenges could be addressed to the Inclusive Education.

Research fundamental Questions

Some basic questions like, what are the 'needs and challenges' for achieving the goal of 'inclusive education'? How will an 'inclusive environment' congregated the 'needs of children with disabilities'? How 'quality education' can be delivered for 'all children' with effectively and efficiently at school level? How 'Right to Education Act, 2009' address 'inclusion' at Secondary school level in West Bengal, India? To, answer such questions, central and state need to deal with classrooms teaching-learning and overall educational environment of school so that it can become an 'inclusive school'.

Methodology

This study is a qualitative inquiry and its outcome is based on reviewing & revisiting the existing relevant documents, scholarly articles and the real-life experience through survey method namely school-based experiences related to the problem, teachers' awareness, enthusiasm and willingness to execute the provisions of RTE Act, 2009 to ensure inclusion in schools. The data have been collected from 40 school teachers (including Headmaster/Headmistress, Teacher-in-Charge and Assistant Teachers) through interview. The participants i.e. the teachers are covering rural and urban areas of schools from eight districts (North 24 Parganas, South 24 Parganas, Nadia, Howrah, Kolkata, Hooghly, Bardhaman and Malda) of West Bengal state, India. Data have been received by interviewing the teachers through open ended questions regarding the views, challenges and suggestions related to provisions of 'RTE Act, 2009' and its impact on inclusion of disabled children in formal schooling system. The interview was taken focusing on the issues mainly related to the awareness towards the 'RTE Act, 2009' provision of 'no detention policy' up to class VIII, mid-day meal project, school environment, teachers engagement time at school, student-teacher model ratio, teachers training programme, inclusion status of disabled students after implementation of 'RTE Act, 2009 at school level, challenges for achieving the goal of 'inclusive education' in



classroom, how an inclusive environment would likely to meet the 'needs of children with disabilities'?

Findings and Discussions

The responses given by the school teachers have been organised systematically and analysed through qualitatively, interpreting the interview focusing on the relevant issues with the help of coding and some specified details are revealed as follows:

The findings of the study showed that Policy interventions often diverge from how they are perceived and executed in practice. After analysing the responses it has been observed that the teachers' awareness related to RTE Act., 2009 are average. Most of the teachers have opined that they face and feel problems in various aspects which include conducting lottery system of admission, insufficient of funds for new TLM (Teaching learning materials) for Inclusive set-up, distribution of books, segregation of disabled children by their friends and some others, time constraint and traditional evaluation system, Overcrowded classroom, lack of proper teacher training, learning outcome of diverse to cater needs. Successful inclusion programmes require supportive leadership at the school level. This is evident from the low levels of enrolment of children with disabilities in the schools, in spite of the government's efforts to promote inclusion in the past four decades and the findings also supported by the study of Pattnaik (2018).

Relevance of RTE Act., 2009 for Promoting Inclusive Education

The RTE Act., 2009 plays a crucial role in promoting inclusive education by legally mandating equal opportunities for all children to access quality education. By prohibiting discrimination and ensuring the provision of necessary resources, the Act lays the foundation for creating inclusive learning environments. The Act establishes mechanisms such as monitoring system and grievance redressal mechanisms to hold authorities accountable for the effective implementation of inclusive education policies (Ministry of Law and Justice, 2009). In recent years, there has been a significant push towards integrating assistive technology into inclusive education practices in India (Singh, Sharma, & Agarwal, 2022). To address the shortage of special education teachers, the government has expanded special education teacher training programs across various states. These programs aim to equip educators with specialized skills to support students with diverse learning needs (Kumar & Reddy, 2023). Recognising the importance of gender inclusivity in education, curriculum reforms have been introduced to incorporate gender-sensitive content and pedagogical practices. Community-led initiatives have emerged as a promising approach to promoting inclusive education at the grassroots level. Projects such as community-based inclusive schools (CBIS) empower local communities to take ownership of inclusive education efforts and foster a supportive learning environment for all children (Mishra & Patel, 2023).

Suggestions for strengthen inclusive education in India

To further enhance inclusive education in India, it is essential to strengthen the implementation of the RTE Act through

increased investment in infrastructure, teacher training, and support services for children with disabilities. There are some specific submissions through which we can ensure inclusive education through addressing RTE Act., 2009:

1. Need the bridging between 'special schools' and 'inclusive education' practices and link also need to set up between 'community-based rehabilitation programmes' and 'inclusive education'.
2. Inclusion with adequate preparation of general schools with proper infrastructural facilities with a focus on improving accessibility for children with disabilities removal of architectural barriers (Least Restrictive Environment-'LRE') at schools.
3. Awareness generation among parents, communities, and civil society in promoting inclusive education and about 'no detention policy', which should be there but regular evaluation (formative evaluation like 'CCE') should be based on performance indicators among all students.
4. Ongoing professional development programmes of 'general teachers' at 'pre-service' and 'in-service' levels should be incorporated regularly, so that teachers will be equipped better to work in an 'inclusive environment'.
5. Regular data collection and monitoring mechanisms should be established to assess progress towards inclusive education goals and identify areas for improvement.
6. Policies needed to steps for execution Pupil-centred pedagogy (modern teaching method) like Constructivist approach where all can progress at their optimum pace.
7. Curriculum materials should be made accessible and incorporated with value education and specialist teachers (Itinerant Model) are made available to support mainstream education.

CONCLUSION

'Inclusive Education' is not only a right but also a cornerstone of social justice and equality. The 'RTE Act of 2009' represents a significant milestone in India's journey towards inclusive education, but concerted efforts are needed to overcome existing challenges and realise the vision of an inclusive education system that leaves no child behind. By addressing infrastructure gaps, enhancing teacher capacity, and promoting community participation, India can move closer to achieving the goal of inclusive and equitable education for all. 'Right to Education Act., 2009' ensures education to 'all children' irrespective of their 'caste', 'religion' and 'ability'. The term 'Inclusion' is more than a method of educating students with 'disabilities'.

Hence, the total system of education including the teachers, parents, and students will also suffer if the consequences of implementation of the Act, are not judge judiciously in India's own perspective, especially when the country has vast regional perspectives in education among its states. The central and state government need to overhaul the education system including strong vigilance for nurturing indisputable inclusive practices by better and wholesome implementation of 'RTE Act, 2009' to ensure 'Inclusive Education' across the country. Inclusive education is essential for promoting social justice and ensuring that every child has the opportunity to reach their full potential. The RTE Act of 2009 represents a



significant step towards achieving inclusive education in India, but concerted efforts are needed to address the existing challenges and realise the vision of an inclusive education system.

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IMPLEMENTATION OF GRAPHIC INTERCHANGED FORMAT (GIF) – ENHANCED LEARNING MATERIALS (ELM) TO THE PERFORMANCE OF STUDENTS IN PHYSICAL EDUCATION OF BALIBAGO INTEGRATED HIGH SCHOOL

Irish Grace M. Pangilinan

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ABSTRACT

Current educational trends, the emergence of the knowledge society, societal changes, and globalization influenced the higher education at the greater level and thus resulted in a quality education and quality assurance, the transformation of the education system and changes in teaching and learning approaches like virtual learning and more technologically enhanced learning like the GIF-ELM. Among a wide range of GIF's has been introduced to academic institutions and industries.

As revealed in this study, the thirty-five (35) teachers who are utilizing GIF-ELM, agreed that the level of effectiveness of the GIF-ELM when it comes to Accuracy, Significance, and Presentation is highly effective. The Enhanced Students Performance after using GIF-ELM is found also highly effective.

Diversity refers to the diversification and multiple dimensions in information transmission of technology that will enhance the performance of the Grade 8 students, the results revealed that it is Highly Effective. With this, the utilization of learning materials using GIF-ELM stimulate students' concentration and awareness of the learning contents. The same viewpoint was stated in stressing that the presence of suitable learning material is a necessity for a smooth process of sharing information between the teacher and learners.

INTRODUCTION

In this 21st century, the term technology is an important issue in many fields including education. This is because technology has become the knowledge transfer highway in most countries. Technology integration nowadays has gone through innovations and transformed our societies that has totally changed the way people think, work and live. As part of this, schools and other educational institutions which are supposed to prepare students to live in "a knowledge society" need to consider ICT integration in their curriculum (Chaamwe, 2020). Based on the Curriculum Guide on Physical Education (PE) provided by the Department of Education (DepEd), fitness and psychomotor learning comprise the heart of the K to 12 PE Curriculum which includes value, knowledge, skills and experiences in physical activity participation to achieve and maintain good academic standing.

However, the status of Physical Education in the Philippines has seen a well as being severely affected by the onset of a rapidly changing youth culture immersed in mobile technology and social media, (Solon, 2017). Thus, if not addressed promptly with necessary measures would be an offense to the guiding principles of Republic Act No. 5708 also known as the Schools Physical Education and Sports Development Act of 1969 such as instilling in young citizens a proper appreciation of the importance of physical development hand in hand with the mental development in individual and social activities; providing opportunities for the athletic development of children and youth who grace, coordination, stamina and strength and addressing the physical growth, social training, and personal, discipline for all students, as well as superior athletic achievement for those who are psychologically inclined and physically gifted.

In relation to the aforementioned statement, educators have taken necessary steps in addressing the issue such as exploiting these new technologies in teaching rather than looking at them as deterrent to psychomotor learning. Thus, reflected in this research is the development of ICT-integrated instructional material utilizing moving or animated images in teaching skills in selected sports in Grade 8 knowing that schools entered already the digital

era, it became a central cognitive artifact for conveying information. This study aimed to find out whether moving images particularly Graphic Interchange Format-Enhanced Learning Material (GIF-ELM) can improve skills of students in Physical Education as compared to traditional lecture and text-based or module-based learning at school especially in circumstances that learning and instruction is confined only in the classroom due to lack of resources or adequate space to accommodate physical activities. GIF stands for Graphics Interchange Format. GIF is a raster file format designed for relatively basic images that appear mainly on the internet. Each file can support up to 8 bits per pixel and can contain 256 indexed colors. GIF files also allow images or frames to be combined, creating basic animations. GIFs can be used for small animations and low-resolution video clips, or as reactions in online messaging used to convey emotion and feelings instead of using words. They are popular on social media platforms and even being introduced in the classroom for highly industrialized country.

Technology can never replace an actual physical activity or actual teaching, but it could still be beneficial in the curriculum as it takes advantage of young people's enthusiasm for it to get them move physically. More than that, it helps teachers to maximize instruction especially if they are given limited time, space, and resources in the transfer of learning to students. Furthermore, as students' population has gotten more and more overweight and unhealthier, some countries and institutions look at Physical Education with more importance (Solon, 2017). However, amidst the recognized benefits of Physical Education in the academic, social, psychological, and physical development of learners, it is still one of the most neglected subjects in the curriculum especially in public schools. For instance, in the locale of the study, most Physical Education teachers during sports competitions starting from school intramurals to the regional and national sports competitions become coaches of the participating athletes. And, most of them spend their time coaching and assisting players during trainings and competitions leaving the majority of their students in the classroom with their lectures and books; or worst, unattended. Consequently, teachers who are not



handling PE subjects relieve these PE instructors resulting to inadequate instruction of knowledge and skills to students as they are not well-inclined of teaching the subject. In connection to this, this GIF-enhanced instructional material in teaching Physical Education could help non-specialist teachers in the instruction process as it provides concrete descriptions or animated demonstrations of the Physical Education concepts or skills to be taught in contrast to text-based learning modules which are more of an abstract and traditional way of delivering information.

As such, this ICT-integrated instructional material could lessen the burden of PE teachers leaving a majority of their classes behind when engaged in coaching sports-related competitions outside the school and the locality within weeks or even months. Students can make use of the instructional material even with the absence of the teacher or with the guidance of non-PE teachers and not by just merely copying lectures from books without the topic being explained.

MATERIAL AND METHODS

This study examined the effectiveness of the Implementation of Graphic Interchanged Format (GIF) -Enhanced Learning Materials (ELM) to the Performance of students in Physical Education of Balibago Integrated High School, Schools Division of Sta. Rosa City. Specifically, this study sought answers to the following questions:

1. What is the level of effectiveness of Graphic Interchange Format (GIF)- Enhanced Learning Materials (ELM) in teaching Physical Education as perceived by the students in terms of:
 - 1.1 accuracy;
 - 1.2 significance; and
 - 1.3 presentation?
2. What is the mean level of enhanced students’ performance after using GIF ELM as perceived by the teacher?
3. Is there a significant difference between the mean scores of the pre-test and post-test?
4. Is there a significant relationship between the effectiveness of GIF-ELM in teaching Physical Education and enhanced students’ performance?

The study was conducted within the premise of the Balibago Integrated High School in the Division of Santa Rosa City. More specifically, the participants of the study will be Grade 8 students. This is to check and assess the implementation of Graphic Interchanged Format (GIF) -Enhanced Learning Materials (ELM) to the Performance of students in Physical Education of Balibago Integrated High School, Schools Division of Sta. Rosa City in which these learning resource materials will be implemented and administered. They are composed of one hundred (100) student participants.

The right to conduct the study strictly adhered through the approval of the principal and teachers. There were separate letters provided to the participants denoting their privacy, safety and safeguarding their personality. Issues of confidentiality was also

discussed during the orientation in separate venues; thus, they treated with respect. With due permission, a scheduled physical administration of the learning resource was administered to the Grade 8 students of the school. Analysis and interpretation of data was done after the retrieval of the responses. To better transpire in the data collection, data gathering procedure was organized and presented to the participants for validation and then came up with a summary.

This study utilized the Quasi-Experimental research design to further assess the effectiveness of implementation of Graphic Interchanged Format (GIF) -Enhanced Learning Materials (ELM) to the Performance of students in Physical Education of Balibago Integrated High School, Schools Division of Sta. Rosa City. Quasi experimental research designs, like experimental designs, test causal hypotheses in this study. A quasi-experimental design lacks random assignment. Furthermore, quasi-experimental designs identify a comparison group that is as similar as possible to the treatment group in terms of baseline pre-intervention characteristics. This design is defined as quantitative design since the results from the Pre-test and Post test will be analyzed and systematically scaled through quantifiable results and information from the students in the Grade 8 level.

Also, the researcher utilized the non-equivalent research design which is quasi-experimental in nature. The responses of a treatment group are compared on measures collected at the beginning and end of the research. Furthermore, this study will be using a developmental research design. Manguerra, (2018) mentioned that developmental research aims for knowledge creation anchored in data systematically derived from practice. It is a suitable type of research that tests "theory" based on hypotheses and validates them through training that has been extended essentially through various means. Moreover, this design seeks to establish new procedures, techniques, and tools anchored from a systematic analysis of specific circumstances. Hence, developmental research creates generalizable conclusions or statements of law or produces context-specific knowledge that serves as a problem-solving process.

The data gathered from the study was analyzed statistically based on the suggested statistical treatment. The researcher used mean and standard deviation as descriptive statistics in describing the performance level of the Grade 8 students in terms of their pretest and posttest. An Independent t-test will be used to determine if there is a significant difference between the pre-test and post-test of the students. A paired-sample t-test will be applied to assess if there is a significant difference between the pretest and post-test mean scores of the students Furthermore, Cohen’s d for effect size will be employed.

RESULTS AND DISCUSSION

Table 1.1 Level Effectiveness of Graphic Interchanged Format (GIF)- Enhanced Learning Materials (ELM)

Indicators	Mean	Interpretation
A. ACCURACY		
1. The learning materials that use GIF have its unique way on transmission of information.	4.03	Highly Effective
2. The references, credits or links that involve GIF are appropriate and relevant.	3.80	Highly Effective
3. GIF is accurate and up-to-date throughout the use of the materials.	3.57	Highly Effective
4. I can easily understand the learning content when GIF is employed in teaching and learning process.	3.91	Highly Effective
5. I highly appreciate the GIF as learning tools being utilized in teaching.	3.91	Highly Effective
Overall Mean	3.84	Highly Effective



Legend: 4.50 - 5.00 Very Highly Effective (VHE), 3.50 - 4.49 Highly Effective (HE), 2.50 - 3.49 Moderately Effective (ME) 1.50 - 2.49 Fairly Effective (FE) 1.00 - 1.49 Poorly Effective (PE)

As shown in table 1.1 on Effectiveness of GIF-ELM in terms of Accuracy indicator 1, on learning materials has its unique way on transmission of information got the highest weighted mean of 4.03 while indicator 3, on accurate and up-to-date GIF throughout the use of materials got the lowest weighted mean 3.57. Moreover, all the indicators such as; Students can easily understand the learning content when GIF is employed in teaching and learning process and Students highly appreciate the GIF as learning tools being utilized in teaching got the same weighted mean of 3.91 respectively, which falls under the interpretation of Highly Effective.

The overall weighted mean for the effectiveness of accuracy was 3.84 interpreted as Highly Effective. According to Manlapaz (2020), the outcome showed that accuracy is very beneficial and would enhance students' performance. As a result, information and communication technologies can be precisely and successfully learned using Graphics Interchange Format (GIF),

which is made possible by integrating these technologies into educational settings. These findings are supported by Tachibana's (2021) assertion that GIF serves as both a medium and a means of expressing the information that individuals transmit.

Every media has a distinct method and purpose for disseminating information, and they all work in a somewhat complimentary manner with one another. He added that the modern multimedia model for information communication is accurate, efficient, and convenient, replacing the outdated single transmission form of voice, visuals, and images. With the emergent of the 21st century education, the use of computers and new technologies has become an important aspect of teaching and learning. ICT integration or multimedia teaching enabled the classroom instruction to redefine some of the strategies and concepts of teaching and learning. Teachers increased the quality of their instruction with the help of new and modern technologies.

Table 1.2 Level Effectiveness of Graphic Interchanged Format (GIF)- Enhanced Learning Materials (ELM)

Indicators	Mean	Interpretation
B. SIGNIFICANCE		
1. The learning materials is unique, rare, contributes to the students' performance.	3.69	Highly Effective
2. The learning materials offer an innovative learning/teaching method.	4.00	Highly Effective
3. The learning materials material engages and motivates the students.	3.97	Highly Effective
4. The learning materials can be tailored for various curricula.	3.91	Highly Effective
5. The effectiveness is consistent throughout the learning materials.	4.03	Highly Effective
Overall Mean	3.92	Highly Effective

Legend: 4.50 - 5.00 Very Highly Effective (VHE), 3.50 - 4.49 Highly Effective (HE), 2.50 - 3.49 Moderately Effective (ME) 1.50 - 2.49 Fairly Effective (FE); 1.00 - 1.49 Poorly Effective (PE)

Table 1.2 on Effectiveness of GIF-ELM in terms of Significance, indicator 5, on GIF is consistent throughout the learning materials got the highest mean score of 4.03 interpreted as Highly Effective. Indicator 1, on learning materials has a rare contribution to the student's performance got the lowest mean score of 3.69 also interpreted as Highly Effective. More so the overall mean for effectiveness of GIF-ELM as perceived by the teachers was 3.920., interpreted as Highly Effectiveness. This revealed that Significance of Graphic Interchanged Format (GIF) plays an important role in the teaching and learning process.

According to Argundo (2019), it was determined that employing a visual stimulus had a noteworthy impact. It has been discovered that GIF presentations help learners understand the material and promote learning. Similar to this, the GIF-ELM is an invention meant to enhance the process of teaching and learning. In the teaching and learning process, GIF makes use of a variety of

media, tools, and approaches. In order to meet predefined learning objectives, it seeks to provide relevant learning experiences using a variety of media. Learning occurs from hearing what students hear; learning increases from seeing what students see; and learning continues from doing what students do. In order to concretize and substantiate learning, it is crucial to supply sufficient, appropriate, and varied instructional materials.

Based on the statement, Learning Materials are seen to be an important instrument or educational resources that help in improving students' knowledge, abilities and skills which has a large influence to the students' overall progress. Likewise, in this concept, learners will learn more if teachers relate the lesson to the students' experiences and interests. Parallel to this study, teachers are accountable of providing materials necessary to engage and motivate students' participation and learning.

Table 1.3 Level Effectiveness of Graphic Interchanged Format(GIF)- Enhanced Learning Materials (ELM)

Indicators	Mean	Interpretation
C. PRESENTATION		
1. Learning materials (including video, audio, photographs, etc) is presented with clarity, focus and organization.	3.83	Highly Effective
2. The learning materials is easy to navigate.	3.77	Highly Effective
3. The information is presented in ways that familiar to students.	4.00	Highly Effective
4. The learning material is well organized without distracting elements.	3.77	Highly Effective
5. Audio-visual quality of images, sounds, illustrations, videos, etc is good.	4.03	Highly Effective
Overall Mean	3.88	Highly Effective

Legend: 4.50 - 5.00 Very Highly Effective (VHE), 3.50 - 4.49 Highly Effective (HE), 2.50 - 3.49 Moderately Effective (ME) 1.50 - 2.49 Fairly Effective (FE); 1.00 - 1.49 Poorly Effective (PE)



As shown in the table 1.3 on Level of Effectiveness of GIF-ELM in terms of Presentation, indicator 5, on Good audio-visual quality of images, sounds, illustrations, videos got the highest weighted mean score of 4.03 interpreted as Highly Effective. Whereas indicator 2 & 4, the learning materials is easy to navigate and have a well-organized of elements got the same lowest weighted mean score of 3.77 also interpreted as Highly Effective. The overall weighted mean for this category was 3.88, interpreted as Highly Effective.

According to Alberto (2020), the use of Graphic Interchange Format in the creation of educational materials facilitates and eases the teaching process for students by illustrating the extent to which GIF animations, which are a byproduct of the integration of technology into education, appeal to students on a visual and educational level as well as how these animations can be used to enhance the visual and educational aspects of education. The researcher focused on the well-organized components and use of teaching aids that would match the needs of the learners based on the ways in using teaching and learning resources in the teaching and learning process. It also bears a striking resemblance to the

localization of educational resources, in which instructors adapt the lesson's content to fit a specific context.

In relation to the current study, GIFs are used in lesson exemplars particularly in Physical Education that will show how a particular movements and basic skills will be performed. Those animated images familiar to the students' drive to learn as they are more interested in technology-based materials rather than the traditional ones which merely focuses on lecture or demonstration style.

Table 2 on enhanced students' performance after using GIF-ELM, indicator 4, on Appreciate the GIF in teaching and learning process got a highest weighted mean of 3.94. Indicator 3 & 4, on Integrate GIF in teaching and learning process not just to inform but to transform; Present with multitude of avenues for learning got the lowest weighted mean of 3.86. Moreover, all the indicators such as Enhanced learning by using GIF; Improve their learning experience through the use of GIF got the same weighted mean of 3.91, all of which falls under the interpretation of Highly Effective. The overall average weighted mean for the Enhanced students' performance was 3.90 interpreted as Highly Effective.

Table 2 Enhanced Students Performance after using GIF-ELM

Indicators	Mean	Interpretation
1. Enhance learning by using Graphic Interchanged Format	3.91	Highly Effective
2. Improve their learning experience through the use of GIF.	3.91	Highly Effective
3. Integrate GIF in teaching and learning process not just to inform but to transform.	3.86	Highly Effective
4. Present with multitude of avenues for learning.	3.86	Highly Effective
5. Appreciate the GIF in learning process.	3.94	Highly Effective
Overall Mean	3.90	Highly Effective

Legend: 4.50 - 5.00 Very Highly Effective (VHE), 3.50 - 4.49 Highly Effective (HE), 2.50 - 3.49 Moderately Effective (ME) 1.50 - 2.49 Fairly Effective (FE) 1.00 - 1.49 Poorly Effective (PE)

Salleh (2021) asserts that animated images convey more information than static images and help viewers visualize it more clearly, particularly when it is divided into distinct micro steps. Animated GIFs might be compared to extremely brief videos. The abbreviation for Graphic Interchange Format is GIF. Strictly speaking, it's a series of condensed computer graphics that are

presented one after the other to mimic movement. The majority of GIFs are merely a few seconds long and only has a few frames. When selected thoughtfully, they convey just one message to the student.

Table 3 Difference on the pre-test and post-test after using GIF-ELM

	t-value	P-value	Decision
Pre-test Post-test	-50.771	.0000	There is significant difference between the mean scores of pre-test and post-test.

The table 3 explains the difference on the pre-test after using GIF-ELM revealed that with t-value of -50.771 and a level of significance of 0.0000, it can be gleaned from the table that there is a significant difference on the performance of the students in Physical Education using GIF-ELM.

By utilizing a variety of ICT technologies, PE teachers may work more efficiently and improve student learning. In addition to computerized tools like pedometers and heart rate monitors that track students' exercise habits, hardware and software for video analysis of student performance, and the use of the internet to engage students in PE and sport-related activities ranging from simple information searches to inquiry-based tasks, teachers can use GIF-ELM as an educational software to teach sport skills.

The table 4 explains on the test on the significant relationship of Effectiveness of the GIF-ELM and the performance of the students revealed that Since P-value of 0.0000 is less than the level of significance of 0.05 with 18 degree of freedom.

Providing instruction that is current, pertinent, and multimodal is made easier with the use of ICT integration. Additionally, digital solutions give pupils an even playing field. All students, regardless of needs, benefit from the opportunities to personalize and modify every learning scenario, making for a better and more differentiated educational experience. By doing this, we make sure that every young person gains the skills and information necessary to participate fully in the knowledge society and advance its advancement.

**Table 4 Test on the significant relationship of Level of effectiveness of the GIF-ELM in teaching Physical Education on the enhanced students' performance.**

	P-value	df	Level of significant	Decision
Level of effectiveness of the GIF-ELM in teaching Physical Education	0.0000	18	0.05	There is no significant difference between the mean scores of pre-test and post-test.
Enhanced students' performance				

CONCLUSION

Based on the result of the study, the overall weighted mean of "GIF-ELM in terms of Accuracy" is 3.84 which falls under "Highly Effective". With these results, it clearly reveals that the effectiveness of accuracy is highly effective that would support the student's performance. With this result, GIF-ELM is use as a learning tool of information and communication technologies effectively and accurately that can be achieved through the integration of these technologies into classroom environments.

The GIF-ELM in terms of Significance got the weighted mean of 3.92 which implies as "Highly Effective" by the teacher-respondents. This only proved that GIF-ELM has a significance effect in the teaching learning process and can effectively engage students in optimistic, innovative and technology-based in classroom situation.

The overall weighted mean of GIF-ELM in terms of Presentation" is 3.88 which can be interpreted as Highly Effective. This revealed that GIF-ELM presentation was practiced by the teacher-respondents. Hence, they are adapting technology-based on their teaching and learning process. The items taught in the lesson are usually chosen by the teacher rather than the learners because of the combination of text, sound, graphics, video or animation are being used in teaching physical education is becoming a common aspect of instructional practice in learning.

Diversity refers to the diversification and multiple dimensions in information transmission of technology that will enhance the performance of the Grade 8 students, the results revealed that it is Highly Effective based on its overall weighted mean the ratings of 3.90. With this result the utilization of learning materials that will stimulate students' concentration and awareness of the learning contents. The same viewpoint was stated in stressing that the presence of suitable learning material is a necessity for a smooth process of sharing information between the teacher and learners.

Meanwhile, based on the result the mean value, the test mean of pre-test have no significant difference on the test mean in the post-test after using GIF-ELM.

When tested for significant difference, the post-test mean scores of the two groups of students is statistically and highly significant, in favor of those students exposed to GIF-ELM. Hence, this intervention was effective. Therefore, there is a significant effect on the performance of the students in Physical Education using Graphic Interchanged Format-Enhanced Learning Materials.

Furthermore, based on the result the P-value of 0.0000 of the level of effectiveness of the GIF-ELM in teaching Physical Education has no significant relationship on the enhanced students' performance. The alternative hypothesis which state that there is a significant relationship on the enhanced students' performance is accepted therefore, there should be more coherent utilization of teaching aids and integration of relevant instructional materials.

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HORTICULTURAL FIELD IS EXPLORING WITH ITS VARIOUS UTILIZATION

N. Anitha¹, P. Jhansi², M. Lavanya³, K. Haindavi⁴, Dr. V. Tejeswara Rao^{5*}

^{1,2,3}M.Sc. (Final) Analytical Chemistry, MVR Degree and PG College, Visakhapatnam

⁴Assistant Professor, Department of Human Genetics, MVR Degree and PG College, Visakhapatnam.

^{5*}Associate Professor, Department of chemistry, MVR Degree and PG College, Visakhapatnam.

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ABSTRACT

Horticulture farming also aims to enhance the quality of life, as well as the beauty, sustainability, and recovery of our ecosystem and the human condition. These days, a crucial concerning issue is arising globally to ensure nutrition security for huge population that leads to focus on production increase, quality improvement, food safety assurance, and processing strategies. Consequently, a large amount of waste generates in the processing industries, household kitchen, and supply chain of horticultural commodities that has led to a significant nutrition and economic loss, consequently creating environment pollution with extensive burden of landfills. However, these wastes showed magnificent potentiality of re-utilization in several industries owing to as rich source of different bioactive compounds and phytochemicals. Therefore, sustainable extraction methods and utilization strategies deserve the extensive investigations.

INTRODUCTION

According to the Horticulture definition "The science and art of growing, producing, marketing, and utilizing high-value, intensively grown food, and ornamental plants in a sustainable manner is known as Horticulture". Annual and perennial plants, fruits and vegetables, decorative indoor plants, and landscape plants are all examples of horticulture crops. Horticulture farming also aims to enhance the quality of life, as well as the beauty, sustainability, and recovery of our ecosystem and the human condition. Plants, crops, and green spaces help to sustain and enrich our lives by providing healthy food, beautifying our homes and communities, and lowering our carbon footprint.

Horticulture an art of production, utilisation and improvement of horticultural crops, such as fruits and vegetables, spices and condiments, ornamental, plantation, medicinal and aromatic plants. Horticulture plays a major role in the economy by generating employment, providing raw material to various food processing industries, and higher farm profitability due to higher production and export earnings from foreign exchange.

Nowadays, the horticultural field is exploring with its various utilization. An ever-demanding market is going on with its various options. Vast cultivation in field level with fabulous export potential makes the horticultural product market more outstanding. The global horticultural market value about 20.77 billion USD was estimated in 2021 and targeted to 40.24 billion USD till 2026 [1]. From the kitchen to processing industry, the uses of horticultural product are remarkable today. With its flexibility of uses, problems also arise with various means. The by-products or wastes in horticultural point of view is getting worst day by day for lack of proper utilization not taken. Both

developing and developed countries such as Bangladesh, Cambodia, India, Indonesia, Malaysia, Philippines, Thailand, and Vietnam are suffering from various environmental pollutions in concern with water, soil, and air pollution. The increasing trend of population is found to be the major cause of waste generation [2]. Increased population make wastes more usual in homestead generally produced by unnecessarily.

Introduction to Horticulture

- Horticulture is based on agriculture, and its name comes from the Latin terms Hortus and culture, which mean "garden" and "cultivation," respectively.
- Horticulture does not involve large-scale crop production or animal husbandry, unlike agriculture.
- Horticulture does not involve large-scale crop production or animal husbandry, unlike agriculture. Horticulture, on the other hand, emphasizes the use of small plots with a diverse mix of mixed crops, while agriculture focuses on a single large primary crop at a time.
- Horticulture has been studied and practiced for thousands of years, and it is thought to have played a role in the transition from nomadic human cultures to sedentary, or semi-sedentary, horticultural communities.
- Horticulture is classified into many types, each of which focuses on the production and processing of various plants and foods for particular purposes.
- Multiple organizations around the world teach, encourage, and support the advancement of horticulture in order to preserve science.
- Plant propagation and cultivation are used in horticulture to increase plant growth, yields, quality, nutritional

value, and resistance to insects, diseases, and environmental stresses.

- Luca Ghini, Luther Burbank, and Tony Avent are well-known horticulturists.

From the production of horticultural foods, various factors involve for the hazardous environmental appearance. Uncontrolled uses of pesticide and residual effects of various chemicals initiate the primary threats to nature by creating bad impact on the wildlife, soil, human, and animal communities [3]. Sometimes these chemicals (about 5–15%) that introduced in the global market for field management are counterfeit in nature [4]. The food wastes evolved in kitchen is noteworthy in many countries such as China, containing solid food wastes between 88% and 94% [5]. Processing industries greatly influence the environment pollution as so many by-products discarded to the environment from this sector while these by-products contain some high quantities of phytochemicals that can be reusable enough for the better disposal [6]. Massive climate issues arise from the undisposed waste available in the environment [7]. Greenhouse gases increases are also introduced in nature by the inappropriate waste disposal method. So, proper and alternative process of waste disposal is compulsory for economic viability and environmental stability.

Increasing the recycling and developing various disposal methods can ensure the proper mitigation of environmental pollution. The industrial and various sources of horticultural wastes are getting importance for its valuable compositions. Recycling can develop the new opportunities with commercial benefits. Biofuels, enzymes, vitamins, antioxidants, and various important chemicals are manufactured from the industrial wastes today. Waste to wealth can be the modern thought of waste disposal. The management of these wastes can be

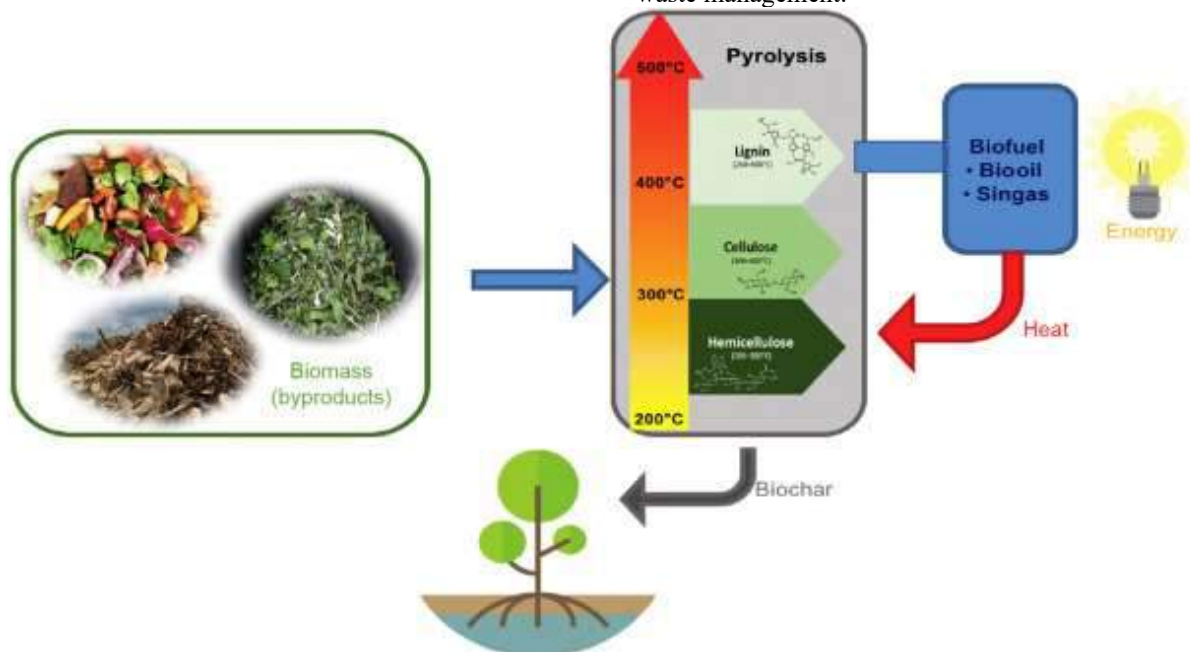
supervised by the government with its regular monitoring, because the waste disposal with its economic benefits can bring the sustainability for both environment and industrial concern [8].

Scope of Horticulture

- Horticulture crops produce a higher yield per hectare than field crops.
- Horticulture crops are extremely valuable because of their high nutritional value. Fruits and vegetables, in particular, provide us with a lot of vitamins and minerals.
- Horticulture is very important because it improves the beauty of the environment.
- Small and marginal farmers can benefit from horticulture crops.
- Crop varieties with a wide variety of applications are available in the Horticulture section.
- Horticultural crops benefit the environment by minimizing waste, conserving soil and water, and enhancing the farmer's socioeconomic status.

Nature and generation of horticultural waste

The affluence of horticulture in industrial and environmental perspective is greatly significant today. Whereas there are some phenomena arising day by day with management and utilization of horticultural wastes. The nature of wastes in horticultural end is multidisciplinary. Some create chemical hazard; some are alarming for their biological and thermal point of view also. Postharvest handling and storage occur about 54% of wastes that is upstream, while 46% happens “downstream,” at the processing, distribution, and consumption stages [9]. These wastes disposal is our major concern in case of sustainable waste management.



Wastes evolving during horticultural production chain

The pragmatic scenario of waste evolving is associated with the increasing of population. With higher population, increasing rate demands the higher agricultural produce. In other words,

more food demand may arise with the population increasing rate.

Agricultural production nowadays is more than three times than the last five decades [10]. With technological advancement, the productivity may increase in horticultural sectors also. On the

contrary with the increasing productivity, it generates the higher quantities of wastes also. Some of them are green wastes, and some are recyclable solid wastes.



Chemical wastes during cultivation

These wastes are generated from the continuous use of pesticides, insecticides, and herbicides during the cultivation. These are mainly solid wastes such as pesticides containers, bottles. The activities of using these types of chemicals in developing countries are mostly handled by the rural uneducated farmers. So, the disposal of these types of solid wastes usually gets ignorance by the farmers or the users. Such

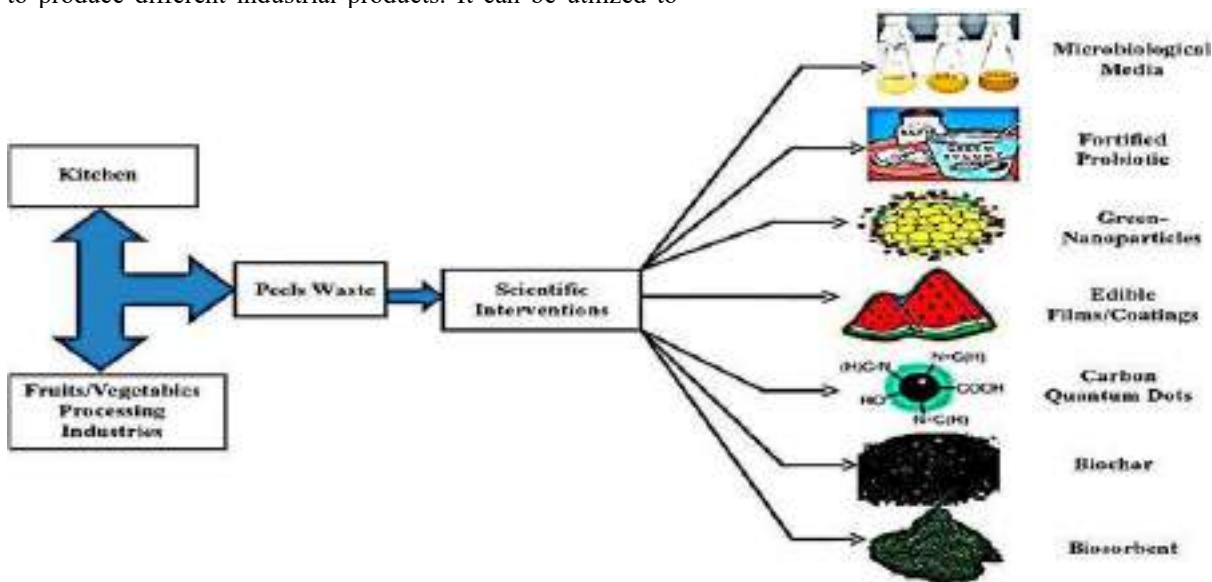
types of ignorance result in the degraded mode of the environmental balance. About 2% of pesticides usually remain unused in the containers, and then the disposal of these hazardous material is done by the throwing these into the nearest ponds or on the open field condition; the ultimate environmental issues may arise by this as food poisoning, water pollution, air pollution, etc., by this type of ignorance [11].



Technique of horticultural waste management

Horticultural waste such as the peels, seeds, and other constituents of vegetables and fruits that contain high amount of phytochemical compounds and essential nutrients are used to produce different industrial products. It can be utilized to

extract as well as obtain bioactive compounds that can be used in food, textile, and pharmaceutical industries as shown in Figure

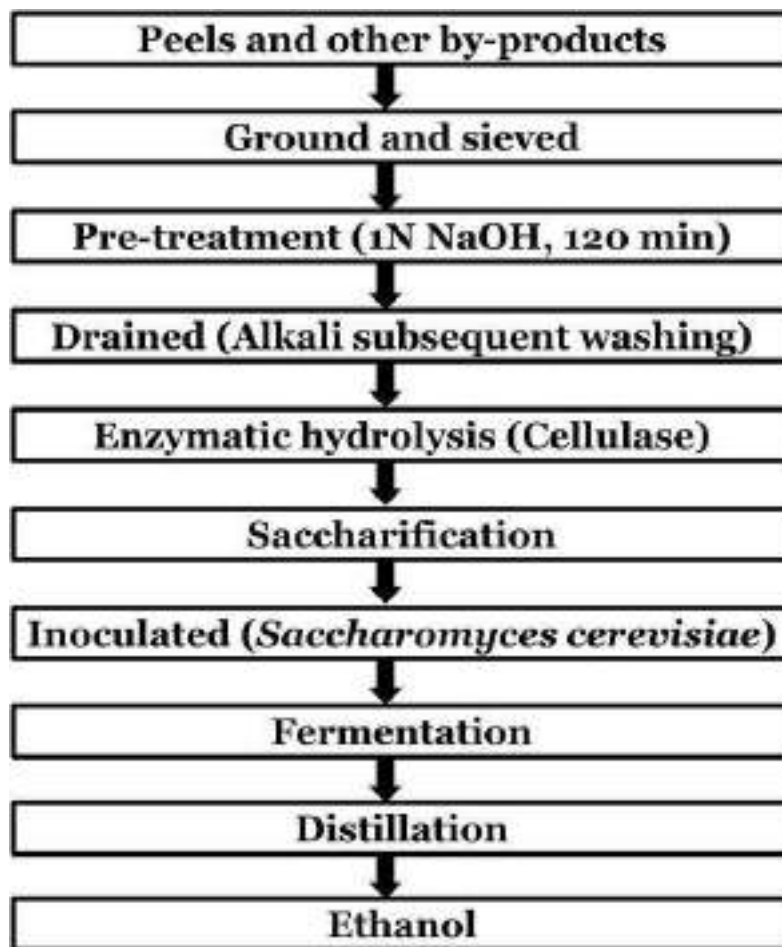


Utilization of fruits and vegetable peel-based waste into novel industrial products Biofuels (bioethanol, biogas)

Waste can be disposed through converting the wastes and by-products into biofuels. Bioethanol and biogas production nowadays appears as the most sustainable waste management program, which has some significant economic values.

Bioethanol can be processed through horticultural by-products such as carrot peels, banana peels, and other crops parts, which

previously can be dried in the sun. The product can be ground and sieved for further processing. After that, the products can be pretreated with 1 N NaOH for 2 hours. Then draining or in other words alkali subsequent washing can be done. Enzymatic hydrolysis by cellulase enzyme leads to saccharification. Then the inoculation of *Saccharomyces cerevisiae* is required. Then the fermentation and distillation are done for bioethanol production.



Flow chart for bioethanol production by cellulase enzyme.

The other way for wastes disposal as the biofuel source is biogas production. Nowadays we can see the rapid adaptation of this disposal system in our rural areas also.



By-Products of Fruits

Orange, lemon, lime and mandarin are the four principal citrus fruits that are widely grown throughout the world. The industry produces by-products such as peels, interior tissue and seeds. In the course of processing, over 50% of the fruit is converted to by-products and 15 million tonnes of peel waste are produced annually. Bagasse from grapes is another waste product created during the manufacturing of wine, which accounts for around 80% of all grape output. It is made up of the peels, seeds and stems of the fruit. The manufacturing of juices, jellies and raisins may also produce by-products, though in smaller amounts. Apple (*Malus domestica*) pomace, a by-product of the

fruit juice sector, is made up of apple peels, seeds, stems and pulp. Mango (*Mangifera indica* L.), mostly produces peels and seeds as by-products. The biggest manufacturers of wastes are the alcoholic beverage and sugar industries, which also utilize sugarcane extensively. Other residues are produced as well, including cane trash, molasses and press mud, even though molasses is the principal By-products of Vegetables.

- The primary by-products of the tomato (*Lycopersicon esculentum* L.), which is the second-most significant vegetable crop in the world, are peels, seeds and pulp.



• Peel is the most valuable by-product of the potato (*Solanum tuberosum* L.). The main outcomes of processing potatoes are chips and fries .

• Broccoli and cauliflower (*Brassica oleracea* var. *italica*) both create the by-products leaf and stem. According to a production estimate for broccoli and cauliflower, 50% of the leftovers might be used as animal feed and the other 50% for bioconversion into new products.

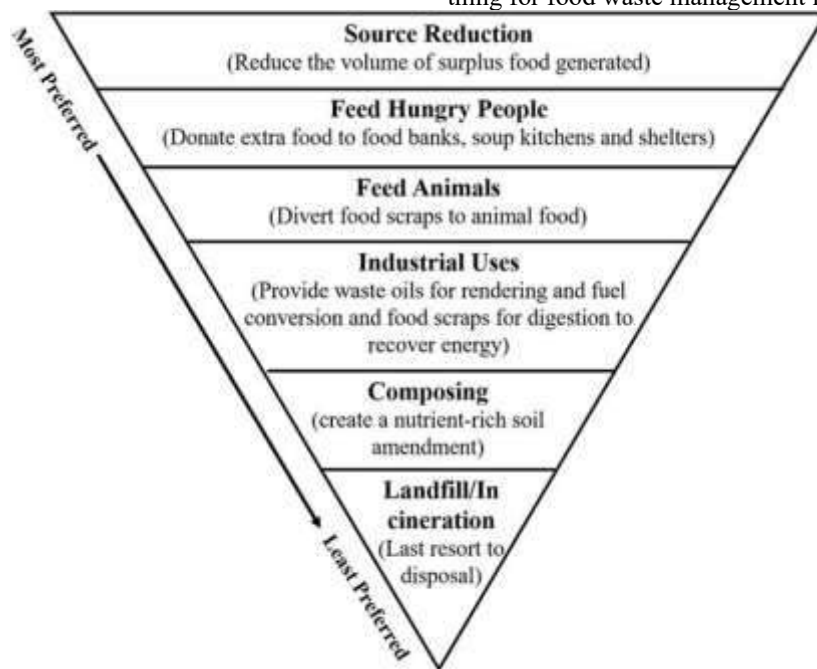
• The pod of the pea (*Pisum sativum* L.), is one of the principal by-product that is typically rejected and burned despite having a high protein content .

• The by-products of the carrot (*Daucus carota* L.), which is a rich source of carotene, are largely pomace and peels.

Prospects of horticultural waste management

It is obvious that waste disposal is not an easy task as it requires bigger margin of resources and right methods to minimize its after-effects. All the techniques or methods of reaping wastes are not efficient enough always. Food recovery hierarchy

published by US EPA showed that there are different methods or approaches are proficient at different level. Landfilling and incineration (combustion of the waste materials) are the last resort of wastes disposal, because sometimes it is harmful for our environment. Soil pollution and abundance of toxic gases are visible by this kind of disposal system. Then the composting creates a nutrient-rich soil amendment. It requires specialized area away from the home, and it requires more time for disposal. Industrial uses of wastes are just above from the composting in that pyramid as it provides waste oils for rendering and fuel conversion and food scraps for digestion to recover energy. Lots of commercial industries are developing today with the new hope with horticultural by-product establishing. Although some wastes also are considered developing the industries but commercial exposure may be spread rapidly. Main effective approach will be the source reduction and sometimes we waste food more than we consume so that extra food can be donated to food banks, shelters can reduce the possibility food wasting. Public awareness is the big thing for food waste management in horticultural sectors also.



Food Recovery or Management Hierarchy.

CONCLUSION

Various environmental concerns and some economic benefits demand the appropriate disposal of horticultural wastes. Minimizing of wastes can maximize the environmental stability. However, people are not so aware about the impact of horticultural wastes. So, the proper awareness with the effective implementation of wastes is a crying need for today. Meanwhile, sustainability can be brought through adapting the modern disposal methods with longer effects and economic flexibility. In addition, the growth of the wastes disposal industries also gives the new dimension for the sustainable waste management. Finally, it can be enunciated that waste management provides green ecology, which can serve environmental stability with industrial prosperity.

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LIVED EXPERIENCES OF DANGEROUS DRUG USERS IN THEIR SOCIAL CAPITAL: A NARRATIVE INQUIRY

Dr. Mildred E Vila¹, Dr. Jose Melarte G. Goco Jr², Chief Engineer Ferdinand C. Villamil³

¹Taguig City University

²Pamantasan ng Lungsod ng Muntinlupa

³University of Perpetual Help System Dalta

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ABSTRACT

In this study, the exploration of the phenomenon is through qualitative design. It intended to discover the real-life experiences of the dangerous drug user with their social capital. With the data from the participants, it provides the themes under the major theme created from life course theory. This concludes that social capital is significant either too dangerous drug use and be cured once the individual has the disorder. Therefore, recommendations are solely base to the life trend of dangerous drug users within the social capital.

KEYWORDS: Dangerous drugs, Experiences, Social Capital, Users

INTRODUCTION

The well-known drug abuse phenomena have been a favorite topic in academic discipline for behavior like criminology. It is a disease in which the person having it cannot control craving and can also put someone dependent on it to function. The latest report about people having drug abuse disorder showed 269 million of them, which is thirty percent higher from 2009, with the number of cannabis users around 192 million. However, opioids are still positioned as number one unsafe of all due to more passing rate, which is 71 % in general increment with 93 % increment from ladies and 63 % from men (UNODC, 2020). In the Philippines, the great news is that number of dangerous drug users has decreased by more than 50 percent adding up to 1.67 million or a proportion of 2:100 Filipinos. Cannabis is the foremost common drug being abuse in the age bracket of 18 to 59 years old (Xinhua, 2020). In Barangay San Dionisio, as reported by Carrasco (year), during 2021-2022, there were numerous arrests for drug related cases and millions of pesos were seized. On the account of arrest and seizure of dangerous drugs, it is now considered by the Philippine Drug Enforcement Agency (PDEA) as hot spot for dangerous drugs. In totality of the report, the central issue in drug abuse is a continuing existence. With the issue, there is some important responsibility of social capital for it be controlled or prevented.

Social capital is the immediate influencer of any type of behavioral disease just like drug abuse involvement. In talking about behavior with social capital, they are a composition of a group of people who are directly connected to the everyday life of a person like family, peer, and neighborhood. The roles of social capital in the continuous existence of drug abuse are the

influencing attitude shown to individual that creates physical and psychological tension, and as an individual is involved in drug abuse, there are consequences. An example is suffering from unstable mind, which produces undesirable decision like crime. Another is potentiality of social capital to negative conformity, just like stigma. It makes drug abusers, upon severe use, separate from the norms of the society. Evidently, they become very suspicious with high level of distrust on people.

Researchers have reported the importance of social capital in understanding the cause and possible treatment of dangerous drug users. Di Maggio et al. (2021) stated that life satisfaction can be regained if the social capital will provide hope. It clearly shows that if we are the social capital of the drug user, we must remove the traditional labeling always given to them. Instead, we encourage and make them feel their positive acceptance in the place belong. According to Kupka et al. (2020), there are many disadvantaged neighborhoods in Czechia, all involved in drug abuse. The research utilized a cross-sectional study design with bivariate and multivariate analysis to determine if there would be a significant difference in the responses of socially excluded localities (SELS) and non-socially excluded areas (N-SELS). In the theme predictors of lifetime illicit drugs use and exposure, non-SEL respondents with a high level of education were most likely not to be in illicit drug use. Also, positive variables in the demographic profile were not affected by illicit drug use. The negative variables such as low-level housing and fear of street neighborhoods pushed individuals to be in illicit drug use. Asumbrado and Canoy (2020) conducted a study using a narrative inquiry design to find out if social capital such as low-income communities would put individuals in drug use as a mode of



living and thrive in communities. In the rehabilitation and reintegration aspect, environment has implications in achieving. The study showed that social capital played negatively and positively for the cause and treatment of dangerous drug users. However, the three studies on social capital role focused only on quantitative approach.

In Di Maggio et al. (2020), the question we can ask is “what had been the role of social capital to receive either the positive or negative cure for the drug use disease?” Also, the obvious gap of Kupka et al.’s (2020) study is on the conclusiveness of the true and actual scenario of the drug users’ social capital. Moreover, Asumbrado and Canoy (2020) missed the other class of the society such as the high-income communities, because their study focused alone in low-income communities. For relapse aspect, the entire social capital was not part of the investigation which indicates the lack of evidence for entire social background that motivates the dangerous drug users to go back again on its use. The mentioned researches focused only on the cause of drug abuse rather than on its prevention. Thus, it is relevant for a study to focus on the true role of social capital, considering its entirety. In this approach for truth, the relapse cause and prevention can be depicted, which will help the drug user and their family in overcoming the disease.

The purpose of the study is to document the lived experiences of dangerous drug users in their social capital. This will accomplish the gap in the mentioned studies like including participants from different socio-economic status. Moreover, the entire social capital will be deeply connected as it processes the data needed. Lastly, part of the phenomenon is relapse, a factor in social capital. It is one main factor for it always happens to dangerous drug users. Utilizing qualitative approach to handle the stories from the participants’ experiences, this study attempts to come up with a strong conclusion and an appropriate recommendation on the rehabilitation and prevention of drug abuser. The remainder of the paper is divided into methodology, result, discussion, conclusion and recommendation. All of this will be detailed in its section.

The qualitative aspect can be very helpful in formulating a program that addresses the issue on drug abuse. The study will be beneficial to the following:

Drug users in recovery. Drug users seek recovery from addiction needs all the social capital they have. The need for support to be sober and be in normal life is critically required. This study will provide awareness on the valuable role of the immediate social capital of the drug users’ recovery. It will also encourage drug users who want to recover through the approach they need most since the formulation to be suggested is coming from the experiences and needs of drug users as part of the rehabilitation process.

The Philippines. This study may provide significant ways for addiction recovery to strengthen control over drug addiction in the country.

Rehabilitation center. This center in the country has standard six-month process that requires the government large budget for it. In this manner, findings will help minimize budget for recovery of drug users through a new approach in which users can stay only for minimal period in the center, thereby cutting food budget and other expenses.

Barangay units. Leaders from this unit can systematically change the social phenomenon through identification of the needs and gaps for rehabilitation of drug users and eventually create policy programs in fighting drug addiction.

RESEARCH QUESTIONS

The study was anchored on life course theory, which states the four principles why behavior happens: historical time and place, timing in lives, linked lives, and human agency. From these principles, the researcher formulated the research questions. Research question 1, “What circumstances in participant’s life are being experienced in their social capital?” embraces the first and second principle of the life course theory. The interview questions determined the cause behind the use of dangerous substances. The following interview questions were used.

IQ 1: What had you experienced in your family that put you in deciding the use of illegal substance?

IQ 2: What have you experienced in your family after they had known your illegal substance disorder?

IQ 3: What had you experienced in your friends that put you in deciding the use of illegal substance?

IQ 4: What have you experienced in your family after they had known your illegal substance disorder?

IQ 5: What have you experienced in your friends that put you in deciding the use of illegal substance?

IQ 6: What have you experienced in your neighborhood after they had known your illegal substance disorder?

Research question 2, “What are the needs of the participants for them to accept normal life without dangerous substance?”, explains the role of social capital or the link lives of the participants. The interview questions are as follows.

IQ 7: What do you think would be the best thing for your family to do when you decide recovery from drug abuse?

IQ 8: What do you think would be the best thing to do by your friends in deciding a recovery in drug abuse?

IQ 9: What do you think would be the best thing to do by your neighborhood in deciding a recovery in drug abuse?

IQ 10: How would you help yourself without family, friends, and other significant people in your life when you decide recovery from drug abuse?

Research question 3, “What approach is appropriate for the rehabilitation of participants?”, deals with the principle of human agency in life course theory which can give the role of social capital in the rehabilitation of the participants. The interview question is:

IQ 11: What recommendation would you give to rehabilitate drug users?

The questions were drafted first in a matrix form and reviewed by three knowledgeable persons about the study. All their



suggestions and recommendations were noted and considered in the final revision of the guide questions.

METHODOLOGY

This study, which utilized qualitative research design, determined the lived experiences of dangerous drug users in their social capital, the needs of drug users for them to accept the getting into normal life without dangerous substances, and the approaches that can be formulated for the rehabilitation of the drug users. Judgmental sampling technique was utilized as a set of criteria was used. Participants were 18 years of age and above, male or female, residents of the locale of the study, have used illegal drugs for at least two years, and either rehabilitated or not. Moreover, due to the sensitivity of the topic, the study employed snowball sampling. In this technique, the selection of participants was done through referral.

Based on life course theory, the pre-determined themes include causes, conformity, and change. An open-ended questionnaire was drafted based on the pre-determined themes. The personal interview was conducted among the participants who accepted to be part of the study. The transcripts of the interviews were transcribed and the transcriptions were sent back to the participants for them to check the accuracy of the content. The analysis of the data, which was done through inductive manner, revealed 11 sub-themes: Life Stresses, Means of Trading,

Temptation, Availability, Worthless, Being Misjudged, Abhorrence, Being Ignored, Aid, Self-capacity, and Motivation. The major themes include historical life event and timing in lives, linked lives, human agency, and personal control.

RESULTS AND DISCUSSIONS

This study explored the lived experiences of dangerous drug users in their social capital. It examined how their social capital causes drug abuse, how they conform to the situated drug dependency, and how they change their habit of using an illegal substance. The six drug users who were interviewed explained their lived experiences with their family, peers, and neighborhood to their involvement, adaptation, and habit alteration. This study consists of three major questions to resolve; hence, the answers are presented in three sections. The first section describes the participants' social-historical events they had experienced that caused them to have illegal substance use habits (Socio-historical Event and Timing), with corresponding six interview questions. The second section explores the deepest part of their life course wherein social capital knows already that they have been using an illegal substance (Linking Lives), with corresponding four interview questions. The last section addresses how the participants could change or change their habits (Human Agency and Personal Control) based on one interview question.

Discourse and Dimension	Example quote
<p>a</p> <p>Historical Event and Timing of Lives</p> <p>Life Stresses, means of trading, temptation and availability of illegal drug induces drug abuse.</p>	<p>P2 “my wife goes to America to work with the kids”</p> <p>P1 “We are really poor where I have to sell illegal drugs to compensate all our needs on our home”</p>
<p>b</p> <p>Linked Lives</p> <p>Being considered as unworthy and misjudge as user of illegal drugs makes the addiction worst. Also, the way not to personally break, addicts tend to keep friends who are using illegal drugs</p>	<p>P5 “all people known to drug user still have to respect and never show that you do not care anymore. It is better to the family members to keep reminding that to change the way he was doing with the life”</p>
<p>c</p> <p>Human Agency and Personal Control</p> <p>The best way to be reform again to non-user of illegal drugs, helping drug abuser through stand by always on their sides and keep telling the good thing of being change as well as having personally a strong determination to get away on addiction.</p>	<p>P6 “Drug addicts must determine to change their lives, as they think of changing their lives, family member should provide moral support”</p>

The first section of the lived experiences of the participants talks about socio-historical event and timing of their lives according to life course theory principles. It determines the cause of dangerous substance use disorder. From the analysis of data, four major themes emerged, each with corresponding core narratives. Under

Life Stress, the core-narratives are broken family, intimate partner, and escaping reality. For Means of Trading, the core-narratives are livelihood and survival. Core-narratives in Temptation include offering and curiosity and for Availability, the core-narratives are nuisance area and ease of access.



The second part is conformity, which is the principle of linked lives in the life course theory. It is comprised of three major themes, with corresponding core-narratives. The core-narratives of Worthless are inferiority and rejection. For Misjudged, the core-narratives are being misunderstood and same habit while for Ignored, the core-narratives are dubiety and tease. The last part deals with change. The themes for the principle of human agency are personal control, each with corresponding core-narratives. For Aid, the core-narratives are standing by and advise. For Self-capacity, the core-narratives are self-determination and intellect while for Motivation; the core-narratives are family worth and faith.

CONCLUSIONS

The study was conducted to explore the lived experiences of persons with illegal substance use disorder in their social capital. Specifically, it sought to understand the meaning-making of these experiences. It is believed that from the moment of pursuing the investigation with the narration of the experiences of the persons with illegal substance use disorder, certain events can be revealed which can be used in drafting a new approach for the rehabilitation of the participants. The study employed the Life Course Theory in examining the meaning-making of the persons with illegal substance use disorder in each of their events in their cause, conformity, and possible change. Based on the data analyzed and interpreted, the following conclusions were drawn.

1. Drug addiction is a chronic illness characterized by drug using and utilization that is compulsive, which leads toward difficulty to control and despite harmful effects; illegal drug users often experience a variety of issues in family life. This addiction can have both immediate and indirect consequence for criminal behavior and violence that creates a lower.
2. Relatedness is an essential element that determines the drug users' choice to take or to quit drugs. It provides an important social capital which facilitates the recovery from drug use. Once this need is satisfied and internalized as intrinsic motivation, one will enjoy a high sense of well-being and be encouraged to engage in healthy behavioral patterns, as well as preserve positive growth and development, instead of resorting to drugs.
3. Drug users' family members feel supportive and motivated when they are able to talk and share drug problems with their immediate family members.
4. Drug users are their own managers in the process of recovery. Hence, their awareness of the underlying factors that facilitate the process of sustainable rehabilitation and recovery program can provide a good guidance in this regard.
5. Recovery encompasses more than remaining abstinent from drugs and that recovery is a life-long process.

RECOMMENDATIONS

Based on the following conclusions, the following recommendations are offered.

1. The government agency, particularly the National Anti-Drug Agency and NGOs, must strengthen their effort in providing appropriate training related to coping strategies for drug users. This training is important in order to enhance their existing knowledge in implementing the coping strategies when dealing with drug abusers' family members.
2. Peer groups must be organized as drug users can likely find support, acceptance, and encouragement from peers who are former users. Former users might use their lived experiences to demonstrate how to cope with the challenges during recovery. Most significantly, significant others can try to be more supportive and understand better the needs and perspective of the drug users and give them more encouragement to help them withstand the difficulties experienced by doing drug withdrawal, rather than coercing to quit drugs or even avoiding them.
3. Recovery assessment tools must be developed, preferably in collaboration with experts by experience, meaning there must be a need for innovative ways of evaluating recovery that takes into account individual differences, needs, and circumstances.
4. Consultation with family members to screen for psychological disorder and educating them through mass media and counseling sessions with the purpose of motivating the economic, psychological, and emotional support of the drug users must be done.
5. Since family and peers are human agencies that, if combined with personal control and faith, strong probability of change can be achieved, maintaining the bond and trust of the social capital of the illegal substance users must be firmly established. It is contributing to personal control and to bringing back to the victims of illegal substance the faith they have.
6. Community-based Drug Rehabilitation Program must be implemented in all communities and all primary health care facilities in communities must endeavor to provide community-based treatment and support for illegal drug users as an essential part of a continuum of care for them.

LIMITATIONS OF THE STUDY

The limitation of the present study is on methodology. Like qualitative research, an exploratory study takes a minimal sample. It cannot be assumed that findings are applicable to a bigger population. Additionally, the samples are living only in one barangay. Therefore, the narration of the respondents is not a complete reflection of the whole population of the illegal drug users' lived experiences. This study would require further investigation and reflection on a more diverse sample of illegal drug users, including the whole city or a comparison of two cities. The social capital focused only on family, peers, and neighborhood. Since there are some other parts of the total influence for an individual to develop behavior, habit, and character, it is important to include the total composition of social capital such as family, peer, neighborhood, social media, school, and church.



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A COMPARATIVE STUDY OF TEACHER PERCEPTIONS ON AI-ENABLED GAMIFIED ASSESSMENT PLATFORMS IN SAUDI ARABIAN AND INDIAN HIGHER EDUCATIONAL INSTITUTIONS

Dr. A.P. Muthulakshmi M.Com., M.Phil., MBA., Ph.D.¹, Kunja Arjumand, MBA., (PhD)²

¹Professor, ²Research Scholar

¹Department of Management studies,

¹ CMS Institute of Management Studies,
Coimbatore, India

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ABSTRACT

This study investigated how educators in higher education from Saudi Arabia and India perceive AI-powered gamified assessment platforms (AGATs). We aimed to compare teacher perceptions across these two culturally distinct educational systems, considering factors like perceived usefulness, ease of use, trust in AI, and the appeal of gamification. Online surveys gathered data from a diverse sample of teachers in both countries. A total of 120 respondents participated, with an equal representation from India (n=60) and Saudi Arabia (n=60). The analysis compared the average scores and standard deviations for each group using paired-sample t-tests. While initial perceptions may appear similar, significant differences emerged between the two groups, particularly indicating Saudi Arabian teachers' greater receptivity to AGATs. The surveys explored user experience, perceived effectiveness of AGATs, and attitudes towards gamification and AI assessments. While some potential variations in perceptions emerged (Table 1.2), paired-sample t-tests (Table 1.3) revealed statistically significant differences between the two groups. Interestingly, initial analyses suggest Saudi Arabian teachers might be slightly more receptive to AGATs, warranting further investigation. These findings, though limited by the online survey methodology, highlight the importance of understanding teacher perceptions for successful AGAT implementation. Future research with larger and more diverse samples, potentially incorporating qualitative methods, could provide deeper insights into these variations.

In conclusion, although potential variations in teacher perceptions across countries were observed, statistically significant differences were established, leading to the rejection of the null hypothesis. This underscores the need for future research with larger, more diverse samples and the potential value of qualitative methods to delve deeper into the underlying reasons for these variations. Ultimately, considering teacher perceptions is crucial for successful AGAT implementation. By understanding these nuances, we can tailor educational technology like AGATs to better suit the needs of teachers across diverse contexts, ultimately promoting effective integration and maximizing their potential benefits for student learning.

Abbreviations: AGAT – Artificial Intelligence Gamified Assessment tools.

AI-EAP- Artificial Intelligence -Enabled Assessment Platforms

KEYWORDS: Educators, Higher education, Perception, AI-powered gamified assessment platforms (AGATs), Saudi Arabia, India.

INTRODUCTION

The world of education technology is booming, with innovative Platforms like gamified quizzes and challenges (think Kahoot! or Quizizz) emerging all the time. These Platforms aim to make learning more engaging and personalized, potentially leading to better results (Huang et al., 2022). But for teachers to use them effectively, they need to be on board, and their opinions can vary depending on the country and educational system (Williamson et al., 2020).

These two countries present distinct cultural, educational, and technological landscapes, making them ideal settings for comparative research. These two countries have very different cultures, educational systems, and technology use, making them interesting to compare. Saudi Arabia is actively investing in improving education and using more technology in classrooms (Alshumaimeri, 2019). India, on the other hand, has a rapidly growing tech industry and higher education system, creating a dynamic environment for using technology in schools (Ministry of Education, Government of India, 2021). AI-enabled gamified assessment Platforms (AGATs) represent a growing trend in



educational technology, offering personalized assessments, real-time feedback, and gamified elements to enhance student learning. However, their successful integration depends heavily on teacher perceptions and attitudes. This review examines recent research on teachers' perceptions of AGATs, specifically focusing on aspects like ease of use, performance expectancy, effort expectancy, social influence, user experience, and enjoyment.

LITERATURE REVIEW

The educational landscape is rapidly evolving, with innovative assessment Platforms like AGATs (e.g., Kahoot! Quizizz) emerging to enhance student engagement and potentially improve learning outcomes (Huang et al., 2022). However, their effectiveness hinges on teacher acceptance and perceptions, which can vary significantly across cultural and educational contexts (Williamson et al., 2020). This review explores key factors influencing teacher perceptions of AGATs, emphasizing the importance of considering cultural nuances and pedagogical alignment.

Cultural dimensions influence teacher perceptions of AI-enabled assessment platforms (AI-EAPs). Collectivist teachers value AI-EAPs for collaboration (Wang, 2020) but may resist emphasis on individual performance (Li & Bao, 2022). Individualist teachers prefer AI-EAPs for personalization (Ferguson, 2021) but worry about reduced interaction (Moosavi et al., 2019). Power distance (Ganesan, 2017) and uncertainty avoidance (Farooq et al., 2020) also play a role. Considering these factors is crucial for culturally appropriate AI-EAP design. Studies suggest that teacher acceptance of AI platforms hinges on factors like perceived usefulness for enhancing student learning (Chang, 2019) and ease of use (Liu et al., 2020). Concerns regarding teacher autonomy, data privacy, and potential overreliance on technology are also reported (Aydin & Yildirim, 2022). Positive social influence from colleagues significantly impacts AI adoption (Wu et al., 2023), aligning with the UTAUT model (Unified Theory of Acceptance and Use of Technology). Research on AI-powered assessment Platforms (AGATs) highlights potential benefits like personalized feedback and increased student engagement (Al-Ghamdi et al., 2021; Hwang & Chen, 2022). However, concerns exist regarding potential downsides of gamified learning, such as increased pressure and a shift away from deeper learning objectives (Ferguson, 2016). The effectiveness of AI platforms ultimately depends on careful design and implementation that prioritizes broader pedagogical goals (Ferguson, 2016). Effective training addressing teacher concerns and fostering a positive learning experience are crucial for successful AI integration (Aksu & Ozcelik, 2020; Morris et al., 2019). Addressing individual teacher needs and differences can further enhance adoption (Karaali et al., 2023). Cultural differences influence teacher perceptions of technology. Teachers in collectivistic cultures might value collaborative aspects of AI platforms more, while those in individualistic cultures might prioritize personalized learning elements (Hofstede, 2017).

Cultural differences play a role in technology adoption. Hofstede (2017) suggests teachers in collectivistic cultures might value collaborative aspects of AGATs more, while those in individualistic cultures might prioritize personalized learning elements. Existing technology infrastructure within institutions can also influence perceptions (World Bank, 2023). Countries with a focus on educational reform might offer more opportunities for teacher training related to AGATs, impacting acceptance (Al-Zahrani, 2019). Perceived usefulness is a crucial factor for technology adoption. Teachers are more likely to embrace AGATs perceived to enhance teaching effectiveness and student learning (Chang, 2019). User-friendly interfaces and clear instructions are essential for fostering positive perceptions and promoting technology adoption (Liu et al., 2020). Furthermore, teachers are more receptive to technologies that align with their existing pedagogical beliefs (Yousuf, 2018). Access to adequate technical support is also critical for addressing concerns and facilitating successful integration (Aksu & Ozcelik, 2020).

Studies consistently show that teachers with a positive perception of AGATs' ease of use are more likely to adopt them (Chang et al., 2018; Liu et al., 2020). This aligns with the UTAUT model's Effort Expectancy construct, where perceived ease of use influences a positive attitude towards using a technology. Similarly, effort expectancy plays a crucial role. While initial concerns about complexity and time investment exist (Aydin & Yildirim, 2022), effective training, gamified features (Morris et al., 2019), addressing individual differences (Karaali et al., 2023), and fostering a supportive environment (Al-Ghamdi et al., 2021) can all contribute to a positive perception of effort, ultimately facilitating successful adoption.

AGATs hold promise for enhancing the educational experience, but their effectiveness and user experience depend on various factors, including cultural context, technology integration, teacher training, and careful design implementation that prioritizes broader pedagogical goals (Ferguson, 2016). Further research is needed to solidify the evidence base and guide the development and implementation of AGATs across diverse educational settings. By addressing teacher concerns through professional development, ensuring teacher autonomy

Several studies report positive teacher perceptions regarding AGATs' potential benefits, such as personalized feedback, data-driven insights, and increased student engagement (Al-Ghamdi et al., 2021; Hwang & Chen, 2022). However, some teachers express concerns about the potential limitations, including overreliance on technology, data security and privacy, and the need for proper training and support (Aydin & Yildirim, 2022). Interestingly, both positive perceptions about student engagement and concerns about learning outcomes have been reported by teachers across diverse contexts (Clark & Mayer, 2016; Hamari et al., 2016; Azevedo, 2015; Hwang et al., 2020). This highlights the need for further research and clear communication on the



potential benefits and limitations of AGATs to teachers from different backgrounds.

Positive social influence from colleagues significantly impacts teachers' acceptance and use of educational technology, including AGATs (Wu et al., 2023). This aligns with the UTAUT model, suggesting teachers are more likely to adopt Platforms recommended by their peers. Research also highlights the role of user experience in shaping perceptions. Well-designed gamified elements can enhance user experience by providing opportunities for competition, achievement, and feedback, leading to increased engagement and motivation (Hamari et al., 2016). Furthermore, gamified elements can foster intrinsic motivation in teachers by aligning with Flow Theory principles, which emphasize the importance of enjoyment in the learning process (Ryan & Deci, 2017). Studies suggest that engaging and positive user experiences derived from gamification elements can contribute to a sense of enjoyment and this enjoyment can, in turn, further enhance intrinsic motivation and promote sustained engagement with AGATs. A strong need exists for further research solidifying the evidence base on the effectiveness of AI platforms in diverse educational settings (Azevedo, 2015). Studies are needed to explore the long-term impact on teachers and students, including potential ethical considerations across countries. Further research is needed to solidify the evidence base and guide the development and implementation of AGATs across diverse educational settings.

RESEARCH QUESTION

What are the key factors influencing teacher perceptions of AGATs in Saudi Arabian and Indian higher education institutions?

Are there any significant differences in teacher perceptions of AGATs between these two countries?

RESEARCH GAP

It highlights the importance of understanding how teacher roles across different educational contexts can influence effectiveness of AGATs and can vary. The study aims to contribute to filling this research gap by investigating teacher perceptions in Saudi Arabia and India, two culturally distinct educational systems. More research is needed to understand how these Platforms can be optimized for different educational systems across countries with varying curriculum, assessment structures, and various subject teacher roles.

THEORETICAL FRAMEWORK

This framework proposes interconnected factors influencing teacher perceptions and intentions to use AI-enabled gamified assessment Platforms. Core factors like perceived usefulness, effectiveness, and effort (UTAUT, TAM) shape teacher attitudes, which in turn influence their intention to use the tool. Gamification elements like enjoyment, challenge, and collaboration further contribute to positive attitudes and intention by increasing engagement and motivation. Additionally, trust in

AI and its transparency play key roles in influencing perceptions of fairness, accuracy, and ultimately, tool effectiveness. This model highlights the multifaceted nature of teacher adoption and suggests that successful implementation requires addressing not only tool functionality but also user perceptions and trust.

But it's not just about the tool itself. Teachers also consider the **effort involved** (effort expectancy). Will it be easy to use and save them valuable time? Additionally, positive word-of-mouth from colleagues and administrators (social influence) can go a long way in building trust and encouraging adoption. Ultimately, a combination of these factors shapes a teacher's overall **attitude** towards the AGAT, influencing their decision to use it (behavioral intention). However, AGATs offer unique features beyond traditional Platforms. The **engaging and fun elements** of gamification can spark a sense of **intrinsic motivation** in teachers themselves (enjoyment). The challenge level should be just right - not too easy, not too hard - to keep them engaged (challenge). This intrinsic motivation, fueled by enjoyment, makes them more likely to want to use the AGAT regularly. Engagement goes beyond the individual teacher. **Healthy competition** fostered by the AGAT can make using the tool more enjoyable for everyone (competition). At the same time, it can reinforce the perceived benefits for student learning (performance expectancy). **Collaboration features** can further enhance enjoyment by promoting social support and interaction among teachers (collaboration). Clear **and actionable feedback** provided by the AGAT is crucial. It helps teachers see the tool's effectiveness firsthand (performance expectancy), leading to a more positive attitude. Building trust is also essential. Teachers need to feel confident in the **fairness and accuracy** of the AGAT's algorithms and decision-making processes (trust in AI). **Transparency** regarding how the AI works and how data is used is key to building this trust.

In essence, this framework highlights the importance of looking beyond the technical aspects of AGATs. Successful implementation requires not only a well-functioning tool but also a focus on cultivating positive user perceptions and trust. By incorporating engaging design elements, providing clear feedback, and ensuring transparency, AGATs can become valuable assets in the educational landscape.

METHODOLOGY

The core Online surveys uses Likert scale questions to gauge educators' opinions exploring user experience, perceived effectiveness of AGATs, and attitudes towards gamification and AI assessments. This design offers insights into educators' attitudes towards AGATs, but it might not capture their in-depth experiences or perspectives on specific game features. Descriptive statistics and paired t-tests were employed to compare perceptions between countries. A diverse sample of teachers, representing various subjects, experience levels, and technological proficiency in both nations, was ensured. Survey instruments, including a 5-point Likert scale questionnaire, were carefully crafted. Ethical considerations were paramount, with



informed consent obtained and participant privacy meticulously maintained throughout the study.

DATA ANALYSIS

A total of 120 participants with 60 participants each, India and Saudi Arabia are equally represented, ensuring a balanced

comparison and enhancing the study's generalizability and a comprehensive examination of AGAT adoption across diverse contexts. Data quality was ensured through evaluations of sample adequacy, reliability, and validity (details in Table 1). The analyses confirm good internal consistency and validity of the data, and the sample size appears sufficient.

Table 1: Demographics of Teacher Participants

Category	Country	Frequency	Percent	Valid Percent	Cumulative Percent
Country of Teaching	India	60	50.0	50.0	50.0
	Saudi Arabia	60	50.0	50.0	100.0
Experience	0-2 years	2	3.3	3.3	3.3
	3-5 years	3	5.0	5.0	8.3
	6-10 years	3	5.0	5.0	13.3
	11-15 years	6	10.0	10.0	23.3
	16+ years	46	76.7	76.7	100.0
	Total	60	100.0	100.0	100.0
Gender	Female	36	60.0	60.0	60.0
	Male	24	40.0	40.0	100.0
	Total	60	100.0	100.0	100.0
Age	18-24	2	3.3	3.3	3.3
	35-44	22	36.7	36.7	40.0
	45-54	11	18.3	18.3	58.3
	55+	25	41.7	41.7	100.0
	Total	60	100.0	100.0	100.0

TABLE: 1.1 Data Reliability, Validity And Sample Adequacy

Variables	Reliability α	CR	Convergent Validity AFL	Discriminant Validity	
				AVE	R2
User Experience (UX) and Perception	.926	.850	.863	.767	.722
Design Elements and Outcomes	.914	.749	.852	.766	.715
Overall Cronbach's Alpha	.938				
Overall KMO	.926				
Chi-Square Value	1208.533				
Sig	.000				

Note: CR: Composite Reliability, AVE: Average Variance Extracted, AFL: Average Factor Loading

Table 1.1: Reliability, which reflects how consistent our measurements were, is high for all areas we investigated (User Experience, Perception, Design Elements, and Outcomes). This is shown by Cronbach's Alpha (α) exceeding .9 and Composite Reliability (CR) values above .74.

Loadings (AFL) above .8 and Average Variance Extracted (AVE) values exceeding .7. These indicate that the measures accurately represent the concepts we were studying, and that they capture most of the relevant information. Finally, a large enough sample size was confirmed by a high Kaiser-Meyer-Olkin (KMO) value (.926) and a significant Chi-Square value.

Validity, which verifies that our measures captured what we intended, is also strong. This is supported by high Average Factor



TABLE: 1.2 MEASURES OF DISPERSION
Comparison Between Agats Adoption Among He Teachers In Saudi Arabia And In India

Variables	India		Saudi Arabia		Correlation
	Mean	SD	Mean	SD	
User Experience (UX) and Perception					
How likely are you to recommend the tool based on its perceived usefulness?	4.267	1.177	4.600	1.028	.806
How effectively has the tool helped students improve critical thinking, problem-solving, or knowledge retention?	4.433	0.871	4.800	0.605	.793
How confident are you in the tool's accuracy assessing student knowledge/skills?	4.033	1.119	4.800	0.684	.799
How much time and effort will it take to learn and use the tool?	4.333	0.795	4.283	0.940	.803
How easy is it to integrate the tool into your teaching practice?	4.433	0.673	4.467	0.676	.840
To what extent do colleagues encourage you to use the tool?	4.217	1.043	4.517	0.596	.824
How supportive is your administration of using the tool?	3.967	1.275	4.483	0.854	.730
How much effort is taken to create questions and activities in the tool?	3.767	1.240	4.200	1.086	.842
How enjoyable are the gamified elements for you in your teaching practice?	3.400	0.643	3.617	0.490	.817
Knowing students are learning more with the tool, how satisfactory is that?	4.233	0.810	4.567	0.593	.705
Does using the tool feel like a good fit for your teaching style and values?	4.317	0.892	4.667	0.475	.718
Can you trust the tool to be fair and accurate in its assessments?	3.967	0.991	4.617	0.490	.704
Understanding how AI works, does it make you trust the results more or less?	3.767	1.110	4.567	0.500	.817
Design Elements and Outcomes					
Do you think friendly competition motivates students to learn more?	4.220	0.948	4.610	0.492	.891
Does competition make the tool enjoyable and fun for you?	3.917	0.962	4.567	0.593	.970
Does the teamwork feature make the tool more engaging and enjoyable for students?	4.317	0.965	4.717	0.454	.742
Is the information the tool gives about student learning clear to understand?	4.217	0.940	4.567	0.593	.836
Does the feedback make it easy to see if students are learning more with the tool?	4.167	0.806	4.283	0.940	.893

Level of Significance: 5 per cent

Table 1.2: compares how teachers in India and Saudi Arabia view the tool AGAT. The table shows average scores (means) and how spread out the scores were (standard deviations) for different aspects of the tool, like user experience (UX) and how well it achieves its goals (design elements and outcomes). These differences suggest that teachers in each country might have slightly different opinions on how useful and easy to use the tool

is. The table also includes "correlation values." Showing closely related teachers' answers were to different questions. For example, a high correlation might mean that teachers who liked one feature of the tool also tended to like another. Confidence in Differences shows that the observed differences between the two groups of teachers (India vs. Saudi Arabia) are real and not just due to chance.



TABLE: 1.3 RESULT OF PAIRED Z TEST
Comparison Between Agats Adoption Among He Teachers In Saudi Arabia And In India

India vs Saudi Arabia	Mean	SD	t value	DF	Sig
User Experience (UX) and Perception					
How likely are you to recommend the tool based on its perceived usefulness?	1.664	0.333	11.552	59	.306
How effectively has the tool helped students improve critical thinking, problem-solving, or knowledge retention?	1.164	0.367	12.440	59	.093
How confident are you in the tool's accuracy assessing student knowledge/skills?	1.407	0.767	14.222	59	.199
How much time and effort will it take to learn and use the tool?	1.443	0.050	10.268	59	.403
How easy is it to integrate the tool into your teaching practice?	1.073	0.033	10.241	59	.440
To what extent do colleagues encourage you to use the tool?	1.344	0.300	11.729	59	.124
How supportive is your administration of using the tool?	1.722	0.517	12.324	59	.130
How much effort is taken to create questions and activities in the tool?	1.769	0.433	11.897	59	.242
How enjoyable are the gamified elements for you in your teaching practice?	0.885	0.217	11.897	59	.117
Knowing students are learning more with the tool, how satisfactory is that?	1.036	0.333	12.492	59	.605
Does using the tool feel like a good fit for your teaching style and values?	1.055	0.350	12.570	59	.418
Does the feedback make it easy to see if students are learning more with the tool?	1.151	0.117	10.785	59	.591
Can you trust the tool to be fair and accurate in its assessments?	1.176	0.650	14.280	59	.970
Design Elements and Outcomes					
Do you think friendly competition motivates students to learn more?	1.099	0.390	12.725	58	.442
Does competition make the tool enjoyable and fun for you?	1.132	0.650	14.446	59	.436
Does the teamwork feature make the tool more engaging and enjoyable for students?	1.108	0.400	12.797	59	.293
Is the information the tool gives about student learning clear to understand?	1.162	0.350	12.333	59	.204
Understanding how AI works, does it make you trust the results more or less?	1.350	0.800	14.589	59	.117

Level of Significance: 5 per cent

FINDINGS

In Table 1.3 digs in deeper into the comparison of teachers' perceptions between India and Saudi Arabia. The table shows average scores (means) and how spread out the scores are (standard deviations) for each group. While these appear similar, suggesting potentially shared views, the "t values" indicate some noteworthy differences in the teachers' opinions. Therefore, the null hypothesis of no significant differences in perceptions is rejected based on the observed data and analysis. since all computed Z test scores are found to be significant at the 5% significance level, it means that there is sufficient evidence to reject the null hypothesis. In other words, there is evidence to

suggest that the sample means are significantly different from the population mean. Further analysis suggests that teachers in Saudi Arabia might be generally more receptive to using AGATs compared to their Indian colleagues. Consequently, the null hypothesis formulated is rejected, leading to the conclusion that significant differences exist in the perception of AGATs usage among higher education teachers in Saudi Arabia and India. Conducting in-depth interviews with larger and more diverse samples of teachers across disciplines and experience teachers from both Saudi Arabia and India could provide richer data on their lived experiences and specific concerns or preferences



regarding AGATs. This qualitative approach could offer valuable insights that a quantitative survey might lack.

LIMITATIONS AND DISCUSSION ON NON-SIGNIFICANT FINDINGS AND SUGGESTIONS

In examining the impact of cultural backgrounds on teachers' perceptions of AGATs in Saudi Arabia and India, we did not find significant cultural differences. This could be attributed to the familiarity of teachers in both countries with technology or the study's emphasis on assessment over gaming aspects. Moreover, relying solely on online surveys may have overlooked important cultural nuances. To address these limitations, future research should consider employing in-depth interviews and expanding the sample size to better capture diverse experiences and backgrounds. Specifically exploring distinct game features within AGATs could provide valuable insights into how culture and teaching styles influence teachers' views on these platforms, ultimately enhancing their effectiveness for teachers and improving student learning outcomes.

CONCLUSION

In conclusion, our study investigated teacher perceptions of AGATs across Saudi Arabia and India. While our analysis did not reveal statistically significant differences, our further exploration suggests that Saudi Arabian teachers exhibit greater receptivity towards AGATs. We emphasize the need for future research with larger, more diverse samples and qualitative methods to gain a deeper understanding of these potential variations and their implications for the development of more effective AGATs. Recognizing the importance of considering teacher perceptions in implementing educational technology platforms, we highlight the role of future studies in informing the design and customization of AGATs to better meet teachers' needs across different contexts.

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EVALUATION OF SEMANTIC SIMILARITY BETWEEN GENE ONTOLOGY BASED ON PROTEIN FAMILY AND PATHWAY ANALYSIS

Anooja Ali¹, Ambili PS²

¹School of CSE, REVA University, Bangalore, India

¹School of CSA, REVA University, Bangalore, India

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ABSTRACT

An evolving vocabulary that explains the roles of proteins and genes is called gene ontology, or GO. Gene ontology (GO) describes the molecular, cellular, and biological levels of gene functioning. Semantic similarity gained relevance due to the widespread usage of gene annotations. There are a number of semantic similarity metrics that are available in the literature that concentrate on various strategies: distance-based techniques at the word level or gene product level, external documents, topology-based approaches that focus on boundaries, ancestor or child nodes. We presume that combining all of these element's results in a methodical way to gauge the degree of similarity across GO annotation items. We have conducted a detailed analysis of the biological pathways and GO keywords, and we have created a semantic measure of similarity called SimGOT. SimGOT takes into account topology-based similarity measures, membership of words in fuzzy clustering, and semantics hidden in the ontology or information content of a term. UniProt is used to build the datasets that are positive and negative. We compared four existing GO-based semantic similarity metrics based on semantic similarity, Pearson's correlation coefficient, and Protein Family (Pfam) subdomain group similarity. The superiority of SimGOT over alternative semantic similarity metrics is demonstrated by the experimental findings.

KEYWORDS—Gene Ontology, Pearson's correlation coefficient, Protein family, SimGOT, UniProt

I. INTRODUCTION

The regulation of cellular life is significantly influenced by proteins. They provide the key to understand the requirements to support life. Thus proteins are requisite to live [1]. Hundreds to thousands of amino acids together form a protein molecule. Bioinformatics facilitates the statistical analysis of protein sequences thereby annotating the genome to predict their structure and to understand the functionality [2]. Bioinformatics researchers often use similarity measures to compare one protein with another.

A sequence of amino acids constitutes one protein. These sequences correspond to sequence similarity. The similarity is commonly compared with the BLAST algorithm and the BLOSUM62 scoring matrix [3]. GO is an adaptable database containing the gene functions of various organisms like animal, plant, human and microbial genomes. GO consortium updates the database on regular basis. The three taxonomies that enclose the pertaining biological knowledge are Molecular Function (MF), Biological and Cellular Components (BP and CC). The ontology for these taxonomies contains several processes, related to each other and referred to as GO terms. The GO term for each taxonomy (MF, BP and CC) can be downloaded from the ontology website.[4].

The relationship between the pairs in GO is 'part-of' and 'is-a'. Few characteristics are inherited from ancestors. So GO is a Directed Acyclic Graph (DAG). Each term in GO indicates the

role of the protein in performing MF, BP and CC processes. The hierarchical relationship is represented by edges in a DAG, whereas nodes stand in for GO words.

GO helps to predict essential proteins. Information content present in an annotation can be used to measure semantic similarity between proteins. Genes are semantically similar if they have interconnected MF, BP and CC functionalities. Consider a subgraph of CDC20 gene (Cell Division Cycle 20), a protein-coding gene with GO: 1990333 the mitotic checkpoint complex [5]. Fig 1 indicates the ancestor chart for CDC20. CDC20 is a pre-invasive hub gene for cervical cancer.

Semantic similarity is the similarity score of ontology terms between interacting proteins. Semantic similarity analysis can uncover protein clustering [6], pathway modeling [7] and protein interaction predictions [8]. Functional similarities are advantageous for various applications hence; it is required to ensure that the similarity measures are reliable. Correlation between sequence and semantic similarity may not be existing with all protein pairs. Pearson's association Coefficient is a frequently used metric to determine this association. [9]. While experimenting with the existing semantic and sequential similarity measures, we identified a few questions that need to be addressed. When the correlation between the similarity measures is low, each similarity measure becomes independent. When correlation is high, can query based on semantic similarity be an alternate for the existing sequence matching



methodologies. Thus a systematic method is required to investigate this correlation.

Most of the current methods don't take into account all of the important GO graph topological properties. In order to extract the proteins that the present tools are missing, it also advocates using semantic tools including improving the ones that are already in place. Semantic similarity is measured by most information content-based methodologies using the information content between GO keywords.

In this paper, we attempt to resolve these issues by inquiring about the relationship between various similarity measures and the validity of the proposed method is compared with the existing similarity measures. SimGOT incorporates every significant similarity computation approach. The following is a list of the planned work's primary contributions:

1. A new topology based similarity measure, `struct_depth()`.
2. `Multifact_sim()` is a multi-factored similarity measure that incorporates weight function, participation for every term, and fuzzy clustering.

The remainder of the document is structured as follows: A review of the relevant literature opens the following section.

II. RELATED WORK

There are several methodologies available in the literature for calculating semantic similarity based on GO terms and topology. In this section, we present a systematic study of the various methods available in the literature.

Approaches to semantic similarity may be roughly categorised as Node-based, Edge related, Hybrid and Node-based methods consider the features of GO terms which are linked to their parent or child and they often query the nodes [10]. The information quality among GO words is taken into consideration by very few node-based techniques. In line with the information content principle, if a GO term is t , the probability to detect the child of t is $P(t)$. The information content present in the term t can be denoted by $-\log P(t)$ [11]. Eq.1 denotes this.

$$IC(t) = -\log P(t) \quad (1)$$

According to this, if the frequency of usage of the GO term becomes common in a specific database, then the GO term is considered less informative. Edge-based methods are dependent on distance function either based on shortest path or common path to an ancestor in DAG [12]. If two GO terms have a common ancestor, then the semantic similarity between them is measured with the concept of information content, either as selecting the Most Informative Common Ancestor (MICA) or Common Disjunctive Ancestor (CDA) [13].

Similarity measure proposed by Resnik, Lin [14], Jiang [15] selects the MICA. The advantage of Lin and Jiang's measure over Resnik is the normalization of value from 0 to 1. Lin normalized the similarity by averaging the information content of two terms [16]. Thus the similarity measure considers the information available in query terms. Similarity by Lin's measure from 0 to 1. $S(t[i], t[j])$ denotes the set of parents shared by terms $t[i]$ and $t[j]$.

Resnik does not consider the distance of the LCA (Lowest Common Ancestor). So, if two terms have a common ancestor and if they are at different levels of GO, still their semantic similarity remains the same. The distance of the LCA is taken into account by Lin's similarity measure, but the depth of the common ancestor is not. Few researchers even combined Resnik's, Lin's and Jiang's similarities. Schlicker considered the annotation probability of the ancestor with more information content [17].

A common drawback with these methods is they consider only MICA and not the CDA. Wang's similarity measure considers topological information and ignores annotation. Wang's method had a substantial advantage over other information content-based methods. Nagar and Al-Mubaid proposed a hybrid measure that uses the shortest path based on topology and information content from DAG. Depending solely on correlation and predicting protein functionality may produce errors [18]. While group-wise approaches solely assess functional similarity, pairwise methods assess the semantic similarity of GO keywords. A strong association between sequencing and annotation similarity was investigated by Lord et al [19].

According to the literature review, there is no set method for determining the optimal similarity metric. Few of the approaches ignore the CDA and consider only MICA. Few approaches do not consider any topological feature of the graph. All the existing measures used the different properties of GO term and they are auxiliary to each other. Combining the GO term and topology are delimited in literature. In this research, we propose SimGOT, to estimate similarity at pairwise or GO term level and at the topological level.

III. METHODOLOGY

The three main phases of SimGOT are as follows:

1. The number of connections of a node with smooth information is taken into consideration by the suggested technique, which employs depth as a factor for similarity measure.
2. A review is conducted of the information content found on the shortest path connecting the cluster centre and the GO term.
3. Fuzzy clustering allows a GO term to be a member of more than one clustering. Unlike other clustering algorithms, clusters can have overlapped members.

It is important to mention GO modernization. GO structure is updated frequently with the emergence of new annotations and the relationship between the annotation and path. Subsequently, the GO database will be updated regularly. So, the features of GO terms like annotation, path, depth, information content are falsified.

A. Similarity based on `struct_depth`

Let t be a GO term. The number of ascendants or descendants that are either directly or indirectly linked to t in an ontology is indicated by the symbol $N(t)$. Depth of a word is defined as the ratio of this to the number of GO terms associated with a certain ontology and is represented as $depth(t)$. The corpus is $|O|$ in size.



A combination of information content and a topological metric, as shown in equation (2).

$$depth(t) = \frac{N(t)}{|O|} \quad (2)$$

Each node in the graph is associated with $depth(t)$ indicating connectors of the node. Nodes with $depth(t)$ above the threshold are elected as cluster centers by dividing with the height of the tree as in eq. (3)

$$Struct_depth(t) = \frac{depth(t)}{depth(GO)-1} \quad (3)$$

The node with the greatest connection level must be the cluster centre. As with Lin's and Jiang's measure, relying just on LCA will not be adequate to identify the cluster centre and will result in a shallow annotation problem. Genes with shallow hierarchical annotations have high similarity.

To evaluate the similarity between terms, t_1 and t_2 , the average $struct_depth$ of both terms are calculated. The proposed method to detect cluster center consider all the features including the number of interconnected nodes, number of GO term and depth of GO tree. The proposed method comprehends fuzzy clustering because each term can belong to more than one cluster.

B. Similarity based on multifact_sim

Few researchers considered the distance of the shortest path from the cluster center to every other node in the network. The advantage of this method over other existing methods is the combination of information content along with path length. Let P_1 indicate the path from the cluster center, c to a node t_1 in the network and P_2 indicates the path from c to the node t_2 .

The difference between the two terms t_1 and t_2 concerning the cluster head is detected. Let C_1 and C_2 be the cluster center of t_1 and t_2 respectively. The membership function of t_1 with the cluster C_1 be $m(t_1, C_1)$ and the function of t_1 with the cluster C_2 be $m(t_1, C_2)$. The membership function of t_2 with the cluster C_1 be $m(t_2, C_1)$ and t_2 with cluster C_2 be $m(t_2, C_2)$.

The difference between the terms concerning cluster C_1 for t_1 and t_2 is indicated as $[m(t_1, C_1) - m(t_2, C_1)]$. Similarly, for cluster C_2 the difference between the membership function is indicated as $[m(t_1, C_2) - m(t_2, C_2)]$. These differences are represented by $Diff(C_1)$ and $Diff(C_2)$. If multiple similarity measures are considered, then the similarity measure with maximum similar candidates are referred to in the next step. Following this principle, the maximum difference is considered as in eq (4).

$$MaxDiff(t_1, t_2) = Max[Diff(c_1), Diff(c_2)] \quad (4)$$

Table 1: Semantic similarity comparison of SimGOT with other Information Content methods (Resnik, Lin, Wang, GOGO) for the GO term pairs (GO: 0046572 and GO: 0016829) and (GO:0060089 and GO:0004872).

Approach	Similarity (0046572,0016829)	Similarity (0060089, 0004872)
Resnik	0.082	0.311
Lin	0.135	0.762
Wang	0.610	0.715
GOGO	0.376	0.534
SimGOT	0.396	0.622

The precision of the proximity metric being utilised determines how effective any similarity measure will be. Only interacting proteins will have strong semantic similarity as determined by GO keywords. Our suggested technique does this by combining the topology with the term's information content.

The semantic similarity for protein pairings is computed using Best Match Average (BMA). BMA performs better biologically than average and maximum methods. Average or maximum use is restricted to the given application. (5) provides the suggested similarity equation.

$$X = weight(t_1, t_2) + struc_depth(t_1, t_2) \quad (5)$$

IV. RESULTS AND DISCUSSION

Benabderrahmane et al. employ a benchmark dataset to assess SimGOT in order to assess different GO features. SimGOT outperforms other cutting edge methods in terms of correlation and Pfam similarity. We generated a list of positive and negative interactions by analysing the UniProt dataset. The Pfam score is determined by dividing the total number of families that proteins share by the number of protein families that they share. Under BMA, resemblance scores are shown. We employ Nunivers for normalisation and the GO universal measure, so BMA may be used to determine functional similarity at the end. The correlation between sequencing and semantic similarity is determined using Pearson's correlation coefficient. BLAST log bit score is used to calculate sequence similarity.

Evaluation is carried out using GO:0003674 as the DAG. We conducted an evaluation based on the MF ontology with 27 direct descendants of this GO word. The similarity between the GO word pairs GO:0046572 and GO:0016829, GO:0060089 and GO:0004872 is displayed in Table 1. Using information content-based methodologies such as Resnik, Lin, and Wang, we assessed SimGOT.

Pfam clans' intraset similarity is computed. The evaluation is conducted using the dataset from genes found in the same clan have comparable molecular functions, and MF ontology is used to access similarities [20]. The clans utilised in the similarity study are listed in Table 2. The Pearson correlation coefficients for the three ontologies are shown in Table 3. SimGOT consider all the ancestors shared between the terms. Considering MICA or CDA alone will not be appealing for a denser graph because the information content of some useful ancestors will not be considered.



Table 2: The Pfam clans that were utilised to determine each clan's gene count and degree of similarity.

TPfam Clan	No: of genes
ALDH	15
BIR	8
FBD	7
Flavo-protein	8
6PGDC	7

Table 3: A comparison of the CC, BP, and MF ontologies' Pearson Correlation Coefficients. The values with the highest values are bolded.

Approach	CC	BP	MF
Lord	0.523	0.521	0.625
Al Mubaid	0.514	0.492	0.543
Wang	0.637	0.532	0.622
TopoICSim	0.6346	0.528	0.623
SimGOT	0.644	0.613	0.704

Table 4: The Pearson Correlation Coefficient for MF, CC, and BP ontologies on IEA- and IEA+ between sequence and similarity scores. The ontologies with the highest values are indicated.

Approach	Pearson's Correlation for IEA-			Pearson's Correlation for IEA+		
	MF	CC	BP	MF	CC	BP
Lord	0.529	0.428	0.411	0.562	0.416	0.511
Al Mubaid	0.513	0.426	0.422	0.540	0.422	0.531
Wang	0.522	0.431	0.416	0.532	0.428	0.549
TopoICSim	0.521	0.431	0.421	0.540	0.436	0.512
SimGOT	0.518	0.443	0.438	0.531	0.448	0.509

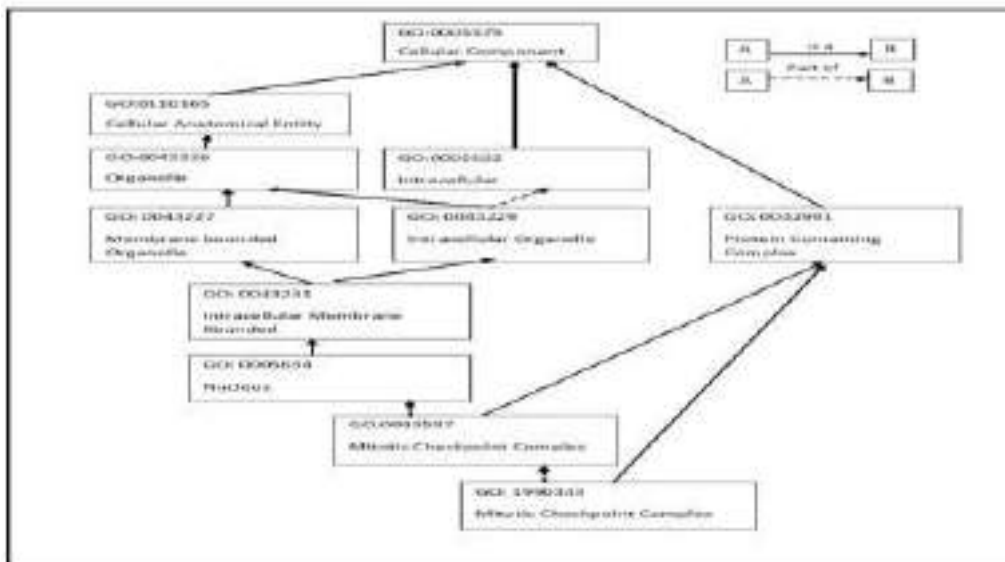


Fig 1 Ancestral chart for CDC-20, mitotic checkpoint complex with GO- 199033

SimGOT exhibits superior performance over the topology-based approach by Wang et al. The main advantage of *SimGOT* is the apprehension of fuzzy clustering for *GO*, shortest path distance to the cluster center, membership. *SimGOT* excel over other information content-based techniques based on *MICA* and *CDA* approaches. We combine information and topology aspects of the term and estimate the similarity between them.

A. Evaluation with Interacting Dataset

Dataset used is from the Gene Ontology database [21]. An optimum coverage can be obtained only by including *IEA+* and *IEA-*. Protein interactions reviewed in UniProt are

considered as the positive dataset [22]. This constitutes 3,500 interactions. A negative dataset is created by considering unreviewed annotations from UniProt. The sequence and semantic similarity are correlated to each other because the standard deviation between them is $\pm 2SD$. So, Pearson correlation coefficient can be used for further calculation.

When it comes to MF and CC ontologies for the *IEA+* and *IEA-* datasets, *SimGOT* shows the strongest association. Table 4 illustrates this. This is because multifactor similarity was taken into account. Terms that correspond to many clusters are taken into account via fuzzy clustering. The



depth of the term plus best match average increase SimGOT's efficiency. When all three-ontology ontology are evaluated, the MF ontology shows a stronger association.

V. CONCLUSION

In this research, we provide an improved method for evaluating semantic similarity for GO words, called SimGOT, which is based on the term's information content as well as topological variables of DAG, such as the terms' structure depth, membership, size, and shortest path. We test SimGOT on the Pfam clan based on intraset similarity. SimGOT exhibited improved performance by considering the benchmark datasets. SimGOT shows robust performance over existing approaches like Lord, Wang, Al Mubaid and TopoCSim. We evaluated the pairwise gene similarity and compared it with other information content-based approaches. We also assess the performance of SimGOT for Pearson's correlation among sequence and semantic similarity on positive and negative datasets and evaluated that. The research on considering all the ancestors or particular ancestors is still in progress.

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ANALYSIS OF MTHFR GENE GLU429ALA POLYMORPHISM SIGNIFICANCE IN THE RISK OF MYOCARDIAL INFARCTION

Khamidov Diyorbek Abdullayevich¹, Ibragimov Dilshodbek Nabievich²

^{1,2}Assistants of Andijan State Medical Institute, c. Andijan, Uzbekistan

ABSTRACT

Alleles and haplotypes of the Glu429Ala polymorphism of the MTHFR gene did not affect the risk of developing MI. In all likelihood, the prothrombotic effect of polymorphisms of this gene can manifest itself when it is combined with other genetic mutations that affect the risk of developing MI or when a combination of hereditary and acquired factors is present. Such combinations are a much greater threat than the presence of one genetic disorder of the coagulation system.

KEY WORDS: myocardial infarction, COVID-19, Glu429Ala genetic polymorphism of MTHFR gene.

1. INTRODUCTION

Over the past two years, the results of cohort studies, a number of reviews and descriptions of clinical observations on complications caused by the SARS-CoV-2 virus, in particular in the cardiovascular system, have been published. The development of cardiovascular disorders exacerbated the severity of the patients' condition and increased the risk of mortality [4, p.1745-1756]. For example, doctors in Italy reported a case of a 53-year-old patient whose clinical manifestations of COVID-19 were severe pericarditis with fever rather than pneumonia [3, p.3-14; 6, p.2121-2138]. In patients who died from COVID-19, biomarker levels before death were 12 times higher in the presence of morphological signs of myocardial damage than in their absence [1, p.1071-1076].

An increase in biomarker values is a sign of an unfavorable outcome of an existing disease. Undoubtedly, further research is needed on the diagnostic and prognostic role of biomarkers of myocardial stress in COVID-19 [2, p.883-884]. To this end, we studied the role of the Glu429Ala polymorphism in the MTHFR in the risk of myocardial infarction (MI) in patients with a history of COVID-19 viral infection and in patients who did not have a history of transferred COVID-19 [5, p.28-35].

2. PURPOSE OF THE STUDY

To study and evaluate the contribution of the Glu429Ala polymorphism in the MTHFR gene to the risk of myocardial infarction (MI) in patients with a history of COVID-19 viral infection and in patients who did not have a history of COVID-19.

3. MATERIAL AND METHODS OF RESEARCH

In a specialized center for the treatment of patients infected with COVID-19 in the Andijan branch of the Republican Specialized Scientific and Practical Medical Center for Cardiology, in the cardiology department of the Andijan Regional Multidisciplinary Center and in the Andijan branch of the Republican Scientific Center for Emergency Medical Care, clinical and laboratory materials were collected from patients

being treated for cardiovascular disease. In particular, patients with myocardial infarction were involved in the study. These patients were divided into two groups: patients with myocardial infarction with a history of COVID-19 viral infection and patients with myocardial infarction without a history of viral infection with COVID-19. In total, 94 patients with myocardial infarction aged over 18 years were involved in the study. Of them:

- The first group - 53 patients with myocardial infarction who had a history of viral infection with COVID-19;
- The second group - 41 patients with myocardial infarction who did not have a history of viral infection COVID-19
- The third group - a control group of 90 conditionally healthy donors.

Statistical processing of the results was performed using the standard software package OpenEpi V.9.2. Analysis of the deviation of empirical genotype frequencies from the theoretically expected Hardy-Weinberg distribution was carried out using the Statistica software package.

4. THE RESULTS OBTAINED AND THEIR DISCUSSION

The calculated probability coefficient showed that the proportion of detection of the functionally unfavorable Ala allele in respondents with COVID-19 associated MI was slightly lower, while the wild Glu allele was slightly higher compared to representatives of the control group (20.8% vs. 23.9% and 79.2% versus 76.1%, respectively). Calculation data suggest that the presence of these alleles does not increase the risk of developing COVID-19 associated MI ($\chi^2=0.4$; OR=0.8; 95%CI:0.47-1.49; p=0.6) and ($\chi^2=0.4$; OR=1.2; 95%CI:0.67-2.14; p=0.6). It was revealed that the statistical difference between the homozygous variant of the Glu/Glu haplotype ($\chi^2=1.0$; OR=1.4; 95%CI:0.7-2.87; p=0.4), the heterozygous Glu/Ala haplotype ($\chi^2=1.6$; OR=0.6; 95%CI:0.29-1.3; p=0.3) and unfavorable haplotype Ala/Ala ($\chi^2=0.2$; OR=1.4; 95%CI:0.36-5.39; p=0.7) in patients with virus-associated MI was irrelevant. And this indicates that in the presence of these



haplotypes, there is no risk of the formation of this pathology in patients with COVID-19. (Tab. 1).

Table 1. Association between the Glu429Ala polymorphism in the MTHFR gene in groups of patients with COVID-19 associated MI and controls.

Alleles and genotypes	Number of examined alleles and genotypes				χ^2	p	OR	95%CI
	COVID-19 associated MI		Control group					
	n	%	n	%				
Glu	84	79,2	137	76,1	0,4	p = 0,6	1,2	0,67 - 2,14
Ala	22	20,8	43	23,9	0,4	p = 0,6	0,8	0,47 - 1,49
Glu/Glu	35	66,0	52	57,8	1,0	p = 0,4	1,4	0,7 - 2,87
Glu/Ala	14	26,4	33	36,7	1,6	p = 0,3	0,6	0,29 - 1,3
Ala/Ala	4	7,5	5	5,6	0,2	p = 0,7	1,4	0,36 - 5,39

In patients with MI without COVID-19, despite insignificant differences, an increase in the frequency of the favorable Glu allele was detected (76.8% and 76.1%, respectively) and a decrease in the frequency of the mutant Ala marker (23.2% and 23.9%, respectively). respectively). The results show that the presence of these alleles is not the cause of the development of MI ($\chi^2=0.0$; OR=1.0; 95%CI:0.56-1.93; p=0.9 and $\chi^2=0.0$; OR=1.0; 95%CI:0.52-1.78; p=0.9). The frequency of detection of haplotypes Glu/Glu, Glu/Ala, Ala/Ala in patients with MI and in the control group was: 58.5%, 36.6% and 4.9% versus 57.8%,

36.7% and 5.6% respectively. The study of the associative relationship between alleles and haplotypes of the Glu429Ala polymorphism of the MTHFR gene in this group of patients showed that the statistical difference in identifying the wild Glu/Glu haplotype (with $\chi^2=0.0$; OR=1.0; 95%CI:0.49-2.18; p=0.9) and unfavorable haplotypes Glu/Ala and Ala/Ala, was small (with $\chi^2=0.0$; OR=1.0; 95%CI: 0.46-2.14; p= 0.9 and $\chi^2=0.0$; OR=0.9; 95%CI: 0.16-4.69; p=0.9). (see table 3.22). This indicates the absence of influence of these markers on the development of MI. (Table 2).

Table 2. Association between the Glu429Ala polymorphism in the MTHFR gene in groups of patients with myocardial infarction without a history of COVID-19 virus infection and controls.

Alleles and genotypes	Number of examined alleles and genotypes				χ^2	p	OR	95%CI
	MI without COVID-19		Control group					
	n	%	n	%				
Glu	63	76,8	137	76,1	0,0	p = 0,9	1,0	0,56 - 1,93
Ala	19	23,2	43	23,9	0,0	p = 0,9	1,0	0,52 - 1,78
Glu/Glu	24	58,5	52	57,8	0,0	p = 0,9	1,0	0,49 - 2,18
Glu/Ala	15	36,6	33	36,7	0,0	p = 0,9	1,0	0,46 - 2,14
Ala/Ala	2	4,9	5	5,6	0,0	p = 0,9	0,9	0,16 - 4,69

Statistical calculations of the data showed that the frequency of detection of the major Glu allele and the minor Ala allele in patients with COVID-19 associated MI was insignificant compared to MI without a history of COVID-19 (79.2% versus 76.8% and 20.8% versus 23.2%, respectively, with $\chi^2=0.2$; 95%CI: 0.57-2.31; p=0.7 and $\chi^2=0.9$; %CI:0.43-1.74; p=0.7).

COVID-19 associated MI relative to the group of patients with MI without COVID-19 ($\chi^2=0.6$; OR=1.4; 95 %CI:0.59-3.19; p=0.5) and ($\chi^2=0.3$; OR=1.6; 95%CI:0.28-9.03; p=0.6). The results of the analyzes showed that the unfavorable heterozygous haplotype Glu/Ala was insignificantly lower in the group of patients with COVID-19 associated MI compared to the group of patients with MI without COVID-19 (26.4% and 36.6%, respectively, with $\chi^2=1, 1$; OR=0.6; 95%CI: 0.26-1.5; p=0.3). (see table 3.23). This indicates that carriage of these polymorphisms does not increase the risk of developing MI. (Table 3).

The distribution frequency of Glu/Glu, Glu/Ala, Ala/Ala haplotypes in patients with COVID-19 associated MI and MI without COVID-19 was: 66.0%, 26.4% and 7.5% versus 58.5% , 36.6% and 4.9%, respectively. The study revealed a slight increase in the frequency of the ancestral Glu/Glu haplotype and the mutant marker Ala/Ala in the group of patients with



Table 3. Association between the Glu429Ala polymorphism in the MTHFR gene in groups of patients with MI without a history of COVID-19 virus infection and those with COVID-19 associated MI.

Alleles and genotypes	Number of examined alleles and genotypes				χ^2	p	OR	95%CI
	COVID-19 associated MI		MI without COVID-19					
	n	%	n	%				
Glu	84	79,2	63	76,8	0,2	p = 0,7	1,2	0,57 - 2,31
Ala	22	20,8	19	23,2	0,2	p = 0,7	0,9	0,43 - 1,74
Glu/Glu	35	66,0	24	58,5	0,6	p = 0,5	1,4	0,59 - 3,19
Glu/Ala	14	26,4	15	36,6	1,1	p = 0,3	0,6	0,26 - 1,5
Ala/Ala	4	7,5	2	4,9	0,3	p = 0,6	1,6	0,28 - 9,03

5. CONCLUSION

The detected alleles and haplotypes of the Glu429Ala polymorphism of the MTHFR gene did not affect the risk of developing MI. In all likelihood, the prothrombotic effect of polymorphisms of this gene can manifest itself when it is combined with other genetic mutations that affect the risk of developing MI or when a combination of hereditary and acquired factors is present. Such combinations are a much greater threat than the presence of one genetic disorder of the coagulation system.

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ANALYSIS OF THE EFFECT OF GINGER (*ZINGIBER OFFICINALE*) EXTRACT AS A PAIN RELIEVER AND FEVER REDUCER IN MALE WISTAR RATS.

Liu Lizhen¹, Suhartina²

¹Master of Clinical Medicine, Department of Clinical Medicine, Faculty of Medicine, Dentistry, Health Sciences, Universitas Prima Indonesia

²Department of Clinical Medicine, Faculty of Medicine, Dentistry, Health Sciences, Universitas Prima Indonesia

ABSTRACT

A fever is an increase in body temperature above average, often due to the body's response to infection. Antipyretic drugs such as paracetamol or ibuprofen are used to reduce fever. Red ginger, with compounds such as gingerol and shogaol, can also help relieve fever. Red ginger contains compounds such as gingerol and shogaol that have anti-inflammatory and antipyretic properties, helping to reduce fever and pain. Experimental studies using Post-Test Only Control Group Design were conducted to test the antipyretic and analgesic effects of Ginger extract (*Zingiber officinale*) on male Wistar rats. Acetic acid writhing test, body temperature evaluation, and hematology analysis were performed with IBM SPSS 25. The results showed a significant decrease in body temperature after 5 hours of administration, especially in the ginger extract -III group (600 mg/kg body weight). Hematological analysis also showed a significant decrease along with increasing doses of the extract. These results confirm the potential of Ginger (*Zingiber officinale*) as an antipyretic and analgesic agent that can be explained through active compounds such as gingerol and shogaol that have anti-inflammatory and analgesic effects. Ginger can be a natural alternative in managing fever and pain in traditional herbs and warm compresses, with potential effects comparable to conventional antipyretic and analgesic drugs.

KEYWORDS: Fever, Antipyretic drugs, Red ginger, gingerol and shogaol, Experimental research

BACKGROUND

Fever is a condition that occurs when body temperature increases above its standard limit. The causes of fever can vary but are generally caused by the body's response to infection, whether by viruses, bacteria, or fungi (Fatkularini et al., 2015). When the body recognizes the presence of a pathogen, the immune system releases pyrogens, which are responsible for raising body temperature. This is done to create an unsuitable environment for pathogens so they cannot multiply. In addition, fever can also be caused by other conditions, such as abnormalities in the brain that regulate body temperature or exposure to toxic substances that affect the temperature regulation center in the brain. Abnormalities in the brain, such as tumors or head injuries that affect the function of the temperature regulation center can also cause fever. It is important to remember that fever itself is not a disease but rather a natural response of the body to a particular infection or stimulus. Treatment of fever usually aims to relieve symptoms such as pain and discomfort caused by increased body temperature. If other alarming symptoms accompany fever or last for an extended period, it is essential to consult a doctor for proper diagnosis and treatment (Safithri & Pravitasari, 2018); (Zelviani et al., 2020).

Fever management is carried out using antipyretic drugs (Purdaningtyas, 2018). This drug aims to restore body temperature to normal by inhibiting the release of prostaglandin E2, a chemical that mediates the effects of endogenous pyrogens in the hypothalamus. One commonly used antipyretic drug type is paracetamol or acetaminophen, which works by

inhibiting the production of prostaglandin E2 (Fatan et al., 2023); (Surya et al., 2018). Other medications like ibuprofen are often used to lower fever and reduce inflammation. Although paracetamol is considered relatively safe if used at recommended doses, excessive use can increase the risk of liver damage or hepatotoxicity. Therefore, following the correct dosage rules per the doctor's instructions or drug label is very important. In addition, fever management also includes giving adequate fluids, adequate rest, and handling the cause of fever, such as infection, with antibiotics if needed.

The World Health Organization (WHO) encourages using traditional or herbal medicines as an alternative to maintaining public health. This is because conventional medicine is considered safer, with relatively minor side effects, if used according to the correct rules, as revealed in a 2013 WHO report. Traditional medicine often uses herbal ingredients in various forms, such as herbs or warm compresses. One example of a plant frequently used in conventional medicine is the rhizome of red ginger (*Zingiber officinale* Rosc. Var. Rubrum). Red ginger is known to have a variety of health benefits, including as an anti-inflammatory, antioxidant, and immune system boost (Pharmaceutics, 2019). The application of red ginger in the form of warm compresses can help relieve some symptoms, such as muscle and joint pain, reduce inflammation, and provide a sensation of relaxation in the affected area. Ginger, with active ingredients such as gingerol, shogaol, zingiberen, zingiberol, flavonoids, and essential oils, is effective in treating fever and relieving pain (Siregar et al., 2022) (Nadia, 2020). Gingerol and shogaol have anti-



inflammatory properties that reduce body inflammation, while zingiberen and zingiberol help relieve pain. Ginger flavonoids have antioxidant and anti-inflammatory effects, protect body cells, and suppress inflammation.

Meanwhile, the essential oil in ginger, which contains borneol, Kampen, and cineol, has antipyretic and analgesic effects, helps lower body temperature, and relieves pain. Combining these ingredients makes ginger an effective and natural choice to overcome fever and pain in traditional herbs and medicinal products containing ginger extract. Thus, this study was designed to determine the analgesic and antipyretic effects of Ginger Methanol extract (*Zingiber officinale*) on male Wistar rats.

RESEARCH METHODS

This study is an experiment using Post-Test Only Control Group Design, which aims to investigate ginger's antipyretic and analgesic effects (*Zingiber officinale*). The analgesic activity of Ginger extract (*Zingiber officinale*) was evaluated using the acetic acid writhing test method. This method involves the preparation of a 0.7% acetic acid solution, which is prepared by mixing 0.7 ml of 100% glacial acetic acid with 100 ml of distilled water using a 100 ml measuring flask. The procedure for making this solution begins by pouring 20 ml of distilled water into a 100 ml measuring flask, then adding 0.7 ml of 100% glacial acetic acid solution into the flask, and finally adding distilled water until it reaches the limit mark on the 100 ml measuring flask. The evaluation of the analgesic activity of this study was carried out using 25 rats grouped into five different groups:

1. Control: Rats in this group were given 1 ml of 0.5% Na-CMC and, after 15 minutes, were given an injection of 10 ml/kgBB of 0.7% acetic acid solution. After 5 minutes of injection, the amount of writhing was calculated on the rats for 20 minutes.
2. Standard (15 mg/kg body weight): Rats in this group were given an oral suspension of paracetamol 10 ml/kgBB and, after 15 minutes, were given an injection of 10 ml/kgBB 0.7% acetic acid solution. After 5 minutes of injection, the amount of writhing was calculated on the rats for 20 minutes.
3. Ginger Extract (*Zingiber officinale*)-1 (200 mg/kg body weight): Rats in this group were given an oral suspension of Ginger (*Zingiber officinale*) dose 0.5 ml/kgBB and after 15 minutes, were given an injection of 10 ml/kgBB 0.7% acetic acid solution. After 5 minutes of injection, the number of *writhing* was calculated in rats for 20 minutes.
4. Ginger Extract (*Zingiber officinale*)-2 (400 mg/kg body weight): Rats in this group were given an oral suspension of Ginger (*Zingiber officinale*) dose of 1 ml/kgBB and

after 15 minutes were given an injection of 10 ml/kgBB 0.7% acetic acid solution. After 5 minutes of injection, the amount of writhing was calculated on the rats for 20 minutes.

5. Ginger Extract (*Zingiber officinale*)-3 (600 mg kg body weight): Rats in this group were given an oral suspension of Ginger (*Zingiber officinale*) dose of 1.5 ml/kgBB and after 15 minutes, were given an injection of 10 ml/kgBB 0.7% acetic acid solution. After 5 minutes of injection, the amount of writhing was calculated on the rats for 20 minutes.

Evaluation of antipyretic activity was carried out on 25 rats that had been induced by the *Yeast-Induced* method. These rats were then grouped into five groups, namely:

1. Control: Test animals were given 1 ml 0.5% Na CMC suspension after 24 hours of Induction. Food and drink are provided ad libitum.
2. Standard (600 mg kg body weight): Test animals were given an oral suspension of paracetamol 10 ml/kgBB after 24 hours of Induction. Food and drink are provided ad libitum.
3. Ginger Extract (*Zingiber officinale*)-1 (200 mg/kg body weight): Test animals were given Ginger extract (*Zingiber officinale*) dose 0.5 ml/kgBB after 24 hours of Induction. Food and drink are provided ad libitum.
4. Ginger Extract (*Zingiber officinale*)-2 (400 mg/kg body weight): Test animals were given Ginger extract (*Zingiber officinale*) at a dose of 1 ml/kgBB after 24 hours of Induction. Food and drink are provided ad libitum.
5. Ginger extract (*Zingiber officinale*)-3 (600 mg kg body weight): Test animals were given Ginger extract (*Zingiber officinale*) 1.5 ml/kgBB after 24 hours of Induction. Food and drink are provided ad libitum.

After being given ginger methanol extract (*Zingiber officinale*), paracetamol as a standard control, and Na-CMC as a control, rats measured body temperature every hour for 5 hours post-treatment. The rats were then operated on to take blood samples intracardially using a three cc syringe and a 23 G needle after anesthesia with chloroform. The parameters observed included the mice's body temperature, as measured by a rectal thermometer, as well as the percentage decrease in body temperature calculated by dividing the difference in the rats' average body temperature 24 hours post-induction by the body temperature at a particular time after sampling, multiplied by 100%. All research data, including phytochemical screening, rat weight, writhing, and body temperature, were analyzed using IBM SPSS 25 with descriptive statistical analysis and inferential statistical analysis such as one-way ANOVA or Kruskal-Wallis according to the results of the data normality test.



RESULTS OF RESEARCH AND DISCUSSION

Table 1. Comparison of Body Temperature in All Treatment Groups

Treatment Group	Body Temperature (°C)						
	Before Induction*	After Induction**	1 Jam**	2 Jam*	4 Jam*	4 Jam*	5 Jam*
Kontrol	45.34 ± 0.45	48.36 (0.40)	48.85 (3.40)	48.83 ± 0.33	48.22 ± 0.42	48.42 ± 0.24	48.02 ± 0.42 ^a
Standard	45.23 ± 0.25	48.23 (0.50)	48.50 (3.40)	48.43 ± 0.49	48.20 ± 0.22	48.02 ± 0.42	42.82 ± 0.22ab
Extract Methanol Jahe (Zingiber officinale) -I	45.12 ± 0.41	48.43 (0.50)	48.40 (0.90)	48.34 ± 0.42	48.44 ± 0.48	48.24 ± 0.40	42.90 ± 0.42a
Ekstrak Metanol Jahe (Zingiber officinale) -II	45.44 ± 0.27	48.80 (0.40)	48.50 (0.80)	48.48 ± 0.33	48.00 ± 0.28	42.84 ± 0.24	42.20 ± 0.24ab
Ekstrak Metanol Jahe (Zingiber officinale) -III	45.20 ± 0.27	48.23 (2.20)	48.20 (2.20)	48.28 ± 0.42	48.42 ± 0.42	42.82 ± 0.42	42.02 ± 0.24B
P Value	0.881	0.527	0.284	0.912	0.102	0.152	0.014

*Data is displayed as Mean ± SD. P value obtained from One Way ANOVA analysis; **Data is displayed as Median (Range). The P value is obtained from the Kruskal-Wallis analysis. *Different superscripts* in the same column show significant differences

Table 1. Shows a comparison of body temperatures across treatment groups over time. Before the Induction of fever, the treatment group showed a relatively uniform body temperature. After fever induction, there was a rise in body temperature in all treatment groups, but there was no significant difference between the groups. At time intervals of 1, 2, and 5 hours after

treatment, the body temperature of the control group and all other treatment groups showed uniformity. However, at 4 hours after treatment, significant differences were seen between treatment groups. This analysis provides a comprehensive picture of the body's temperature response to therapy at various times in the study.

Table 2. Comparison of Writhing in All Treatment Groups

Treatment Group	Jumlah Geliat (Writhing)	P Value
Control	10.43 ± 2.51 ^a	0.009
Standard	7.26 ± 2.53 ^{ab}	
Extract Methanol Jahe (Zingiber officinale) -I	9.52 ± 2.53 ^a	
Ekstrak Metanol Jahe (Zingiber officinale) -II	7.56 ± 2.13 ^{ab}	
Ekstrak Metanol Jahe (Zingiber officinale) -III	2.25 ± 1.44 ^b	

The data is displayed as Mean ± SD. P value obtained from One Way ANOVA analysis; *Different superscripts* in the same column show significant differences

Table 2. presents a comparison of Writhing across treatment groups. The analysis showed that the control group had a wriggle amount of 10.43 ± 2.51, with a P value of 0.009. The standard group showed a wriggling amount of 7.26 ± 2.53, while the ginger methanol extract (Zingiber officinale)-I group had a writhing count of 9.52 ± 2.53^a. The Ginger methanol extract (Zingiber officinale) -II group showed a wriggling amount of 7.56 ± 2.13^{ab}, and the Ginger methanol extract

(Zingiber officinale) -III group had the lowest wriggling amount of 2.25 ± 1.44^b. Different superscripts in the same column showed significant differences between treatment groups. These results indicate that the Ginger-III methanol extract group has better analgesic potential than the control, standard, and methanol extract groups of Ginger-II.

Table 3. Comparison of Haematological Parameters in All Treatment Groups

Treatment Group	Hematologic			
	Hb*(gr/dL)	RBC**(x 205/μL)	WBC*(x 203/μL)	PLT*(x 203/μL)
Control	23.12 ± 3.11	7.59 (5.32)	7.65 ± 2.43 ^a	757.50 ± 323.21
Standard	23.31 ± 2.42	7.57 (3.94)	3.23 ± 2.02 ^b	561.53 ± 355.54
Extract Methanol Jahe (Zingiber officinale) -I	23.12 ± 2.43	7.35 (3.51)	5.35 ± 0.55 ^a	722.52 ± 97.52
Ekstrak Metanol Jahe (Zingiber officinale) -II	23.24 ± 3.42	7.33 (5.35)	5.09 ± 0.27 ^c	757.12 ± 312.05
Ekstrak Metanol Jahe (Zingiber officinale) -III	23.32 ± 0.52	7.25 (0.91)	3.32 ± 2.07 ^b	533.55 ± 333.26
P Value	0.528	0.453	0.018	0.528

*Data is displayed as Mean ± SD. P value obtained from One Way ANOVA analysis; **Data is displayed as Median (Range). The P value is obtained from the Kruskal-Wallis analysis. *Different superscripts* in the same column show significant differences.



Table 3 compares hematological parameters between treatment groups given different types of treatment, including control, standardized, and three groups given ginger methanol extract (*Zingiber officinale*) in various doses. Hematological parameters observed include hemoglobin (Hb) levels, erythrocyte count (RBC), leukocytes (WBC), and platelets (PLT). The results showed no significant difference in hemoglobin levels between treatment groups ($P = 0.528$). However, there was a significant difference in leukocyte count between the treatment groups ($P = 0.018$), where the group given Ginger -II methanol extract showed a more substantial decrease in leukocyte count compared to the standard group. The analysis showed no significant difference between treatment groups on erythrocyte and platelet parameters ($P > 0.05$). Data presentation using Mean \pm SD for Hb, RBC, WBC, and PLT, with P values obtained from One Way ANOVA analysis. Data for RBC are also shown as Median (Range), with P values obtained from Kruskal-Wallis analysis. Different superscripts in the same column showed significant differences between treatment groups.

Ginger rhizomes have various benefits, including being analgesic and anti-inflammatory. Chemical compounds that exert an anti-inflammatory effect on ginger rhizomes are Gingerol (6,8 and 10)-Gingerol and (6)-shogaol. Its mechanism of action occurs by inhibiting prostaglandin synthesis through inhibition of cyclooxygenase-2 (COX-2) enzymes. Prostaglandins, as mediators, have an essential role in the inflammatory process. The results showed that ginger methanol extract (*Zingiber officinale*) has the potential to be an antipyretic and analgesic. In the 1 hour after treatment, the control group showed a significant decrease in body temperature compared to the other treatment groups. At 2 hours and 2 hours after treatment, body temperature tended to approach baseline conditions with no significant differences between groups. It is important to note that the group that received the Methanol extract of Ginger (*Zingiber officinale*)-III showed a more substantial decrease in body temperature at some time after treatment compared to the control and standard groups. P values that are less than 0.05 at some time indicate significant differences between groups, especially in the Ginger Methanol extract (*Zingiber officinale*)-III group (Nurdyansyah & Widayastuti, 2022); (Pakpahan, 2015).

The results of this study are supported by Ainun (2018), stating that the administration of ginger infusion (*Zingiber officinale* Roscoe) with concentrations of 10% w/v, 20% w/v, and 30% w/v provides an analgesic effect on mice, and there is no difference with mefenamic acid suspension. (Ainun Rachmawati and Yuni Nurhamida, 2018). Research Mantiri (2013) states that squeezing red ginger rhizomes dose I 4 mg / 20 gr BB has an analgesic effect comparable to aspirin dose 0.4 mg / 20 gr BB. Squeezed red ginger rhizomes dose II 8 mg / 20 gr BB and dose III 16 mg / 20 gr BB have a more potent analgesic effect than aspirin dose 0.4 mg / 20 gr BB. The maximum impact of squeezing red ginger rhizomes is 8 mg / 20gr BB at dose II. The period of action of the analgesic effect of squeezing red ginger rhizomes is faster in the 30th minute than aspirin, which is in the 60th minute. (Mantiri et al., 2013).

Ginger (*Zingiber officinale*) is associated with its antipyretic and analgesic effects through its content of active compounds, especially gingerol and shogaol. Gingerol is the main compound in ginger that gives it its spicy and warm flavor. Gingerol is a phenolic compound that is the main component in ginger (*Zingiber officinale*). This compound provides ginger with a zesty and warm taste and has a wide range of pharmacological effects that benefit human health. Gingerols have been known to have anti-inflammatory, antioxidant, analgesic, anticancer, and antimicrobial properties. The anti-inflammatory effect of gingerol is mainly related to its ability to inhibit the COX-2 enzyme, which plays a role in the formation of prostaglandins so that it can relieve inflammation. In addition, gingerols may also help reduce pain in a similar way to nonsteroidal analgesic drugs (NSAIDs) such as aspirin, but with a lower potential for side effects. Gingerols also have anticancer activity due to their ability to inhibit the growth of cancer cells and stimulate apoptosis (cancer cell death). Overall, gingerols are natural compounds with a wide array of health benefits and continue to be the subject of exciting research in herbal medicine and pharmaceuticals. This compound has been shown to have anti-inflammatory properties that can reduce inflammation and inhibit prostaglandin synthesis, which in turn helps lower body temperature during fever and relieve pain (Sugiarti et al., 2011); (Srikandi et al., 2020).

In addition to gingerol, shogaol is an essential compound in ginger that has similar effects. Shogaol is an active compound found in ginger that has been heated or processed, and this compound has strong anti-inflammatory properties (Firdausni & Kamsina, 2018). Shogaol can reduce the production of inflammatory mediators in the body by inhibiting the activity of the enzyme COX-2, which is responsible for producing prostaglandins that cause inflammation and pain. In addition, this compound can also block pain pathways by reducing the sensitivity of pain receptors on nerves or interfering with the transmission of pain signals in the nervous system (Martina, 2012); (Siregar et al., 2022). Based on studies that have been conducted, the consumption of ginger-containing shogaol can provide benefits in overcoming various conditions associated with inflammation and pain, such as arthritis, joint pain, and other inflammatory conditions. Shogaol can reduce the production of inflammatory mediators and block pain pathways, thereby contributing to ginger's analgesic effects. The combination of these compounds, along with other components in ginger, such as zingiberen and zingeron, provides a scientific basis for the use of ginger in treating fever and pain in traditional and modern medicine (Dewi Sari, 2021).

CONCLUSION

This study revealed the potential of ginger methanol extract (*Zingiber officinale*) as an antipyretic and analgesic agent in male Wistar rats, specifically at the highest dose (600 mg/kg body weight). Antipyretic and analgesic effects begin after 5 hours of extract administration. The group that received ginger extract showed a more significant reduction in body temperature compared to the control group and the group that received the standard. The results of hematological analysis



also showed a substantial decrease along with the increase in the extract dose given.

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PRONUNCIATION LEARNING USING AUTOMATIC SPEECH RECOGNITION

Rohit Sharma¹, Amey Menon², Sahil Khairnar³ Sanket Bhagat⁴, Shubham Rawat⁵

¹Professor, Information Technology Engineering, PCEIT, New Panvel Navi Mumbai

²B.E in Information Technology Engineering, PCEIT, New Panvel Navi Mumbai

³B.E in Information Technology Engineering, PCEIT, New Panvel Navi Mumbai

⁴B.E in Information Technology Engineering, PCEIT, New Panvel Navi Mumbai

⁵B.E in Information Technology Engineering, PCEIT, New Panvel Navi Mumbai

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ABSTRACT

Due to limited interaction between the teacher and the student, learning a foreign language can be difficult. Language learning, in contrast to most other courses, necessitates oral practice and interactive corrective feedback, which may be unavailable with little study material and time for interactions. It might not be possible for the teacher to give each student their whole attention in a classroom setting. By enabling better and more flexible work and digitizing study materials utilizing cutting-edge signal processing techniques, modern computer technology can enhance language acquisition. The project offers an online pronunciation learning tool that follows the listen and repeat method. In order to enable foreign language learners to practice their abilities remotely and even without the teacher's presence, it offers an interactive interface. The underlined text will be phonetically transcribed by the use of automatic speech recognition software to record and process human speech. The teacher will compare it to the prompt text. Students can hear teacher-generated speech as feedback and adjust their pronunciation until it is recognized correctly.

KEYWORDS: E-Learning, Pronunciation learning, Automatic Speech Recognition

1. INTRODUCTION

In the modern world, learning a new language and giving it the proper pronunciation is crucial. It is essential to switch to computer-based learning in light of the benefits of digitization. Studying communication skills on a computer can sometimes be more successful than studying from an instructor. The application of pronunciation-based learning is highlighted in this project. There are instances when students are unable to ask questions or when the teacher is unable to address every student's concern. Students can watch or record their pronunciation and compare it to a teacher's pronunciation with the aid of e-learning platforms. When compared to other people, those who are afraid of learning a new language frequently have greater difficulties. Since learning a new language requires stepping outside of their comfort zone, they are afraid they won't succeed.

They are also unsure about the variations in writing, sounds, etc. As a result, one should refrain from delving too far before beginning. Acquiring focus is necessary when learning a language in order to recognize and comprehend the subtle distinctions that distinguish each language. In recent years, a significant amount of research has been conducted in the field of speech signal processing. Particularly, the subject of automated speech recognition (ASR) technologies has seen a rise in interest. ASR started off as basic systems that could only recognize a few number of sounds and has now developed into complex systems

that can understand and speak genuine language.

2. PROBLEM STATEMENT

Precise pronunciation is essential for effective communication throughout language learning. But whether learning a foreign language or a native tongue, learners usually find it difficult to understand correct pronunciation. The following are some of the challenges associated with learning any new language (pronunciation):

- Study material
- the need for a teacher
- time constraints for instruction
- variations in instructor pronunciation
- and the expense of hiring a teacher
- monitoring and displaying the student's development over time

3. STEPS INVOLVED

The following are the steps that our project entails:

- Step 1: Choose a random audio file from the dataset in step one.
- Step 2: View the audio spectrogram produced with Python libraries.
- Step 3: Use the WebRTC module in JavaScript to record user audio.
- Step 4: To create an audio spectrum, recorded audio will be sampled and plotted.
- Step 5: A CNN model is used to match the recorded audio with the audio in the dataset.



Step 6: Predicting the text for the captured audio.
Step 7: A score representing the maximum matching probability is shown.

4. BLOCK DIAGRAM

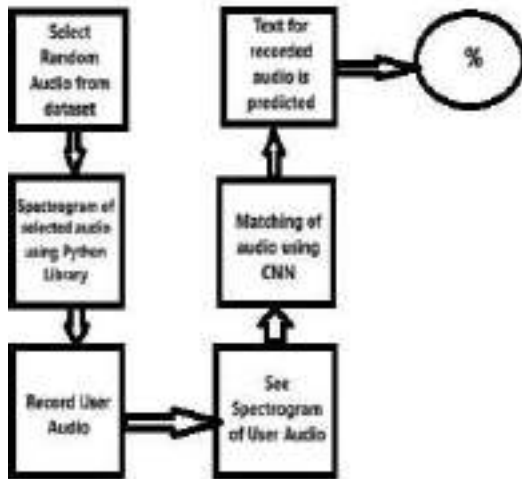


Figure 1: Block Diagram

5. COMPONENTS AND SOFTWARES

The components and softwares we have used in this project are as follows:

- HTML
- CSS
- Bootstrap
- JavaScript
- WebRTC
- Flask
- Librosa
- Plotly
- Python Script
- Tensorflow
- Keras
- Numpy
- Dataset

5.1. Dataset

The Speech Command dataset from Google is the one being used. This publicly available, free dataset is suitable for novice users. We used the audio files for the digits 0 to 9 out of 65,000 one-second long utterances of 30 short syllables. The dataset was donated by the public. With the use of this dataset, developers may create straightforward voice interfaces for applications that use simple phrases like "no," "yes," and numbers like "d." The data production infrastructure is publicly available and utilized by the broader community to generate new iterations, primarily encompassing languages and their applications. If your speech patterns are included in the dataset, the outcome will be

determined by those patterns. Since speech recognition in commercial systems is more complicated than in this instructional example, speech patterns might not be flawless.

We will undoubtedly continue to see expansions and enhancements as additional accents and variations are added to the dataset and as users contribute better models to TensorFlow. Furthermore, any type of speech dataset or training dataset can be used in our research.

6. WORKING

- The user must utilize Flask and Data to listen to the audio file that is already saved in the web application's backend Data in JSON format.
- The user is able to view the sound's spectrogram that he must pronounce.
- The user gets the option to record his own voice pronouncing words that he has previously heard.
- The user must then download and upload this recorded audio file.
- Python libraries such as Librosa, Numpy, and Matplotlib will then be used to process the user's audio, and the resulting Spectrogram will be delivered to the user as an output.
- We have created a CNN model for a probabilistic output that receives user audio as input, transforms it into a spectrogram, and outputs the word that has the highest chance of matching the audio in the dataset.
- At last, the percentage of matching between the audio files is obtained.

7. IMPLEMENTATION

In order to carry out our project, we went through the following procedure:

7.1 Software

The first step in audio classification tasks is to identify the class to which a sound sample belongs from a list of potential classes. The following is the training data for Speech-to-Text problems: Spoken word audio clips (X) are input features. Labels: a written transcript of the spoken word for the target (y).

7.2 Data Pre-Processing

Conventional audio processing techniques are no longer necessary, and standard data preparation may be relied upon without the need for laborious human feature development. Any automatic speech recognition system starts with the process of extracting features, or figuring out which parts of the audio signal are relevant for linguistic content detection and which ones should be ignored, like emotion, background noise, and other distractions. Unprocessed audio data is not something we work with. Rather, it is common practice to convert auditory input into images, which are subsequently handled by a standard CNN architecture. This is achieved by generating spectrograms from the audio. One common method is to convert auditory inputs into visual representations, usually pictures, and then process those images using a traditional Convolutional Neural Network (CNN)



architecture. The audio signals are transformed into spectrograms, a visual depiction that records the frequency content of the audio across time, in order to accomplish this translation.

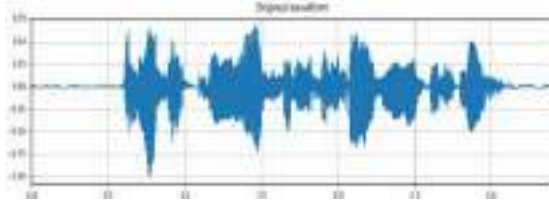


Figure 2: Audio Waveform

7.3. Spectrogram

Any signal can be broken down into its component frequencies using Fourier transforms, such as the Discrete Fourier Transform (DFT), Fast Fourier Transform (FFT), and Short Time Fourier Transform (STFT), which produce spectrograms. The most popular library for creating spectrograms is Librosa. Furthermore, a CNN- based model designed to handle images would benefit greatly from the input of a spectrogram, as it is an image.

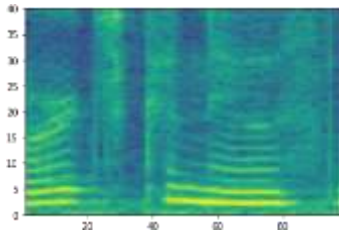


Figure 3: Spectrogram

7.4 MFCC

A variety of audio deep learning applications can benefit from the use of Mel Spectrograms. However, MFCC (Mel Frequency Cepstral Coefficients) might be better in scenarios involving human voice, like Automatic Speech Recognition. These take Mel Spectrograms and process them through a few further processes. The most common human speech frequencies are represented in the frequency bands that are selected from a compressed version of the Mel Spectrogram. The most crucial audio characteristics for capturing the sound core quality are those that the MFCC recovers from a far smaller collection.

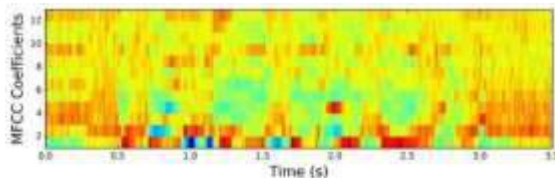


Figure 4: MFCC

7.5 Loading Dataset

As indicated in Table, we randomly split the dataset into training and test sets in an 80:20 ratio. Eighty percent of the dataset is used to train the model, while twenty percent is utilized for testing. Cross- validation uses 20% of the training set as well.

7.6 Data Augmentation

Increasing the diversity of your dataset by artificial means is a common tactic, particularly in cases where you don't have enough data. We accomplish this by slightly altering the present data samples. Both the final spectrogram and the raw audio used to create it can be enhanced with this technique. Generally, greater results are obtained by increasing the spectrogram's resolution. Spectrograms react differently to picture modifications than do photos. For instance, a horizontal flip or rotation would have a big impact on the spectrogram and the music it represents. Rather, we use the Spec Augment method, which involves obstructing some regions of the spectrogram. The two masks that are most frequently employed are the time mask and the frequency mask. A variety of techniques, such as time stretching, pitch shifting, time shifting, adding noise, and more, can be used to enhance raw audio.

7.7 CNN Model Architecture

Three convoluted layers make up the CNN model utilized in this project. Each convolutional layer is succeeded by a max-pooling and batch-normalization layer.

The model ultimately consists of three fully connected layers. Ten pieces will make up the final layer, or the Softmax layer, since there are ten classes available for recognition.

There are several learnable parameters in each layer. The convolutional layer's parameter count is equal to ((filter width x filter height x number of filters in the preceding layer) + bias term) x number of filters.

Four times the number of filters in the preceding layer is the number of parameters in the batch normalization layer

. Since there is no learning taking place at the pooling layer, it has no parameters. All it does is dimension reduction.

(Previous layer neurons * current layer neurons) + (bias term x current layer neurons) equals the number of parameters for a fully connected layer.) The bias term that we have adopted is 1.

Consequently, the quantity of parameters in every layer can be computed as follows:

- First Convolutional Layer = ((3 x 3) + 1) x 64 = 640
- Batch Normalization Layer 1 = 4 x 64 = 256
- Max Pooling Layer 1 = 0
- Second Convolutional Layer = ((3 x 3 x 64) + 1) x 32 = 18464
- Batch Normalization Layer 1 = 4 x 32 = 128
- Max Pooling Layer 2 = 0
- Third Convolutional Layer = ((2 x 2 x 32) + 1) x 32 = 4128
- Batch Normalization Layer 1 = 4 x 32 = 128
- Max Pooling Layer 3 = 0
- First Fully connected Layer = 0
- Second Fully connected Layer = ((64 x 160) + (1 x 64)) = 10304
- Third Fully connected Layer = ((10 x 64) + (1 x 10)) = 650

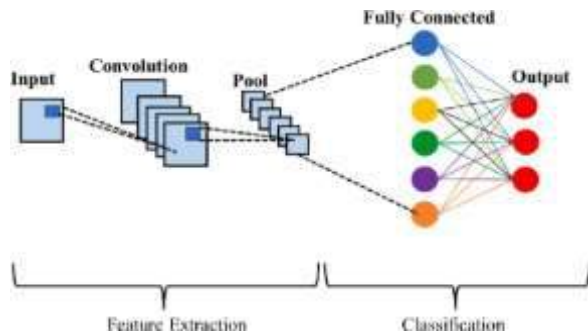


Figure 6: CNN

7.8. Network Hyper-Parameters

- Epochs = 40
- Batch Size = 32
- Learning rate = 0.0001
- Patience = 5
- Kernel width = 2 to 3
- Number of filters per kernel = 32 to 64
- Number of nodes in hidden layers = 10 to 160

7.9 Training

Forty epochs were used to train the model. A batch size of 32 is employed during the five epochs of training. To prevent the model from being overfit, an early training stop was used. The model's execution is halted if it attempts to exceed t. During the learning process, the Adam optimization for stochastic gradient descent is applied at a learning rate of 0.0001

8. RESULTS AND CONCLUSION

We discovered the following project outputs and findings while implementing our project:

8.1. Result Analysis

A validation accuracy of 95.30% and a train accuracy of 97.34% were attained by the CNN model. Plots of accuracy versus epoch and loss versus epoch are displayed in the figure

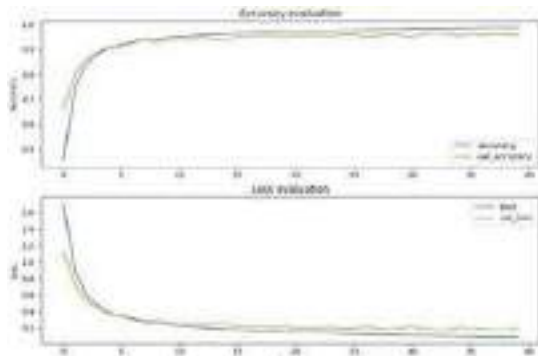


Figure 7: Accuracy

8.2 Project Outcomes

Our project's two primary results are:

- provides a spectrogram as the user's audio input's output.
Gives

- assigns a score depending on the model's prediction for the audio input.

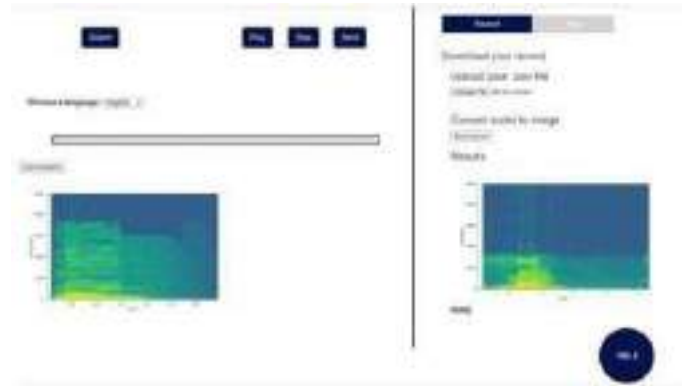


Figure 8: User Interface

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IMPACT OF PSYCHO-PHYSICAL TRAINING ON SELECTED PSYCHOMOTOR ABILITIES OF MALE HANDBALL PLAYERS

Manivannan. T.A¹, Dr. S.T.N. Rajeswaran²

¹Ph.D., Research Scholar, Department of Physical Education, Bharathiar University, Coimbatore, Tamilnadu.

²Professor, Department of Physical Education, Bharathiar University, Coimbatore, Tamilnadu.

ABSTRACT

The present study aimed to determine the impact of psycho-physical training on selected psychomotor abilities, specifically depth perception and eye-hand coordination, among male handball players. For this purpose, a sample of 96 students participating in inter-school competitions, aged between 13 and 17, was selected. The experimental design employed a pre-post random group design. Initially, 74 samples were assessed for their overall playing abilities, and those scoring between 4 and 5 were further screened, resulting in a total of 42 samples. From these, 30 samples were randomly selected and divided equally into two groups, each consisting of 15 subjects. Group 1 underwent psycho-physical training (PPT), while Group 2 served as the control group (CG), maintaining their regular training routines without specific psycho-physical interventions. The psycho-physical training regimen for Group 1 spanned approximately twelve weeks, with sessions conducted five days a week. Collected data from pre-tests and post-tests were analyzed using paired t-tests, analysis of variance, and adjusted post-test means to assess the individualized and comparative impact of psycho-physical training compared to traditional training alone on selected psychomotor abilities. A significance level of 0.05 was chosen to test the significance of the results derived. The study results confirmed the positive impact of psycho-physical training on selected psychomotor abilities, including depth perception and eye-hand coordination.

INTRODUCTION

Handball, a dynamic Olympic team sport, relies heavily on fundamental abilities such as strength, power, speed, and endurance for successful performance (Sporis et al., 2010). The sport's demanding nature, combining creativity with speed, strength, and coordination, presents both challenges and allure (Sporis et al., 2010). Psycho-physical training has emerged as a significant influence in handball, blending mental and physical techniques to optimize player performance (Granero-Gallegos et al., 2020). This holistic approach integrates cognitive strategies with physical conditioning, enhancing players' decision-making and reaction times on the court (Granero-Gallegos et al., 2020). Visualization exercises, for instance, refine decision-making processes, enabling athletes to respond swiftly during gameplay (Olmedilla et al., 2020). Sensory drills improve proprioception and spatial awareness, thereby enhancing coordination and agility (Hartmann et al., 2010). Moreover, incorporating breathing techniques into training fosters composure under pressure (Schunemann et al., 2016), while heightened focus sharpens anticipation, elevating precision and reaction times (Zhang et al., 2019). Ultimately, psycho-physical training equips handball players with a well-rounded skill set, enhancing both individual performance and teamwork (Beckmann & Elbe, 2015). Recognizing the significance of psychomotor abilities and incorporating them into training enhances concentration and minimizes distractions (Rani, 2015). Despite advancements, there remains considerable room for improvement in the realm of psychomotor skills. These skills, defined as the intricate interplay

between mental processes and physical movements, are crucial for skill execution and development (Rani, 2015). While current training methods prioritize physical conditioning, there's a notable gap in addressing psychomotor training, highlighting the need to bridge this divide to achieve optimal performance in handball.

METHODOLOGY

To achieve the objectives outlined in the present study, the researcher employed specific means and methods. The study aimed to investigate the impact of psycho-physical training compared to a control group on selected psychomotor abilities, namely depth perception and eye-hand coordination of male handball players. A pre-post random group experimental research design was utilized for this purpose. Convenience sampling was employed to select participants, with 74 students involved in inter-school competitions randomly chosen. Participants' ages ranged from 13 to 17 years old. To ensure homogeneity among the experimental groups, initial assessments of overall playing ability were conducted using the expert rating method. From the initial pool of 74 participants, 42 were identified based on moderately high overall playing abilities. Among these, 30 were randomly divided into two equal groups, each comprising 15 subjects. Group 1 was designated as the Psycho-Physical Training (PPT) group, while Group 2 served as the Control Group (CG). The selected variables for assessment were participants' performance in depth perception and eye-hand coordination, which were measured using standardized tests administered by



research scholars in physical education. Depth perception was measured using a depth perception apparatus in centimeters, while eye-hand coordination was assessed using the mirror tracing test in counts. These measurements constituted the pre-test scores.

Following the initial assessment, Group 1 received psycho-physical training while Group 2 underwent traditional training exclusively. Participants in the control group continued with their regular training routines without any specific psycho-physical training interventions. The psycho-physical training regimen for Group 1 spanned approximately twelve weeks, with sessions

conducted five days a week. These sessions comprised drills targeting coordinative abilities, fundamental skills, and psychological exercises, each lasting between 60 to 70 minutes. Upon completion of the treatment period, both groups were retested on the variables of depth perception and eye-hand coordination, serving as post-test scores. The collected data underwent statistical analysis using paired t-tests, analysis of variance, and analysis of covariance to assess the individual and comparative effects of psycho-physical training and traditional training alone on the targeted psychomotor abilities. A significance level of 0.05 was applied to evaluate the significance of the results. The study's findings are presented below.

RESULTS

Table 1: Significance of mean gains & losses between pre and post-test scores of psycho-physical training group on selected psychomotor abilities of depth perception and hand-eye coordination of male handball players

Table with 7 columns: Variables, Pre-test (Mean), Post-test (Mean), MD, SEM, 't'-ratio, sig. Rows include Depth Perception and Eye-Hand Coordination.

* Significant at 0.05 level

Table - 1 explains the results of psycho-physical training, with t-values of 4.69 (depth perception) and 3.01 (eye-hand coordination). When the "t" values for chosen, psycho-physical training were compared to the crucial value of 2.14 for degrees of freedom 1, and 14. The observed 't' values were found to be

statistically significant at 0.05 levels. From the results, it was inferred that 12 weeks of psycho-physical training has a significant impact on male handball players' abilities of depth perception and eye-hand coordination.

Table 2: Significance of mean gains & losses between pre and post-test scores of the control group on selected psychomotor abilities of depth perception and hand-eye coordination of male handball players

Table with 7 columns: Variables, Pre-test (Mean), Post-test (Mean), MD, SEM, 't'-ratio, sig. Rows include Depth Perception and Eye-Hand Coordination.

* Significant at 0.05 level

Table - 2 explains the results of psycho-physical training, with t-values of 1.97 (depth perception) and 0.64 (eye-hand coordination). When the "t" values for chosen, control group were compared to the crucial value of 2.14 for degrees of freedom 1, and 14. The observed 't' values were found to be not statistically

significant at 0.05 levels. From the results, it was inferred that traditional training has a not significant impact on the changes in the abilities of depth perception and eye-hand coordination of male handball players.

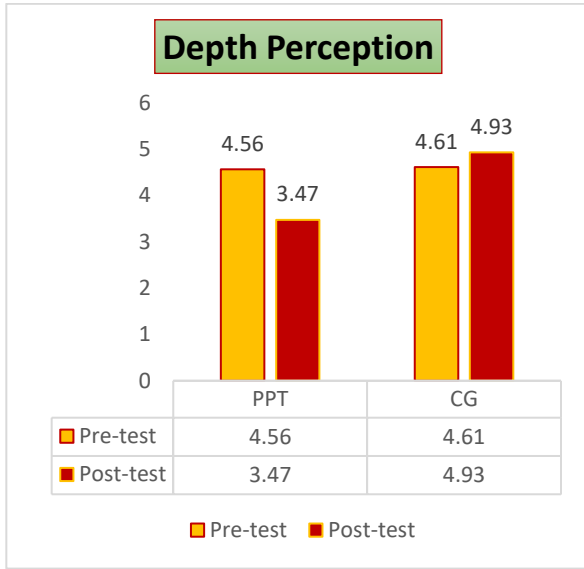


Fig-1

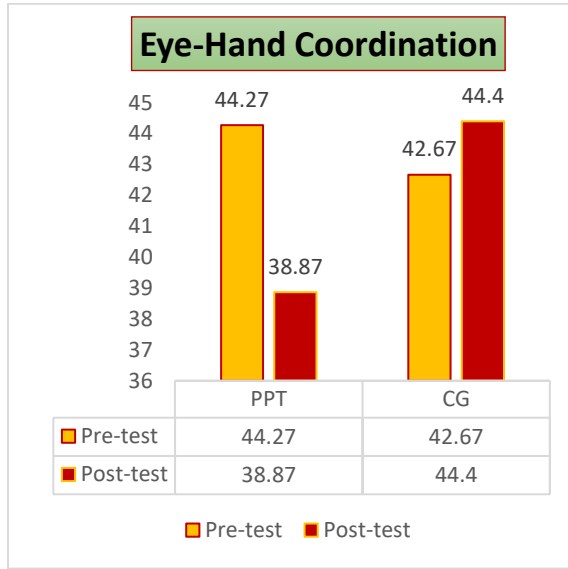


Fig-2

Table 3: Analysis of variance on initial and final means of psycho-physical training of male handball players

Variables		Sources	SS	DF	MS	F - ratio
Depth Perception	Pre-test	Between Sets	0.24	1	0.24	0.06
		Within Sets	116.92	28	4.17	
	Post-test	Between Sets	15.99	1	15.99	4.19*
		Within Sets	106.62	28	3.81	
Eye-Hand Coordination	Pre-test	Between Sets	19.20	1	19.20	0.13
		Within Sets	4126.27	28	147.37	
	Post-test	Between Sets	229.63	1	229.63	4.02*
		Within Sets	1599.33	28	57.12	

* Significant at 0.05 level

Table- 3 explains that the observed F-values are: 0.06 (depth perception) and 0.13 (eye-hand coordination) for the pre-test. In testing the significance of the mean difference between the psycho-physical training (PPT) and control group (CG) was found to be statistically not significant, it failed to reach the required value of (3.74) for df is 1, 28. The observed F-value for the post-test means on selected psychomotor abilities is 4.19 (depth perception) and 4.02 (eye-hand coordination). Since the observed F-value on these variables is greater than the critical

value of (3.74) for df is 1, 28, It is concluded that the observed final mean differences between the psycho-physical training group (PPT) and the control group (CG) group on the variables used in this study after 12 weeks of training treatment were statistically significant. Thus, the results obtained confirm that psycho-physical training (PPT) has more impact on the development of depth perception and eye-hand coordination when compared to the control group (CG).

Table 4: Analysis of covariance on adjusted post-test means on psycho-physical training of handball players

Variables	Sources	SS	DF	MS	F- ratio
Depth Perception	Between Sets	14.90	1	14.90	26.56*
	Within Sets	15.15	27	0.56	
Eye-Hand Coordination	Between Sets	288.23	1	288.23	9.12*
	Within Sets	853.27	27	31.60	

* Significant at 0.05 level



Table 4 reveals that the obtained “F” value was 26.56 (depth perception) and 9.12 (eye-hand coordination). Since the observed F-values on these variables were higher than the required critical value (3.74) at the 0.05 level of significance for df is 1, 27, it was found that the adjusted post-test means differences among the two

groups on selected psychomotor abilities of (depth perception and eye-hand coordination) were found to be statistically significant. It was concluded that psycho-physical training (PPT) has more impact on the development of depth perception and eye-hand coordination when compared to the control group (CG).

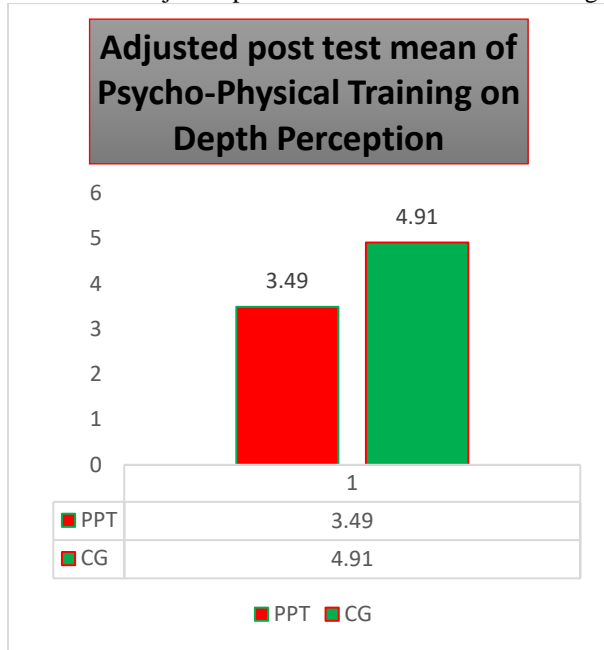


Fig-3

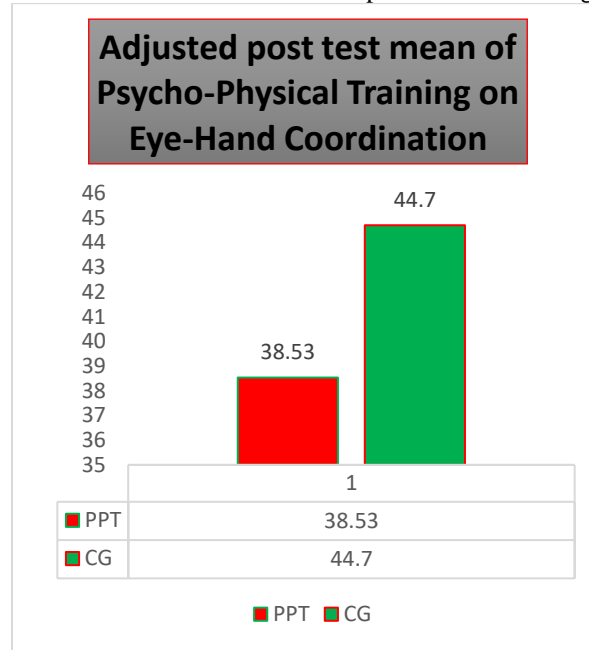


Fig-4

DISCUSSION ON FINDINGS

Based on the results, the following conclusion has been made. In testing the individualized effect of psycho-physical training on selected psychomotor abilities (depth perception and eye-hand coordination), the observed result confirms the positive changes made from pre-treatment and post-treatment. For the control group (CG), the obtained results explained that the no significant changes were observed the depth perception and eye-hand coordination from their pre- to post-treatment. Based on the results of the individualized effect of psycho-physical training (PPT) and control group (CG), it was concluded that the need for psycho-physical training (PPT) may be a viable source for the players.

The current investigation examined the effects of a twelve-week psycho-physical training regimen on both depth perception and eye-hand coordination of male handball players. This study aimed to enhance the players' perception and coordination ability to improve the performance of individuals and ultimately contribute to their success in competitive situations. The findings of the study revealed that psycho-physical training was notably effective in eliciting favorable improvements across various parameters of male handball players.

In the present study, Psychomotor abilities and their need in the game of handball, eye-hand coordination is needed for dribbling, passing, shooting, receiving the ball to the opponent, dropping the

ball from height, and throwing the ball to the place where they want to send it. Skills in handball allow players to make pinpoint passes, shoot with precision, fake out the defense, and dribble the ball. These players have to excel in coordinative abilities between eye-hand coordination. Eye-hand coordination also allows a player to receive a ball with his hand and make adjustments to intercept the ball (S.T.N.Rajeswaran, 2013). The psychomotor training would help the player to perform better in coordinative abilities of eye-hand coordination and depth perception. (Rameshpandian *et al.*, 2021). The study found that psychomotor skills highly improved in-depth perception and eye-hand coordination, skill performance of the psychomotor drills (Wilkins and Gray, 2015).

The findings of this study are highly promising, showcasing the advantages of psycho-physical training. Furthermore, the results indicate that enhancements in mobility can be achieved after just 12 weeks of such training.

CONCLUSION

Upon analyzing the study's findings and acknowledging its inherent limitations, it becomes clear that integrating psycho-physical training has a distinct positive effect on enhancing the selected psychomotor variables (depth perception and eye-hand coordination) of male handball players. Substantial improvements were noted in the selected variables among participants who underwent psycho-physical training over the



twelve weeks. This suggests that the tailored psycho-physical training regimen effectively enhances both depth perception and eye-hand coordination.

It can be inferred that the personalized application of psycho-physical training yielded statistically significant and positive effects throughout the intervention period, contributing to the enhancement of selected psychomotor variables among of male handball players.

In contrast, the control group's individualized interventions did not yield significant improvements in selected psychomotor abilities (depth perception and eye-hand coordination), within the same timeframe. When comparing the outcomes between the psycho-physical training group and the control group, it is evident that the former exhibited substantially greater advancements in psychomotor abilities. This discrepancy highlights the superior impact of psycho-physical training on enhancing depth perception and eye-hand coordination of male handball players.

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AN EMPLOYABILITY TRACER STUDY OF SECONDARY EDUCATION – MATHEMATICS GRADUATES FROM 2022 TO 2023

Erika Mae P. Asoy, LPT¹, Audrey Mae G. Ozaraga, LPT²,

Deveyvon L. Espinosa, MAEd³, Regine L. Generalao, MST-MATH⁴,

Jonelson C. Escandallo, PhD⁵, Conie B. Cerna, MAEd⁶, Kristy Jane R. Muegna, MAEd⁷

¹ORCID No. 0009-0008-1987-3780, Instructor, Kapalong College of Agriculture, Sciences and Technology, Maniki, Kapalong, Davao del Norte

²ORCID No. 0009-0001-3369-3929, Instructor, Kapalong College of Agriculture, Sciences and Technology, Maniki, Kapalong, Davao del Norte

³ORCID No. 0000-0002-2896-5416, Assistant Dean-Institute of Teacher Education,

Kapalong College of Agriculture, Sciences and Technology, Maniki, Kapalong, Davao del Norte

⁴ORCID No. 0009-0009-3280-3303, BEd-Mathematics Program Coordinator, Kapalong College of Agriculture, Sciences and Technology, Maniki, Kapalong, Davao del Norte

⁵ORCID No. 0000-0001-5808-6749, BEd-English Program Coordinator, Kapalong College of Agriculture, Sciences and Technology, Maniki, Kapalong, Davao del Norte

⁶ORCID No. 0009-0008-1170-3234, BEd-Filipino Program Coordinator, Kapalong College of Agriculture, Sciences and Technology, Maniki, Kapalong, Davao del Norte

⁷ORCID No. 0009-0006-9910-0117, BEEd-Generalist Program Coordinator, Kapalong College of Agriculture, Sciences and Technology, Maniki, Kapalong, Davao del Norte

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ABSTRACT

This graduate tracer study investigated the employment outcomes and career trajectories of graduates from the Bachelor of Secondary Education Major in Mathematics program at Kapalong College of Agriculture, Sciences, and Technology during the academic years 2022 to 2023. The study, based on survey responses from all 49 graduates, explored demographic characteristics, employment status, income levels, relevance of education to employment, work attitudes, and skills development.

Findings revealed that most graduates were female, single, and aged between 20 to 25 years. While most graduates were employed, a significant portion remained unemployed, with a notable percentage engaged in non-teaching roles. Despite this, a substantial proportion of graduates found their college degree highly relevant to their current work. The study indicated a high level of work attitude among graduates and underscored the institution's provision of quality education and effective skills development.

The employment rate stood at 73.5%, indicating a favorable outcome for many graduates. However, recommendations were proposed to address areas of concern, including the establishment of a graduate employability coordinator, offering training for graduates in non-teaching roles, enhancing technical and entrepreneurial skills through specialized workshops and partnerships, and strengthening industry partnerships to expedite job placement.

Overall, the study highlighted the strengths and areas for improvement in preparing mathematics graduates for the workforce, providing valuable insights for the institution to enhance its support for graduates' career development.

KEYWORDS: Tracer Study, Mathematics Graduates, Teacher Education

INTRODUCTION

Tracer surveys serve as indispensable technical tools, meticulously monitoring and analyzing the trajectories of program beneficiaries over time to enhance program management. This systematic tracing enables thorough examination of long-term impacts, identifying strengths, weaknesses, and areas ripe for improvement.

Higher Education Institutions (HEIs) globally conduct tracer studies to glean reliable feedback from graduates regarding program effectiveness. Emphasizing the necessity of

possessing the requisite skill set for securing and managing employment effectively, as well as pursuing improved opportunities, is underscored by The International Labour Organization World. In India, Misra and Khurana (2017) delve into theoretical concepts and models of employability, pinpointing disparities between academic teachings and employer expectations during the hiring process. Meanwhile, offering invaluable insights into the intersection of higher education and community needs, they significantly influence academic administration and the broader role of higher



education in national development, exemplified by graduates of Medan State University (Hasibuan et al., 2022).

Gines (2014) conducted a meticulous tracer study spanning from 2009 to 2011, delving into employment outcomes, satisfaction levels, and program relevance for PNU graduates. This examination thoroughly scrutinized satisfaction with university services, learning environments, and facilities, assessing the efficacy of teacher education programs in adapting to dynamic standards such as ASEAN integration and evolving competency frameworks for Southeast Asian teachers in the 21st century.

Similarly, Cuadra et al. (2019) emphasize the significance of tracer surveys in providing profound insights into program intervention effectiveness. Through extensive data collection and analysis, these surveys elucidate factors contributing to both success and failure, empowering program managers to make evidence-based decisions and refine strategies, reallocate resources, and optimize outcomes. This fosters continuous improvement and sustainability within the program framework.

In Davao Oriental, a survey conducted by Apostol and Susada (2022) as part of a tracer study gathered responses from 150 graduates under Bachelor of Elementary Education. The findings indicated that these graduates viewed the curriculum they underwent in college as applicable to both their initial and present jobs. They voiced the opinion that the communication skills and discipline they gained during their college years were the most essential assets in their professional endeavors.

In the 21st century's complex educational landscape, higher education emerges as a pivotal force in adapting to reforms through teaching, research, and outreach. Addressing these challenges presents a significant undertaking for Philippine Higher Education Institutions (HEIs). A strategic approach to overcoming these obstacles involves cultivating graduates primed to apply their acquired knowledge effectively in their professional pursuits.

In the local context, a college in Kapalong recognizes the imperative of conducting graduate tracer studies to refine its curriculum and prepare students for the regional workforce. By meticulously tracking alumni career paths, invaluable insights are gleaned into the specific skills and knowledge requisite for success in various professions. This empowers tailoring of the curriculum to align seamlessly with regional employers' needs and expectations, ensuring students receive the most pertinent and practical education possible. Through this endeavor, the college aims not only to enhance graduates' employability but also to contribute to the institution's growth and development by equipping students with the tools necessary to excel in their chosen fields within the local context.

Furthermore, this proactive approach aims to refine the Bachelor of Secondary Education major in Mathematics program by closely monitoring alumni career paths. Understanding alumni trajectories is imperative for fine-tuning the curriculum to meet the dynamic demands of the job market. The institution's objective is to equip graduates with the requisite skills and knowledge to excel in their careers,

particularly in the education sector. This initiative not only enhances graduates' employability but also reinforces the institution's commitment to providing high-quality education that prepares students for real-world success.

OBJECTIVES OF THE STUDY

The primary purpose of this study was to:

1. describe the demographic characteristics of graduate-respondents, grouped by academic year, including:
 - 1.1. sex;
 - 1.2. civil status;
 - 1.3. age;
 - 1.4. year graduated; and
 - 1.5. educational attainment and development;
2. describe the employment profile and features of the graduate-respondents, grouped by academic year, including:
 - 2.1. employment rate;
 - 2.2. employment status;
 - 2.3. level of income;
 - 2.4. period of seeking the first job after college;
 - 2.5. relevance of college degree to the present job; and
 - 2.6. job mismatching;
3. determine the level of self-rated evaluation by graduate respondents regarding their attitude toward work;
4. determine the level of self-rated evaluation by graduate respondents regarding the quality of education provided by the institution; and
5. determine the level of self-rated evaluation by graduate respondents regarding the skills and abilities obtained at the institution and their usability in their present occupation.

METHODS

Design

This study used the descriptive type of research as it provides an objective portrayal of specific phenomena or subjects by systematically collecting and analyzing data to generate objective and statistically reliable findings. This method concentrates on characterizing demographic segments, prioritizing the depiction of what occurs rather than delving into the reasons behind it, distinguishing itself by its focus on describing the subject of inquiry without addressing causality (Sidel et al., 2018). Further, descriptive quantitative research involves collecting information about variables without altering the environment or manipulating variables, thereby avoiding investigation into cause-and-effect relationships. This approach may be utilized for various purposes such as theory development, problem identification, justification of current practices, decision-making, or understanding what others in similar situations are doing (Baker, 2017). The study employed descriptive research to outline the employment rate and status of Secondary Education – Mathematics graduates from Kapalong College of Agriculture, Sciences, and Technology. Its



aim was to quantify the extent of graduates' employment and detail their employment status alongside demographic information such as gender, age, and marital status.

Population and Sample

This tracer study primarily focused on graduates of the Bachelor of Secondary Education Major in Mathematics program at Kapalong College of Agriculture, Sciences, and Technology from the academic years 2022 to 2023. It employed a complete enumeration method since its main goal was to track and monitor graduates regarding their employment status and rates. Specifically, in 2022, there were 25 graduates, comprising 7 males and 18 females. In 2023, there were 24 graduates, with 11 males and 13 females. Consequently, the total population and sample size for this study were 18 males and 31 females, totaling 49 Secondary Education – Mathematics graduates.

Research Instrument

The research instrument used in this study was adapted from the study of Escandallo (2024) entitled “A Tracer Study on the Elementary Education Graduates from Academic Year 2015 to 2019: Employment in Focus” with a Cronbach’s alpha of 0.955. Thus, it can be ensured that the internal consistency of the questionnaire used is excellent.

Data Collection Procedure

Data collection is the systematic gathering of information to ensure accurate, valid, and perceptive study outcomes. It employs various tailored methods, such as surveys and experiments, to capture truthful and nuanced constructs relevant to the research (Sadan, 2017). Thus, the following were the primary steps taken responsibly by the researchers to gather the needed data of the study.

First, the researchers obtained precise and accurate data by requesting the total number of Bachelor of Secondary Education – Mathematics graduates from the institution's registrar, ensuring the inclusion of the entire study population from academic years 2022 to 2023.

Second, upon receiving the total graduate count, the researchers employed a survey tracer questionnaire adapted from Escandallo (2024), covering aspects such as employment rate, employment status, educational progression, work attitude, quality of education, and skills development for each graduate.

This questionnaire underwent external validation by experts holding doctoral degrees in relevant fields, ensuring its excellent internal consistency.

Third, following questionnaire validation, the researchers commenced tracking graduates' employment status, educational progression, work attitude, quality of education, and skills development using Google Forms.

Fourth, upon completion of the survey by graduate respondents, the researchers collected and prepared the data for analysis and treatment.

Lastly, the data underwent analysis and interpretation by the institution's designated statistician, who presented the findings in tabular and graphical formats to facilitate comprehension and interpretation of the results.

Data Analysis

To analyze the data, the mean was utilized to determine the average score for assessing the graduates' work attitudes, evaluating the provision of quality education, and measuring the development of various skills and abilities.

RESULTS AND DISCUSSION

The results and discussion are provided in response to the established objectives of the study.

Demographic Characteristics of Secondary Education–Mathematics Graduates

The first objective of this tracer study is to describe the demographic characteristics of the Secondary Education–Mathematics graduates from academic year 2022 up until academic year 2023. These demographic characteristics encompass sex, civil status, age, year graduated, and educational attainment and development.

Sex. Divulged in Table 1 is the total number of the Bachelor of Secondary Education major in Mathematics graduates from the academic year 2021-2022 to academic year 2022-2023. In batch 2022, comprised of 25 graduates, 18 or 72% of this are female and the remaining 7 or 28% are male. Meanwhile in batch 2023, comprised of 24 graduates, 13 or 54.17% of this are female and the remaining 11 or 45.83% are male.

Year Graduated	Sex	Frequency	Percent
2022	Female	18	72.00%
	Male	7	28.00%
Total		25	100%
2023	Female	13	54.17%
	Male	11	45.83%
Total		24	100%

Table 1: Sex Distribution of Secondary Education–Mathematics Graduates

Civil Status. Divulged in Table 2 is the civil status of the Bachelor of Secondary Education major in Mathematics graduates from the academic year 2021-2022 to academic year 2022-2023. The data reveals that in batch 2022, only 1 or 4% of the graduates are married, while 24 or 96% of the graduates

are single. Conversely in batch 2023, 24 or 100% of the graduates are still single. Furthermore, the survey questionnaire incorporates options for *widowed* and *separated*, yet none of the graduates currently identify with these civil statuses.



Year Graduated	Civil Status	Frequency	Percent
2022	Married	1	4.00%
	Single	24	96.00%
Total		25	100%
2023	Married	0	0.00%
	Single	24	100%
Total		24	100%

Table 2: Civil Status of Secondary Education–Mathematics Graduates

Overall, it could be gleaned from Summary Table 1 that 97.96% of the graduate-respondents are single. Meanwhile, the remaining 2.04% of the graduate-respondents are already married.

Summary Table 1: Civil Status of Secondary Education–Mathematics Graduates

Year Graduated	Civil Status	Frequency	Percent
2022 and 2023	Married	1	2.04%
	Single	48	97.96%
Total		49	100%

Age. Divulged in Table 3 is the age distribution of the Bachelor of Secondary Education major in Mathematics graduates from the academic year 2021-2022 to academic year 2022-2023. In batch 2022, it could be gleaned that 14 or 56% of the graduates are 24 years of age; 7 or 28% of the graduates are 23 years of age; 3 or 12% of the graduates are 25 years of age; and 1 or 4% of the graduates are 26 years of age. On the other hand, in batch

2023, it could be noted that 15 or 62.5% of the graduates are aged 23; 5 or 20.83% of the graduates are aged 24; 1 or 4.17% of the graduates are aged 22; another 1 or 4.17% are aged 25; similarly, another 1 or 4.17% of the graduates are aged 26; and finally, 1 more or 4.17% of the graduates are aged 34.

Year Graduated	Age	Frequency	Percent
2022	22	0	0.00%
	23	7	28.00%
	24	14	56.00%
	25	3	12.00%
	26	1	4.00%
	34	0	0.00%
Total		25	100%
2023	22	1	4.17%
	23	15	62.50%
	24	5	20.83%
	25	1	4.17%
	26	1	4.17%
	34	1	4.17%
Total		24	100%

Table 3: Age Distribution of Secondary Education–Mathematics Graduates

Overall, it is reflected in Summary Table 2 that 93.88% of the graduate-respondents are aged 20-25. Conversely, the remaining 4.08% and 2.04% of the graduate-respondents are aged 26-30 and 31-35, respectively.

Age	Frequency	Percent
20-25	46	93.88%
26-30	2	4.08%
31-35	1	2.04%
Total	49	100%

Summary Table 2: Age Distribution of Secondary Education–Mathematics Graduates

Year Graduated. Divulged in Table 4 is the total number of the Bachelor of Secondary Education major in Mathematics graduates from the academic year 2021-2022 to academic year 2022-2023. For the year 2022, there are 25 graduates, comprising 51.02% of the graduate-respondents. Meanwhile,

for the year 2023, there are 24 graduates, comprising 48.98% of the graduate-respondents.



Year Graduated	Frequency	Percent
2022	25	51.02%
2023	24	48.98%
Total	49	100%

Table 4: Year Graduated of Secondary Education–Mathematics Graduates

Educational Attainment and Development. Divulged in Table 5 is the overall count of the Bachelor of Secondary Education major in Mathematics graduates from the academic year 2021-2022 to academic year 2022-2023 who have acquired vocational education and/or national certification. For batch 2022, only 1 or 4% of the graduates obtained vocational education, specifically on Electrical Installation and Maintenance NC II. Meanwhile, 24 or 96% of the graduates did not. For batch 2023, 1 or 4.17% of the graduates obtained

National Certificate Level II for Automotive Servicing, 1 or 4.17% of the graduates attained National Certificate Level II for Animal Production (Swine), 1 or 4.17% of the graduates acquired National Certificate Level II for Computer Systems Servicing, and 1 or 4.17% of the graduates had a National Certificate Level II for Electrical Installation and Maintenance. Conversely, 20 or 83.33% of the graduates did not acquire any vocational education and/or national certification.

Year Graduated	Vocational Education	Frequency	Percent
2022	Without	24	96.00%
	Electrical Installation and Maintenance	1	4.00%
	Total	25	100%
2023	AUTOMOTIVE NCII	1	4.17%
	Animal Production (SWINE)	1	4.17%
	Computer System Services NCII	1	4.17%
	Electrical Installation Maintenance NCII	1	4.17%
	Without	20	83.33%
Total	24	100%	

Table 5: Vocational Education/National Certification of Secondary Education–Mathematics Graduates

Overall, it could be gleaned from Summary Table 3 that 89.80% of the graduate-respondents did not obtain any vocational education. Meanwhile, the remaining 10.20% of the graduate-

respondents acquired vocational education, with its corresponding national certification.

Vocational Education	Frequency	Percent
With	5	10.20%
Without	44	89.80%
Total	49	100%

Summary Table 3: Summary of Vocational Education/National Certification of Secondary Education–Mathematics Graduates

Divulged in Table 6 is the overall count of the Bachelor of Secondary Education major in Mathematics graduates from the academic year 2021-2022 to academic year 2022-2023 who have pursued postgraduate degrees or studies. The findings show that for batch 2022, only 1 or 4% of the graduates

acquired postgraduate degree. Specifically, the graduate is ongoing with his/her master’s degree at the University of the Immaculate Conception. Meanwhile, the remaining 24 or 96% of the graduates did not. Similarly, for batch 2023, none of the graduates obtained a postgraduate degree yet.

Year Graduated	Post-graduate Degree/Study	Frequency	Percent
2022	With	1	4.00%
	Without	24	96.00%
Total		25	100%
2023	With	0	0.00%
	Without	24	100%
Total		24	100%

Table 6: Postgraduate Degree/Study of Secondary Education–Mathematics Graduates

Overall, it is reflected in Summary Table 4 that only 2.04% of the graduate-respondents pursued a Masters of Arts in Education major in Mathematics while the remaining 97.96% did not.



Post-graduate Degree/Study	Frequency	Percent
With	1	2.04%
Without	48	97.96%
Total	49	100%

Summary Table 4: Postgraduate Degree/Study of Secondary Education–Mathematics Graduates

Employment Profile and Features of Secondary Education–Mathematics Graduates

The second objective of this tracer study is to describe the employment profile and features of the Secondary Education–Mathematics graduates from academic year 2022 up until academic year 2023. These employment profile and features encompass employment rate, employment status, level of income, period of seeking the first job after college, relevance of college degree to the present job, and job mismatching.

Employment Rate. Presented in Table 7 is the employment rate of the Bachelor of Secondary Education major in Mathematics graduates from the academic year 2021-2022 to academic year 2022-2023. It could be gleaned from the data that 23 or 92% of the graduates from batch 2022 are employed and only 2 or 8% of the graduates are not employed. Moreover, the data reflected that 13 or 54.2% of the graduates from batch 2023 are employed, but 11 or 45.8% of the graduates are not employed. The details of their employment are discussed further in the next sections of this study.

Year Graduated	Employment rate	Frequency	Percent
2022	Employed	23	92.0%
	Not employed	2	8.0%
Total		25	100%
2023	Employed	13	54.2%
	Not employed	11	45.8%
Total		24	100%

Table 7: Employment Rate of Secondary Education–Mathematics Graduates

Overall, it could be gleaned from Summary Table 5 that 73.5% of the graduate-respondents are employed. Meanwhile, the remaining 26.5% are unemployed.

Status	Frequency	Percent
Employed	36	73.5%
Unemployed	13	26.5%
Total	49	100%

Summary Table 5: Employment Rate of Secondary Education–Mathematics Graduates

Employment Status. Presented in Table 8 is the employment status of the Bachelor of Secondary Education major in Mathematics graduates from the academic year 2021-2022 to academic year 2022-2023. It is evident from the data that 11 or 44% of the graduates from batch 2022 are working full-time jobs; 7 or 28% of the graduates are working on a contractual basis; 3 or 12% of the graduates are working regular jobs; 1 or 4% of the graduates are self-employed; and another 1 or 4% of

the graduates are working under job order. Further, the data reflected for batch 2023 that 4 or 16.7% of the graduates are working full-time; 3 or 12.5% of the graduates are self-employed; similarly, 2 or 8.3% of the graduates are working on a contractual basis; also, 2 or 8.3% of the graduates are working part-time but seeking full-time work; and lastly, 2 or 8.3% of the graduates are working regular jobs.

Year Graduated	Employment Status	Frequency	Percent
2022	Job order	1	4.0 %
	Regular	3	12.0%
	Self-employed	1	4.0%
	Working full-time	11	44.0%
	Working on contractual basis	7	28.0%
	Working part-time but seeking full-time work	0	0.0%
Total		23	92.0%
2023	Job order	0	0.0%
	Regular	2	8.3%
	Self-employed	3	12.5%
	Working full-time	4	16.7%
	Working on contractual basis	2	8.3%



	Working part-time but seeking full-time work	2	8.3%
Total		13	54.2%

Table 8. Employment Status of Secondary Education–Mathematics Graduates

Overall, it is reflected in Summary Table 6 that 30.6% of the graduate-respondents are working on a full-time basis and 18.4% of the graduate-respondents are working on a contractual basis. Moreover, 10.2% of the graduate-respondents are regularly-employed, but 8.2% of the graduate-respondents are

self-employed. On the other hand, the remaining 4.1% and 2% of the graduate-respondents are working part-time but seeking full-time work and working as job order employees, respectively.

Employment Status	Frequency	Percent
Regular	5	10.2%
Self-employed	4	8.2%
Full-time	15	30.6%
Job order	1	2.0%
Working on contractual basis	9	18.4%
Working part-time but seeking full-time work.	2	4.1%%
Total	36	73.5%

Summary Table 6: Summary of Employment Status of Secondary Education–Mathematics Graduates

Level of Income. Presented in Table 9 is the level of income of the Bachelor of Secondary Education major in Mathematics graduates from the academic year 2021-2022 to academic year 2022-2023. From the data, it suggests that 11 or 44% of the graduates from batch 2022 are earning Php11,000-Php20,000 monthly; 9 or 36% of the graduates are earning Php1,000-

Php10,000 monthly; 2 or 8% of the graduates are earning above Php30,000; and only 1 or 4% of the graduates are earning Php21,000-Php30,000. Meanwhile, among the batch 2023 graduates, 7 or 29.2% are earning Php11,000-Php20,000 and 6 or 25% are earning Php1,000-Php10,000.

Year Graduated	Level of Income	Frequency	Percent
2022	1,000-10,000	9	36.0%
	11,000-20,000	11	44.0%
	21,000-30,000	1	4.0%
	Above 30,000	2	8.0%
Total		23	92.0%
2023	1,000-10,000	6	25.0%
	11,000-20,000	7	29.2%
	21,000-30,000	0	0.0%
	Above 30,000	0	0.0%
Total		13	54.2%

Table 9: Level of Income of Secondary Education–Mathematics Graduates

Overall, it could be gleaned from Summary Table 7 that 36.7% of the graduate-respondents have a monthly income of Php11,000-Php20,000 and 30.6% of the graduate-respondents have a monthly income of Php1,000-Php10,000. However, only

4.1% and 2% of the graduate-respondents have a monthly income of Php30,000 above and Php21,000-Php30,000, respectively.

Monthly Income	Frequency	Percent
1,000-10,000	15	30.6%
11,000-20,000	18	36.7%
21,000-30,000	1	2.0%
30,000 above	2	4.1%
Total	36	73.5%

Summary Table 7: Level of Income of Secondary Education–Mathematics Graduates

period of Seeking the First Job after College. Presented in Table 10 is the period of seeking the first job after college of the Bachelor of Secondary Education major in Mathematics graduates from the academic year 2021-2022 to academic year 2022-2023. The survey results indicate that for batch 2022, 13 or 52% of the graduates secured a job within 0-3 months; 7 or 28% of the graduates attained employment within 9-12 months;

and 3 or 12% of the graduates were employed after one year. Consequently, the table emphasizes that for batch the 2023 graduates, 7 or 29.2% secured a job within 0-3 months; 4 or 16.7% attained employment within 9-12 months; and 2 or 8.3% were employed after one year.



Year Graduated	Period of Seeking the First Job After College	Frequency	Percent
2022	0-3 months	13	52.0 %
	4-8 months	0	0.0%
	9-12 months	7	28.0%
	Above 1 year	3	12.0%
Total		23	92.0%
2023	0-3 months	7	29.2%
	4-8 months	0	0.0%
	9-12 months	4	16.7%
	Above 1 year	2	8.3%
Total		13	54.2%

Table 10. Period of Seeking the First Job after College of Secondary Education–Mathematics Graduates

Overall, it is reflected in Summary Table 8 that 40.8% of the graduate-respondents attained employment within 0-3 months only. Moreover, 22.4% of the graduate-respondents landed a

job within 9-12 months. Conversely, 10.2% of the graduate-respondents obtained work above 1 year.

Period Seeking Employment	Frequency	Percent
0-3 Months	20	40.8%
4-8 Months	0	0%
9-12 Months	11	22.4%
Above 1 Year	5	10.2%
Total	36	73.5%

Summary Table 8: Period of Seeking the First Job after College of Secondary Education–Mathematics Graduates

Relevance of College Degree to the Present Job. Presented in Table 11 is the relevance of college degree to the present job of the Bachelor of Secondary Education major in Mathematics graduates from the academic year 2021-2022 to academic year 2022-2023. Accordingly, for batch 2022, 14 or 56% of the graduates indicated their degree as *very much relevant*; 4 or 16% of the graduates indicated their degree as *much relevant*;

parallel to this, 4 or 16% of the graduates indicated their degree as *neutrally relevant*; and only 1 or 4% of the graduates indicated their degree as *a little relevant*. Likewise, for batch 2023 graduates, 10 or 41.7% responded to their degree as *very much relevant*; 2 or 8.3% responded to their degree as *neutrally relevant*; and only 1 or 4.2% responded to their degree as *not at all*.

Year Graduated	Relevance Of College Degree to The Present Job	Frequency	Percent
2022	Very Much	14	56.0%
	Much	4	16.0%
	Neutral	4	16.0%
	A Little	1	4.0%
	Not At All	0	0.0%
Total		23	92.0%
2023	Very Much	10	41.7%
	Much	0	0.0%
	Neutral	2	8.3%
	A Little	0	0.0%
	Not At All	1	4.2%
Total		13	54.2%

Table 11: Relevance of College Degree to the Present Job of Secondary Education–Mathematics Graduates

Overall, it could be gleaned from Summary Table 9 that 49% of the graduate-respondents indicated their degree as *very much relevant*, 12.2% as *neutrally relevant*, and 8.2% as *much relevant*. Meanwhile, 2% of the graduate-respondents and another 2% of the graduate-respondents responded to their degree’s relevance as *a little* and *not at all*, respectively.



Relevance of college degree to the present job	Frequency	Percent
Very Much	24	49.0%
Much	4	8.2%
Neutral	6	12.2%
A Little	1	2.0%
Not At All	1	2.0%
Total	36	73.5%

Summary Table 9: Relevance of College Degree to the Present Job of Secondary Education–Mathematics Graduates

Job Mismatching. Presented in Table 12 is the job mismatching or alignment status of the Bachelor of Secondary Education major in Mathematics graduates from the academic year 2021-2022 to academic year 2022-2023. It could be gleaned from the survey results that for batch 2022, 13 or 52% of the graduates are employed as teachers in public schools, private schools, Higher Education Institutions (HEIs), or online

teaching platforms. However, 10 or 40% of the graduates pursued non-teaching roles. Also, the data highlights that for batch 2023, 10 or 41.7% of the graduates pursued non-teaching roles. But, only 3 or 12.5% of the graduates are employed as teachers in public schools, private schools, Higher Education Institutions (HEIs), or online teaching platforms.

Year Graduated	Job Category	Frequency	Percent
2022	Non-teaching	10	40.0%
	Teaching	13	52.0%
Total		23	92.0%
2023	Non-teaching	10	41.7%
	Teaching	3	12.5%
Total		13	54.2%

Table 12: Job Mismatching of Secondary Education–Mathematics Graduates

Overall, it is reflected in Summary Table 10 that 32.7% of the graduate-respondents pursued teaching roles while 40.8% of the graduate-respondents did not

Job Category	Frequency	Percent
Teaching	16	32.7%
Non-teaching	20	40.8%
Total	49	100%

Summary Table 10: Job Mismatching of Secondary Education–Mathematics Graduates

Presented in Table 13 is the job specification of the graduates from the academic year 2021-2022 to academic year 2022-2023 who pursued non-teaching roles. It could be gleaned from the survey results that for batch 2022, 2 or 8% of the graduates became business owners; another 2 or 8% worked as government employees; another 2 or 8% worked as office-based clerks; another 2 or 8% worked as call center agents; 1 or

4% worked as account specialist; and lastly, another 1 or 4% worked as company employee. Further, for batch 2023, 3 or 12.5% of the graduates works as call center agents; 2 or 8.3% worked as government employees; another 2 or 8.3% worked as office-based clerks; 1 or 4.2% worked as account specialist; another 1 or 4.2% worked as company employee; and lastly, 1 or 4.2% worked as sales agent.

Year Graduated	Job Specification	Frequency	Percent
2022	Account Specialist	1	4.0%
	Business Owner	2	8.0%
	Call Center Agent	2	8.0%
	Company Employee	1	4.0%
	Government Employee	2	8.0%
	Office-based Clerk	2	8.0%
	Sales Agent	0	0.0%
Total		10	40.0%
2023	Account Specialist	1	4.2%
	Business Owner	0	0.0%
	Call Center Agent	3	12.5%
	Company Employee	1	4.2%
	Government Employee	2	8.3%
	Office-based Clerk	2	8.3%
	Sales Agent	1	4.2%
Total		10	41.7%

Table 13: Non-teaching Job Specifications of Secondary Education–Mathematics Graduates



Overall, it is reflected in Summary Table 11 that 10.2% of the graduate-respondents opted to work as call center agents and 8.2% of them landed a job as government employees. Similarly, another 8.2% of the graduate-respondents acquired work as office-based clerks while 4.1% of them worked as account

specialists. Similarly, 4.1% of the graduate-respondents pursued career paths as company employees and another 4.1% of them became business owners. Lastly, the remaining 2% of the graduate-respondents obtained work as sales agents.

Job Specification	Frequency	Percent
Account Specialist	2	4.1%
Business Owner	2	4.1%
Call Center Agent	5	10.2%
Company Employee	2	4.1%
Government Employee	4	8.2%
Office-based Clerk	4	8.2%
Sales Agent	1	2.0%
Total	20	40.8%

Summary Table 11: Non-teaching Job Specifications of Secondary Education–Mathematics Graduates

Level of Secondary Education–Mathematics Graduates Attitude to Work

Table 14 displays the attitude towards work among Secondary Education–Mathematics Graduates, with an overall mean score of 4.56, indicating a very high level. This suggests that the graduates consistently exhibit positive attitudes across all aspects of their work, as they strongly agree with all sub-questions related to work attitude.

Notably, item 10–*I seek assistance and help from others whenever I have clarifications and queries*, received the highest mean score of 4.75, reaffirming their consistent manifestation among mathematics graduates in their workplace. Conversely, item number 2–*I like the kind of job and work I am doing*, received the lowest mean score of 4.39, yet still considered very high, indicating consistent manifestation among graduates.

Attitude to Work	Mean	Description
1. I am very interested, happy and satisfied with my work and it is very important for me.	4.36	Very High
2. I like the kind of job and work I am doing.	4.39	Very High
3. I accepted assignments and tasks given to me at work without complaints.	4.50	Very High
4. I arrived on time to prepare my work and extend working hours if necessary.	4.47	Very High
5. I can work better and functional under different working environment and situations.	4.56	Very High
6. I participated in all activities and events inside my workplace.	4.64	Very High
7. I have a good relationship with my colleagues and co-employees.	4.70	Very High
8. I submitted necessary documents and papers on time and beat deadlines.	4.64	Very High
9. I performed my task and job with excellence and outstanding quality.	4.64	Very High
10. I seek assistance and help from others whenever I have clarifications and queries.	4.75	Very High
Overall	4.56	Very High

Table 14: Level of Secondary Education–Mathematics Graduates Attitude to Work

Level of Secondary Education–Mathematics Graduates Quality Education Provisions

Table 15 presents the evaluation of quality education provisions among Secondary Education–Mathematics Graduates, yielding an overall mean score of 4.63, indicating a very high level. This suggests that the graduates consistently experience high-quality education provisions, as they consistently agree with all identified sub-questions related to this aspect.

abilities from different industry partners and linkages, received the highest mean score of 4.73, reaffirming its consistent manifestation among mathematics graduates, particularly those who studied at Kapalong College of Agriculture, Sciences and Technology (KCAST). Conversely, item number 5–*Quality of learning facilities for first-hand and direct experiences like of different laboratories*, received the lowest mean score of 4.45, still considered very high, indicating consistent manifestation among mathematics graduates, particularly those who studied at KCAST.

Among these, item number 4–*Provision of quality practicum guidelines and activities that develops more my skills and*



Quality Education Provision	Mean	Description
1. Availability of course materials and different learning resources needed for our studies.	4.53	Very High
2. Quality of course contents from courses offered as well as the teaching and learning process.	4.65	Very High
3. Conduciveness of the learning environment and atmosphere.	4.59	Very High
4. Provision of quality practicum guidelines and activities that develops more my skills and abilities from different industry partners and linkages.	4.73	Very High
5. Quality of learning facilities for first-hand and direct experiences like of different laboratories.	4.45	Very High
6. Quality of different courses offered in the program that develops the total sum of the student skills.	4.65	Very High
7. Level of optimum interaction and contact with my fellow students through different in-campus activities.	4.67	Very High
8. Well-trained and self-renewing Faculty members and staffs.	4.59	Very High
9. Different trainings, seminars and workshops that prepare students for employment.	4.71	Very High
10. Varied learning assessments and instructions which assess students' progress and learning fairly and equally.	4.69	Very High
Overall	4.63	Very High

Table 15: Level of Secondary Education–Mathematics Graduates Quality Education Provisions

Level of Secondary Education–Mathematics Graduates Skills and Abilities Development

Table 16 illustrates the skills and abilities development among Secondary Education–Mathematics Graduates. The overall mean score of 4.62 suggests a notably very high level of skills and abilities development of the mathematics graduates, as they consistently agree with all evaluated aspects.

Specifically, item number 4–*Creative thinking and creativity, initiative and taking a risk, if necessary*, received the highest mean score of 4.81, indicating a very high level of manifestation among mathematics graduates. Conversely, item number 9–*Technical and Entrepreneurial Skills*, received the lowest mean score of 4.36, still considered very high, suggesting consistent manifestation among mathematics graduates, particularly those from KCAST.

Skills and Abilities Development	Mean	Description
1. Organizational and leadership skill.	4.56	Very High
2. Problem solving and critical thinking skills.	4.72	Very High
3. Ability to work independently as well as team work and team play.	4.78	Very High
4. Creative thinking and creativity, initiative and taking a risk, if necessary.	4.81	Very High
5. Time Management and decision-making skills.	4.67	Very High
6. Writing competence and skills including technical writing.	4.53	Very High
7. Communication and interpersonal skills.	4.64	Very High
8. Computer and ICT Skills.	4.39	Very High
9. Technical and Entrepreneurial Skills	4.36	Very High
10. Ability to work under pressure.	4.58	Very High
11. Ability to write the essentials and basics of effective lesson planning.	4.44	Very High
12. Code of ethics applied to my teaching profession.	4.78	Very High
13. Knowledge with the different teaching methodologies, techniques and approaches through seminars and workshops.	4.69	Very High
14. Expertise about multidisciplinary research that is essential for understanding students' needs and interests.	4.58	Very High
15. Trainings, seminars and workshops about the preparation and evaluation of different instructional materials.	4.72	Very High
Overall	4.62	Very High

Table 16: Level of Secondary Education–Mathematics Graduates Skills and Abilities Development



Below is a summary of the findings derived from the collected data via an online survey administered through Google Forms, along with the conclusions reached and the recommendations provided.

Demographic profile of the BSED Math Graduates

The tracer study conducted across the 2022 and 2023 batches of BSED-Mathematics graduates reveals intriguing trends in gender representation. Notably, there was a shift in gender composition between the two years, with 72% female graduates in 2022 compared to 54.17% in 2023. Conversely, male graduates increased from 28% to 45.83% during the same period, suggesting evolving enrollment patterns or shifting interests within the program (Xie and Li, 2023).

Furthermore, the study indicates a predominant single status among respondents, with 97.96% identifying as such, though a small minority of 2.04% reported being married, adding diversity to the group.

Age distribution also varied between the two batches. In 2022, most graduates were 24 years old (56%), while in 2023, the largest segment comprised 23-year-olds (62.5%). This diversity in age profiles suggests varied entry points and completion timelines within the program.

Examining graduation years, the data reveals a near-even split between 2022 and 2023 graduates, indicating consistent program output over consecutive years, possibly reflecting stable enrollment rates or graduation timelines (Hussein, 2023). Regarding vocational education, the vast majority (89.80%) did not pursue any, while a minority (10.20%) obtained vocational certification, potentially enhancing their competitiveness in the job market.

Furthermore, only 2.04% of respondents pursued postgraduate education immediately after their undergraduate degree, indicating a preference for entering the workforce directly. This comprehensive profile provides valuable insights into the program's student body, encompassing gender dynamics, civil status trends, age diversity, and graduation year distribution, all of which contribute to understanding their preparedness for employment (Ganapati & Ritchie, 2021).

Employment Profile and Features of Secondary Education–Mathematics Graduates

The graduate tracer study furnishes crucial insights into the employment landscape and characteristics of individuals graduating from the Secondary Education–Mathematics program. Examining the data reveals an overall employment rate of 73.5%, with 26.5% of graduates facing unemployment. Interestingly, a stark contrast emerges between the employment rates of batch 2022, boasting an impressive 92% employment rate, and batch 2023, which witnesses a notable decline to 54.2%. This discrepancy suggests potential shifts in market conditions or divergent career trajectories among the group. (Jackson & Li, 2021).

Diverse employment statuses characterize the graduates, showcasing a range of employment arrangements. While 30.6%

secure full-time positions, 18.4% choose for contractual work. Regular employment accounts for 10.2%, while 8.2% venture into self-employment. Conversely, part-time roles and job order positions represent smaller segments, highlighting the multifaceted nature of employment choices among graduates. Meanwhile, income distribution among alumni also exhibits variance, with 36.7% earning between Php11,000-Php20,000 monthly, and 30.6% falling within the Php1,000-Php10,000 range. A mere 4.1% surpass the Php30,000 mark monthly. These figures underscore the economic realities graduates confront upon entering the workforce, emphasizing the significance of income levels in evaluating employment outcomes. (Smith et al., 2018)

The transition period into employment varies, with a substantial 40.8% securing jobs within 0-3 months post-graduation. However, 22.4% endure a more prolonged job search, spanning 9-12 months, while 10.2% have difficulties with a job hunt exceeding one year. Such findings shed light on the dynamic nature of the job market and the persistence necessitated during the post-graduation transition phase. Perceptions regarding the relevance of their college degree to their current job vary among graduates, with 49% considering it very relevant, 12.2% remaining neutral, and 2% deeming it irrelevant (Pitts et al., 2015). This spectrum underscores the importance of aligning educational outcomes with career expectations to bridge potential gaps between academic training and professional roles.

While teaching roles remain a popular career choice, with 32.7% of graduates occupying such positions, a significant 40.8% pursue non-teaching roles. Notably, the diversity of these roles spans call center agents, government employees, clerical staff, account specialists, business owners, and sales agents, underscoring the adaptability of BSED-Mathematics graduates across various career domains (Valdez et al., 2023).

In conclusion, the employment profile of Secondary Education–Mathematics graduates encompasses a broad spectrum of employment statuses, income distributions, job search durations, and perceptions of degree relevance. The prevalence of both teaching and non-teaching roles underscores the adaptability and versatility of graduates in navigating the contemporary job market.

Level of Secondary Education–Mathematics Graduates Attitude to Work

The level of Secondary Education–Mathematics graduates' attitude to work was described as very high. This implies that the graduates' work ethics is consistently manifested and the respondents firmly concur with each and every one of the sub-questions under *attitude to work*.

In connection, a recent study on education graduates revealed that they exhibit not only the requisite knowledge and skills but also a praiseworthy commitment to their work. Their passion and dedication to teaching have blossomed throughout their education. Strengthening their teaching abilities will significantly contribute to nurturing well-rounded students in today's rapidly evolving job market. Consequently, Teacher



Education Institutions (TEIs) should persist in spearheading efforts that foster both the personal and professional development of aspiring educators (Reusia et al., 2020).

Moreover, Pentang et al. (2022) found that education graduates have demonstrated their proficiency and aptitude to excel in both work and educational environments. The institution has conscientiously equipped them for employment, prioritizing their work ethic and personal qualities above all predefined criteria. Their academic preparedness and exemplary professional demeanor stand as tangible evidence of their successful integration into their respective roles (Pentang et al., 2022).

Level of Secondary Education–Mathematics Graduates Quality Education Provisions

The level of Secondary Education–Mathematics graduates' quality education provisions was described as very high. This underscores the consistent manifestation of quality education provision, as every respondent strongly agrees with each and every sub-question regarding such provisions.

In relation to this, findings from the research indicated that the education program of a certain institution is recognized for delivering high-quality education and arming its graduates with essential skills and knowledge, particularly for professional settings. Furthermore, positive responses from graduates regarding the program's effectiveness in preparing them for the workplace, along with their satisfaction with the program, serve to strengthen the perception of its quality among graduates (Owusu, 2021).

Additionally, a tracer study's outcomes highlight the effective delivery of quality education of a state university. This effectiveness is demonstrated through their high employability rates, with a significant majority of respondents already securing employment. Furthermore, the perceived relevance of the college curriculum to their initial job roles indicates that graduates feel well-prepared and equipped with the necessary knowledge and skills from their educational experience. These findings suggest that the program successfully imparts valuable competencies sought after by employers, affirming its commitment to providing a high standard of education (Albina & Sumagaysay, 2020).

Level of Secondary Education–Mathematics Graduates Skills and Abilities Development

The level of Secondary Education–Mathematics graduates' skills and abilities development was described as very high. This illustrative significance and equivalent demand that the degree of skills and abilities development is consistently shown.

In connection, teacher education graduates of a state university exhibit very high employability skills. This suggests that they possess the necessary skills and abilities required in the workplace, indicating effective preparation by the university. Upon closer examination of each skill, the majority of graduates expressed satisfaction with and a high level of proficiency in communication, problem-solving, as well as planning and

organizing skills. Graduates emphasized their achievement in their respective fields or careers through this indicator. Additionally, some graduates demonstrated varying levels of proficiency in leadership, independent work ability, creativity, time management, technological proficiency, critical thinking, and imaginative thinking skills (Pacleb-Ulanday, 2021).

Furthermore, teacher education graduates demonstrated highly favorable employability, emphasizing their possession of essential workplace skills. They perceived all program learning areas as relevant to their employment, with communication and human relations skills being the most valued competencies. Confidence and competence were highlighted as essential values for employment, while entrepreneurial skills and commitment to values were seen as less useful. These findings underscore the importance of student feedback in evaluating institutional performance (Cornillez et al., 2021).

Summary of Findings

Following the successful completion of a survey, which received responses from all graduates of the Bachelor of Secondary Education Major in Mathematics program at Kapalong College of Agriculture, Sciences, and Technology during the academic years 2022 to 2023, the following key findings emerged:

The institution produced a total of 49 graduates, with 31 females and 18 males. Regarding civil status, 97.96% of the graduates are single, while 2.04% are married. In terms of age distribution, 93.88% fall within the 20-25 age bracket, with only 4.08% aged 26-30 and 2.04% aged 31-35. The first batch, in 2022, consisted of 25 graduates, while the second batch, in 2023, produced 24 graduates. Only 5 graduates obtained vocational courses and national certifications, with 1 pursuing post-graduate studies.

In terms of employment, 73.5% of the graduates are employed, with 26.5% unemployed. Of those employed, 30.6% work full-time, and 10.2% hold regular positions. Additionally, 30.67% of graduates earn a monthly income ranging from Php11,000 to Php20,000, with 40.8% securing employment within 0-3 months. Nearly half (49%) agreed that their college degree is highly relevant to their current work. However, 40.8% of graduates are employed in non-teaching roles.

The survey indicated a very high level of work attitude among mathematics graduates, as well as a very high level of quality education provision at the institution. Furthermore, the level of skills and abilities development among graduates was assessed as very high.

Conclusion

After conducting the survey, it was determined that the employment rate of mathematics graduates from batches 2022 to 2023 is 73.5%, indicating that almost three-fourths of the graduates are sufficiently skilled to seek and obtain employment; additionally, the majority are employed full-time and some have secured regular positions. Furthermore, the survey revealed that the graduates' college degree is highly relevant to their job, suggesting that the institution offers



quality education that prepares graduates for their respective fields. Additionally, the level of graduates' work attitude was strongly agreed upon, signifying their efficient and effective performance of tasks, while the institution's quality education provisions were rated as very good, indicating the provision of various training, seminars, resources, and competent faculty members. Lastly, the graduates' skills and abilities development was assessed as very high, indicating the institution's success in cultivating a diverse range of skills and interests among its graduates.

Recommendations

Based on the summarized findings and conclusions of the study, the following recommendations are proposed: Firstly, given the percentage of unemployed graduates, the institution should establish a graduate employability coordinator to monitor employment outcomes and organize online forums to disseminate job opportunities. Secondly, for graduates working in non-teaching roles, the institution should offer various training sessions, seminars, and workshops to motivate them to pursue careers in education. Thirdly, addressing the low mean score for technical and entrepreneurial skills, the institution should implement specialized workshops, entrepreneurship courses, and partnerships with local businesses to enhance graduates' skills in these areas. Finally, considering the varying lengths of time it took graduates to secure employment, the institution should strengthen partnerships with local industry partners and community linkages to provide more job opportunities for graduates immediately after completing their degree programs.

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A SOIL MOISTURE-BASED IRRIGATION SYSTEM BASED ON AI AND IOT

P.S.Ajishlin, K.Karpaka Priya, P.Mukesh, K.Selvaraj
St.Mother Theresa Engineering College, Vagaikulam

ABSTRACT

An important industry that uses a lot of water resources for irrigation is agriculture. Water utilisation in agriculture must be optimised due to the rising demand for food and the growing worry over water shortage. The effective and efficient use of water in agriculture may be increased via the combination of artificial intelligence (AI) and the Internet of Things (IoT) technologies. This study suggests a smart irrigation system that optimises agricultural water consumption by utilising IoT and AI technologies, notably the Partial Least Squares Regression (PLSR) algorithm.

I. INTRODUCTION

The technology makes use of Internet of Things (IoT) sensors to gather information on soil moisture and meteorological conditions. The PLSR algorithm then analyses this data to calculate how much water is best for the crops. Based on the data, the device can automatically adjust the irrigation system, minimising water waste and boosting crop output. Water utilisation in agriculture might be completely changed by using a smart irrigation system that uses the PLSR algorithm. This could result in a more sustainable and effective use of water resources.

II. EXISTING SYSTEM

IoT and AI-powered smart irrigation systems have gained popularity as a study topic because of their potential to increase irrigation's efficacy and efficiency. A review of the literature in this area shows that a range of methods and tools, such as cloud computing, sensor networks, and machine learning algorithms, have been employed to develop smart irrigation systems. Numerous research have suggested using IoT and AI to analyse sensor data, including temperature, humidity, and soil moisture readings, to estimate crop water requirements. Based on this data, machine learning algorithms have been utilised to forecast and make choices. Furthermore, data has been processed and stored using cloud computing, enabling remote access to it.

Smart irrigation systems have been implemented using a variety of hardware platforms, including as Arduino, Raspberry Pi, and microcontrollers. Additionally, Android applications have been created to allow for remote irrigation system monitoring and control.

All things considered, IoT and AI-powered smart irrigation systems have the potential to drastically cut water usage while raising crop quality and output. To maximise these systems' performance, more investigation is necessary, especially with regard to power usage, data transfer, and security.

III. RESTRICTIONS OF THE CURRENT SYSTEM

High Cost: The price of sensors, hardware, and software might make the implementation of an IoT and AI-powered smart irrigation system expensive.

Complexity: The setup and upkeep of IoT and AI integration can be challenging and need for specialised knowledge.

Data Accuracy: The system's efficacy may be impacted by the data accuracy utilised to optimise irrigation schedules. This covers the precision of soil moisture sensors, meteorological data, and other sensors.

Algorithm Limitations: The PLSR algorithm might not be the best choice for all applications, and the calibre of the data it uses as input could affect how accurate it is.

Restricted User Control: Certain systems may offer very few ways for users to customise and exert control over the system, which limits the system's adaptability

Internet connectivity: Network failures or sluggish connectivity may have an effect on smart irrigation systems that depend on it.

IV. PROPOSED SYSTEM

a. The PLSR Algorithm

PLS regression aims to explain their shared structure and predict Y from X. If X is full rank and Y is a vector, then standard multiple regression can be used to do this. Regression analysis is no longer possible if there are many predictors relative to observations, which indicates that X is probably singular (owing to multicollinearity). Numerous strategies have been devised to tackle this issue. Eliminating some predictors (for instance, by applying stepwise approaches) is one strategy. Principal component analysis (pca) of the X matrix is another method that is known as principal component regression. Her principle



components of X are then taken and the regressed variables are utilised. Y. The multicollinearity issue is resolved by the principal components' orthogonality.

Approach

- In a nutshell, the system is composed of two main parts:
- 1. System implementation through Internet of Things.
- 2. Artificial intelligence to forecast soil moisture content and rainfall amounts.

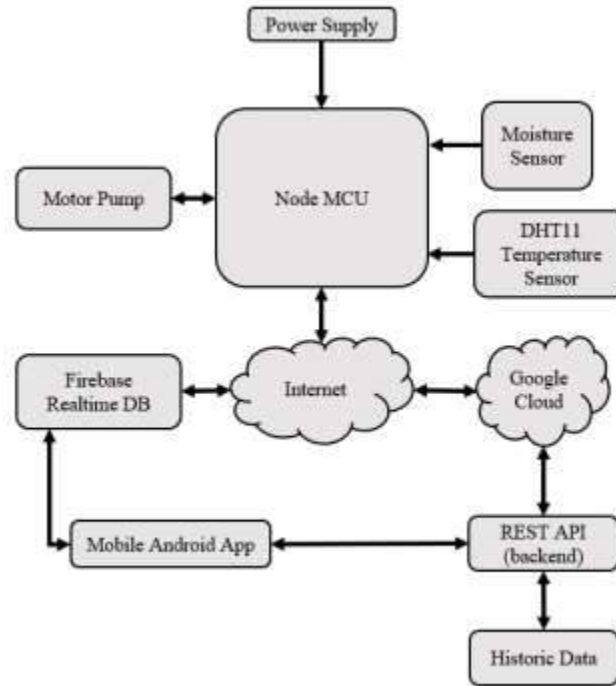


Fig.1. System implementation utilising the Internet of Things

The nodes are managed by a central system, which uses a Cloud API controller to decide when to switch on the pumps connected to each individual node. All of the controller's operations are carried out via JAVA and Python3 scripts. The control logic imports the support script into the main script and invokes the hardening script's methods when appropriate. The PLSR algorithm is used for inference, data preprocessing, and node communication.

After training on a powerful computer, the trained model is introduced into the producing environment.

The IPv4 protocol is used by the nodes to connect to the central controller through a shared WiFi access point. A client-server architecture is used for communication between the nodes and the central controller. There is no communication between nodes.

On the central controller, this implementation makes use of a cloud server. The URL is expanded by the server into a webhook. Using this webhook, the node establishes a connection with the server and provides data.

The sensor data is sent to the server via an HTTP GET request following post-computation. Two messages are sent to the requesting node by server replication by default. 1. Whether or not the pumps attached to a specific node need to be turned on, and 2.

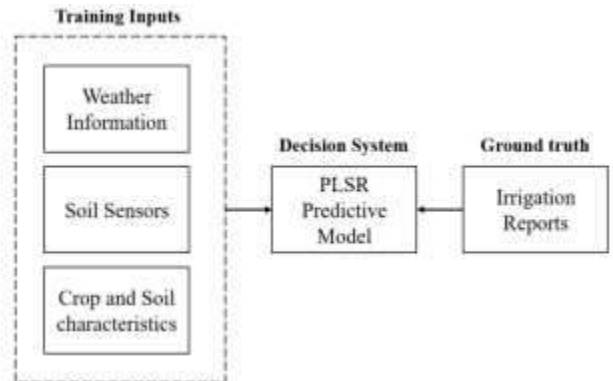


Fig.2 Artificial intelligence to forecast soil moisture content and rainfall amounts

Under typical circumstances, crop evapotranspiration can be computed using the single crop coefficient calculation below:
 $ET_0 = K_c \cdot ET_c$

Here, the crop coefficient is shown by K_c . It is dependent upon several elements, including the type of crop, crop evaporation, crop growth stage, and meteorological data.

The machine learning decision model was created using the partial least squares regression (PLSR) algorithm . It is a



statistical technique that finds the essential connections between the variables that are input and output.

Visually verifiable variables that are quantified to feed data into the decision model are known as predictor (input) variables, and they are denoted by an X.

The outputs for which the specified inputs need to be evaluated are represented by the duplicated variable designated Y.

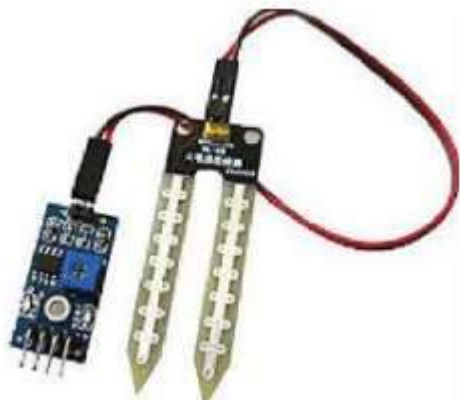


Fig.3.Sensor of Soil Moisture

Displays the many kinds of soil moisture sensors. This consists of two tests where an electric current is used to enter the soil. After that, the soil is examined for obstructions and its moisture content is measured. We are aware that dirt conducts electricity more easily when it is near water. This indicates that these kinds of soils have lower strength conductivity and lower resistance, or that dry soils hold more insurance than wet soils. This strength characteristic forms the basis of the sensor. To convert resistance to voltage, a point is required. The sensor's internal circuit, which changes resistance to voltage, accomplishes this.



Fig.4.ESP8266 NodeMCU

Demonstrates A low-cost, open-source Internet of Things platform called NodeMCU ESP8266 is built around the ESP8266 Wi-Fi microcontroller. It combines Wi-Fi functionality with a microcontroller to facilitate the easy connection and control of devices via the internet. It is a small and low-power option for Internet of Things projects since it features integrated voltage regulation and on-board flash memory. In addition to offering a development kit and support for multiple programming

languages, NodeMCU enables users to rapidly prototype and test their creations.



The composite sensor DHT11 has a calibrated digital signal output for humidity and temperature. To guarantee that the product has great reliability and outstanding long-term stability, temperature and humidity sensor technologies as well as a collection of specialised digital modules are utilised. The sensor is coupled to a high-performance 8-bit microcontroller and consists of a resistive sense of wet component and an NTC temperature measurement device.



Fig.5.DITH Sensor

It features an input circuit, sometimes known as an input, and a control system. It is widely utilised in circuits for automatic control. In short, it's an automated switch that uses a low-current signal to operate a high-current circuit.



Fig.6.Jumper Wire

A wire or those corporate connections in his connection is known by several names (jumper wire, jumper interface, Dupont wire, or Dupont interface, named after one of the founders). or any end



that is frequently used to join a breadboard, other model, or portion of a test circuit to other hardware or parts without the need for soldering paste (or, in certain cases, without them at all) (basically "tinned"). By inserting the "end connector" into the original path and giving them access to a breadboard, printed circuit board header connection, or touch test fixture, individual bob wires are linked.

V.APPLICATION

Temperature and humidity data from the DHT, or soil moisture sensor, are gathered by the NodeMCU board. Artificial intelligence systems then process the data gathered from the sensors and other weather APIs to calculate the ideal water requirement for the plants. The water pump that provides the plants with water is managed by the relay module. Due to the system's internet connectivity, an Android app may be used to monitor and control it from any location.

STEPS:

- Use jumper wires to connect the DHT11 and soil moisture sensors to the NodeMCU board.
- Use jumper wires to connect the relay module to the NodeMCU board.
- Use jumper wires to connect the water pump to the relay module.
- Set up the NodeMCU 8266 board driver and the Arduino IDE on your PC.
- Launch the Arduino IDE, then start a fresh project.
- Select Sketch -> Include Library -> Manage Libraries in the Arduino IDE. Install the Firebase Arduino library by searching for it.
- Connect the NodeMCU board to the code.
- Establish a new Firebase Realtime Database and a Firebase project.
- Launch Android Studio and install OS X version 10 or above. To receive data, connect the Android app to the Firebase Project; open the IDE and create a new project; add custom input for various plants and crops.



Fig.7.Circuit schematic for the suggested model

VI.OUTCOMES

As seen the water pump can be turned on and off in accordance with the soil moisture levels, automating the irrigation

procedure. To prevent crop damage, the system irrigates the soil using data from the soil moisture sensor. This helps to prevent over- or under-irrigation of the soil. Farm owners can use a mobile application to monitor the process online.



Fig.8. Observing with an Android app

VII.CONCLUSION

IoT-enabled intelligent irrigation systems are a very efficient way to maximise yields while minimising water wastage. The technology facilitates precise and effective irrigation by combining IoT sensors, real-time weather information, and soil moisture measurements to optimise irrigation schedules. As a result, the local water supplies are less stressed, plant health is enhanced, and water costs are reduced. Furthermore, farmers find smart irrigation systems driven by IoT to be more convenient and easy to use due to its remote monitoring and control capabilities. All things considered, using intelligent irrigation systems with IoT technology is a step towards more productive and sustainable agriculture.

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FOREIGN DIRECT INVESTMENT AND INDIA'S ENERGY SECTOR: POLICY IMPLICATIONS

Heera S Kumar¹, Sreelekshmi Balakrishnan²

¹Assistant Professor, DC School of Management and Technology, Trivandrum

²Assistant Professor, DC School of Management and Technology, Trivandrum

Corresponding Author: Heera S Kumar, Assistant Professor, DC School of Management and Technology, Trivandrum

ABSTRACT

The paper aims to analyse the impact of Foreign Direct Investment (FDI) on India's energy sector and elucidate the policy implications arising from this dynamic relationship. As India strives to meet its growing energy demands and transition towards sustainable and cleaner sources, foreign investments play a pivotal role in shaping the sector's trajectory. The analysis reveals that FDI has been a significant driver of innovation, technology transfer, and capital infusion in the energy sector. However, challenges such as regulatory uncertainties, bureaucratic hurdles, and policy inconsistencies have impeded the full realization of FDI's potential. By examining successful case studies and identifying bottlenecks, the paper proposes strategic policy measures to harness the benefits of FDI more effectively. Policy implications include the need for a stable and transparent regulatory framework, streamlined approval processes, and targeted incentives to attract foreign investors. Additionally, fostering public-private partnerships and encouraging collaboration between domestic and foreign entities are crucial for achieving long-term sustainability and energy security. The study also emphasizes the importance of aligning FDI policies with India's energy transition goals, such as increasing the share of renewable energy in the overall energy mix. The findings of this research contribute to the on-going discourse on FDI in India's energy sector and provide policymakers with actionable recommendations to enhance the investment climate. As India endeavours to balance economic growth with environmental sustainability, understanding and optimizing the role of FDI in the energy sector is imperative for achieving a resilient and sustainable energy future.

KEYWORDS: Infrastructure development, Foreign Direct Investment (FDI), Power Generation Capacity, Policy Initiatives, Technology transfer, Energy sector, Renewable Energy and FDI policies

INTRODUCTION

Infrastructure development is distinguished by substantial initial investment, a lengthy period of time before returns are realised, and a portfolio with a high level of risk (Neena Sinha, N.V Kumar, 2011) Due to the inherent limitations of almost every infrastructure project, private investors have challenges in securing money with a maturity that aligns with the project's completion timeline. This source has significantly contributed to the fast growth of the private sector in infrastructure construction in developing nations. Two During the 1990s, several developing countries globally allowed private sector involvement in their infrastructure utilities, which were previously safeguarded by the state. As a result of the liberalisation strategy, these economies saw a rapid influx of foreign direct investment (FDI) specifically directed towards the construction of infrastructure (Sharma R and Khurana N, 2013). The private sector is primarily participating in divestitures, Greenfield enterprises, concessionaire agreements, and joint ventures. Although India's infrastructure investment presents a substantial market and potential profits, Latin American economies have attracted a greater portion of foreign direct investment in infrastructure. India has a significant drawback in terms of Foreign Direct Investment distribution among different sub-sectors (Sreelatha Reddy, 2014). The telecoms sector attracts the majority of investments, while the electricity industry, which is equally essential, receives relatively little investment. Several factors contribute to the

relatively limited involvement of foreign companies in equity participation. One challenge arises from the intense rivalry presented by other emerging economies, which also have a pressing need to expand their current infrastructure.

BACKGROUND OF THE STUDY

Global wind and hydropower businesses are showing interest in India's growing renewable energy industry, while facing some economic and operational obstacles. The Indian power industry's recent acceptance of private and foreign investment has initiated a comprehensive process of structural and governance reform (Singh, Shikha *et al.*, 2012)]. As a consequence, a vibrant and growing domestic private power sector has emerged, which is now progressively increasing its presence internationally. Overseas electrical corporations, particularly from Asia, are showing increased interest, although cautiously. Currently, investment seems to play a crucial role in the economic progress of any nation. Foreign direct investment (FDI) is the primary driver of economic development in developing nations. In recent decades, globalisation has facilitated robust economic integration across nations. Developing nations have revised their economic strategies by removing barriers to international commerce and investment. Hence, there is intense rivalry among emerging nations to attract foreign direct investments as it provides several benefits to emerging nations. Firstly, it provides financial resources to create beneficial effects outside of the business, such as creating



jobs, transferring technology, improving management abilities, increasing productivity, conducting research and development, and implementing innovative manufacturing methods inside the nation. Furthermore, it fosters a climate that motivates local investors to allocate their resources inside the nation (Athreya S and S Kapur, 2001). Despite several political and economic concerns, the key industries for foreign direct investment are electricity and energy, financial services, commerce, construction, transportation, textiles, and trade. The power and energy industry, often known as PESP, is a significant recipient of a substantial amount of foreign direct investment. The Government of Pakistan (GOP) has recently introduced a new power strategy and provided many incentives to attract both local and international businesses to engage in the power and energy industry. Furthermore, the development in output contributes to an escalation in energy demand due to an accompanying rise in energy consumption (Neena Sinha, N.V Kumar, 2011). The correlation between energy usage and a country's overall development is significant. Hence, per capita energy consumption serves as a surrogate indicator for assessing the socioeconomic progress of a nation. Like other emerging nations, the energy demand and consumption in this country have steadily risen in tandem with its growing population. a significant energy crisis as a result of its heavy dependence on oil and gas, reduced capacity, cyclical debt, energy security concerns, threats, and poor governance is been experienced . In order to address the energy issue, it is necessary to develop policies that aim to achieve a minimal debt level and discourage investment dependent on loans. In order to evaluate FDI in the power and energy sector objectively, it is essential to examine the government's policies aimed at attracting a substantial amount of FDI to the sector and its impact on the country's economy as a whole (Blomstrom, M and A Kokko, 2003). The study also emphasised the comprehensive framework of the power and energy industry, as well as significant obstacles impeding its advancement. Ultimately,

this report proposes policy recommendations for advancing this industry.

OBJECTIVES

1. To assess the effects of Foreign Direct Investment (FDI) on the energy sector in India.
2. To elucidate the resulting policy implications.

RESEARCH METHODOLOGY

The relevant information is collected from several reliable sources, including journals, publications, and official websites such as the RBI, the Reserve Bank of India, Ministry of Power, Central Electricity Authority, DISCOMS, and others. The study utilised basic statistical tools such as graphs with bars. Financial news sites and industry periodicals provide real-time updates on the most recent advancements in (FDI) in India's energy sector.

FDI inflows in Indian Power Sector

Over the past decade, the Indian power sector has witnessed a noteworthy trend in Foreign Direct Investment inflows, reflecting a growing interest from international investors. FDI in the Indian power sector has experienced a steady increase, propelled by the government's efforts to liberalize policies, encourage private participation, and create a conducive environment for foreign capital. Particularly, the renewable energy segment has emerged as a magnet for FDI, driven by ambitious targets and supportive policies. As a result, global investors are increasingly recognizing the potential in India's power sector, leading to a positive trend in FDI inflows. The infusion of foreign capital not only addresses the financial requirements for expanding the power infrastructure but also brings in technological expertise, best practices, and a broader global perspective, contributing to the sector's overall growth and sustainability. This trend underscores India's emergence as a key destination for international investments in the dynamic and evolving field of energy production and distribution.

Table No: 1 Installed generation capacity, 2022

Category	Installed Generation Capacity (MM)	Share
Fossil Fuel		
Coal	2,04,079	50%
Lignite	6,620	1.6%
Gas	24,824	6.1%
Diesel	562	0.1%
Total fossil Fuel	2,36,086	57.9%
Non- fossil Fuel		
Hydro	46,850	11.5%
Wind	41,666	10.2%
Solar	60,814	14.9%
Bloss mass power	10,206	2.5%
Waste to energy	495	0.1%
Small hydro power	4,899	1.2%
Nuclear	6,780	1.7%
Total non-fossil fuel	1,71,710	42.1%
Total Installed capacity	4,07,797	100%

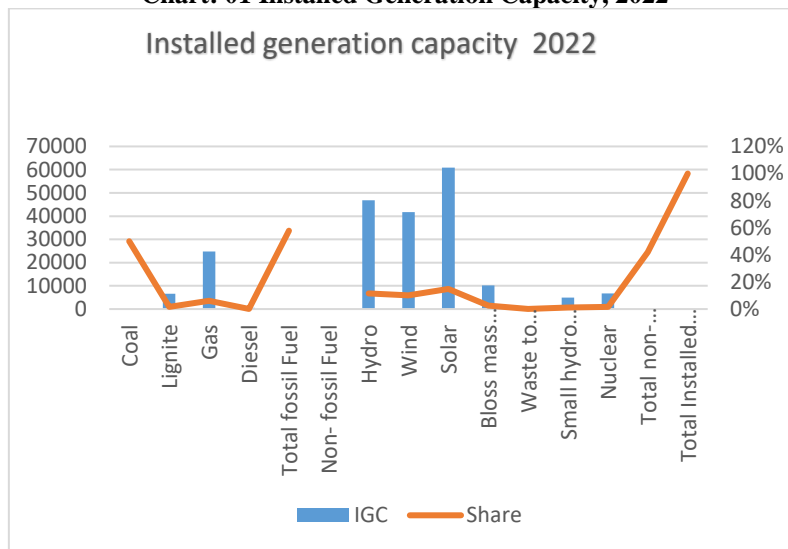
Source: Arthur D. Little, Ministry of Power



India's power sector plays a pivotal role in the country's economic growth and development. With a rapidly expanding economy and a growing population, there is a substantial demand for energy to fuel various industries, businesses, and households. The power sector in India is diverse, encompassing a mix of conventional and renewable energy sources. Thermal power, predominantly coal-based, has historically been a major contributor to the energy mix, supplying a significant portion of the country's electricity needs. However, there has been a concerted effort to increase the share of renewable energy in

recent years, with a focus on solar and wind power projects. The Government of India has implemented ambitious initiatives such as the National Solar Mission to promote the adoption of clean and sustainable energy sources. The country has made significant strides in increasing its renewable energy capacity, attracting investments in solar and wind projects. Additionally, various policy measures, incentives, and regulations have been introduced to promote energy efficiency and environmental sustainability in the power sector.

Chart: 01 Installed Generation Capacity, 2022



Source: Arthur D. Little, Ministry of Power

Challenges persist in the form of distribution losses, inadequate infrastructure, and the need for modernization in certain areas. Efforts are underway to address these challenges and enhance the overall efficiency and reliability of the power sector. The introduction of smart grids, advancements in technology and the emphasis on digitization are contributing to the modernization of the power infrastructure. Overall, India's power sector is undergoing a transformation to meet the increasing energy demand, reduce dependency on conventional sources, and contribute to global sustainability goals. As the country continues to progress, a balanced and diversified energy portfolio, coupled with on-going reforms and investments, is crucial for ensuring a reliable and sustainable power supply for India's future growth.

Green energy generation capacities: Discussion

In order to expedite the acceptance of green energy, we suggest that India prioritise the development of renewable energy producing capabilities by concentrating on:

1. **Improving investor confidence.** Improving investor confidence in green energy projects is essential for driving sustainable development and achieving renewable energy targets. Several key factors contribute to enhancing investor confidence in the green energy sector. First and foremost, policy stability and regulatory certainty are paramount. Clear, consistent, and long-term policies provide investors with the confidence to make substantial commitments to renewable energy projects. Governments play a crucial role in creating an

environment that fosters trust by ensuring that regulations are predictable and supportive. Secondly, financial incentives and a stable investment climate are instrumental in attracting investors. Governments can offer financial mechanisms such as subsidies, tax credits, and favourable tariffs to mitigate risks and enhance the financial viability of green energy projects. Additionally, providing a transparent and efficient project approval process reduces uncertainties and encourages investors to participate in the sector. Thirdly, technological advancements and innovation contribute significantly to investor confidence. A commitment to research and development in green technologies assures investors that the sector is continuously evolving, making investments in renewable energy increasingly viable and competitive. Lastly, building a robust infrastructure and grid integration for renewable energy projects ensures the efficient delivery of clean power to the market. Investors are more likely to engage in projects where the infrastructure is well-established.

2. **Removing barriers to entry of Greenfield projects.** Removing barriers to the entry of Greenfield projects in the green energy sector is crucial for accelerating the transition towards sustainable and renewable energy sources. Governments and regulatory bodies play a pivotal role in fostering an environment that facilitates the establishment of Greenfield projects. One key aspect is the reduction of bureaucratic hurdles and streamlining approval processes. Simplifying



regulatory procedures and expediting the issuance of permits can significantly reduce the time and costs associated with project initiation, making it more attractive for investors. Additionally, providing clarity on land acquisition procedures and ensuring access to suitable project sites can mitigate one of the significant challenges faced by Greenfield projects. Clear and transparent land allocation policies contribute to smoother project implementation, allowing investors to plan efficiently and allocate resources effectively. Financial support mechanisms, such as subsidies, grants, and low-interest loans, can act as powerful incentives for new entrants. These measures help offset initial capital costs and make Greenfield projects more financially viable, particularly in the nascent stages of the renewable energy sector's development. Governments can encourage public-private partnerships, fostering a shared responsibility for project development and creating a conducive environment for investment. By addressing these barriers, governments can attract a diverse range of investors, including domestic and international entities, to participate in Greenfield projects. This not only expands the renewable energy capacity but also contributes to job creation, technology transfer, and the overall sustainability of the energy sector. Removing barriers to entry is a strategic imperative to unlock the full potential of Greenfield projects and accelerate the global shift towards a cleaner and more sustainable energy future.

- 3. Increasing domestic equipment production.** Policies that promote research and development, innovation, and technology transfer can foster a conducive environment for the growth of a robust domestic manufacturing ecosystem. Financial incentives, such as tax breaks, subsidies, and preferential tariffs, can encourage private enterprises to invest in state-of-the-art manufacturing facilities for solar panels, wind turbines, energy storage systems, and other green energy components. By reducing the cost of domestic production, these incentives make domestically manufactured equipment more competitive in the market, attracting investors and creating jobs. Strategic partnerships between the government, private sector, and research institutions can further accelerate the growth of domestic manufacturing. Collaborative efforts can focus on developing and upgrading the technical skills of the workforce, fostering innovation, and optimizing supply chain logistics. Enhancing domestic production not only strengthens a country's energy security by reducing dependence on imports but also contributes to the global effort in reducing carbon footprints associated with transportation and logistics. Additionally, it bolsters the nation's economic resilience by creating employment opportunities and supporting local industries. In summary, a concerted effort to increase domestic equipment production in the green energy sector aligns with broader goals of fostering economic growth, achieving energy independence, and promoting sustainability. It positions countries to be leaders in the

global renewable energy market while contributing to a cleaner and more resilient energy infrastructure.

- 4. Scaling up:** Rooftop solar and wind projects offer decentralized solutions, enabling energy production closer to the point of consumption. Governments and regulatory bodies can play a crucial role in incentivizing the adoption of these technologies by implementing supportive policies, such as feed-in tariffs, net metering, and tax credits. Financial mechanisms, including subsidies and low-interest loans, can encourage businesses, residential users, and institutions to invest in rooftop solar and wind installations. These incentives make the initial investment more accessible and accelerate the return on investment, making green energy solutions more attractive. Community engagement and awareness campaigns are integral to the successful deployment of rooftop solar and wind projects. Educating the public about the benefits of decentralized energy production, cost savings, and environmental impact can stimulate increased interest and participation. Technology advancements and research and development initiatives further contribute to the scalability of rooftop solar and wind projects. Innovations in energy storage, smart grid technologies, and efficient installation methods can enhance the overall effectiveness of these projects. Scaling up deployment also involves streamlining administrative processes, reducing bureaucratic complexities, and ensuring a straightforward regulatory framework. Simplifying approval procedures and permitting requirements can accelerate the implementation of rooftop solar and wind projects, attracting a broader range of participants. By prioritizing and fostering the widespread adoption of rooftop solar and wind technologies, nations can diversify their energy sources, reduce dependency on centralized grids, and empower communities to actively contribute to the transition towards a more sustainable and resilient energy future.

Indian Power Sector: Institutional framework

The Indian power sector operates within a well-defined institutional framework that encompasses various government bodies, regulatory authorities, and industry stakeholders. At the central level, the Ministry of Power is the primary governing body responsible for formulating policies, planning, and coordinating the development of the power sector. The Ministry is supported by several associated organizations, including the Central Electricity Authority (CEA), which advises on matters related to generation, transmission, and distribution. A key player in the institutional landscape is the Central Electricity Regulatory Commission (CERC), an autonomous statutory body responsible for regulating the power sector at the central level. CERC oversees tariff regulations, grid connectivity, and promotes competition in the sector. These commissions play a crucial role in tariff setting, licensing, and ensuring the adherence to regulations. State-owned utilities, private power producers, and distribution companies operate under the purview of both central and state regulatory bodies. The Power System Operation Corporation

(POSOCO) manages the national power grid, ensuring the smooth and reliable operation of the interconnected power systems. In recent years, there has been a growing emphasis on renewable energy, with the Ministry of New and Renewable Energy (MNRE) spearheading policies and initiatives to promote clean energy development. The Green Energy Corridor project aims to facilitate the

integration of renewable energy into the grid. Overall, the institutional framework of the Indian power sector is characterized by a mix of government bodies, regulatory authorities, and sector-specific entities, working collaboratively to ensure the effective planning, regulation, and operation of the country's diverse and rapidly evolving power landscape.

Figure No.2 Institutional framework



Source: <https://www.google.com/url>

Rationale of the Study

The rationale for studying the impact of Foreign Direct Investment (FDI) on India's energy sector stems from the critical role that foreign investments play in shaping the trajectory of the nation's energy landscape. As India contends with increasing energy demands, environmental concerns, and the imperative to transition towards sustainable practices, understanding the dynamics of FDI in the energy sector becomes paramount. This study seeks to unravel the multifaceted influences of FDI on the sector, examining its implications on innovation, technology transfer, and overall economic growth. By analysing the existing literature, case studies, and statistical data, the study aims to provide valuable insights into the current state of FDI in India's energy sector, identifying challenges and opportunities. The findings of this research are expected to contribute to informed policymaking, facilitating the formulation of strategies that attract and maximize the benefits of foreign investments while aligning with India's broader goals of energy security, sustainability, and economic development. Ultimately, the study is motivated by the need to comprehend and optimize the role of FDI in propelling India towards a resilient and sustainable energy future.

Policy Recommendations and Implications

Based on the analysis of Foreign Direct Investment (FDI) in India's energy sector, several policy recommendations emerge to enhance the investment climate, attract foreign capital, and promote sustainable development:

1. **Stable Regulatory Framework:** Establish a stable and transparent regulatory framework to instill confidence among investors. Consistency in policies, regulations, and approvals will mitigate uncertainties and encourage long-term commitments.
2. **Financial Incentives:** Provide targeted financial incentives such as tax credits, subsidies, and concessional financing to make investments in the energy sector more attractive. This can significantly reduce the financial burden on investors, especially in renewable energy projects.
3. **Public-Private Partnerships (PPPs):** Encourage and facilitate public-private partnerships for large-scale energy projects. Collaborative efforts between the government and private sector can enhance efficiency, share risks, and expedite project implementation.
4. **Technology Transfer and Collaboration:** Promote technology transfer and collaboration between domestic and foreign entities. Encouraging joint ventures and research partnerships will facilitate the transfer of advanced technologies and knowledge, benefiting the growth of the energy sector.
5. **Capacity Building:** Invest in capacity building initiatives to enhance the skills of the local workforce. A skilled and knowledgeable workforce is crucial for the successful implementation and maintenance of energy projects.



6. **Renewable Energy Certificates (RECs):** Expand the scope and effectiveness of Renewable Energy Certificates (RECs) to incentivize renewable energy production. A robust REC mechanism can encourage greater investment in solar, wind, and other clean energy projects.
7. **Infrastructure Development:** Prioritize infrastructure development, including grid enhancements and energy storage facilities, to address challenges associated with intermittent renewable energy sources. A resilient and modern infrastructure is vital for the successful integration of renewable energy into the grid.
8. **Clear Land Acquisition Policies:** Implement clear and transparent land acquisition policies to minimize delays in project execution. Land availability and acquisition are critical factors influencing the feasibility and timeline of energy projects.
9. **International Collaboration:** Actively engage in international collaborations, forums, and partnerships to attract global investors and leverage best practices from successful foreign energy projects.

CONCLUSION

High-quality and reliable electrical supply is essential for enhancing agricultural development in India's agricultural industry. Priority should be given to the top countries that are investing in India, and it is necessary to formulate favourable policies to support their investments. Mauritius, although being a minor economy compared to other major economies in the world, makes the most contribution. Although there is some external funding coming from the United Kingdom and Cyprus, it will still maintain a position on the list of contributors. The confidence that the citizens of this nation have in India is motivating them to make investments in the country. It is crucial to highlight that these relationships must become stronger in the future. It is well recognised that to possess the greatest capacity for consumption globally. Therefore, it is imperative that we reassess our policies concerning major multinational corporations that spend very little in India yet want to market their own goods here. Government has to appoint a committee to study FDI expansion in this industry specifically. The article concluded that, by addressing these key elements - policy stability, financial incentives, technological innovation, and infrastructure development - governments and industry stakeholders can collectively bolster investor confidence in green energy, fostering a sustainable and resilient future for the renewable energy sector. Implementing these policy recommendations can contribute to creating an attractive and conducive environment for FDI in India's energy sector, fostering sustainable development and supporting the nation's energy transition goals.

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FINANCIAL REPORTING EVOLUTION: A CASE STUDY OF IND AS IMPLEMENTATION OF INDIAN STEEL COMPANIES

Basavaraja Y N¹, Dr. Veena. M²

¹Research Scholar, Department of Commerce, Vijayanagara Sri Krishnadevaraya University Ballari Karnataka, 583105
²Assistant Professor, Department of Commerce, Vijayanagara Sri Krishnadevaraya University Ballari Karnataka, 583105

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ABSTRACT

This article investigates the ramifications of the transition from Indian Generally Accepted Accounting Principles (IGAAP) to Indian Accounting Standards (Ind AS) on financial reporting within the Indian steel industry. In an era of global economic interconnectivity, the move towards aligning with international standards, notably International Financial Reporting Standards (IFRS), holds profound implications. The study underscores the paramount importance of transparency and comparability in financial reporting. The study employs the Gray's Comparability Index (GCI) to quantitatively assess the conservatism levels in reporting various financial statement items. The findings reveal that while assets, liabilities, and equity exhibit relatively consistent reporting under both standards, Ind AS demonstrates a propensity for greater optimism in the reporting of income, expenses, and financial activities.

INTRODUCTION

In today's globalized economy, the adoption of a uniform set of accounting standards is crucial for ensuring transparency, comparability, and reliability in financial reporting. International Financial Reporting Standards (IFRS) have emerged as the preferred choice for many countries aiming to enhance the quality and consistency of their financial statements. As a significant player in the global steel industry, India has also embarked on the path of convergence to IFRS in recent years.

This comparative study aims to examine the impact of the convergence process on financial reporting practices in the steel sector in India. Specifically, it focuses on the two main accounting frameworks followed in India, namely Indian Accounting Standards (Ind AS) and Indian Generally Accepted Accounting Principles (IGAAP), and analyzes their alignment with IFRS.

The steel industry holds strategic importance in India, contributing significantly to its economic growth and employment generation. Understanding the challenges and opportunities associated with the convergence process in this industry is crucial for stakeholders, including investors, regulators, and financial professionals. Therefore, this study concentrates on the steel sector to provide a focused analysis of the convergence journey and its implications on financial reporting.

Concept of comparability

The important principle involved in presenting financial information in a way that allows for meaningful comparisons between different periods, entities, or financial statements. Comparability is a fundamental concept in accounting and financial reporting, and it plays a crucial role in helping users of financial statements make informed decisions.

Here are some key points to explain this objective:

Consistency Over Time: Financial statements should be prepared using consistent accounting policies and methods from one period to another. This ensures that the financial performance and position of a company can be compared over time. Changes in accounting policies should be disclosed and explained in the financial statements to maintain transparency.

Comparability Across Companies: Financial statements should also be prepared in a way that allows for comparisons between different companies in the same industry or sector. This involves using standardized accounting principles and disclosure requirements so that investors, creditors, and other stakeholders can assess the financial health and performance of different entities.

Standardized Reporting: Accounting standards, such as Generally Accepted Accounting Principles (GAAP) or International Financial Reporting Standards (IFRS), provide guidelines and rules for preparing financial statements. Adhering to these standards enhances comparability because it ensures that companies in the same jurisdiction follow the same rules.



Disclosure and Explanations: To enhance comparability, financial statements should include clear and comprehensive disclosures and explanations. This includes providing additional information about accounting policies, assumptions, and significant accounting estimates. This allows users to understand the basis for the reported figures and make meaningful comparisons.

Footnotes and Supplementary Information: Footnotes and supplementary schedules provide additional context and detail about the financial statements. They can help users understand any unique or non-standard transactions and events, further promoting comparability.

Management's Responsibility: Management of the company is responsible for ensuring that financial statements are prepared in accordance with accounting standards and that they provide meaningful and comparable information. External auditors play a role in providing an independent assessment of whether the financial statements are in compliance with accounting standards.

Investor and Creditor Decision-Making: Comparability is crucial for investors and creditors who use financial statements to assess a company's financial health, performance, and future prospects. They rely on comparability to make informed investment and lending decisions.

REVIEW OF LITERATURE

Kamala and mohapatra (2020) conducted a comparative analysis, assessing the impact of transitioning from Indian Generally Accepted Accounting Principles (IGAAP) to Indian Accounting Standards (Ind-AS) in select Indian industries. Their examination encompassed 38 variables derived from financial statements, including 12 items from the profit and loss account and 12 financial ratios. The findings of the study indicated a diverse impact on the financial statements of Indian companies resulting from this comparative analysis.

Amrita dutta, (2020) Amrita Dutta explored the motivations driving the convergence towards International Financial Reporting Standards (IFRS) and assessed the costs and benefits associated with the adoption of Indian Accounting Standards (Ind-AS) in place of IFRS. The study specifically focused on analyzing financial ratios of Wipro Co. Ltd. when applying both Ind-AS and IFRS. The research findings indicated that there were minimal variations in the ratios calculated under these two distinct accounting standards, a discovery with significant implications for stakeholders.

Atanu pramanick (2018) conducted a study that encompassed a comparative analysis of the financial statements of specific companies, scrutinizing their adherence to both Indian Generally Accepted Accounting Principles (IGAAP) and Indian Accounting Standards (Ind-AS). To measure the relative influence of these standards, the research made use of Gray's comparability index. The results indicated that, in most instances, the shift to Ind-AS

did not result in significant disparities in the Profit & Loss statement and Balance Sheet when juxtaposed with IGAAP.

Paramjoth kaur (2019) a researcher, carried out a comparative analysis encompassing Indian Generally Accepted Accounting Principles (GAAP), International Financial Reporting Standards (IFRS), and Indian Accounting Standards (Ind-AS). The research aimed to scrutinize the key theoretical distinctions necessitating immediate attention for successful convergence. The findings underscored a positive aspect of Indian Accounting Standards, pointing out that there haven't been any substantial alterations when compared to Indian GAAP. However, the study also revealed significant disparities between IFRS and Indian-GAAP, indicating that Indian Accounting Standards may not be fully aligned with the evolving landscape of IFRS..

Revanayya kanthayya (2017) A research study embarked on a detailed comparative examination of balance sheets prepared in accordance with Indian Generally Accepted Accounting Principles (GAAP) and International Financial Reporting Standards (IFRS). The study placed particular emphasis on quantitative distinctions within Indian IT firms, specifically Infosys and Wipro, scrutinizing significant balance sheet elements such as total assets, total liabilities, and total equity. Employing Gray's comparability index, the study brought to light significant findings, highlighting that under IFRS, both total assets and total equity displayed higher values in comparison to Indian GAAP. In contrast, total liabilities showed a lower value, and these differences held statistical significance.

Nageshwar rao, (2020) The researcher performed a comparative assessment of financial statements, with a focus on evaluating the congruence of financial reporting under IND-AS and IFRS for a selected sample of 10 publicly listed companies. The analysis encompassed various balance sheet variables, encompassing non-current assets, current assets, shareholders' equity, income items, and financial ratios. F-test statistics were employed in this comparative evaluation, leading to the conclusion that the adoption of IFRS and IND-AS had a favorable impact on the relevance of financial reporting. This was notably observed in the diminished gap between a company's book value and market value when adhering to these standards, as opposed to the disparities noted under Indian GAAP.

Dr Nisha karla (2016) In this research, the investigator explored the benefits and challenges linked to the implementation of IFRS in the Indian context, while also conducting a comprehensive examination of the notable disparities existing between Indian GAAP and IFRS. A sample of six companies was carefully chosen for scrutiny, with a focus on balance sheet and income statement data, as well as various financial ratios. To assess the hypotheses, T-tests were applied as the statistical method. The results indicated that the shift to IFRS did not produce statistically significant changes in the activity-based ratios of Indian companies. This implies that the transition to IFRS generally had an adverse impact on most of the activity-based ratios.



Dr shilpa vardia (2016) This inquiry evaluated the significance of accounting information in terms of its value both before and after the adoption of International Financial Reporting Standards (IFRS). It employed adjusted R and regression models in the analysis. The comprehensive outcomes of this research demonstrated that subsequent to the implementation of IFRS, Earnings per share, Book value of equity, and company share prices displayed notable enhancements, underscoring improved value relevance in accounting information.

Rahul kamath (2014) The study had a central focus on examining how the adoption of IFRS influenced various financial aspects, encompassing financial risk, investment activities, and operating activities, within a group of eight Indian companies. The primary emphasis of the research revolved around balance sheet variables. In order to gauge the contrast between Indian GAAP and IFRS, the researcher applied T-test statistics. The outcomes of the study unveiled a favorable impact of IFRS adoption on investment and operating activities. Nevertheless, no noticeable improvement or escalation in financial risk or adherence to debt covenants was observed as a result of the transition to IFRS.

OBJECTIVES OF THE STUDY

1. To Compare financial statements prepared as per Ind AS and IGAAP

RESEARCH METHODOLOGY

For this study researcher use both the descriptive and analytical method

Scope of study: for this study select JSW Energy Company limited which are mandatory adopted Ind- AS in the year of 31st march 2016

Sampling method and sample : deliberately, one steel company have been select for this study they are JSW Energy company

limited has started financial reporting in Ind-AS in the since 2016-2017,

Sources of Data : The study is based on secondary data. The data has been collected from the annual reports of select iron and steel Company.

HYPOTHESIS OF THE STUDY

1) H0: There is no significant difference in the balance sheet items reported under IGAAP and IND-AS

H1: There is a significant difference in the balance sheet items reported under IGAAP and IND-AS

Statistical Tools for Data Analysis: Statistical tools used for the study are average, percentage, Gray's Comparability Index (GCI) and statistical inferences like t-test

The study aims to quantitatively assess the comparability of financial reports prepared under different accounting standards, namely Indian GAAP and Ind-AS. To facilitate this comparison, the study employs Gray's Conservatism Index, which was introduced by Gray in 1980. This index is utilized to determine whether certain countries exhibit more conservative accounting practices than others. It quantifies the impact of diverse national accounting practices on profit measurement using the Conservatism Index formula: $1 - (RA - RD) / RA$, where RA represents adjusted profits and RD represents disclosed profits.

Gray's Comparability Index is then applied to critical components of financial statements, including assets, liabilities, and equities prepared under both Indian GAAP and IFRS. This enables an assessment of the disparities between these significant elements, such as assets, equity, liabilities, income, and expenses, as reported under Indian GAAP and Ind-AS. The formulae employed for this index are derived from Gray's original concept, as further developed by Oliveira J., Azevedo G., Oliveira M., and Almeida S. in 2015.

The Index is calculated as under:

$$GCI_{(Total\ Assets)} = 1 - \frac{Total\ Assets_{(Ind\ AS)} - Total\ Assets_{(IGAAP)}}{Total\ Assets_{(Ind\ AS)}}$$

$$GCI_{(Total\ Liabilities)} = 1 - \frac{Total\ Liabilities_{(Ind\ AS)} - Total\ Liabilities_{(IGAAP)}}{Total\ Liabilities_{(Ind\ AS)}}$$

$$GCI_{(Total\ Equity)} = 1 - \frac{Total\ Equity_{(Ind\ AS)} - Total\ Equity_{(IGAAP)}}{Total\ Equity_{(Ind\ AS)}}$$

$$GCI_{(Total\ Income)} = 1 - \frac{Total\ Income_{(Ind\ AS)} - Total\ Income_{(IGAAP)}}{Total\ Income_{(Ind\ AS)}}$$

$$GCI_{(Total\ Expenses)} = 1 - \frac{Total\ Expenses_{(Ind\ AS)} - Total\ Expenses_{(IGAAP)}}{Total\ Expenses_{(Ind\ AS)}}$$

In this study Ind AS is taken as benchmark for analysing the accounting effect on major elements of financial statements of movement from IGAAP and Ind AS. Assets, equity, liabilities,

income and expenses reported under IGAAP and Ind AS is kept in the denominator to analyse the effect of Ind-AS and IGAAP application on Indian accounting practices.

Table 1.1 GCI - Interpretation

	Total Assets	Total Equity	Total Liabilities	Total Income	Total Expenses
Pessimistic	<0.95	<0.95	>1.05	<0.95	>1.05
Neutral	[0.95 - 1.05]	[0.95 - 1.05]	[0.95 - 1.05]	[0.95 - 1.05]	[0.95 - 1.05]
Optimistic	>1.05	>1.05	<0.95	>1.05	<0.95



As shown in Table 3.1 the principle followed by Gray (1980) involves three classification categories: pessimistic, neutral and optimistic. Description of these three categories is as under:

- **Pessimistic (suspicious):** Consisting index lesser than 0.95 for assets, equity, and income greater than 1.05 for liabilities and expenses.
- **Optimistic:** Consisting index higher than 1.05 for assets, equity, and income lower than 0.95 for liabilities and expenses.
- **Neutral:** Consisting index in the range 0.95 and 1.05, involving some understanding.

Thus, for the elements of financial statements conservatism analysis can be performed using can be assessed using the following interpretations:

- a) Suppose, "Total Assets" of IGAAP are greater (lesser) than IFRS, it indicates IGAAP are optimistic (suspicious) compared IFRS. Hence, IGAAP has lower (more) conservatism than IFRS.
- b) Suppose, "Total Equity" of IGAAP is greater (lesser) than IFRS, it indicates IGAAP are optimistic (suspicious) compared IFRS. Hence, IGAAP has lower (more) conservatism than IFRS.

- c) Suppose, "Total Liabilities" of IGAAP is greater (lesser) than IFRS, it indicates IGAAP are suspicious (optimistic) compared IFRS. Hence, IGAAP has more (lower) conservatism than IFRS.
- d) Suppose, "Total Income" of IGAAP is greater (lesser) than IFRS, it indicates IGAAP are optimistic (suspicious) compared IFRS. Hence, IGAAP has lower (more) conservatism than IFRS. and
- e) Suppose, "Total Expenses" of IGAAP are greater (lesser) than IFRS, it indicates IGAAP are suspicious (optimistic) compared IFRS. Hence, IGAAP has more (lower) conservatism than IFRS.

An attempt is made in this research to examine the effect of IFRS / Ind AS application on the performance of select Indian companies. The present research has taken variables of the study by Kamath and Desai (2014) by adding three more variables. The financial activities taken into consideration for the analysis i) financial activities, ii) investment activities, iii) operational activities. Each of the hypotheses formulated are statistically analysed with paired sample t-test at 5 % level of significance.

Comparison of balance sheet under IGAAP and IND-AS

TABLE 1.2

JSW Energy limited Financial position as per IGAAP and Ind-AS in the year of 2016

	Items	As per I-GAAP	As per Ind-as
1	Total assets	16,440.08	16,974.17
2	Total liability	8,255.09	8,382.04
3	Total equity	8,184.99	8,592.13
4	Total income	6,191.10	6,260.71
5	Total expenses	4,802.92	4,697.63
6	Operating activities	2,263.64	2,261.05
7	Investing activities	3,461.43	3,468.17
8	Financing activities	220.58	217.85

Source : Annual reports of jsw energy co.Ltd

JSW energy limited Balance sheet as per IGAAP and Ind-AS in the year of 2016

Items	As per Ind-as	As per I-GAAP	Difference	GCI Index
Total assets	16,974.17	16,440.08	534.09	0.968535133
Total liability	8,382.04	8,255.09	126.95	0.984854522
Total equity	8,592.13	8,184.99	407.14	0.952614777
Total income	6,260.71	6,191.10	69.61	0.988881453
Total expenses	4,697.63	4,802.92	-105.29	1.02241343
Operating activities	2,261.05	2,263.64	-2.59	1.001145486
Investing activities	3,468.17	3,461.43	6.74	0.998056612
Financing activities	217.85	220.58	-2.73	1.012531558

Source : Annual reports of jsw energy co.Ltd

Interpretation

From the above table shows that the total asset of GCI Index is : 0.9685 (Neutral) the "Neutral" range (0.95 - 1.05). This suggests that when it comes to reporting total assets, Ind-as and I-GAAP

are relatively similar in their level of conservatism. There are no significant differences in their assessments of total assets.

The total liabilities of GCI Index is : 0.9849 (Neutral) the "Neutral" range (0.95 - 1.05). This indicates that Ind-as and I-



GAAP have similar levels of conservatism in reporting total liabilities. There are no major differences in their assessments of total liabilities.

The total equity of GCI Index is : 0.9526 (Neutral) "Neutral" range (0.95 - 1.05), indicating that Ind-as and I-GAAP have similar levels of conservatism in reporting total equity. There are no significant disparities in their assessments of total equity.

The total expenses of GCI Index is : 1.0224 (Optimistic) the "Optimistic" range (>1.05). This indicates that Ind-as is more optimistic than I-GAAP when reporting total expenses. Ind-as may report lower expenses compared to I-GAAP, suggesting a potentially more optimistic financial reporting approach for expenses.

The total income of GCI index The GCI Index can be calculated as the ratio of "As per Ind-as" divided by "As per I-GAAP," which is 6,260.71 / 6,191.10 = 1.0113. The GCI Index of 1.0113 falls in the "Optimistic" range (>1.05). the "Optimistic" range (>1.05). This suggests that Ind-as is more optimistic than I-GAAP when it

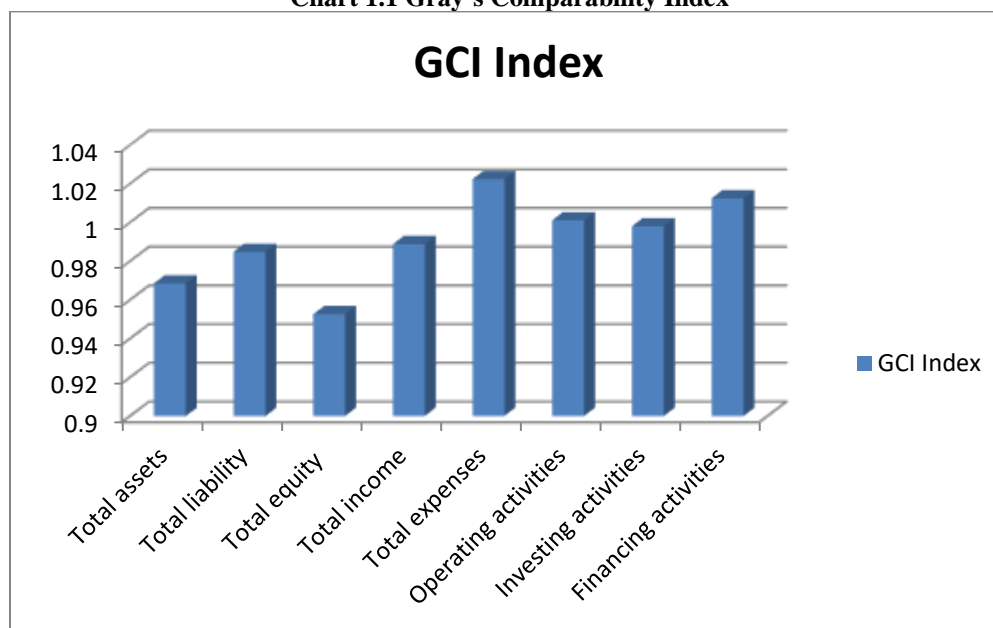
comes to reporting total income. Ind-as may recognize higher income values compared to I-GAAP, indicating a potentially more optimistic financial reporting approach for income.

Operating activities of GCI is that 1.0011 (Neutral) the "Neutral" range (0.95 - 1.05). This suggests that Ind-as and I-GAAP have similar levels of conservatism when reporting operating activities. There are no significant differences in their assessments of operating activities.

Investing activities of GCI is that 0.9981 (Neutral) "Neutral" range (0.95 - 1.05). This indicates that Ind-as and I-GAAP have similar levels of conservatism when reporting investing activities. There are no major differences in their assessments of investing activities.

Financial activities of GCI is that 1.0125 (Optimistic) the "Optimistic" range (>1.05). This suggests that Ind-as is more optimistic than I-GAAP when reporting financing activities. Ind-as may report more favorable financing activity figures compared to I-GAAP, indicating a potentially more optimistic financial reporting approach for financing activities.

Chart 1.1 Gray's Comparability Index



t test results

The t-statistic indicates that there may not be a significant difference between the means of the two samples. In a one-tailed test (negative direction), the p-value (0.0821) is greater than the chosen significance level (e.g., 0.05), suggesting that there is insufficient evidence to reject the null hypothesis. In a two-tailed test, the p-value (0.1643) also exceeds the significance level, indicating a lack of statistical significance in either direction. Overall, the results suggest that there is no strong statistical evidence to conclude that the means of the two samples are significantly different from each other. The similarity in means and variances supports this finding.

Outcome and Conclusion

The overall outcome of the study suggests that the transition from IGAAP to Ind AS has resulted in increased optimism in financial reporting, particularly in income, expenses, and financial activities. However, assets, liabilities, and equity remain relatively consistent in their reporting under both standards. while there are some differences in how Ind-AS and I-GAAP report certain financial metrics (especially income and expenses), overall, they exhibit a relatively similar level of conservatism in their assessments of assets, liabilities, equity, operating activities, and investing activities. However, Ind-AS appears to be more



optimistic in reporting income and financing activities compared to I-GAAP. These differences can have implications for how investors and stakeholders interpret the financial health and performance of the company. In conclusion, the adoption of Ind AS in the Indian steel industry represents a significant step toward harmonizing accounting practices with international standards. While the transition has led to increased optimism in some financial statement elements, the overarching goal of improving transparency and comparability remains paramount. As the global financial landscape continues to evolve, research in this field will continue to be relevant, providing insights into the convergence of accounting standards and its broader implications for the business world.

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t-Test: Two-Sample Assuming Unequal Variances

	<i>t</i>	<i>p</i>
Mean	1	1.03256
Variance	0	0.00059
Observations	2	2
Hypothesized Mean Difference	0.03254	
Df	1	
t Stat	-3.78888	
P(T<=t) one-tail	0.082139	
t Critical one-tail	6.313752	
P(T<=t) two-tail	0.164277	
t Critical two-tail	12.7062	



A STUDY ON VENTURE CAPITAL FINANCE IN INDIA

Mr. S. Venkat Reddy¹, Mr. Jasveer Rathi²

¹Assistant Professor, J.B. Institute of Engineering and Technology

²J.B. Institute of Engineering and Technology

ABSTRACT

This study aims to provide a comprehensive understanding of the variables that impact investment decisions and how they impact innovation and economic development by delving into the details of India's venture capital ecosystem. The initial step of the study's multi-stage development is an exhaustive literature investigation on venture capital in India. Following this, it examines investment patterns across time, preferences within industries, and regional variations. The report also explores the challenges entrepreneurs face when seeking venture capital, drawing attention to the need for legal frameworks and government initiatives to foster an environment conducive to entrepreneurial growth. These examples provide valuable insights into the factors that affect venture capital's success or failure and enrich the academic and practical discussion of venture capital funding. In order to better inform entrepreneurs, investors, and legislators in India, this report provides actionable suggestions for enhancing the country's venture capital ecosystem.

I – INTRODUCTION

Venture capital firms provide more than just financial backing; they also bring a wealth of industry expertise, personal contacts, and information. Angel investors, like those in equity financing, use their own money rather than that of a Venture capital firm or other institutional fund.

An estimated £1.5 billion is invested in the UK each year by angels. Angel investors, in contrast to traditional Venture capital firms, often spend less money but at an earlier stage in a company's growth. Collaboration between angel investors and Venture capital companies, nevertheless, is far from unusual.

A network of angel investors and VCs known as a "innovation eco-system" provides seed money and expert guidance to fledgling businesses.

The right amount of Venture capital to spend depends on a company's current stage of growth. The BVCA outlines the following procedures for Venture capital investments:

Startups may get their ideas off the ground with the help of seed money, which allows them to build a business plan, make prototypes, and conduct more research before releasing their product to the public and beginning mass production.

Businesses are provided with start-up funding so that they may launch their goods and conduct first marketing. While some businesses are still in the planning stages, others have not yet made their product available to the public.

For businesses that have completed product development but are in need of funding to begin commercial manufacturing and sales, there are alternative early stage financing options available.

- They probably aren't earning any money right now.

- Investment money for companies that are nearing the end of their life cycle, when their growth rates are slower compared to when they were just starting out. Although there is no assurance, these companies have a better chance of success now than they had during their initial stages of expansion.
- Capital, often known as "development" or "growth" capital, provided to a running, profitable firm with the express purpose of fostering further expansion and growth.
- Money may be used to fund a variety of related initiatives, such as increasing operational capital, expanding production capacity, developing new products or markets, and so on.

Although they may not be making a profit at the moment, Venture capital will invest in fledgling companies that provide a groundbreaking product or service and have the potential for rapid growth. Venture capital investments are sought after by firms for a variety of reasons. The company's growth, the addition of new employees, enhanced product development, and increased production and sales are just a few of the reasons. Numerous globally recognized companies may trace their early financial support to Venture capital. Companies like Wise, Moonpig, and Skyscanner, headquartered in the UK, and Google, Facebook, and Skype, based in other parts of the globe, all fall into this category since they all received early investment from Venture capital firms. It is fairly uncommon for Venture capitalists to buy minority interests in businesses, often with other investors.

The multiple fundraising rounds that early-stage enterprises go through are often referred to as Series A, B, C, etc. Existing investors or potential new investors may provide more capital to these rounds. Many new businesses get seed



funding from angel investors, crowdsourcing, grants, incubators, or even close friends and family before they secure Series A funding

All of these things come together to form what is known as the "innovation eco-system," a web of investors and mentors that assists new and growing companies at different stages of their journey. Typically, investments made by Venture capital companies are held for a period of five to seven years. The next step may be a stock market sale, an acquisition by a multinational corporation, or an investment by a private equity group, among other options. A private equity investment is an equity investment that is not traded on a public exchange, such as the NYSE. Institutional and individual investors typically pool their funds into private equity through limited partnership agreements. These agreements allow investors to spread their bets across various Venture capital projects while keeping their initial investment safe from legal action.

II – RESEARCH GAP

Considering the ever-changing startup ecosystem and economic environment of India, there are a number of information gaps in the existing literature about the function of Venture capital (VC) in the nation. Inquire into the role of Venture money in encouraging innovation in the startup ecosystem in India. Research in this area might look at things like the most heavily funded sectors and technologies, how Venture capital ties into product innovation, and how companies supported by VCs drive technical progress and competitiveness. Disparities in Venture capital funding and startup activity between Indian states and cities should be investigated. Discover which areas are better suited for Venture capital investment by analyzing criteria including regulatory climate, local market dynamics, accessibility to finance, talent and infrastructure.

III – OBJECTIVES OF THE STUDY

- To know about the Venture Capital Finances in India
- To study about how Venture Capital Ecosystem works
- To identify the variables that impact Venture Capital Investment Choices
- To analyze the impact of Venture capital funding on Start-up in India

IV – RESEARCH METHODOLOGY

If the research technique is well-structured, then the study's findings will be credible and valid, and the research process will be transparent. Research must be well-structured and explained for it to be trustworthy and contribute to the field of study, whether it be academic or practical.

Data is gathered from Primary Source and Secondary Source.

Primary Source Data: Primary data consists of information gathered directly from people, such as via surveys and personal observations. The structured questionnaire is used to gather data in this research.

Research Design: Exploratory Design

Sampling Technique: Convenience Sampling

Sampling Procedure: Simple Random Sampling

Sample Size: 198

Tool for Analysis: Chi Square Test

Secondary Source of Data; Researchers can't do without secondary data, which provides a wealth of information that may either complement primary data or serve as the basis for specific studies due to its richness. Assessing the quality, relevance, and applicability of secondary data is essential for researchers to ensure it is suitable for their study aims. Books, journals, websites, etc. are the sources from which the data is collected.

V – LIMITATIONS OF THE STUDY

- The major limitations of the study is time factor
- The data collected for the analysis may or may not provide us accurate results to make decisions
- The data collected from the specific region, it may not influence on another region

VI - LITERATURE REVIEW

A Study on Venture Capital Financing and Growth in India by P. Bikoji and Dr. Rambabu Gopiseti (Feb 2023): Entrepreneurs looking for Venture capital, which invests in digital startups outside of conventional banks, are in for a world of upheaval. Obtaining seed money has always been a major challenge for new companies. For quite some time, Venture capital has been a go-to for startup funding. Venture capital refers to funding that investment firms provide to emerging companies in the hopes that these companies would be successful in the long run thanks to their innovative business methods. Venture capitalists and funds make money by investing in firms and then selling their shares to those companies. The goal of Venture capital companies is to identify potential new businesses and provide financial support to help them get off the ground and run smoothly. Despite the higher level of risk, Venture capital is rapidly becoming a vital resource for innovative new companies. The phenomena of Venture capital in India may be better understood with the help of this study.

A Paradigm Shift in Indian Venture Capital Industry by Komala G, (Oct2014): The Venture capital industry is undergoing rapid change while it is still in its early stages. Investment in new businesses in India has been growing steadily since the '90s. We can only hope that the future holds even greater opportunities if we encourage entrepreneurs to establish novel legal frameworks and economic arrangements. The aims and purposes of Venture capital in India underwent a shift in 2012. This year is shaping up to continue the trend of record-high Venture capital investment in India that began in 2013. Electronic commerce, healthcare delivery, mobile applications, clean technology, financial inclusion, medical device technology, and information technology are among the areas where investors are keeping an eye on new technologies and



business models. The performance of the Venture capital business over the last fifteen years is examined in this conceptual paper. The researcher has used secondary data for the analysis. This study just covers situations in India.

Venture Capital and Private Equity in India; An analysis of Investments and Exists by Thillai Annamalai and Ashish Deshmukh, (Mar 2011): Venture capital and private equity (VCPE) in India has grown at an exponential rate in the last several years. The Indian industry was the fastest-growing globally between 2004 and 2008, propelling the country to the position of third-most-invested-in globally. However, the academic community has not conducted a great deal of research on the VCPE market in India. To fill a gap in the literature, this paper will focus on recent trends in the Indian VCPE industry. Plan, method, and approach Most studies on VCPE transactions have either focused on investing, monitoring, or leaving, rather than covering the whole investment lifetime. An exhaustive examination of the investment life cycle, from the inception of the VCPE fund's investment until its withdrawal, is the basis of this study. The research included 1,503 businesses that were a part of 1,912 VCPE deals that happened between 2004 and 2008. Findings Near the end of the financing process, most VCPE investments were made, sometimes years after the investee company had already been formed.

Venture Capital Financing in India – A Financial performance evolution study of selected Companies by Prof. Farook Shaikh, (2014): Venture capital is a kind of financial intermediary that may help entrepreneurs get the money they need for new tech-based ideas for expanding, improving, modernizing, or upgrading their businesses. Venture money, which may be in the form of a plain old loan or an equity investment (or perhaps both) in an untested idea, is something that an entrepreneur with the right set of skills and experience might potentially attract. Entrepreneurship may be a path for small and medium-sized enterprises. Using Venture capitalists, investors may spread their money around and put it into a range of companies or even a portfolio. Because of the high level of risk they are prepared to take on, Venture capitalists closely monitor their clients' business models and provide advice on how to improve profitability and ROI.

Analysis of Venture Capital Funding in India by Dimple Khosla, (Jan 2015): One of the most significant trends in the field of entrepreneurship is the exponential growth of Venture capital in the last ten years. It has had far-reaching effects on economies throughout the world, including the development of jobs, novel products and services, increased competitiveness, and a heightened sense of entrepreneurialism. By disseminating and creating the fundamental principles that initiate and sustain economic revival, it has been an impetus behind entrepreneurship. Many different things are done to help the businesses that Venture investors back. A few examples of these methods include: establishing connections, offering legal advice, developing financial systems, marketing strategies, exchanging

business viewpoints, fostering an entrepreneurial environment, assisting with long-term planning and strategy, incentivizing cooperation for the long haul, facilitating co-investment, and securing working capital facilities from banks. The lack of support for innovative projects has meant that India's level of development has been all over the map. If India wants to reap the benefits of economic reforms and become more competitive, VC must finally have its crucial role acknowledged.

A Study on Venture Capital Financing for Micro Small & Medium Enterprises (MSME) in India by Prof. B. Vijaya Lakshmi, Dr. K.Tirumalaiah, (Aug 2015): Companies not listed on a stock exchange are the primary recipients of Venture capital (VC) funds. The majority of VC money comes from equity financing, which may be used to buy shares directly or indirectly via mezzanine financing. Three to five years is the usual time frame for a Venture capital investment. A Venture capitalist's dual role as an investor and counselor is to facilitate a company's expansion by means of financial support and the investor's knowledge and experience. Venture capital investments are based on shareholder agreements between investors and their respective companies. The agreement details the fundamentals of the share price from start to finish.

VII – DATA ANALYSIS & INTERPRETATION

Hypothesis – 1

H0: There is No Impact of Age on current level of Knowledge about the Venture Capital Finance

H1: There is a Impact of Age on current level of Knowledge about the Venture Capital Finance

Observed Values

Age / Current Knowledge	VMH	H	M	L	VML	RT
Below 24yrs	17	17	7	8	2	51
25 – 34yrs	21	32	7	1	2	63
35 – 44yrs	12	18	6	2	1	39
45 – 54yrs	4	6	4	1	1	16
Above 55yrs	2	3	3	1	0	9
Column Total	56	76	27	13	6	178

VMH – Very Much High, H – High, M – Medium, L – Low, VML – Very Much Low



Expected Values

Age / Current Knowledge	VMH	H	M	L	VML	RT
Below 24yrs	16	22	8	4	2	51
25 – 34yrs	20	27	10	5	2	63
35 – 44yrs	12	17	6	3	1	39
45 – 54yrs	5	7	2	1	1	16
Above 55yrs	3	4	1	1	0	9
Column Total	56	76	27	13	6	178

Expected Values = $\frac{CT \times RT}{GT}$

CT = Column Total
 RT = Row Total
 GT = Grand Total

Chi-Square Value

Chi – Square Test = $\sum \frac{(O V - E V)^2}{E V}$

O V = Observed Values
 E V = Expected Values

Degree of Freedom=(R-1)(C-1)=(5-1)(5-1) =4 x 4 =16
 Level of Significance at 5% i.e., 0.05

Tabular Value is 26.296
 Chi square Value is 17.718

Interpretation

From the above data we can state that, Calculated Chi Square value is less than the Tabular Value (i.e., 17.718 < 26.296). So, we accept the Null Hypothesis i.e., There is No Impact of Age on current level of Knowledge about the Venture Capital Finance and Reject the Alternative Hypothesis

Hypothesis – II

H0: There is No Impact of Gender on current level of Knowledge about the Venture Capital Finance

H1: There is a Impact of Gender on current level of Knowledge about the Venture Capital Finance

Observed Values

Gender / Current Knowledge	VMH	H	M	L	VML	RT
Male	49	49	19	10	5	132
Female	7	27	8	3	1	46
Column Total	56	76	27	13	6	178

Expected Values

Gender / Current Knowledge	VMH	H	M	L	VML	RT
Male	41.53	56.36	20.02	9.64	4.45	132
Female	14.47	19.64	6.98	3.36	1.55	46
Column Total	56	76	27	13	6	178

VMH – Very Much High, H – High, M – Medium, L – Low,
 VML – Very Much Low

Expected Values = $\frac{CT \times RT}{GT}$

CT = Column Total
 RT = Row Total
 GT = Grand Total

Chi-Square Value

Age / Current Knowledge	VMH	H	M	L	VML	RT
Below 24yrs	0.063	1.136	0.125	4.000	0.000	5.324
25 – 34yrs	0.050	0.926	0.900	3.200	0.000	5.076
35 – 44yrs	0.000	0.059	0.000	0.333	0.000	0.392
45 – 54yrs	0.200	0.143	2.000	0.000	0.000	2.343
Above 55yrs	0.333	0.250	4.000	0.000	0.000	4.583
Chi-Square Value						17.718

Gender / Current Knowledge	VMH	H	M	L	VML	RT
Male	1.344	0.961	0.052	0.013	0.068	2.439
Female	3.858	2.758	0.150	0.038	0.195	6.999
Chi-Square Value						9.438

Chi – Square Test = $\sum \frac{(O V - E V)^2}{E V}$

O V = Observed Values
 E V = Expected Values

Degree of Freedom=(R-1)(C-1)=(2-1)(5-1) =1 x 4 =4
 Level of Significance at 5% i.e., 0.05

Tabular Value is 9.488
 Chi square Value is 9.438

Interpretation

From the above data we can state that, Calculated Chi Square value is less than the Tabular Value (i.e., 9.438 < 9.488). So, we accept the Null Hypothesis i.e., There is No Impact of Gender on current level of Knowledge about the Venture Capital Finance and Reject the Alternative Hypothesis



Hypothesis – III

H0: There is No Impact of Educational Qualification on current level of Knowledge about the Venture Capital Finance

H1: There is a Impact of Educational Qualification on current level of Knowledge about the Venture Capital Finance

Observed Values

Educational Qualification / Current Knowledge	VMH	H	M	L	VML	RT
SSC	1	1	1	0	0	3
10+2	7	3	1	2	1	14
Degree	19	26	14	8	1	68
PG	29	46	11	3	4	93
Column Total	56	76	27	13	6	178

Expected Values

Educational Qualification / Current Knowledge	VMH	H	M	L	VML	RT
SSC	0.94	1.28	0.46	0.22	0.10	3
10+2	4.40	5.98	2.12	1.02	0.47	14
Degree	21.39	29.03	10.31	4.97	2.29	68
PG	29.26	39.71	14.11	6.79	3.13	93
Column Total	56	76	27	13	6	178

VMH – Very Much High, H – High, M – Medium, L – Low, VML – Very Much Low

$$\text{Expected Values} = \frac{CT \times RT}{GT}$$

CT = Column Total

RT = Row Total

GT = Grand Total

Chi-Square Value

Educational Qualification / Current Knowledge	VMH	H	M	L	VML	RT
SSC	0.003	0.062	0.653	0.219	0.101	1.038
10+2	1.529	1.483	0.594	0.935	0.591	5.133
Degree	0.268	0.317	1.317	1.853	0.728	4.483
PG	0.002	0.997	0.684	2.117	0.239	4.040
Chi-Square Value						14.693

$$\text{Chi – Square Test} = \frac{\sum (O V - E V)^2}{E V}$$

O V = Observed Values

E V = Expected Values

Degree of Freedom=(R-1)(C-1)=(4-1)(5-1) =3 x 4 = 12

Level of Significance at 5% i.e., 0.05

Tabular Value is 21.026

Chi square Value is 14.693

Interpretation

From the above data we can state that, Calculated Chi Square value is less than the Tabular Value (i.e., 14.693 < 21.026). So, we accept the Null Hypothesis i.e., There is No Impact of Educational Qualification on current level of Knowledge about the Venture Capital Finance and Reject the Alternative Hypothesis

VIII - FINDINGS

- Most of the respondents consider High Return on their investment as a motivational factor to invest into Venture Capital.
- According to the study, Venture capital is mostly directed towards the pharmaceutical and information technology (IT) industries.
- It is found in the study that respondents prefer Early and Seed stage for Venture capitalist to fund the business.
- According to the study, Potential Investors consider Team Expertise and Financial projects are the criteria for investing in India for Venture capital.
- According to the perspective, development of the start-ups ecosystem from a Venture capital is Positive.
- First Chi Square value is less than the Tabular Value (i.e., 17.718 < 26.296). So, we accept the Null Hypothesis i.e., There is No Impact of Age on current level of Knowledge about the Venture Capital Finance and Reject the Alternative Hypothesis
- Second Chi Square value is less than the Tabular Value (i.e., 9.438 < 9.488). So, we accept the Null Hypothesis i.e., There is No Impact of Gender on current level of Knowledge about the Venture Capital Finance and Reject the Alternative Hypothesis
- Third Chi Square value is less than the Tabular Value (i.e., 14.693 < 21.026). So, we accept the Null Hypothesis i.e., There is No Impact of Educational Qualification on current level of Knowledge about the Venture Capital Finance and Reject the Alternative Hypothesis

IX – SUGGESTIONS

- Permit or strongly encourage insurance and pension funds to engage in Venture capital.
- Motivate the business community to become involved.
- Make it more appealing for international investors to fund Venture capital businesses in India.
- India's Venture capital industry has grown at an unprecedented rate, opening up exciting new possibilities for ambitious startups to test the waters and even strike gold.
- Investing in startups via Venture capital is a great way to support entrepreneurial growth. We find that it's localized to a small number of places. The government should eliminate taxes on Venture capital investments in



critical sectors like as agriculture, construction, and transportation to encourage investment and boost national growth.

- The government should think about how to encourage young people to think like entrepreneurs and how to make them more aware of the importance of starting their own businesses.

X – CONCLUSION

A comprehensive assessment of this dynamic and significant component of the economy has been provided by the study on Venture capital. Findings from studies on the Venture capital landscape, startup stories, and investment needs have yielded many significant conclusions. By studying the Venture capital investment landscape, we were able to find several investor criteria and methods. Various factors, including risk management and investor preferences in certain industries, go into the lengthy process by which Venture capitalists choose and back promising new companies. Results showed that due diligence processes are important and that investment needs evolve over time in response to market changes.

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ROLE OF INSURANCE IN HUMAN LIFE POST COVID-19 SCENARIO – A STUDY

Mr. Fasi Ur Rehman¹, Ms. Rathod Sanjana²

¹Assistant Professor, J.B. Institute of Engineering and Technology

²J.B. Institute of Engineering and Technology

ABSTRACT

This study investigates how the pandemic has prompted individuals to reevaluate their risk management strategies and how their perspectives on insurance have changed as a result. Health, life, and income protection insurance plans are all on the rise, as the article explains. This might be because people are feeling more vulnerable as a result of the worldwide health crisis. The study also delves at the ways in which insurance might mitigate the social and economic impacts of COVID-19, such as the inability to work, high medical costs, and business disruptions. The research found that insurance companies played a crucial role in assisting individuals in their recovery and resilience after the outbreak. It takes into consideration innovations like telemedicine, automated claims processing, and personalized coverage, as well as how insurance firms have adapted their offers to meet the evolving expectations of clients in the Post COVID-19 Scenario. The study also delves at the interplay between insurance, public health programs and government efforts to strengthen society's ability to withstand future disasters.

INTRODUCTION

Businesses and individuals alike invest in insurance policies to protect themselves financially in the event of unforeseen disasters and to alleviate financial stress. In the event of an accident, sickness, property damage, liability suit, or other disaster, this strategy may help individuals and businesses prepare for the worst and recover financially.

The policyholder and insurer enter into a legally binding arrangement via an insurance policy. Essential to insurance coverage are a number of things. The insurance details, including the covered risks or events, premium, policy length, and terms and conditions, are laid forth in this document.

The policyholder pays the insurer a certain amount each month in return for the insurance coverage; this sum is called the premium. Monthly, quarterly, or yearly payments are common examples of regular payment schedules.

The term "insured" is used to describe the person or entity that has paid for an insurance policy and is protected by its conditions.

When an insurance policy is issued, the issuing insurance firm, sometimes known as the insurer, takes on the financial risk of the policy.

The term "coverage" is used to describe the potential risks and disasters that an insurance policy could pay out for. To safeguard against a wide range of potential losses, there are several insurance policies to choose from, and these are only a few of

them. Insurance policies for life, health, vehicles, homes, and liabilities are just a few examples.

Life insurance safeguards the financial security of the insured's family in the case of the insured's untimely death. A range of coverage choices is at your disposal. Term, whole, and universal life insurance plans are the most common options. Additional forms of life insurance do exist.

Medical bills, such as those for doctor's appointments, hospital stays, and prescription drugs, may be a financial burden without health insurance. In the event of an accident, covered damage to the insured vehicle, or legal responsibility for the bodily harm or property damage of third parties, policyholders are protected from the potential financial disaster by means of auto insurance, a form of risk management. When an insured loss happens, the policyholders of homeowner's and renters' insurance are financially protected.

Cancellation of the trip, serious illness, or lost baggage are just a few of the many potential outcomes that might benefit from purchasing travel insurance. A broad term that encompasses a wide variety of insurance plans is "business insurance." Business interruption, liability, and commercial property are a few examples of such policies.

Spreading out potential losses across many people is crucial to the insurance business model. The pooled premiums will cover the costs incurred by policyholders who choose to file claims, even though not all policyholders are compelled to do so. To prevent people and companies from suffering financially as a



consequence of unforeseen disasters, insurance is an important component of a healthy economy.

To safeguard one's financial well-being against a variety of perils, an insurance policy serves as a legally enforceable contract. The insurance firm receives a monthly premium in return for agreeing to bear the financial consequences of certain losses. Paying a premium is involved in this method of risk management. Assureds may rest easy knowing that their insurer will pay out in full for covered losses, damages, and obligations stated in the policy. Insurance is important because it protects people and businesses from the financial fallout of unforeseen disasters and the stress that these events may bring.

A person may safeguard certain parts of their lives and possessions against specific types of risks by purchasing insurance in a number of forms. In the event of the insured's untimely demise, the policy's beneficiaries will get a death benefit. In addition to helping people take care of their families' finances, there are a number of initiatives that may open doors to opportunities to save and invest.

Medical insurance covers a wide range of treatments, including hospitalization, surgery, prescription drugs, and preventative care. Because of this, people have a higher chance of affording and receiving the high-quality medical care they want. In the event of an accident, theft, or other covered peril, drivers and their cars are financially protected by auto insurance. In the event that you inadvertently hurt someone or damage their property, you may also be protected from legal liability.

Research Gap

Examining insurance's impact on people's lives in the wake of the COVID-19 epidemic might provide light on a number of important questions, both in the short and long term. Some such areas where study is lacking are as follows: Find out how health, life, business interruption, and other forms of insurance have helped people and companies overcome the financial setbacks caused by the epidemic. The efficiency of insurance in reducing financial losses, trends in insurance claims, and how policyholders act might all be part of this analysis. Look at how the epidemic has changed the insurance landscape, especially for marginalized groups, low-income people, and those living in developing nations. Find out how the pandemic has made it harder to get health insurance and what you can do to make it more affordable and accessible.

Objectives of the Study

- To gain knowledge of the insurance industry
- To investigate how customers see insurance
- To determine the importance of insurance in people's lives
- To assess what elements motivate customers to buy insurance
- To provide recommendations based on the study's results

Research Methodology

Data is gathered from the primary source and secondary source. Primary Source: Data that comes straight from the source, including surveys and first-hand accounts, is called primary data. This study makes use of a structured questionnaire to collect data.

Data Collection Method: Structured Questionnaire

Sampling Design: Descriptive and Exploratory Design

Sampling Technique: Convenience Sampling

Sampling Procedure: Simple Random Sampling

Sample Size: 195

Tools for Analysis: Chi-Square Test

Secondary Source: Secondary sources data used for the study such as journals, textbooks, internet, etc., are already available to the public which includes literature review.

Limitations of the study

- The research just included respondents from the Secunderabad and Hyderabad areas.
- The timing of the data collection from the respondent could not be appropriate for analysis
- Decisions may or might not be based on the data.
- Difficult to obtain the accurate data.

LITERATURE REVIEW

The impact of Covid-19 on the Insurance Industry by Pius Babuna, Xiaohua Yang, (Aug 2020): This study analyzed how COVID-19 affected Ghana's insurance industry. In order to simulate the impact of the pandemic on the insurance industry, we examined historical outbreaks such as SARS-CoV, H1N1, and MERS. Researchers used quantitative and qualitative interview techniques to measure the impact of the epidemic. The present economic slump is leading to decreased profits and increased claims. The Ghanaian insurance company lost almost GH 112 million due to economic challenges, event postponements, and cancelled travel plans. Our research and forecasts lead us to believe that standardization of economic indicators will commence in January 2021. In the meantime, insurance companies should be ready to operate remotely while the pandemic drags on, train their staff to adhere to social distance constraints, tighten cybersecurity requirements, and simplify the electronic payment and claim processing systems.

Study on the after effect of Covid-19 Pandemic Insurance Sector I India by Babita Yadav, Pushpa Suryavanshi, (April 2021): The worldwide COVID-19 pandemic and accompanying quarantine have had a devastating impact on the insurance sector, which accounts for a significant chunk of GDP and economic growth. The impact of the COVID-19 pandemic on India's life insurance market is the focus of this essay. Due of its exploratory nature, the paper offers new perspectives on related future research. News articles, websites, blogs, and life insurance companies' annual reports were among the secondary sources included in the study. This paper uses first-year



premium, amount insured, number of lives covered under group schemes, and number of policies issued as metrics to evaluate and contrast the life insurance company's performance in FY 2020 with FY 2019. While the course of six months, or "during Covid," the study was carried out. The research found that the life insurance business has suffered as a consequence of COVID-19, with fewer new policies sold, less premium income, and more issues with claim settlement.

The impact of Covid-19 pandemic on Insurance Demand: The case of China by Xiahang Qian, (July 2021):

Investigations on how the COVID-19 epidemic has altered people's insurance requirements are vital as a means of risk transfer. But there is a lack of research linking COVID-19 to the need of insurance. To examine the impact of the pandemic on issuance demand, this paper crunches data from 241 Chinese cities about confirmed COVID-19 cases and income from insurance companies. When endogeneity is included, the results hold up, and there is empirical evidence linking greater per capita insurance income with higher rates of COVID-19 case confirmation. From an economic standpoint, the per capita insurance revenue increases by 0.896 Yuan for every new proved case. When we look at the revenue gains by insurance type, we can see that life insurance is the most important, followed by health insurance.

Impact of Covid-19 on Insurers by Divya Kirti and Mu Yang Shin, (May 2020):

Insurance firms may face difficulties as a result of the catastrophic impacts of COVID-19, which include extensive market disruptions and potentially substantial increases in sickness and mortality. Life insurance can be especially at risk. Life insurance would get large payouts relative to their capital if the death toll is higher than that of big pandemics like the Spanish flu. Low interest rates that don't go up and asset ratings that don't go up would make a bad situation even worse. In the case of widespread bond rating downgrades, regulators should closely monitor insurers with risky assets and reassess the links to rating actions within regulatory frameworks. Any changes would have to be well-planned in order to avoid reducing the overall amount of capital requirements. When trying to keep the credit supply steady, central banks should think about how insurers' risk appetites can change well before capital levels hit statutory restrictions.

The Negative Impact of Covid-19 on life Insurers by Xun Zhang, Pu Liao, Xiaohua Chen, (Sep 2021):

Life insurers must understand the COVID-19 pandemic mortality risk if they are to evaluate their financial sustainability. In order to illustrate the dynamics of mortality in a post-COVID-19 pandemic context and capture the influence of the virus on mortality across all age groups, this study proposes a transient unfavorable mortality jump model using weekly U.S. death tolls from 2015–2021. In this comparison study, the Lee-Carter model is used as a baseline example to demonstrate the dynamics of mortality in the absence of COVID-19. We next examine the mortality force, survival probability, and life insurer liability, accounting for both

COVID-19 and non-COVID-19 instances. We show that life insurers' bottom lines will take a hit due to the unforeseen elevated mortality rates after COVID-19.

Covid – 19: Implications for Insurer risk management and the Insurability of Pandemic risk by Andreas Richer & Thomas C Wilson, (Sep 2020):

This paper describes ways to develop resilience in advance and uses underwriting criteria to determine whether pandemic risk may be insured. Using a pre-pandemic scenario based on the 2002 SARS epidemic and the 1918 Spanish flu pandemic as a guide, the essay goes on to describe the unique "lessons learned" from the COVID-19 pandemic. The current situation lends support to the pre-COVID-19 hypothesis that shifts in the financial markets, rather than changes in population due to pandemics or other factors, are the primary determinants of claims losses. Concerning the real economy and the property and casualty segment, COVID-19 "surprised" when compared to the pre-COVID-19 scenario. This could lead to long-term damage to the industry's image and the insurability of pandemics as a result of the difficulties encountered with property interruption triggers and exclusions, as well as business interruptions.

An Overview of the Impact of Covid-19 on the Indian Health Insurance Sector and Post Covid-19 Management by Sandeep Kumar, Baldeep Singh, (2022):

The Indian economy has been in a condition of prolonged stagnation due to the country's extended shutdown. This worldwide economic downturn is having an impact on supply and demand networks alike. The national financial system is expected to be impacted by the COVID-19 pandemic. Economic shutdowns and physical separation were among the novel and difficult circumstances brought about by the exceptional nature of this crisis. In 2020, the insurance industry will see a dramatic shift. Several insurance firms were forced to reassess their clients and business practices due to the COVID-19 outbreak. So, this research will look at how COVID-19 affected the health insurance industry, stressing how important it was during the pandemic and talking about the problems they had and how to fix them.

DATA ANALYSIS & INTERPRETATION

Hypothesis – 1

H0: There is No Significance Relation between the Age and Satisfaction with the existing Insurance Policy

H1: There is a Significance relation between the Age and Satisfaction with the existing Insurance Policy



Observed Values

Age	VS	S	M	D	V DS	RT
Below 21yrs	4	2	1	2	0	9
22 – 31yrs	37	28	6	12	4	87
32 - 41yrs	16	12	5	6	23	62
42 – 51yrs	5	8	4	2	2	21
Above 52yrs	1	4	3	5	3	16
CT	63	54	19	27	32	195

VS – Very Much Satisfied, S- Satisfied, M-Moderate,
D- Dissatisfied, VDS – Very Much Dissatisfied

Expected Values

Age	VS	S	M	D	V DS	RT
Below 21yrs	2.9	2.5	0.9	1.2	1.5	9
22 – 31yrs	28.1	24.1	8.5	12.0	14.3	87
32 - 41yrs	20.0	17.2	6.0	8.6	10.2	62
42 – 51yrs	6.8	5.8	2.0	2.9	3.4	21
Above 52yrs	5.2	4.4	1.6	2.2	2.6	16
CT	63	54	19	27	32	195

VS – Very Much Satisfied, S- Satisfied, M-Moderate,
D- Dissatisfied, VDS – Very Much Dissatisfied

Expected Values = $\frac{CT \times RT}{GT}$

CT = Column Total
RT = Row Total
GT = Grand Total

Chi – Square Value

Age	VS	S	M	D	V DS	RT
Below 21yrs	0.41	0.10	0.02	0.46	1.48	2.46
22 – 31yrs	2.81	0.63	0.72	0.00	7.40	11.57
32 - 41yrs	0.81	1.56	0.18	0.78	16.17	19.49
42 – 51yrs	0.47	0.82	1.87	0.28	0.61	4.05
Above 52yrs	3.36	0.04	1.33	3.50	0.05	8.29
Chi - Square Value						45.86

VS – Very Much Satisfied, S- Satisfied, M-Moderate,
D- Dissatisfied, VDS – Very Much Dissatisfied

Chi – Square Test = $\sum \frac{(O V - E V)^2}{E V}$

O V = Observed Values
E V = Expected Values

Level of Significance is 0.05

Degree of freedom is (C-1)(R-1) = (5-1)(5-1) = 4 x 4 = 16

Critical Value is 26.29

Chi Square Test Values is 45.86

Interpretation

From the above data we can state that Calculated Chi-Square Value 45.86 > 26.29 Critical Value. So we reject the Null Hypothesis (H0). And accepts the Alternative Hypothesis (H1). There is a significance relation between the Age and Satisfaction with the existing Insurance Policy

Hypothesis – 2

H0: There is no significance relation between the Income and Satisfaction with the existing Insurance Policy
H1: There is a significance relation between the Income and Satisfaction with the existing Insurance Policy

Observed Values

Income	VS	S	M	D	V DS	RT
Below 240000	8	6	2	5	3	24
240001 – 360000	15	21	5	7	4	52
360001 – 480000	21	12	6	10	19	68
480001 – 600000	12	9	4	3	4	32
Above 600001	7	6	2	2	2	19
CT	63	54	19	27	32	195

VS – Very Much Satisfied, S- Satisfied, M-Moderate,
D- Dissatisfied, VDS – Very Much Dissatisfied

Expected Values

Income	VS	S	M	D	V DS	RT
Below 240000	7.75	6.65	2.34	3.32	3.94	24
240001 – 360000	16.8	14.4	5.07	7.2	8.53	52
360001 – 480000	21.97	18.83	6.63	9.42	11.16	68
480001 – 600000	10.34	8.86	3.12	4.43	5.25	32
Above 600001	6.14	5.26	1.85	2.63	3.12	19
CT	63	54	19	27	32	195

VS – Very Much Satisfied, S- Satisfied, M-Moderate,
D- Dissatisfied, VDS – Very Much Dissatisfied

Expected Values = $\frac{CT \times RT}{GT}$

CT = Column Total



RT = Row Total
GT = Grand Total

Chi- Square Value

Income	VS	S	M	D	V DS	RT
Below 240000	0.01	0.06	0.05	0.85	0.22	1
240001 – 360000	0.19	3.03	0.00	0.01	2.41	6
360001 – 480000	0.04	2.48	0.06	0.04	5.51	8
480001 – 600000	0.27	0.00	0.25	0.46	0.30	1
Above 600001	0.12	0.10	0.01	0.15	0.40	1
Chi - Square Value						17

VS – Very Much Satisfied, S- Satisfied, M-Moderate, D- Dissatisfied, VDS – Very Much Dissatisfied
Chi – Square Test = $\frac{\sum (O V - E V)^2}{E V}$

O V = Observed Values
E V = Expected Values

Level of Significance is 0.05
Degree of freedom is (C-1)(R-1)=(5-1)(5-1) = 4 x 4 = 16
Critical Value is 26.29
Chi Square Test Values is 17

Interpretation

From the above data we can state that, Calculated Chi-Square Value is 17 < 26.29 Critical Value. So we accept the Null Hypothesis (H0) and reject the Alternative Hypothesis (H1). There is no significance relation between the Income and Satisfaction with the existing Insurance Policy

Hypothesis – 3

H0: There is no significance relation between the Gender and Satisfaction with the existing Insurance Policy
H1: There is a significance relation between the Gender and Satisfaction with the existing Insurance Policy

Observed Values

Gender	VS	S	M	D	V DS	RT
Male	29	24	11	19	8	91
Female	34	30	8	8	24	104
Column Total	63	54	19	27	32	195

Expected Values

Gender	VS	S	M	D	V DS	RT
Male	29.4	25.2	8.87	12.6	14.93	91
Female	33.6	28.8	10.13	14.4	17.07	104
Column Total	63	54	19	27	32	195

VS – Very Much Satisfied, S- Satisfied, M-Moderate, D- Dissatisfied, VDS – Very Much Dissatisfied

Expected Values = $\frac{CT \times RT}{GT}$

CT = Column Total
RT = Row Total
GT = Grand Total

Chi – Square Value

Gender	VS	S	M	D	V DS	RT
Male	0.005	0.057	0.513	3.251	3.219	7.046
Female	0.005	0.050	0.449	2.844	2.817	6.165
Chi-Square Value						13.211

VS – Very Much Satisfied, S- Satisfied, M-Moderate, D- Dissatisfied, VDS – Very Much Dissatisfied

Chi – Square Test = $\frac{\sum (O V - E V)^2}{E V}$

O V = Observed Values
E V = Expected Values

Level of Significance is 0.05
Degree of freedom is (C-1)(R-1)= (5-1)(2-1) = 4 x 1 = 4
Critical Value is 9.487

Chi Square Test Values is 13.211

Interpretation

From the above data we can state that, Calculated Chi-Square Value is 13.211 > 9.487 Critical Value . So we reject the Null Hypothesis (H0). And accepts the Alternative Hypothesis (H1). There is significance relation between the Gender and Satisfaction with the existing Insurance Policy

Hypothesis – 4

H0: There is no significance relation between the Occupation and Satisfaction with the existing Insurance Policy
H1: There is a significance relation between the Occupation and Satisfaction with the existing Insurance Policy



Observed Values

Occupation	VS	S	M	D	V DS	RT
Student	6	7	4	3	1	21
Pvt Employee	36	26	9	14	8	93
Govt Employee	12	19	4	5	6	46
Self Employed	9	2	2	5	17	35
Column Total	63	54	19	27	32	195

VS – Very Much Satisfied, S- Satisfied, M-Moderate, D- Dissatisfied, VDS – Very Much Dissatisfied

Expected Values

Occupation	VS	S	M	D	V DS	RT
Student	6.78	5.82	2.05	2.91	3.45	21
Pvt Employee	30.05	25.75	9.06	12.88	15.26	93
Govt Employee	14.86	12.74	4.48	6.37	7.55	46
Self Employed	11.31	9.69	3.41	4.85	5.74	35
Column Total	63	54	19	27	32	195

VS – Very Much Satisfied, S- Satisfied, M-Moderate, D- Dissatisfied, VDS – Very Much Dissatisfied

Expected Values = $\frac{CT \times RT}{GT}$

CT = Column Total
RT = Row Total
GT = Grand Total

Chi – Square Value

Occupation	VS	S	M	D	V DS	RT
Student	0.09	0.24	1.87	0.00	1.74	3.94
Pvt. Employee	1.18	0.00	0.00	0.10	3.46	4.74
Govt. Employee	0.55	3.08	0.05	0.29	0.32	4.29
Self Employed	0.47	6.11	0.58	0.00	22.06	29.22
Chi - Square Value						42.19

VS – Very Much Satisfied, S- Satisfied, M-Moderate, D- Dissatisfied, VDS – Very Much Dissatisfied

Chi – Square Test = $\sum \frac{(O V - E V)^2}{E V}$

O V = Observed Values
E V = Expected Values

Level of Significance is 0.05

Degree of freedom is (C-1)(R-1) = (5-1)(4-1) = 4 x 3 = 12

Critical Value is 21.026

Chi Square Test Values is 42.19

Interpretation

From the above data we can state that Calculated Chi-Square Value 42.19 > 21.026 Critical Value. So we reject the Null Hypothesis (H0). And accepts the Alternative Hypothesis (H1). There is significance relation between the Occupation and Satisfaction with the existing Insurance Policy

FINDINGS

- Increased life uncertainty due to the COVID-19 pandemic and the rising number of corona positive patients has led to a surge in the demand for health and pure insurance policies. Both during and after the lockdown, health and term insurance plans saw significant increases of over 35%.
- The significance of life insurance has been brought to people attention due to the increased danger of contracting the virus during the COVID-19 pandemic. Prior to this outbreak, the general penetration of insurance was low.
- Insurance firms are shifting their emphasis to provide customer-centric creative solutions that provide a broad range of advantages, including COVID-19 risk coverage, in response to the changing times of uncertainty.
- Surge in Online Insurance Sales with the current epidemic, more and more individuals are opting for online insurance policies. A 30–40% increase in insurance business was seen during the lockdown time due to the large number of individuals purchasing insurance online.
- Out of 195 respondents, 5% respondents are in the age group of Below 21yrs, 45% respondents are in the age group of 22 – 31yrs, 32% respondents are in the age group of 32 – 41yrs, 11% respondents are in the age group of 42 – 51yrs, 8% respondents are in the age group of above 52yrs.
- Out of 195 respondents, 47% of the respondents are Male, 53% of the respondents are Female
- Out of 195 response, 12% of the respondents Income is below 240000, 27% of the respondents Income is 240001 – 360000, 35% of the respondents Income is 360001 – 480000, 16% of the respondents Income is 480001 – 600000, 10% of the respondents Income is Above 600001.
- Out of 195 responses 5% of the respondents educational Qualification is SSC, 8% of the respondents are 10+2, 35% of the respondents are Degree, 49% of the respondents are PG, 3% of the respondents are Ph.D.



- Out of 195 respondents 11% of the respondents are students, 48% of the respondents are Pvt Employee, 24% of the respondents are Govt Employee, 18% are self Employed.
- Out of 195 respondents 82% of the respondents says Yes COVID-19 epidemic make you more aware of potential threats to your financial stability, 18% of the respondents says No.
- Hypothesis - 1 calculated Chi-Square Value 45.86 > 26.29 Critical Value. So we reject the Null Hypothesis (H0). And accepts the Alternative Hypothesis (H1). There is a significance relation between the Age and Satisfaction with the existing Insurance Policy
- Hypothesis – 2 calculated Chi-Square Value is 17 < 26.29 Critical Value. So we accept the Null Hypothesis (H0) and reject the Alternative Hypothesis (H1). There is no significance relation between the Income and Satisfaction with the existing Insurance Policy
- Hypothesis – 3 calculated Chi-Square Value is 13.211 > 9.487 Critical Value . So we reject the Null Hypothesis (H0). And accepts the Alternative Hypothesis (H1). There is significance relation between the Gender and Satisfaction with the existing Insurance Policy
- Hypothesis – 4 calculated Chi-Square Value 42.19 > 21.026 Critical Value. So we reject the Null Hypothesis (H0). And accepts the Alternative Hypothesis (H1). There is significance relation between the Occupation and Satisfaction with the existing Insurance Policy

Suggestions

- A rise in insurance lapsation occurred because policyholders were unable to pay their premiums in a timely manner due to job and income losses.
- Due to financial concerns, several policyholders were unable to pay their payments on time, resulting in the expiration of their insurance.
- Very seldom declining demand for new insurance sales - For some time now, the number of new policy sales has been drastically falling, mirroring trends seen in other sectors.
- Investors were wary of putting money into new policies during the lockdown period because to the drop in market values and interest rates, which caused financial instability.
- Individuals are hesitant to purchase or renew insurance plans due to the fact that they lost their employment during the epidemic.

CONCLUSION

This study sheds light on the significance of insurance in people's life, which is particularly important in light of the recent COVID-19 pandemic. After reviewing the research and data, some significant findings have been reached: To start, the pandemic has shown how important insurance is for safeguarding one's financial stability and flexibility when

confronted with unpredictability. As communities and individuals reevaluate their approaches to risk management, the demand for income protection, health, and life insurance has skyrocketed. The second thing to keep in mind is that insurers have shown to be resilient and creative in the post-COVID world by giving clients digital solutions and a variety of coverage options to meet their shifting expectations.

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A STUDY ON REWARDS AND RECOGNITION WITH REFERENCE TO DR. REDDY'S LABORATORIES

Mrs. M.A. Sharmila¹, Mr. Gaddam Bhuvaneshwar²

¹Assistant Professor, J.B. Institute of Engineering and Technology

²J.B. Institute of Engineering and Technology

ABSTRACT

Financial incentives, opportunities for career advancement, and non-monetary manifestations like respect and appreciation are all part of Dr. Reddy's Laboratories' elaborate system of rewards and recognitions, as shown by the outcomes. The organization's emphasis on individual recognition is a critical part of fostering a culture of excellence and devotion among employees, which is in harmony with its core values and objectives. The need of a transparent, balanced, and performance-based remuneration structure is also emphasized by the study. It emphasizes the need of continuously evaluating and enhancing pay systems to align evolving corporate goals with employee aspirations. This research has significant implications for firms across all industries seeking to enhance their recognition and reward strategies, not just for Dr. Reddy's Laboratories. Understanding the nuances of employee engagement and motivation is crucial for firms seeking long-term success and market competitiveness. This knowledge allows them to cultivate a solid and reliable workforce.

INTRODUCTION

Motivating and inspiring workers to do better is possible via the use of rewards and recognition programs. A reward is an incentive for good behavior. When it comes to keeping great staff and getting the most out of them, recognition is key. There are a lot of forms of recognition and incentives that come with a price tag. These include cash bonuses, stock awards, and a plethora of company-paid benefits.

Encouraging and motivating people to accomplish greater performance is the fundamental purpose of delivering Rewards and Recognition. Human resource motivational factors include rewards and recognition. In order to accomplish objectives, rewards and recognition are offered. Organizational strategies should be tightly matched with the rewards system. Innovative, one-of-a-kind goods and services might be on the horizon thanks to these tactics.

Both monetary and non-monetary forms of rewards and appreciation are acceptable. Money might come in the form of a bonus, stock awards, perks paid for by the employer, or gift cards. Small tokens of appreciation like mugs, t-shirts, sets of pens and pencils, additional vacation time, and ceremonial awards are examples of non-monetary incentives and recognition. Recognizing and rewarding excellent achievement is a great way to keep people motivated.

By boosting engagement and morale, encouraging employees to match their behavior with corporate goals, recruiting and keeping talent, and creating a feeling of ownership and responsibility, a successful recognition and incentives program helps firms accomplish their strategic objectives.

Benefits of Recognizing Employees

A basic human need is to be appreciated by one's employer. Worker engagement, team cohesion, and overall company success are all enhanced when workers feel valued and acknowledged for the efforts, they put in. The success of a company's goals and the upholding of its values should be the driving forces behind any employee recognition and reward program.

Some advantages of employee recognition are as follows:

- Boosted engagement and productivity
- lower staff turnover
- happier and more fulfilled workers
- stronger team spirit
- more customer loyalty and satisfaction
- easier recruitment and retention of top talent
- less stress and absence

In a system of rewards and recognition, employees are compensated in both internal and external ways for their efforts. When workers are fairly and promptly acknowledged for their contributions, it creates an atmosphere of recognition and reward. This encompasses not only fair and consistent monetary remuneration, but also team or employee celebrations, acknowledgment of years of service, and/or accomplishments attained.

Positive work environments and high employee satisfaction may be achieved via the strategic use of incentives and recognition. Employee morale, productivity, and efficiency may all be enhanced with their assistance.



No progress in employee motivation will be achieved so long as reward and recognition are seen as a singular phenomenon, independent of the motivating processes that accompany them. Pay vs. recognition arguments, which fail to take into account key differences, will persist in diverting our attention.

Research Gap

In terms of praise and incentives, people have various tastes. Organizations can better understand how to fit their compensation systems with the particular motivations and preferences of their workers. Factors including cultural origins, age variances, and personality attributes could inform research into individualized incentive schemes. There is a lack of research on the effects of non-monetary incentives on employee engagement, motivation, and performance, in contrast to the extensive literature on monetary rewards such as pay increases and bonuses. Various organizational circumstances call for various types of non-monetary incentives; one such area of research may be the efficacy of praise, recognition, flexible work arrangements, and possibilities for career growth.

Objectives of the Study

- To Understand the Current Rewards and Recognitions of the Company
- To identify the satisfaction level of the employees towards the current rewards and recognition
- To analyse the effects of Rewards and Recognition provided by the organization on employee performance

Research Methodology

Data is gathered from the primary and Secondary data Primary Data; The efficacy of workplace incentives and recognition systems may be better understood with the use of primary data gathered via surveys, interviews, or experiments. This data can then be used to make evidence-based decisions that boost employee engagement and performance.

Research Design: Descriptive Research Design
Sampling Design: Convenience Sampling
Sampling Procedure: Simple Random Sampling
Sample Size: 138
Tool For Analysis : Structured Questionnaire

Secondary Data: Publicly accessible secondary sources, such as scholarly journals, textbooks, the internet, and other similar resources, provided the data used for this study's literature review.

Limitations of the study

- The most significant limitation of the research is time.
- It's possible that the analysis's data collection period was not ideal for the Analysis
- It's possible that the decision-making outcomes provided by the evaluated data are inaccurate.
- Information gathered from one branch that may not have an effect on the other

LITERATURE REVIEW

A Study on the Impact of Rewards and Recognition on Employee Motivatin by Baskar P. (jan 2013): Incentives and public acclaim impact workers' motivation to perform their best, according to the study's primary purpose. The specific aims of the study were to identify the most effective forms of appreciation, compare the behaviors of appreciated and unappreciated employees, measure the effect of motivation on performance, examine its effects on professional and personal growth, and identify any effects on workplace conflicts. We used a descriptive research technique in our work. Employees of these companies were the ones who really filled out the questionnaires. The research shows that there are a lot of factors that influence how motivated and happy employees are at work. Awards and recognition also have a positive and direct relationship with workplace happiness and motivation, which is worth noting. Employees' drive and contentment on the job might, therefore, vary in response to new rewards and recognition programs. So, it seems to reason that improved recognition and incentives would boost motivation and satisfaction, which might result in more output.

Impact of Rewards and Recognition on Employee motivation by Gangapuram Aruna, (March 2018): The main purpose of the research was to look at the effects of public praise and incentives on employees' motivation to perform well. Furthermore, the study sought to ascertain the most efficacious methods of acknowledgment and compensation, contrast the behaviors of valued and unvalued employees, discover the extent to which motivation enhances productivity, ascertain whether it impacts professional and personal growth, and ascertain whether it generates disputes amongst employees. Our research approach in this study was descriptive. It was employees of these companies that participated in the polls. Employees' motivation and satisfaction on the workplace are impacted by several factors, according to the findings. Another important discovery was the positive and direct relationship between rewards and recognition and contentment and drive at work. Employees' drive and contentment on the job might, therefore, vary in response to new rewards and recognition programs.

Understanding the impact of Reward and Recognition, Work life Balance, on Employee retention with Job Satisfaction as Mediating Variable on Millennials in Indonesia by Aga Hutama Tirta, Amelia Emrika, (July 2020): At the moment, the biggest generation in the workforce is the millennial generation. They are slated to succeed the current management at the very top in the next fifteen to ten years. If they remained instead of looking for work elsewhere, the firm may end up saving a ton of money on training and recruiting expenses. This research aims to conduct an investigation into the impacts of reward and recognition programs, work-life balance, and employee retention via the medium of job satisfaction. This research is expected to provide insight on how organizations can effectively retain the Millennial generation, who now constitutes the majority of their workforce. In order to get these samples, we



used a nonprobability sampling approach. By combining a structural equation model with partial least square software, statistical analysis was carried out. We tested our hypotheses using the t-test and p-value outcomes.

Intrinsic Rewards and Employee’s Performance with the mediating Mechanism of Employee’s Motivation by Faiza Manzoor, Longbao Wei, Muhammad Asif, (July 2021): The major goal of this study is to investigate the effects of intrinsic incentives on worker productivity. Intervening as it does, it stresses the significance of employee incentive programs. This objective has been achieved via the use of a questionnaire to collect data from small and medium-sized firms in Pakistan. We received 300 completed surveys out of 400 that were delivered to our target population. To test our hypotheses, we used structural equation modeling in conjunction with confirmatory factor analysis. The main results of the research demonstrated that intrinsic incentives have a positive and statistically significant influence on employee performance. Specifically, the study found that the correlation between intrinsic incentives and performance is significantly attenuated by an employee's level of intrinsic motivation. Results are presented with descriptions of consequences.

Impact of Reward and Recognition on Job Satisfaction and Motivation: An Empirical Study from Pakistan by Rizwan Qaiser Danish and Usman Ali, (Jan 2010): Human resources are one of a company's most significant assets. Keeping good, experienced workers on staff is essential to any company's success. A more competitive, valuable, and profitable company could emerge from inspired employees. This study intends to address that information vacuum by examining the factors that motivate people to give their all on the work and the connection between organizational reward, recognition, and motivation. We asked many different types of organizations for their staff's opinions so that we could provide a cross-sectorally representative sample. An 88% response rate was achieved when 250 self-administered surveys were returned by employees across industries, resulting in 220 useable questions. No one was forced to take part in the survey, and all responses were anonymous.

Study of Influence of Rewards and Recognition on Employee’s Job Satisfaction and Motivation in Private Industries in Rajasthan by Jyoti Rathore and Vikram Singh Chouhan, ((May 2021): This dissertation seeks to investigate the effects of incentives and recognition on employee motivation and job satisfaction in the private sector of Rajasthan. A wide range of Rajasthani industries have contributed to the data set. Ensuring employee happiness is a crucial aspect of human resources since it fosters loyalty towards the firm. The present study aims to establish a link between rewards and recognition, employee motivation, and job satisfaction. According to the study's findings, intrinsic motivation is strongly associated with contentment in one's job and financial reward. Recognizing and rewarding employees has a profound effect on their motivation and satisfaction.

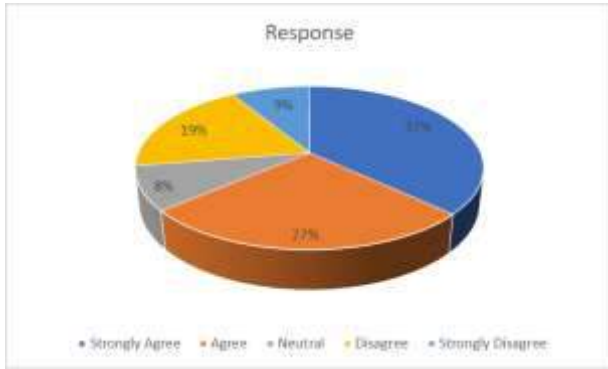
A Study on Impact of Reward and Recognition system on Employee Job Satisfaction by Patel Disha Janakbhai and Dr. Anuradh Pathak, (May 2021): This study aims to investigate the relationship between employee satisfaction and a system of incentives and recognition. A major objective of this study is to determine whether firms provide incentives and acknowledgement to their personnel. Studying how businesses inspire their workers with praise and incentives. The research data used in this study was collected via the administration of questionnaires. One hundred respondents were selected using a standard random selection process.

Impact of Rewards and Recognition on Employee Performance with reference to Pharmaceutical Industry – A Select Study by P Suma Harika and A Chiatanya, (July 2019): An organization's human resources are its most precious asset. The capacity to hold on to competent and seasoned employees has a significant impact on a company's overall performance. Motivated employees have the potential to boost an organization's competitiveness, value creation, and bottom line. This study's overarching goal is to determine what factors, if any, motivate employees to give their all on the job by investigating the relationships between traits including reward, recognition, job satisfaction, and motivation. The criteria that were considered in the research were employee motivation and job satisfaction. Here we have discussed what this report means for HR managers and lawmakers. In addition to outlining the limits and suggestions for further research.

DATA ANALYSIS AND INTERPRETATION

- 1. Do you Agree that, the system of Incentives and recognition serve to encourage to improve the performance of employee
a. Strongly Agree b. Agree c. Neutral d. Disagree
e. Strongly Disagree

Particulars	Response	Percentage
Strongly Agree	51	37
Agree	37	27
Neutral	12	9
Disagree	26	19
Strongly Disagree	12	9
Total	138	100



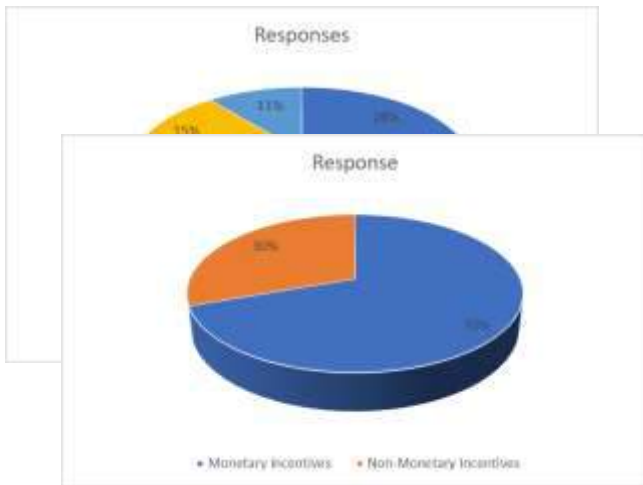
Interpretation

From the above data we can interpret that, 37% of the respondents strongly agree that the system of rewards and recognition serve to encourage the employees performance, 27% of the respondents agree, 9% are Neutral, 19% respondents disagree, 9% respondents strongly disagree

2. Does you agree for the present system of awards and recognition reflect the principles and Objectives of the Organization

- a. Strongly Agree
- b. Agree
- c. Neutral
- d. Disagree
- e. StronglyDisagree

Particulars	Respondents	Percentage
Strongly Agree	38	28
Agree	51	37
Neutral	13	9
Disagree	21	15
Strongly Disagree	15	11
Total	138	100

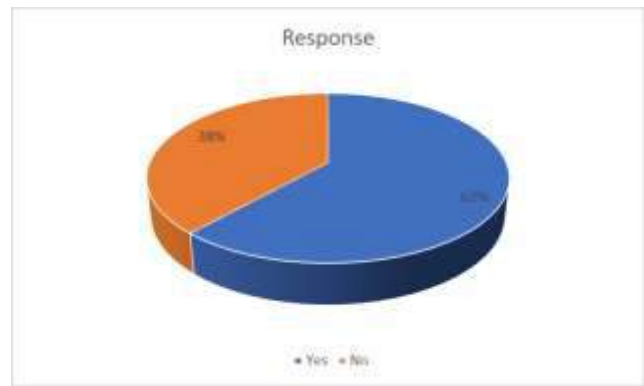


Interpretation

From the above data we can interpret that, 28% of the respondents strongly agree for the present system of awards and recognition reflect the principles and Objectives of the Organization, 37% of the respondents Agree, 9% Neutral, 15% of the respondents Disagree, 11% strongly Disagree.

3. Did you received any Rewards and Recognition from the company
 a. Yes b. No

Particulars	Response	Percentage
Yes	85	62
No	53	38
Total	138	100



Interpretation

From the above data we can interpret that, 62% of the employees received the rewards and recognition from the company and 38% of the respondents didn't received any incentive

4. What type of Incentives are more attractive in rewards and recognition of the companies

- a. Monetary Incentives
- b. Non – Monetary Incentives

Particulars	Response	Percentage
Monetary Incentives	96	70
Non-Monetary Incentives	42	30
Total	138	100

Interpretation

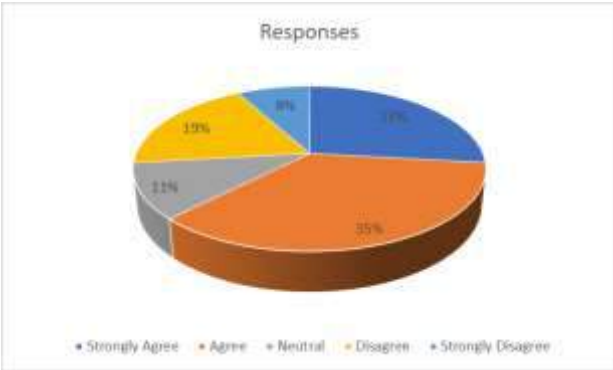
From the data above we can interpret that, 70% of the respondents says Monetary Incentives will attract the employee to work efficiency and effectively, 30% of the respondents says Non-Monetary Incentives will attract more.

5. The company's system for awarding and recognizing employees is open for review

- a. Strongly Agree
- b. Agree
- c. Neutral
- d. Disagree
- e. StronglyDisagree



Particulars	Responses	Percentage
Strongly Agree	37	27
Agree	49	36
Neutral	15	11
Disagree	26	19
Strongly Disagree	11	8
Total	138	100



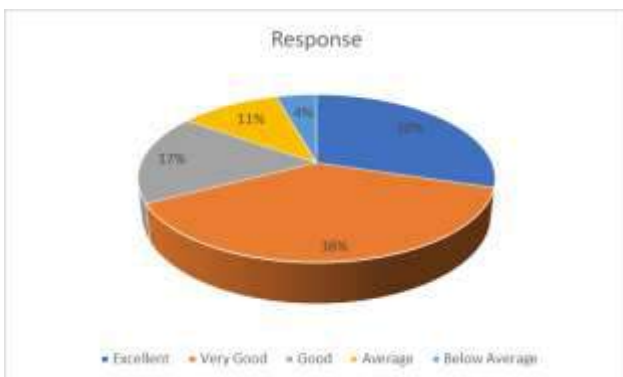
Interpretation

From the above data we can interpret that, 27% of the respondents strongly agree that companies reward and recognition system is open for review, 36% of the respondents Agree, 11% are Neutral, 19% of the respondents disagree, 8% of the respondents strongly disagree.

6. How would you rate the overall effectiveness of the Rewards and Recognition program infostering a positive work Culture?

- a. Excellent b. Very Good c. Good d. Average
- e. Below Average

Particulars	Response	Percentage
Excellent	41	30
Very Good	52	38
Good	24	17
Average	15	11
Below Average	6	4
Total	138	100



Interpretation

From the above data we can interpret that, 30% of the respondents rate Excellent for the overall effectiveness of the Rewards and Recognition program in fostering a positive work Culture, 38% respondents rate Very Good, 17% of the respondents rate Good, 11% of the respondents rate Average, 4% of the respondents rate Below Average

FINDINGS

- According to analysis, 37% of the respondents strongly agree that the system of rewards and recognition serve to encourage the employees performance, 27% of the respondents agree, 9% are Neutral, 19% respondents disagree, 9% respondents strongly disagree.
- According to analysis, 28% of the respondents strongly agree for the present system of awards and recognition reflect the principles and Objectives of the Organization, 37% of the respondents Agree, 9% Neutral, 15% of the respondents Disagree, 11% strongly Disagree.
- According to analysis, 62% of the employees received the rewards and recognition from the company and 38% of the respondents didn't received any incentives.
- According to analysis, 70% of the respondents says Monetary Incentives will attract the employee to work efficiency and effectively, 30% of the respondents says Non-Monetary Incentives will attract more.
- According to analysis, 27% of the respondents strongly agree that companies reward and recognition system is open for review, 36% of the respondents Agree, 11% are Neutral, 19% of the respondents disagree, 8% of the respondents strongly disagree.
- According to analysis, 30% of the respondents rate Excellent for the overall effectiveness of the Rewards and Recognition program in fostering a positive work Culture, 38% respondents rate Very Good, 17% of the respondents rate Good, 11% of the respondents rate Average, 4% of the respondents rate Below Average

SUGGESTIONS

- Establish a mechanism for employees to offer feedback in order to guarantee that the recognition and rewards program is continuously improving.
- Strive to acknowledge individuals for their distinct preferences and accomplishments. It's possible to use this method to acknowledge significant achievements, innovative concepts, teamwork, or exceptional performance.
- Establish a system of peer recognition so that employees may recommend and recognize one other's initiatives; this will foster a sense of togetherness and friendship among employees.
- Establishing clear criteria for rewards and recognition ensures that everyone is aligned. Hopefully, this clarifies what employees need to meet in order to be considered for recognition.



- Promote advancement and development inside the organization by linking rewards and recognition with chances for professional growth, such as promotions, training programs, or leadership roles.
- Recognize and reward workers who are making an effort to make the workplace more inclusive and diverse, and especially those who have gone above and above in this regard.
- The wellness activities that could be a component of the rewards and incentives program to assist employees in feeling better often include health benefits, gym memberships, and mindfulness courses.
- To foster a sense of thankfulness and camaraderie among employees, it is recommended to provide an online platform where they may freely recognize and appreciate one other's achievements.
Employees that consistently put in their best work may be rewarded with long-term incentives such as stock options, profit-sharing plans, or performance-based bonuses.
- Give supervisors the resources they need to properly acknowledge and value their employees.

CONCLUSION

The study of Dr. Reddy's Laboratories' incentives and recognitions system provides valuable information for improvement as it clarifies several aspects of the current system. Although employees value acknowledgment for their work, the findings suggest that the present program for rewards and recognition may use some adjustments. Based on the findings, the program may be enhanced and more aligned with the organization's goals and values. A more personalized and open method of acknowledgment, fostering a culture of mutual appreciation among workers, and incorporating awards with opportunities for professional development and wellness programs are all ways that Dr. Reddy's Laboratories may work toward a more welcoming and supportive workplace. Managers should also be trained in effective recognition tactics and establish regular feedback channels to guarantee that their workforce is always engaged and striving to improve. Ultimately, by establishing a robust program of rewards and recognition, Dr. Reddy's Laboratories can improve morale, motivation, and performance—as well as enhance corporate success and employee happiness.

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A TRACER STUDY ON THE SECONDARY EDUCATION MAJOR IN FILIPINO GRADUATES FROM ACADEMIC YEAR 2022 TO 2023: EMPLOYMENT IN FOCUS

Marefe L. Silongan, LPT¹, Conie B. Cerna, LPT., MAEd², Jennevive S. Manlawe, LPT³,
Deveyvon L. Espinosa, LPT., MAEd⁴, Kristy Jane R. Muegna, LPT., MAEd⁵,
Jonelson C. Escandallo, LPT., PhD⁶, Regine L. Generalao, LPT., MST=Math⁷,
Rowel A. Peñora, L.Agr., MEd⁸,

¹ORCID No. 0009-0001-4950-2402,

Instructor, Kapalong College of Agriculture, Sciences and Technology,
Maniki, Kapalong, Davao del Norte, Philippines

²ORCID No. 0009-0008-1170-3234,

BSED Filipino Program Coordinator/Instructor, Kapalong College of Agriculture, Sciences and Technology Maniki,
Kapalong, Davao del Norte, Philippines

³ORCID No. 0009-0001-8518-9273

Instructor, Kapalong College of Agriculture, Sciences and Technology,
Maniki, Kapalong, Davao del Norte, Philippines

⁴ORCID No. 0000-0002-2896-5416,

Assistant Dean-Institute of Teacher Education/Instructor II, Kapalong College of Agriculture, Sciences and Technology,
Maniki, Kapalong, Davao del Norte, Philippines

⁵ORCID No. 0009-0006-9910-0117

BEED Program Coordinator/Instructor II, Kapalong College of Agriculture, Sciences and Technology
Maniki, Kapalong, Davao del Norte, Philippines

⁶ORCID No. 0000-0001-5808-6749

BSED English Program Coordinator/Instructor II, Kapalong College of Agriculture, Sciences and Technology
Maniki, Kapalong, Davao del Norte, Philippines

⁷ORCID No. 0009-0009-3280-3303

BSED Mathematics Program Coordinator/Instructor II, Kapalong College of Agriculture, Sciences and Technology
Maniki, Kapalong, Davao del Norte, Philippines

⁸ORCID No. 0009-0007-3977-7721

Community Extension Linkages and Networking Director/Instructor II, Kapalong College of Agriculture, Sciences and
Technology, Maniki, Kapalong, Davao del Norte, Philippines

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ABSTRACT

This tracer study was conducted to assess the employment rates and employability of graduates who completed the Bachelor of Secondary Education-Filipino program from the years 2022 to 2023 at a local college in Kapalong, Davao del Norte. Additionally, it aimed to identify the graduates' attitudes towards work, evaluate the quality of education provided by the institution, and analyze the development of graduates' skills and abilities. The study employed a descriptive research method, gathering data from 47 respondents through an online survey using Google Forms. Survey showed that the employment rate of secondary education- major in Filipino graduates was 72.3% of which 38.3% is working as teachers. Further, as to those whose work is non-teaching, 10.6% is working in call center agencies, 6.4% is working as office-based clerk, 4.3% are government employee, 2.1% as kitchen manager, 6.4% as sales associate, 2.1% as events manager, and another 2.1% as storekeeper. Then, 8.5% are regular employees, 6.4% are self-employed, 31.9% are full-time employees, 4.3% are on job order, 19.1% are working on contractual basis, and 2.1% is working on part-time but seeking full-time employment. Meanwhile, surveyed showed that there are only 10.6% who pursued further graduate studies. The level of attitude to work, quality education provisions of the institution as well as skills and abilities development obtained a very high descriptive rating which means that the secondary education- major in Filipino graduates always manifested the said behaviors. Results showed that secondary education- major in Filipino faces unemployment. Thus, it is advisable for the school to appoint a graduate employability coordinator. This individual would be tasked with tracking and overseeing graduates' employment statuses, as well as organizing online forums to disseminate information regarding various job vacancies and opportunities available for application.

INTRODUCTION

Tracer studies play a crucial role in evaluating the effectiveness of educational institutions and ensuring the provision of quality education and services. Through tracer studies, institutions gather feedback from graduates, enabling them to assess various aspects

of their educational experience, including curriculum relevance, teaching methodologies, and skill acquisition (Smith, J., Johnson, K., & Lee, S., 2020).

Additionally, tracer studies facilitate the identification of areas where curriculum revisions, pedagogical enhancements, and



strategic planning efforts are needed to enhance program quality and relevance. Through a comprehensive examination of tracer study outcomes, institutions can foster continuous improvement and ensure that their academic programs meet the evolving needs of students and industries. Therefore, tracer studies play a vital role in not only providing evidence of course outcomes but also in evaluating academic program effectiveness and informing strategic decision-making processes within educational institutions (Wong & Tan, 2018).

Globally, tracer studies evaluate higher education program effectiveness and alignment with the job market. Smith (2019) discusses their significance, synthesizing international findings and offering best practices. Müller (2018) conducts a European study on graduate employability, addressing challenges in aligning education with workforce demands. Nazron, Lim, and Nga (2017) explore Southeast Asia's education-to-work transition, emphasizing soft skills' role in employability. These studies contribute to understanding higher education's impact on workforce needs and global economic development.

In Metro Manila, Santos (2018) conducted a tracer study focusing on graduates of the Engineering program at University X from 2010 to 2013. The study aimed to evaluate how well the program's curriculum aligned with the demands of the industry and to gauge the effects of the K-12 transition. Among the 80 graduates identified, 60 participated in the survey, resulting in a response rate of 75%. The findings indicated that a considerable number of graduates secured positions in engineering companies within six months of completing their studies. Additionally, the study highlighted that graduate perceived practical training modules as the most advantageous component of the curriculum, enhancing their preparedness for employment in the continually evolving educational environment.

In Cagayan de Oro City, a tracer study was conducted to investigate the employment outcomes of graduates from University Y's Education program spanning from 2003 to 2008. The results indicated that most graduates found employment within six months of completing their studies, and many stayed in the same position for more than two years. These initial roles typically offered monthly salaries ranging from Php20,001 to Php30,000. The majority of employed participants worked in the public sector within the local community, primarily in large-scale organizations. However, a notable portion of respondents remained unemployed, citing reasons such as family obligations, the pursuit of better-paying opportunities, and health issues. Nonetheless, a significant number of employed respondents reported that their current jobs were aligned with their area of expertise, and they attributed their success in part to the communication skills honed during their college education (Hernandez & Reyes, 2017).

In the local context, a college in Kapalong started operations in 2005, pioneering as the first local institution to achieve Level 1 accreditation from the Association of Local Colleges and Universities – Commission on Accreditation (ALCUA) in Region XI. Driven by a dedication to refining teaching approaches and equipping emerging professionals for international opportunities, the institution initiated a tracer study for its alumni to evaluate their readiness for employment and current job statuses. Additionally, this study aims to collect feedback and recommendations for enhancing the existing curriculum to more effectively facilitate the career advancement of graduates in their specialized fields.

Therefore, it is on this basis that the tracer study was undertaken to assess the employment rate and status of graduate students,

along with their self-assessment of work attitudes, the quality of education provided by the institution, and the advancement of skills and abilities among Bachelor of Secondary Education - Filipino graduates. This initiative serves the institution's commitment to fulfilling its social responsibilities and values by crafting a curriculum that guarantees post-graduation employment for students and further enhancing its ongoing provision of quality education.

OBJECTIVES OF THE STUDY

The primary purpose of this study was to:

1. Describe the demographic characteristics of the graduate-respondents in terms of:
 - 1.1. sex when grouped per academic year;
 - 1.2. civil status;
 - 1.3. age;
 - 1.4. year graduated; and
 - 1.5. educational attainment and development;
2. Describe the employment profile and features of the graduate-respondents in terms of:
 - 2.1. employment rate;
 - 2.2. employment status;
 - 2.3. level of income;
 - 2.4. period of seeking the first job after college
 - 2.5. relevance of college degree to the present job; and
 - 2.6. job mismatching.
3. Describe the level of the graduates-respondent self-rated evaluation with their attitude to work?
4. Determine the level of the graduates-respondent self-rated evaluation with the quality of education provision of the institution?
5. Determine the level of the graduates-respondent self-rated evaluation with the skills and abilities obtained in the institution and its usability with their present occupation?

METHODS

Design

Descriptive research methodology, characterized by the systematic collection and tabulation of quantitative data, forms the foundation of this study. Its primary aim is to depict the characteristics of a demographic segment without exploring causality, focusing instead on testing hypotheses and answering research questions. This approach provides a systematic framework for reporting on events, phenomena, or facts within a defined area or population (Smith, 2018). Furthermore, descriptive research involves the collection of data to test hypotheses or provide answers to research inquiries, emphasizing the determination and reporting of the current state of affairs. It is recognized as a scientific methodology that systematically describes events, situations, phenomena, or facts within a specific area or population, contributing to a comprehensive understanding of the subject matter (Johnson, 2017). In the study, the descriptive research approach was used to outline the employment rate and status of Secondary Education – Filipino graduates from Kapalong College of Agriculture, Sciences, and Technology. Its aim was to quantify the graduates' employment rate and describe their demographic profile, including gender, age, and civil status, to provide a comprehensive understanding of their employment status.

Population and Sample

Primarily, the population and sample of this tracer study were the graduates of Bachelor of Secondary Education-Filipino in Kapalong College of Agriculture, Sciences and Technology from academic year 2022 to 2023. Hence the study used the complete enumeration method since the very purpose of the study is to tracj

abd trace graduates' terms of their employment status and rate. To be specific, in the year 2022, there were 24 graduates of which there were 4 males and 20 females; and in year 2023, there were 9 males and 14 females which made a total of 23 graduates. Thus, the total population and sample of this study is 13 males and 34 females for a total of 47 Secondary Education-Major in Filipino graduates.

Research Instrument

The research tool employed in this investigation was modified from Escadallo's (2024) study titled "Examining Employment Patterns of Elementary Education Graduates from 2015 to 2019," demonstrating a Cronbach's alpha coefficient of 0.955. This indicates that the questionnaire utilized exhibits excellent internal consistency.

Data Collection Procedure

Data collection refers to the process of systematically gathering, measuring, and analyzing precise information for research purposes utilizing established and validated methodologies. Typically, it constitutes the initial and crucial phase of research across various disciplines (Questionpro, 2020). Hence, the researcher conscientiously undertook the following principal steps to procure the requisite data for the study.

First, given that the study's population and sample encompassed graduate students pursuing Bachelor of Secondary Education-Filipino within the institution, the researchers requested precise data on the total number of graduates spanning from the academic year 2022 to the academic year 2023 from the college registrar. This step was taken to ensure the inclusion of exact and reliable data in the study's analysis.

Second, after getting the total number of graduates, the researchers utilized the survey tracer questionnaire originally developed by Escadallo (2024). This questionnaire was designed to assess various aspects including employment rate, employment status, educational attainment and development, work attitude, provision of quality education, as well as skills and abilities development among each graduate. Additionally, the questionnaire underwent external validation by experts within the relevant research field, all possessing doctoral degrees in their respective areas of specialization.

Civil Status

Figure 2 shows the civil status of Bachelor of Secondary Education-Filipino graduates from the academic years 2021-2022 to 2022-2023. The data revealed that all graduate students are

Third, after the survey questionnaire validation, the researchers began tracing the graduates concerning their employment status and rate, educational attainment and development, attitude towards work, provision of quality education, and development of skills and abilities. This process was conducted utilizing Google Forms.

Fourth, after the graduate students provided complete responses to the questionnaire, the researchers collected the surveys and initiated the tally process in readiness for data analysis and treatment.

Lastly, the data underwent analysis and interpretation by the appointed statistician of the institution. This process involved presenting the retrieved data in tabular and graphical formats to facilitate clearer and more comprehensible understanding of the results.

Data Analysis

For analyzing the data, mean was used for getting the average score in measuring the level of graduates' attitude to work, evaluation of quality education provision and the development of different skills and abilities.

RESULTS AND DISCUSSION

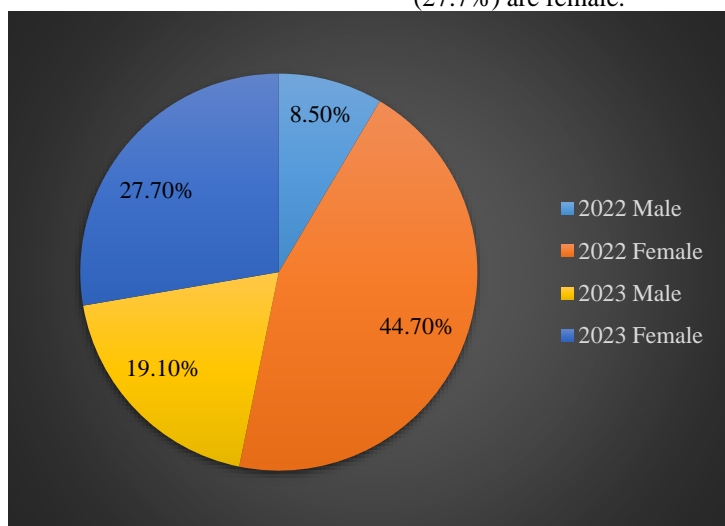
The results and discussion are presented in answer to the set objects of the study.

Demographic Characteristics of the BSED-FILIPINO Graduates

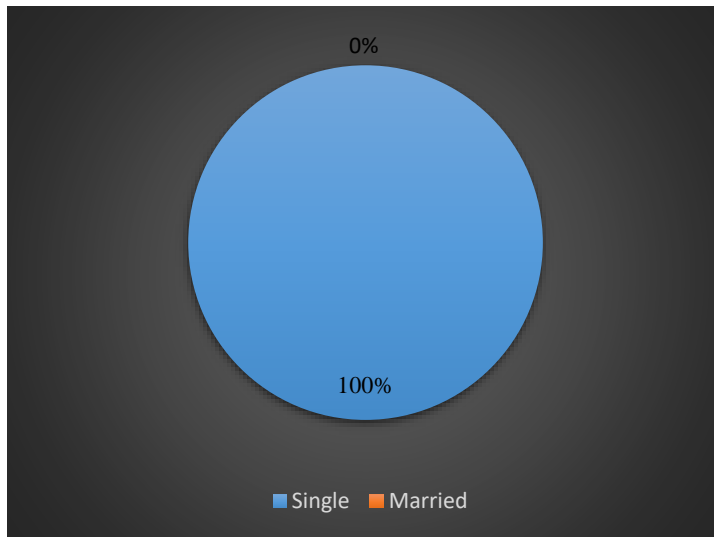
This tracer study's main objective is to identify the demographic characteristics of the Filipino graduates of the Bachelor of Secondary Education program who graduated during the academic years 2022 and 2023. These demographic characteristics include age, gender, marital status, graduation year, and educational achievements and accomplishments.

Sex

Figure 1 shows the total number of Bachelor of Secondary Education-Filipino graduates from 2021-2022 to 2022-2023. In batch 2022, there are 24 graduates, with 4 (8.5%) being male and the remainder 20 (44.7%) being female. In batch 2023, there are 23 graduates, 9 (19.1%) of whom are males, and the rest 14 (27.7%) are female.



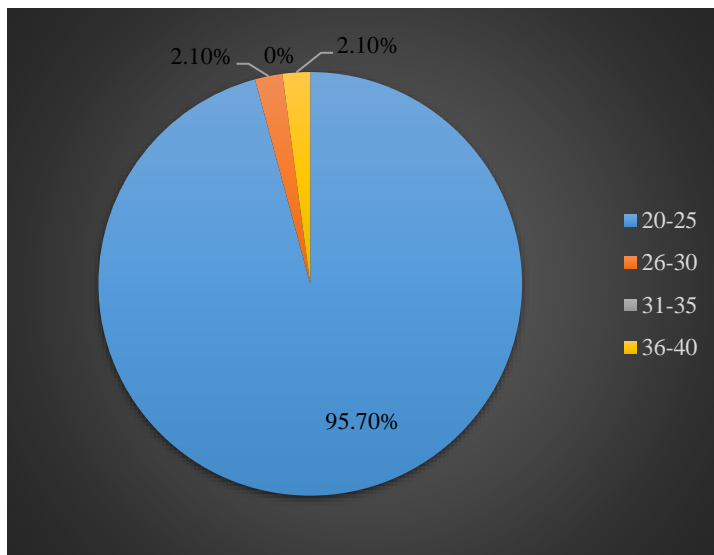
single. Also, the survey form includes the alternatives widowed and separated, yet none of the graduates now hold either civil status.



Age

The age range of Filipino Bachelor of Secondary Education candidates from the academic years 2021–2022 to 2022–2023 is displayed in Figure 3. Of the 47 grads who responded to the

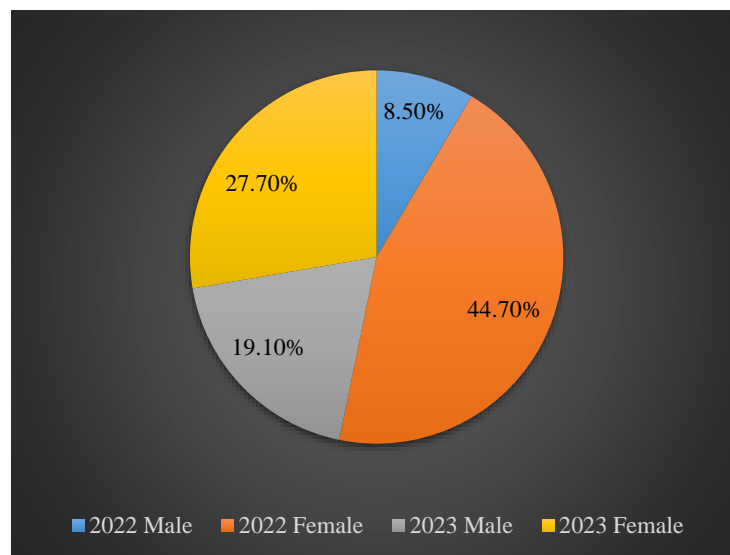
Google forms online survey, 46 are in the 20–25 age range, one is in the 26–30 age range, and one is in the 36–40 age range.



Year Graduated

The total number of Filipino Bachelor of Secondary Education graduates from the academic years 2021–2022 to 2022–2023 is shown in Figure 4. There are twenty female grads and four male

graduates for the year 2022. In 2023, there are 23 graduates and 9 of this are males and the remaining 14 are females.



Educational Attainment and Development

Shown in Figure 5 is the total number of Filipino Bachelor of Secondary Education graduates who undertook vocational training and/or national certification between the academic years 2021–2022 and 2022–2023 is shown in Table 5. According to the

survey, 38 or 80.9% of graduates did not receive vocational education, whereas 9 or 19.1% of graduates did. The following figure lists the various occupations that can be obtained with this occupational education: call center, office-based clerk,

government employee, kitchen manager, sales associate, event manager, and storekeeper.

Vocational Education

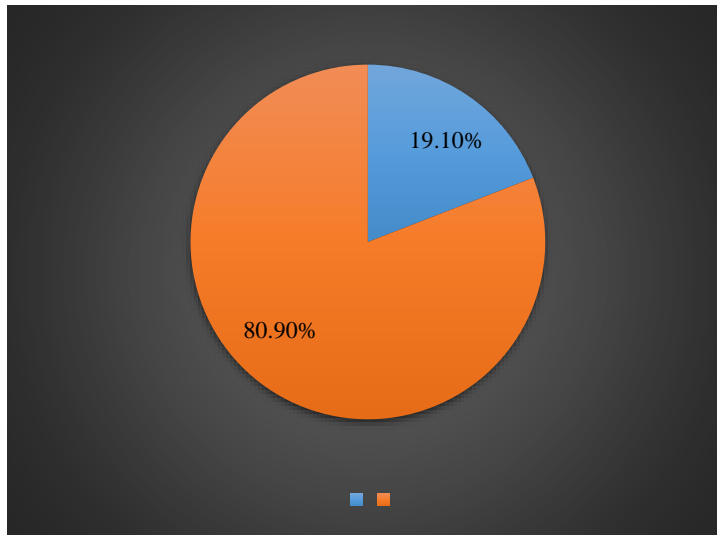
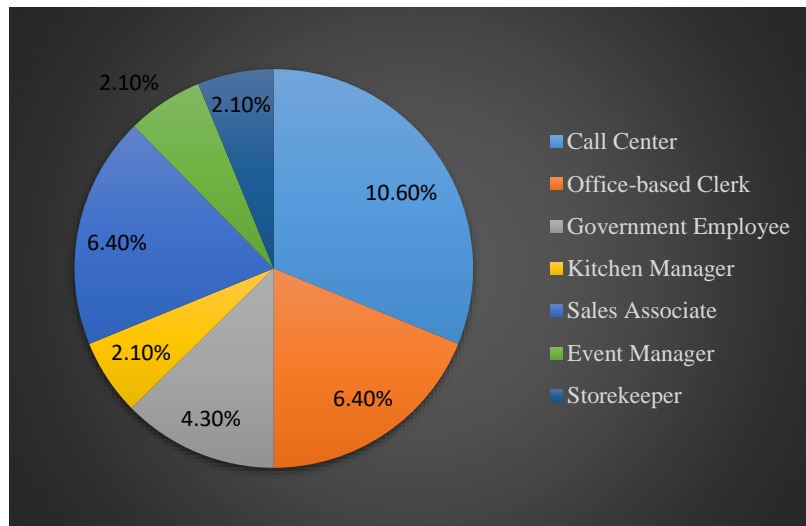


Figure 6 displays the frequency and percentage distribution of non-teaching occupations of Bachelor of Secondary Education-Filipino graduates. Five graduates, or 10.6% of the total, hold work in call centers among the listed occupations. Office-based Clerks come in second with three graduates, or 6.4% of the total. The percentage of graduates among sales associates and

government employees is 6.4% and 4.3%, respectively, with two graduates each. Each of the three categories—kitchen managers, event managers, and storekeepers—has one graduate, or 2.1% of the total. Together, the 16 grads who are included in the statistics make up 34% of the total.

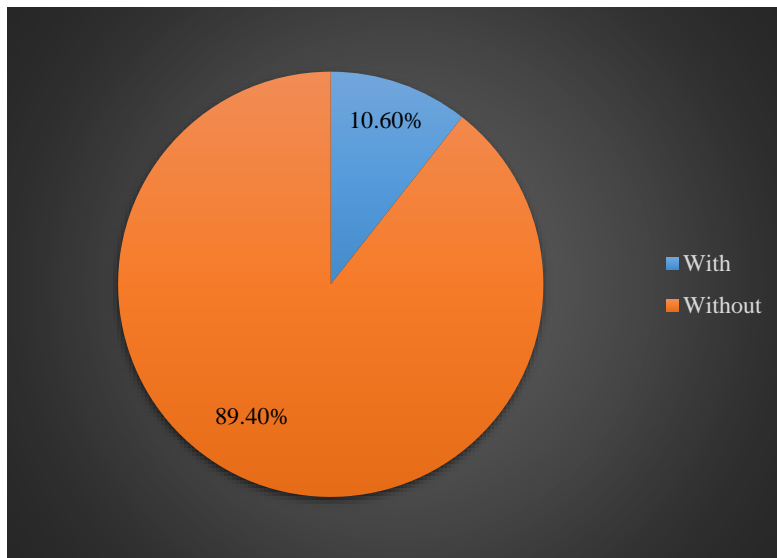
Non-teaching Occupation



Employment Profile and Features of BSED-FILIPINO Graduates

Shown in Figure 7 is the total number of Bachelor of Secondary Education-Filipino from academic year 2021-2022 to 2022-2023 who obtained and undergone post graduate or studies. Only 6 graduates, or 10.6% of the total, got postgraduate degrees or

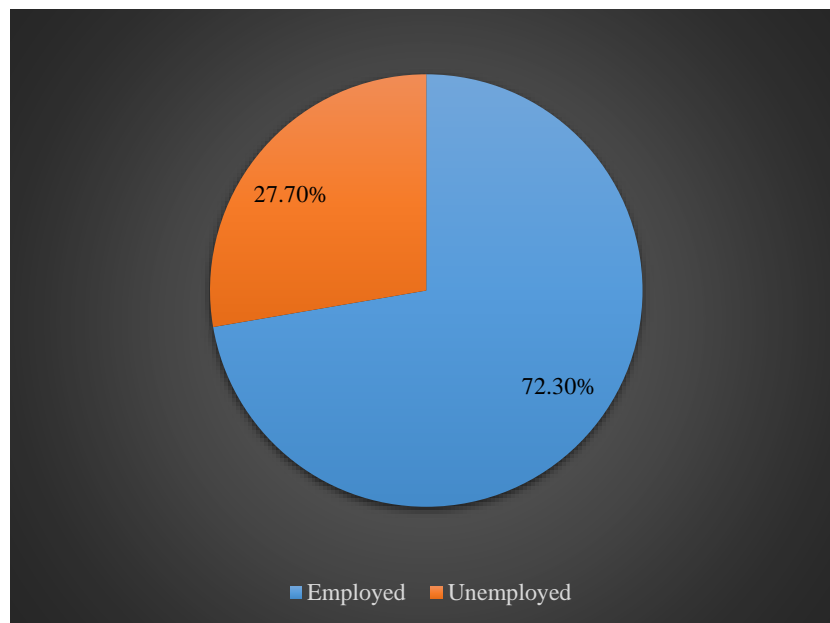
studies, while 41 grads, or 89.4%, chose not to pursue further education, according to the survey. Additionally, the survey revealed that just one degree was earned by graduates, and that was the Master of Arts in Education Major in Filipino. The participants funded their education through working at University of Immaculate Conception.



Employment Rate

Displayed in Figure 8 is the total count of Bachelor of Secondary Education-Filipino from the academic year 2021-2022 to 2022-2023. According to the survey findings, among the 47 graduate students who participated in the online survey, 13 individuals or

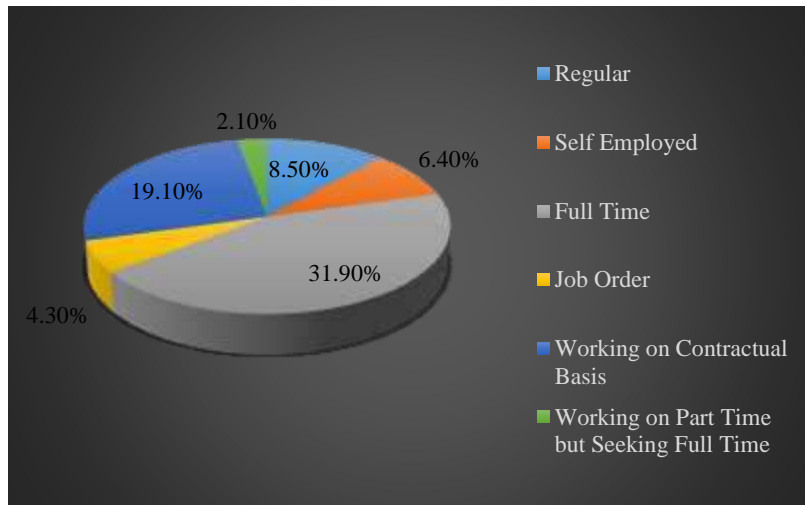
27.7% reported being unemployed, while 34 individuals or 72.3% were engaged in teaching roles, which may encompass online, public, private, or local college settings, and non-teaching professions, as detailed in the next table.



Employment Status

Shown in Figure 9 is the total number of Bachelor of Secondary Education-Filipino graduates from the academic years 2021-2022 to 2022-2023. Findings from the survey indicate that out of the 47 graduate students who provided responses, 4 individuals or 8.5% are employed as regular employees, 3 individuals or 6.4% are

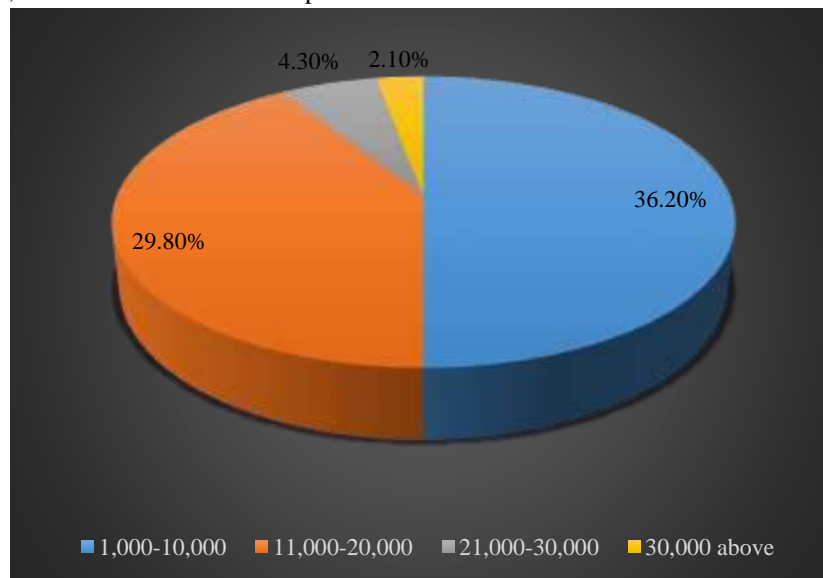
self-employed, an additional 15 individuals or 31.9% are employed full-time, 2 individuals or 4.3% are engaged in job order positions, 9 individuals or 19.1% are working on a contractual basis, and finally, one graduate student is working part-time while actively seeking full-time employment.



Level of Income

Figure 10 shows the total count of Bachelor of Secondary Education-Filipino graduates from the academic years 2021-2022 to 2022-2023. According to the survey results, among the 47 graduate students who provided responses in this regard, 17 individuals or 36.2% reported earning a monthly income ranging from 1,000 to 10,000 pesos, 14 individuals or 29.8% reported

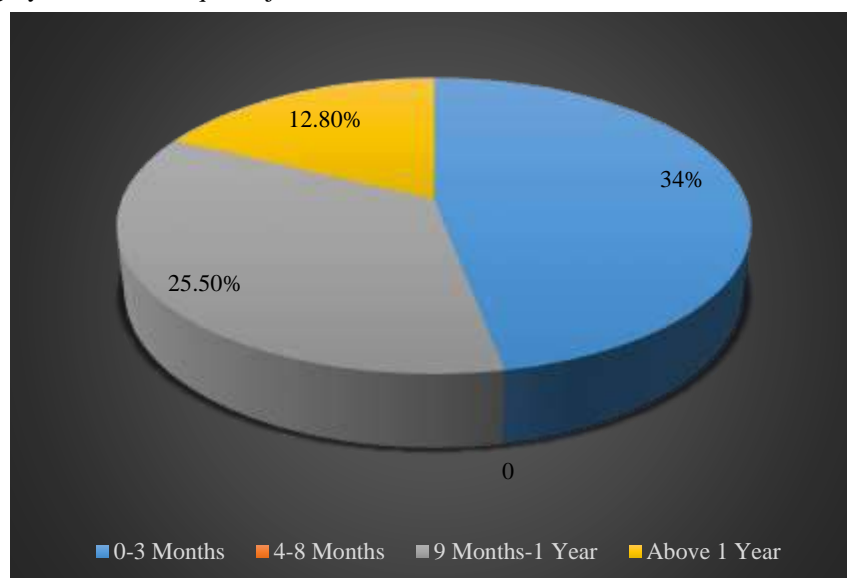
earning between 11,000 and 20,000 pesos per month. Additionally, 2 graduate students or 4.3% disclosed earning a monthly income ranging from 21,000 to 30,000 pesos, and finally, there is 1 graduate student or 2.1% who reported earning 30,000 pesos and above per month.



Period Seeking of Job After College

Shown in Figure 11 is the total number of Bachelor of Secondary Education-Filipino from academic year 2021-2022 to 2022-2023. The survey's results revealed that, out of the 47 graduate students who answered in this category, 16 or 34% required just 0-3

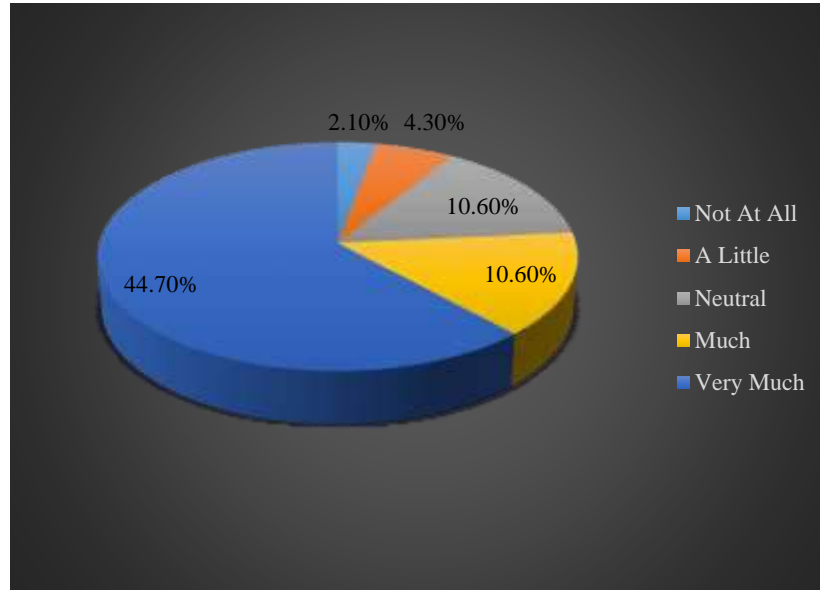
months to secure their first employment, while another 12 or 25.5% were able to do so in a period of 9-1 year. After a year, six people, or 12.8%, were able to secure employment.



Relevance of College Degree to the Present Job

Shown in Figure 12 is the total number of Bachelor of Secondary Education-Filipino from academic year 2021-2022 to 2022-2023 about the relevance of their college degree to their present job. Result of the survey showed that from the 47 graduate students

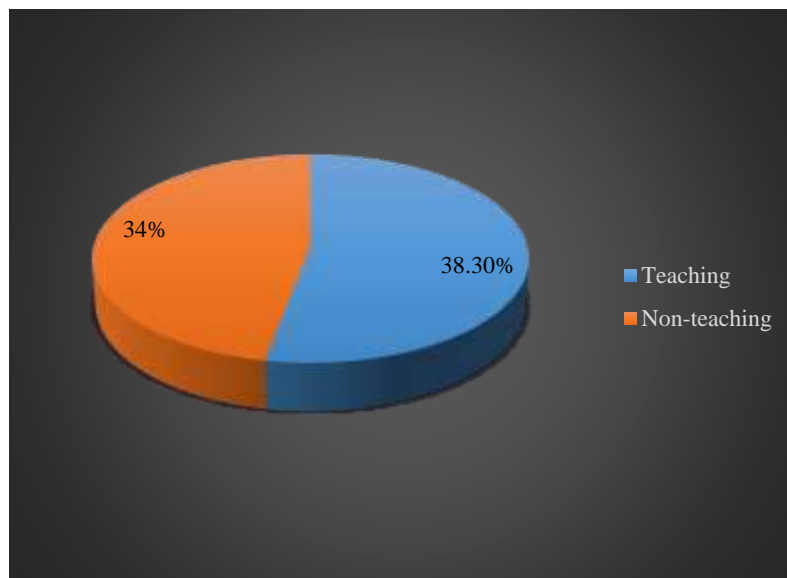
who responded in this aspect, there are 21 or 44.7% chose very much relevant, another 5 or 10.6% chose much relevant and another 5 or 10.6% chose neither. The other 2 or 4.3% chose a little relevant and lastly, the remaining 1 or 2.1% chose not all.



Job Mismatching

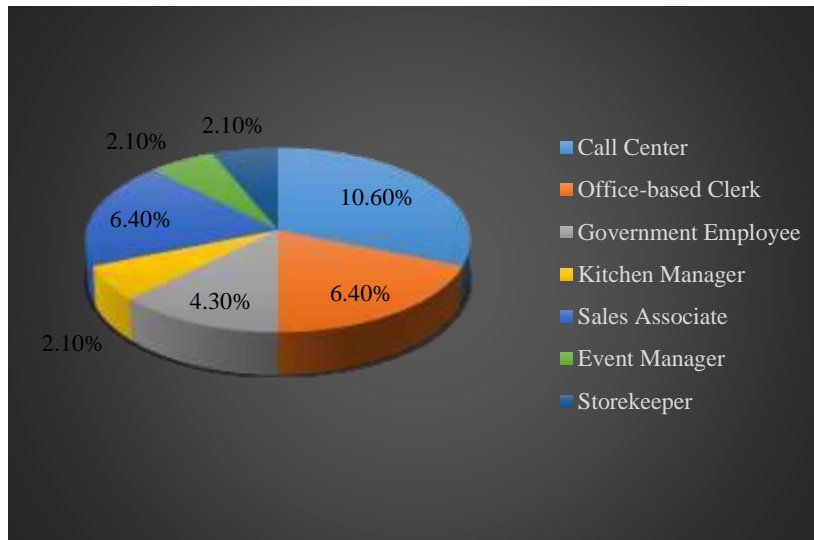
The total number of Filipino Bachelor of Secondary Education graduates from the academic year 2021–2022 to 2022–2023 is shown in Figure 13. The survey's results revealed that, of the 47 graduate students who answered this question, 18 or 38.3% are

currently employed as teachers, whether they be in higher education institutions (HEIs), private schools, public schools, or even online learning environments. The following figure indicates that 16 graduate students, or 34% of the total, work as non-teaching employees.



Shown in Figure 14 is the total number of Bachelor of Secondary Education-Filipino from academic year 2021-2022 to 2022-2023. The survey's findings indicated that five, or 10.6%, of the 47 graduate students who are not teaching—as indicated in Table 14—work in call centers. The remaining three, or 6.4%, are employed as office-based clerks. The remaining 2 or 4.3% are

employed by the government, the remaining 1 or 2.1% are in the kitchen management position, the remaining 3 or 6.4% are in sales associate roles, and the remaining 1 or 2.1% are in event management roles. Lastly, storekeepers make up the final 1 or 2.1% of the workforce.



Level of the Bachelor of Secondary Education- Filipino Graduates Attitude to Work

Shown in Table 1 is the level of the Bachelor of Secondary Education-Filipino graduates with their attitude to work which obtained and earned an overall mean score of 4.36 described as very high. This descriptive meaning and equivalent entails that the level of the BSED-Filipino graduates’ attitude to work is always manifested since the respondents strongly agree to all the identified sub-questions under attitude to work.

In the table, it showed that of all the ten sub-questions, item number 2 stating - *I like the kind of job and work I am doing*

obtained the lowest mean score of 4.06 with a descriptive equivalent as very high which means that the said item and/or construct is always manifested by the BSED-Filipino graduates in their work or in their workplace. Meanwhile, the items which obtained the highest mean score of 4.65 is item 10 stating *I seek assistance and help from others whenever I have clarifications and queries* with a descriptive equivalent as very high which means that the said items and/or constructs are always manifested by the BSED-Filipino graduates in their work or in their workplace.

Attitude to Work	Mean	Description
1. I am very interested, happy and satisfied with my work and it is very important for me.	4.12	High
2. I like the kind of job and work I am doing.	4.06	High
3. I accepted assignments and tasks given to me at work without complaints.	4.18	High
4. I arrived on time to prepare my work and extend working hours if necessary.	4.41	Very High
5. I can work better and functional under different working environment and situations.	4.32	Very High
6. I participated in all activities and events inside my workplace.	4.50	Very High
7. I have a good relationship with my colleagues and co-employees.	4.59	Very High
8. I submitted necessary documents and papers on time and beat deadlines.	4.41	Very High
9. I performed my task and job with excellence and outstanding quality.	4.35	Very High
10. I seek assistance and help from others whenever I have clarifications and queries.	4.65	Very High
Overall	4.36	Very High

Level of the Bachelor of Secondary Education- Filipino Graduates Quality Education Provisions

Shown in Table 2 is the level of the Bachelor of Secondary Education-Filipino graduates with quality education provisions which obtained and earned an overall mean score of 4.67 described as very high. This descriptive meaning and equivalent entails that the level of the BSED-Filipino graduates’ quality education provision is always manifested since the respondents always agree to all of the identified sub-questions under quality education provision.

From the ten sub-questions, item number one stating *availability of course materials and different learning resources needed for our studies* obtained the lowest mean score of 4.49 with a descriptive equivalent as very good which means that the said item and/or construct is always manifested by the BSED-Filipino graduates as they studied in Kapalong College of Agriculture, Sciences and Technology (KCAST). Further, the items which obtained the highest mean score of 4.79 is item number two stating *quality of course contents from courses offered as well as the teaching and learning process* which is described as very good which means that the said item and/or construct is always



manifested by the BSED-Filipino graduates as they studied in Kapalong College of Agriculture, Sciences and Technology (KCAST).

Quality Education Provision	Mean	Description
1. Availability of course materials and different learning resources needed for our studies.	4.49	Very High
2. Quality of course contents from courses offered as well as the teaching and learning process.	4.79	Very High
3. Conduciveness of the learning environment and atmosphere.	4.62	Very High
4. Provision of quality practicum guidelines and activities that develops more my skills and abilities from different industry partners and linkages.	4.70	Very High
5. Quality of learning facilities for first-hand and direct experiences like of different laboratories.	4.55	Very High
6. Quality of different courses offered in the program that develops the total sum of the student skills.	4.64	Very High
7. Level of optimum interaction and contact with my fellow students through different in-campus activities.	4.62	Very High
8. Well-trained and self-renewing Faculty members and staffs.	4.77	Very High
9. Different trainings, seminars and workshops that prepare students for employment.	4.77	Very High
10. Varied learning assessments and instructions which assess students' progress and learning fairly and equally.	4.74	Very High
Overall	4.67	Very High

Level of the Bachelor of Secondary Education- Filipino Graduates Skills and Abilities Development

Shown in Table 3 is the level of the Bachelor of Secondary Education-Filipino graduates skills and abilities development which obtained and earned an overall mean score of 4.51 described as very high. This descriptive meaning and equivalent entails that the level of the BSED-Filipino skills and abilities development is always manifested since the respondents always agree to all of the identified sub-questions under quality education provision.

From the 15 sub-questions, item number three stating *Computer and ICT Skills* obtained the lowest mean score of 4.38 with a descriptive equivalent as very good which means that the said item and/or construct is always manifested by the BSED-Filipino graduates as they studied in Kapalong College of Agriculture, Sciences and Technology (KCAST). Further, the items which obtained the highest mean score of 4.68 is item number three stating *ability to work independently as well as team work and team play* which is described as very good which means that the said item and/or construct is always manifested by the BSED-Filipino graduates as they studied in Kapalong College of Agriculture, Sciences and Technology (KCAST).

Skills and Abilities Development	Mean	Description
1. Organizational and leadership skill.	4.53	Very High
2. Problem solving and critical thinking skills.	4.43	Very High
3. Ability to work independently as well as team work and team play.	4.68	Very High
4. Creative thinking and creativity, initiative and taking a risk if necessary.	4.53	Very High
5. Time Management and decision-making skills.	4.43	Very High
6. Writing competence and skills including technical writing.	4.45	Very High
7. Communication and interpersonal skills.	4.53	Very High
8. Computer and ICT Skills.	4.38	Very High
9. Technical and Entrepreneurial Skills	4.40	Very High
10. Ability to work under pressure.	4.47	Very High
11. Ability to write the essentials and basics of effective lesson planning.	4.49	Very High
12. Code of ethics applied to my teaching profession.	4.60	Very High
13. Knowledge with the different teaching methodologies, techniques and approaches through seminars and workshops.	4.53	Very High
14. Expertise about multidisciplinary research that is essential for understanding students' needs and interests.	4.53	Very High
15. Trainings, seminars and workshops about the preparation and evaluation of different instructional materials.	4.61	Very High
Overall	4.51	Very High



DISCUSSION

Below is the summary of findings based on the gathered data conducted through online survey using google forms, the conclusions drawn and the recommendations.

Demographic profile of the BSED Filipino Graduates

The primary research objective of this study was to identify the demographic profile of Secondary Education graduates majoring in Filipino, spanning from batch 2022 to batch 2023. The survey findings revealed a predominant presence of female graduates, with a significant portion currently employed as educators. Furthermore, a substantial majority identified as single, with the age distribution predominantly falling within the range of 20 to 25 years. Additionally, one respondent fell within the 26 to 30 age bracket, while another respondent was aged between 36 and 40. Further, studies have indeed explored the potential influence of a person's sex or gender on their employment opportunities and experiences. Informal employment is a greater source of employment for men than for women at the world level (63 vs 58 percent), in developed countries (19 vs 18 percent), and emerging countries (69 vs 64 percent). However, in developing countries, the percentage of women workers who are informally employed (92 percent) is substantially higher than the percentage of male workers (87 percent). Further, in a majority of countries (56 percent), the percentage of women workers in informal employment exceeds the percentage of men workers. This does not result in higher global averages due to higher shares of informal employment for men relative to women in emerging countries with large populations such as Russia and China as well as most countries of the Middle East and Northern Africa. Further, although more women workers than men workers are informally employed in India and Pakistan and some other countries of Southern Asia, low female labor force participation rates limit the effect of high female informal employment rates in the global and regional estimates. (Bonnet et. al, 2019).

Also, some studies show that while companies are modestly increasing women's representation at the top, doing so without addressing the broken rung offers only a temporary stopgap. Because of the gender disparity in early promotions, men end up holding 60 percent of manager-level positions in a typical company, while women occupy 40 percent. Since men significantly outnumber women, there are fewer women to be promoted to senior managers, and the number of women decreases at every subsequent level. (McKinsey & Company, 2023).

Several studies have been carried out on the relationship between marital status and job satisfaction. Results of the studies have shown that marital status has a continual commitment on the organization with the married group being much happier in their jobs compared to the other statuses found that marital status play a part in the determination of job satisfaction as well as the level of performance delivered by the employee. A married person would have a very distinct sort of organizational commitment, which would have a continual nature. In other words, the person would feel much more obligated towards his job just like one would feel in their religion/ family matters etc. In that regard, other factors would be affected in the same vein as well such as level of job satisfaction and even loyalty towards the organization that one has been working for. A number of findings have outlined a list of factors that become hindrances for employees' especially female employees in the path of attaining work-life balance. These factors include role conflict, no kind of recognition or acknowledgment on an achievement, organizational politics, gender bias, elderly and child care issues

and so on and so forth (Mani V, 2013). It has also been found that the reason for work-life conflict for married families include child care issue, matter of salary, time constraints etc. (Atif & Zubairi, 2018).

However, studies have indeed shown a correlation between younger age, higher education, and job changes. Younger individuals, especially those who are well-educated, may still be in the process of exploring their career options. They might change jobs more frequently as they search for the right fit or pursue opportunities for growth and advancement. Well-educated individuals often possess skills that are in high demand. They may change jobs to leverage their education and acquire new skills or experiences that align better with their career goals. In some industries or fields, younger, well-educated workers are highly sought after. They may receive more job offers or opportunities for advancement, leading them to change jobs more frequently (Fehrmann, 2019).

Some research found that workers aged 55 years and above are less likely than their younger counterparts to engage in dominating. Similarly, in a recent daily diary study, older employees were found to be more avoiding and obliging than their younger peers when handling workplace conflicts. The findings from work and non-work contexts indicate that compared with younger individuals, older individuals tend to report fewer negative emotions and utilize more avoiding and obliging and fewer dominating when handling tensions with others (Yeung et al., 2020).

Educational Attainment and Development

The tracer study reveals the educational achievements of graduates majoring in Secondary Education with a focus on Filipino. According to the survey findings, nine graduates pursued and successfully obtained vocational education degrees and/or National Certificate Level II qualifications. These encompass certifications in diverse fields such as food processing, front office management, food and beverage services, agriculture production, bookkeeping, shielded metal arc welding, and computer servicing. Furthermore, six graduates pursued advanced degrees to further their education. Specifically, they pursued and obtained a Master of Arts in Education majoring in Filipino.

In line with this, study revealed that short-cycle tertiary graduates have higher employment rates than those with bachelor's or master's or equivalent degrees, while in others they have lower rates. As short-cycle tertiary programmes aim to provide professional skills, often combined with an implicit promise of an easier transition into the labour market, these data suggest that there are differences in the effectiveness of such programmes educational attainment and employment rates are positively correlated across different levels of tertiary attainment. Individuals aged 25-64 with a doctoral or equivalent degree have the highest employment rates of all ISCED attainment levels in all OECD countries except in Luxembourg and New Zealand. Likewise, the employment rate of individuals with a master's or equivalent degree is higher than the employment rate of those with a bachelor's or equivalent degree as their highest level of attainment everywhere except New Zealand. On average, individuals with a master's or equivalent degree are 5 percentage points more likely to be employed than individuals with a bachelor's or equivalent degree. The difference in employment rates persists throughout adults' working life in most OECD countries. So, although master's graduates are more likely to have work experience than bachelor's graduates, their higher employment rates are not simply due to them finding employment



after graduating more easily than those with a bachelor's or equivalent degree (OECD library, 2022).

Employment Profile and Features of BSED Filipino Graduates

According to the findings of the tracer study, over half of the graduates have secured employment, with the teaching profession being the predominant field, encompassing roles in public schools, private institutions, and local colleges. Additionally, a portion of graduates has diversified into various sectors such as government, call centers, office-based roles, kitchen management, sales, event management, and storekeeping. The majority of employed graduates hold regular full-time positions, with earnings ranging from ₱1,000 to ₱20,000 monthly.

Further analysis from the tracer study indicates that a significant number of education graduates have successfully passed the Licensure Examination for Teachers (LET) and secured employment within three months post-graduation. Presently, these employed individuals typically earn salaries ranging from ₱10,000 to just under ₱15,000 per month. Similarly, the majority of them possess the competence and skills necessary to meet the demands of the global employment market. Lastly, from the findings, the study recommends that the college should conduct graduate tracer study as it is a very powerful tool that can provide valuable information for evaluating the whereabouts and performance of the graduates in the workplace. This study aimed to keep track of the graduates in one of the state universities in the Philippines (Cuadra et. al, 2019).

Another tracer study revealed that the most of graduates (37.41%) find their employment working fulltime, followed by self-employed (21.46%). Only 8.78% and 7.80% not working and looking for a job and working part-time but not seeking fulltime respectively. For the employment type of graduates, a large number of graduates at 67.80% are in the job as teacher, and only 25.84% are in the other type of employment. Only 5.85% are in the position of principal or administrators. A significant proportion of teacher education graduates were professionally employed, based on the findings of the study of (Aquino, Punongbayan, Macalaguim, et.al., 2015).

Level of the Bachelor of Secondary Education Major in Filipino Graduates Attitude to Work

The level of the Bachelor of Secondary Education major in Filipino graduates with their attitude to work was described as high and very high. This descriptive meaning and equivalent entails that the level of the BSED Filipino graduates' attitude to work is evident as respondents overwhelmingly express strong agreement with all the identified sub-questions pertaining to their attitude towards work.

It has been revealed by a number of studies that teacher motivation could be enriched when teachers have the right to choose teaching materials, programmes and teaching methods and to determine classroom organization and discipline. Factors identified included adequate professional relations and ties, professional input, teacher evaluation, leadership and teacher development. Other identified motivation factors included social values and norms, working environment and colleagues, teacher personal information and professional variables. A study of researchers has provided a list of direct motivating factors (intrinsic motivation and extrinsic motivation) and indirect motivating factors (autonomy, working relationships, self-realization and institutional support). They believed that these factors heavily influenced the maintenance of teacher motivation over their career. As intrinsic motivation has been considered as significant factor for pre-service teachers to make career choice, extrinsic influences especially financial benefits such as salary,

pension and insurance etc. were often mentioned extrinsic factors motivating in-service teachers (Jiyang Han and Hongbiao Yin, 2016).

Level of the Bachelor of Secondary Education Graduates Quality Education Provisions

The level of the Bachelor of Secondary Education major in Filipino graduates with quality education provisions was described as very high. This descriptive meaning and equivalent entails that the level of the BSED Filipino graduates' quality education provision is always manifested as respondents consistently agree with all identified sub-questions pertaining to quality education provision.

This finding is in consonance to the study which pointed out that high-quality teaching is central to the higher education sector. Its pursuit has become heightened with increasing competition across institutions and opportunities to study globally through various modes (Harrison et. al, 2022).

A study highlight how quality education is essential for fostering the knowledge, skills, values, and attitudes necessary for sustainable development. Researchers argue that education should not only provide individuals with academic knowledge but also equip them with the critical thinking abilities to understand complex sustainability challenges and the creativity to devise innovative solutions. Furthermore, the researchers emphasize the importance of education for promoting sustainable development at both the individual and societal levels. Quality education enables individuals to make informed decisions that contribute to environmental conservation, social equity, and economic prosperity. Moreover, education can empower communities to address pressing sustainability issues such as climate change, poverty, and resource depletion. The study underscores the transformative potential of education in advancing sustainable development goals. By investing in quality education that promotes sustainability principles, societies can build a more equitable, resilient, and environmentally responsible future (Mokski et.al, 2022).

Level of the Bachelor of Secondary Education Graduates Skills and Abilities Development

The level of the Bachelor of Secondary Education major in Filipino graduates with the skills and abilities development was described as very high. This descriptive meaning and equivalent necessitate that the proficiency and competence of BSED Filipino graduates in skills and abilities development are consistently evident.

In connection to the results, a study shows prevalent culture of resume-building activities and argues for a shift towards colleges and institutions that prioritize intellectual curiosity and personal development. The study emphasizes the importance of a diverse array of challenging courses, majors, and extracurricular opportunities, which allow students to engage deeply with their interests and develop a holistic understanding of the world. While the study does not specifically name colleges or institutions that embody this ideal, the insights underscore the significance of seeking out educational environments that foster critical thinking, intellectual growth, and personal fulfillment, rather than merely focusing on credentials (William, 2015).

Further, another study shows the significance of a comprehensive approach to life skills education, highlighting key components for effective implementation. The study emphasizes the importance of a curriculum that is both sequential and developmentally appropriate, ensuring that skills are introduced and built upon in alignment with students' maturity levels. Active learning



strategies, such as role-playing and group discussions, are advocated for fostering student engagement and skill acquisition. Additionally, the study stresses the necessity of providing ample opportunities for practice and feedback to facilitate skill mastery. Moreover, integrating life skills education across various contexts, including homes and communities, is highlighted as essential for promoting holistic development. Teacher training and ongoing support are deemed crucial for educators to deliver the curriculum effectively. Lastly, collaboration with families, community organizations, and other stakeholders is encouraged to enrich students' learning experiences and provide real-world application opportunities. By incorporating these elements, educators can better equip students with the essential life skills needed to navigate challenges and thrive in contemporary society (Durlak et al., 2019).

Summary of Findings

After the conduct of the survey which successfully responded to 100% of respondents, the following are the summary of findings: the institution, Kapalong College of Agriculture, Sciences and Technology, produced a total of 47 graduates, comprising 13 males and 34 females. All respondents indicated a single civil status, with none being married. Regarding age distribution, the majority of graduates fall within the 20-25 age bracket, with only one graduate aged 26-30 and another aged 36-40. Batch 2022 yielded the highest number of graduates, totaling 24 students, while batch 2023 had the fewest, with 23 graduates. Furthermore, 19.1% of graduates obtained a vocational course or National Certificate, whereas only 10.6% pursued further studies.

In addition, when it comes to the employment rate, 72.3% of graduates have secured employment, while 27.7% remain unemployed. Among respondents, nearly half are employed full-time, with others engaged in various forms of employment such as regular, self-employment, job order, contractual work, and part-time roles with a desire for full-time positions. The majority of graduates report a monthly income ranging from 1,000 to 10,000, with approximately half earning between 11,000 and 20,000. Fewer graduates earn 21,000 to 30,000 and above monthly. For most graduates, the job search spanned from 0 to 3 months or 9 months to 1-year post-college, with a significant proportion (38.3%) acknowledging the relevance of their college degree to their current employment. Additionally, 34% of surveyed graduates work in non-teaching roles.

Lastly, according to the survey, the BSED major in Filipino graduates demonstrated a high and very high level of work attitude. Additionally, the institution's provision of quality education was rated as very good, and the development of skills and abilities among the graduates was also assessed as very high.

CONCLUSION

Following the survey, several conclusions emerged. Firstly, the employment rate among BSED major in Filipino graduates from the batches of 2022 to 2023 stands at 72.3%, indicating that nearly three-quarters of the graduates possess the necessary skills to secure employment. Additionally, a majority of the graduates hold regular employment positions, with some engaged in full-time work. Lastly, the survey underscores the relevance of the college degree to the graduates' employment, highlighting the institution's provision of quality education through courses and disciplines that effectively prepare graduates for their respective fields.

Moreover, the level of the attitude of work graduates' students demonstrated a strong consensus, indicating their efficient and effective performance of tasks and responsibilities. Furthermore,

the institution's educational standards were rated as very good, highlighting KCAST's commitment to providing quality education through diverse training programs, seminars, abundant learning resources, and a proficient faculty and staff. Lastly, the graduates' skills and abilities exhibited a notably very high level of development, showcasing KCAST's success in nurturing and refining a wide range of talents and interests among its students.

RECOMMENDATIONS

Based on the study's summary of findings and conclusions drawn, the following recommendations are suggested: Initially, given the survey's indication of a percentage of graduates facing unemployment, it is advisable for the school to appoint a graduate employability coordinator. This individual would be tasked with tracking and overseeing graduates' employment statuses, as well as organizing online forums to disseminate information regarding various job vacancies and opportunities available for application.

Secondly, there exists a subset of graduate students who have pursued non-teaching roles. Consequently, it is advisable for the school to offer various training sessions, seminars, and workshops to engage these students. This engagement will foster their motivation to further pursue a career in education. These initiatives aim to build upon the extensive training, seminars, and workshops they experienced during their college years, which equipped them with the necessary preparation, skills, and competence to excel as educators.

Thirdly, within the framework of skills and abilities enhancement, it is observed that computer and ICT skills garnered the least average rating. Consequently, it is imperative for the institution to prioritize the improvement of these competencies. This could involve implementing targeted training programs, fostering a technology-integrated learning environment, and providing ample resources for skill development in the realm of computing and information and communication technology. By addressing this area of deficiency, the institution can better equip individuals with the necessary tools to thrive in an increasingly digital-centric world.

Lastly, the study's findings indicate that graduates typically took between 1 to 3 months or 9 months to 1 year to secure employment post-college. Therefore, it is advised that the institution strengthen its partnerships with local industries and community networks. This collaboration could facilitate quicker job placement for graduates upon completing their degrees. By expanding these partnerships, the institution can increase job prospects for its graduates, leveraging the numerous opportunities available through its industry connections and community engagements.

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EXPLORING THE INFLUENCE OF SOCIOECONOMIC FACTORS ON EDUCATION-MEDIATED POVERTY IN INDONESIA

Muhammad Saleh Mire
Mulawarman University

ABSTRACT

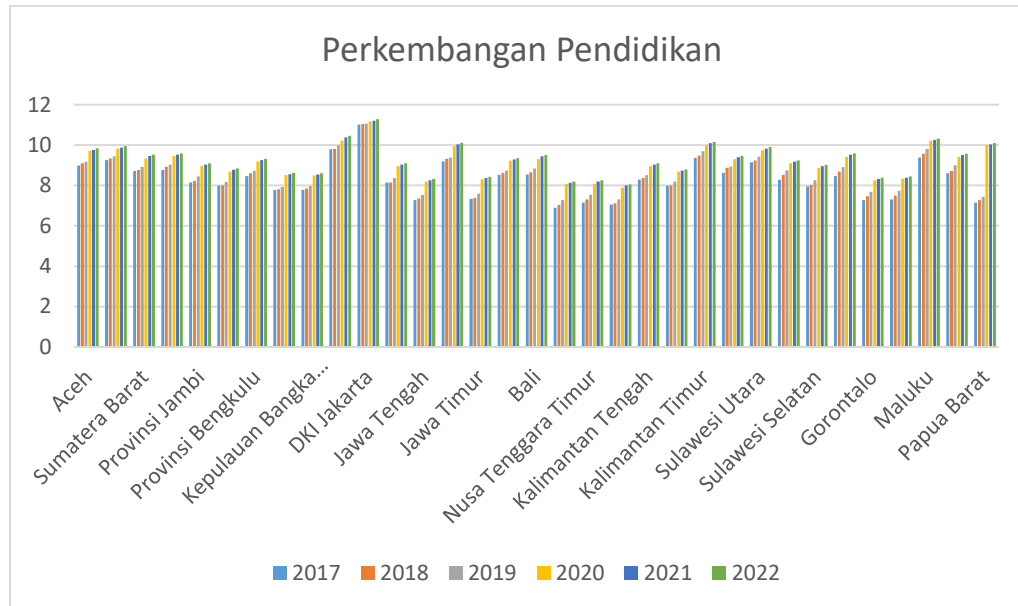
This study aims to determine and assess the influence of road infrastructure, wages, industrial development, MSMEs, and electricity consumption on poverty and education, using panel data in 34 provinces in Indonesia during 2017-2022. The statistical model used is Path Analysis with dummy variables, grouping the system into 2 groups, namely the western region of Indonesia (IBB) and the eastern region of Indonesia (IBT). The research results show that road infrastructure has a positive impact on poverty alleviation in both the IBB and IBT areas, but hurts education in both areas. Furthermore, industrial development and electricity consumption have a negative influence on poverty but have no impact on education in both regions. Meanwhile, wages have a negative influence on poverty in IBB, but in IBT they have a positive influence. Furthermore, MSMEs can be said to exacerbate poverty in IBB, but in IBT they can reduce poverty. MSMEs, industrial development, and electricity consumption do not have a positive impact on education in both regions. Poverty has no influence on education at IBB, but at IBT the opposite happens, namely a decrease in poverty causes an increase in education. Comparing the magnitude of the influence between variables, wages have the greatest influence on education.

INTRODUCTION

Disparities in economic development between regions are a universal phenomenon, in all countries regardless of their size and level of development. Development disparities are a serious inequality problem that must be overcome in both market and planned economic systems. According to Todaro (2020), the development process has at least three core objectives, namely increasing the availability and expanding distribution of various basic life necessities, increasing living standards, and expanding economic and social choices. Apart from creating the highest possible growth, the main goal of development efforts is to eliminate and reduce poverty levels, income inequality, and unemployment levels. Furthermore, it is said that education is a vital component in the growth and development of a country. The dual role of education, namely as input and output, makes education very important in economic development. The role of education in developing countries is to shape a country's ability to absorb modern technology and develop the capacity to create sustainable growth and development (Todaro, 2002). The function of national education development is to develop abilities and shape the character and civilization of a dignified nation to make the nation's life more intelligent, aimed at developing the potential of students to become human beings who believe in and are devoted to God Almighty, have a noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens (Education Law, 2003). Furthermore (Todaro, 2000) stated that an important factor in building human resources is education. Education is a fundamental factor in improving the quality of human life and ensuring social and economic growth, capital and natural

resources are only passive factors of production while humans are active agents who can accumulate capital, exploit natural resources, and build social, economic, and political organizations and bring progress for national development.

National attention to education was started by several educational figures such as Ki Hajar Dewantara who founded Taman Siswa in 1922 in Jogjakarta, becoming an important turning point, where education was not only for the elite but for all Indonesian people, which was the opposite of previous times. where education could only be had and enjoyed by certain people (elites) during the Belanda colonial period. In 1975, reforms occurred where education was used as a tool for national development. The Nine-Year Compulsory Education Program was introduced to ensure all Indonesian children receive basic education. Education in Indonesia currently still faces various challenges, including disparities between regions, teacher quality, and inequality in learning facilities. However, there are also positive developments, especially in the use of technology which is always developing from time to time. Apart from that, character education is also an important focus, not only about academics but also about forming a strong personality and soft skills. Nowadays, education in Indonesia is no longer limited to formal schools. There are many trainings, online courses, and other activities that also provide knowledge. With the development of technology, education is becoming more modern and focuses not only on academic lessons but also on developing other skills. Even though there has been progress, there are still many challenges that must be faced, such as disparities between regions, uneven quality of education, and lack of resources (Obet, R., 2024).



Gambar 1.

Sumber: Hasil Penelitian

Looking at Figure 1, it can be seen that all provinces in Indonesia have experienced educational development or improvement as measured by the average number of years of schooling. Medium According to BPS Data, Average Years of Schooling for the Indonesian Population Throughout 2022-2023. Based on data from the Central Statistics Agency (BPS), the average length of schooling (RLS) for the Indonesian population will reach 8.77 years in 2023. This figure is an increase of 0.08 years compared to the previous year which was 8.69 years. It is hoped that the development of education will get a breath of fresh air from efforts to reduce poverty, although education cannot necessarily reduce poverty, as research conducted by (Surbakti at al., 2023) states that education has a positive effect on poverty.

Poverty in Indonesia has not shown a significant decline for almost a decade. This can be seen from the percentage of poverty which has not decreased significantly. From 2017 to 2022 it only ranged from 10.12% to 9.57, but during the Covid-19 period, in 2020 there was a significant increase until it reached 10.19%. Furthermore, if we look at the poverty conditions per province, it is known that the province of Papua is the province with the worst poverty conditions, reaching 27.76% in 2017, although it experienced a decline that was not sharp so that in 2022 the percentage of poverty in the region will be 26.80%. On the other hand, the region with the lowest poverty rate is DKI Jakarta with the poverty percentage in 2017 reaching 3.78% but in 2022 it will increase to 4.61% (BPS, 2023). Poverty is closely related to other economic activities, such as education and road instructors. Road infrastructure is expected to provide forward linkages and backward linkages so that poverty can be eradicated.

Good and correct infrastructure development will make it easier for the economy to improve. Apart from that, it can make it easier

for investors to invest in the area. Then economic equality will be achieved when development is well directed. (Pedroni & Canning, 2004) states that infrastructure has externalities. Various infrastructure such as roads and bridges have positive externalities for education. Policies in improving infrastructure in Indonesia are based more on output orientation, namely in the form of economic growth compared to equality both between the islands of Java and outside Java. The inequality that occurs can be seen based on the value of investment and production in each region, the largest investment currently occurring is on the island of Java, which only covers 7% of the entire territory in Indonesia. Meanwhile, output or GRDP on the island of Java produces the largest total output for Indonesia. This means that the concentration in development on the island of Java is far superior to other regions of Indonesia. The lagging behind an area in development is influenced by many things. For example, the low level of attractiveness of an area causes its economic activity to be low. An area that does not have human resources or natural resources together with a lack of incentives offered (infrastructure, hardware and software, security and so on) can be the cause of an area lagging behind in development (Azis, 1994).

Wages are compensation received by workers in accordance with existing provisions and regulations. Economic activities can run smoothly because of the contribution of workers. Thus wages are directly related to production or economic growth. However, wages do not guarantee increased production. (Lupu, D. at al., 2023) found that GDP increases cause wages to increase at different frequencies; there is a positive correlation between GDP growth and wage growth; the effects of wage-led growth policies were weak and only on short periods. Furthermore, it also found that estimates cast a high degree of uncertainty on the effectiveness of wage increase policies promoted by some



national authorities to achieve economic growth. The increase in wages spearheaded by the government means that industry will inevitably pay higher wages. This will encourage the workforce to improve performance which in turn will have an impact in the form of increasing industrial productivity. Increasing productivity will lead to an increase in business scale which in turn will increase people's income so that the level of welfare can also increase. Apart from wages which can encourage increased productivity, per capita income is an indicator or benchmark in measuring the level of social welfare in a country

One of the important sectors that use the most electrical energy is MSMEs because they have a large quantity. This sector has a strategic role in improving the country's economy. This can be seen from the large number of workers working in this sector, the high contribution to the formation of the national economy's gross domestic product (GDP), and helping to reduce public unemployment. This sector has proven its resilience in facing the economic crisis that hit the Indonesian economy when many large companies went bankrupt. Furthermore, MSME problems slowed the SME growth in Asia including i) lack of finance, ii) lack of comprehensive databases, iii) low-level of R&D expenditures, and iv) insufficient use of information technology and providing remedies for mitigating them (Yoshino, N. and Taghizadeh-Hesary, F. 2016).

The role of MSMEs in economic development is very strategic because they provide the largest contribution, as stated by the research team said that the majority or 99% of businesses in Indonesia are at the MSME level. MSMEs themselves contribute 61.9% to the total gross domestic product (GDP) and absorb approximately 97% of the local workforce so that they can be used as a means of alleviating poverty. Other researchers also expressed the same thing, stating that micro and medium industries contribute to job growth and increase people's (Airlangga, 2022). Thus, an increase in the quantity of MSMEs can cause energy demand, especially electrical energy because MSMEs, like other large companies, have production factors that will produce output which has an impact on increasing energy demand, including electrical energy. Furthermore, MSMEs from industry can be encouraged to start developing the manufacturing industry, because some MSMEs are included in the manufacturing industry.

Industry is a sector that provides greater added value than other sectors, so its development is necessary to encourage other sectors. The strategic role of the industrial sector as an engine of economic development is not without reason, because the industrial sector will have derivative impacts, namely increasing the value of capital capitalization, the ability to absorb a large workforce, and the ability to create added value (value added creation) from every input or basic material. which is processed. (Cahyono, E. 2015). Furthermore, it is said that the strategic role of the industrial sector as an engine of economic development is not without reason, because the industrial sector will have derivative impacts, namely increasing the value of capital

capitalization, the ability to absorb a large workforce, and the ability to create added value (value added creation) from every input or basic material that is processed. Furthermore, this industrial process requires various inputs, one of which is electrical energy.

Electrical energy is a very important energy source for human life, both for industrial activities, commercial activities and in daily household life. Electrical energy is needed to meet lighting needs and also production processes involving electronic goods and industrial tools or machines. In the future, the need for electricity will continue to increase along with the increase and development in terms of population, investment, technological developments including the development of the world of education for all levels of education, even the electrical energy that can be obtained from non-fossil sources shows that Today this energy is increasingly needed. This means that oil production in Indonesia continues to decline because production wells are generally old. Therefore, it is important for every individual to save or be energy efficient to overcome the problem of decreasing energy reserves, namely by using a method used to efficiently use electrical energy by conserving energy (Presidential Instruction No. 13, 2011).

Electrical energy is an input for various production activities that will produce goods for consumption. This shortage and inability to use electrical energy can have an impact on poverty. Electrical energy is also closely related to people's ability to access the internet, so the role of electricity can also be a means of alleviating poverty. Therefore, the government continues to strive to supply electrical energy to meet growing demand with the development of the processing and refining industry (smelter). There are 52 smelter industries that will be built with electricity needs reaching 4,789 Giga Watt (Ministry of Energy and Mineral Resources, 2021). The electric vehicle battery factory that has been built is a manifestation of the government's seriousness in downstreaming the nickel industry, which is the raw material for the battery industry. This can increase investment in other industries such as motorbikes and electric cars because there is a link between industries (Miller, R. E. and Blair, P. D. 2009). Consumption is a key variable because of its relationship to economic activity and development. Electrical energy plays an important role in economic development and is an important factor that supports people's welfare (Han, Sang-Yong, 2004). Meanwhile, according to the State Electricity Company, per capita electricity consumption in Indonesia in 2020 reached 1.09 MWH and in 2021 it amounted to 1.11 MWH; This means there will be an increase of 1.83%, then in 2022 electricity consumption will reach 1,173 MWH or an increase of 6.30% from the previous year and finally in 2023, consumption will reach 1,285 MWH or an increase of 9.54%. This is in accordance with Keynes' theory which states that when income increases, consumption will increase (Branson, W. H. 1992). Apart from that, the increase in per capita income also has an impact on improving people's welfare. People can access education, health care, and better infrastructure. The quality of life will increase and there is the



potential to reduce the level of poverty which is still a social problem in Indonesia.

Research examining the relationship between socio-economic factors and education which is mediated by poverty, Figure 2. Poverty is faced with having a negative influence on education, as an effort to prove that education and poverty have a reciprocal relationship because previously several studies showed that education influences poverty, or It can be said that the more developed education causes the reduction of poverty.

RESEARCH OBJECTIVES

This research aims to analyze and examine the relationship between industrial sector growth and environmental quality in two regions through socio-economic factors in the form of:

- 1. Compare the influence of socio-economic factors on poverty and education in Eastern Indonesia and Western Indonesia
2. Assess the effect of road instructors, wages, industrial development on poverty and education
3. Examining the effect of wages and MSMEs and electricity consumption on poverty and education
4. Examining the relationship between poverty and education

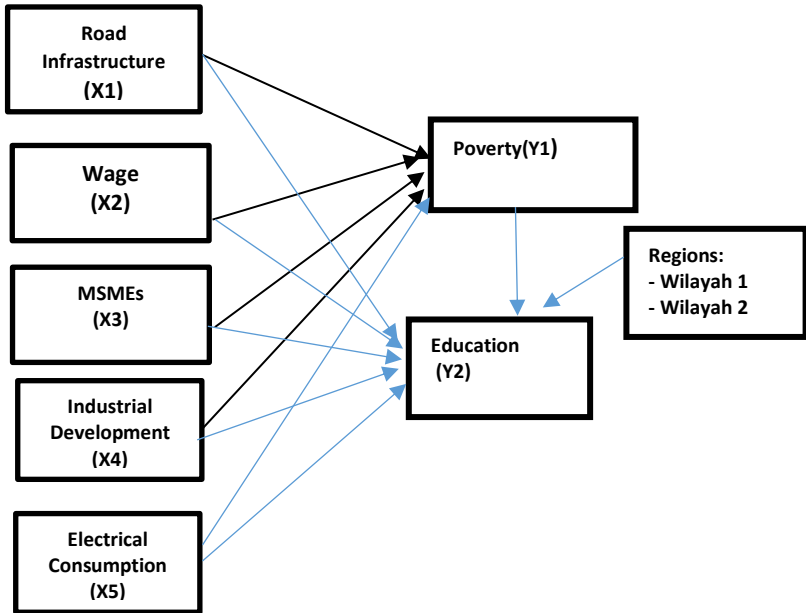


Figure 2. Framework

Region 1, wilayah bagian Barat Indonesia
Region 2, Wilayah Bagian Timur Indonesia.

LITERATURE REVIEW

Education

According to J.J. Rousseau Education is giving us supplies that were not available in childhood, but which we need in adulthood. According to Law no. 20 of 2003 Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble morals, and the skills needed by themselves, society, the nation, and country.

educational activities. Thus, apart from being universal, education is also national. Its national character will color the nation's education. Furthermore, education is closely related to (family) income, if income increases it will have an impact on increasing education (Fergusen, Hb. at al., 2022). Likewise, if education is considered as an investment (human investment), it will increase output as explained by the Neoclassical (exogenous) economic growth theory pioneered by Solow and Swam in 1955.



Poor people do not have sufficient income and consumption to lift them from the minimum adequate level. So in short, poor people are those who live below the poverty line, which is determined by a national or international institution. So understanding of poverty covers not only economics, but has expanded to cover various aspects of life, including other social dimensions, such as health, and education and even entering the political dimension, although the definition of poverty is the inability to meet minimum standards of needs, both food and non-food. This kind of poverty is also called absolute poverty, contrasted with relative poverty. Apart from that, Indonesia is known for structural poverty and temporary poverty. Structural poverty is certainly worse than temporary poverty because, in this type of poverty, it is difficult to get out of poverty. After all, it has become chronic (chronic poverty) which is characterized by deprivation, discrimination, and living in areas that do not support the improvement of life. broadening also emphasizes that poverty reducing strategies must recognize the interactions among the policies--the impact of appropriately designed combinations will be greater than the sum of the individual parts (Kanbur, R. and Squire, L. 1999). Furthermore, Buck, R., and Deutsch, J., 2014 stated that t. Poverty is a vast and complex issue that plagues communities in a seemingly endless cycle. However, working together to find effective ways of solving issues caused by poverty, the future can become a brighter for American youth growing up in poor communities.

Although establishing a positive environment within a school is a challenging task, it is just as important to recognize what makes the environment of the community positive. Principals who were able to align school goals and community goals had better success within the school (Mulford, et al., 2008) Community involvement is one of the major factors that benefits a schools success. When the teachers and members of the community believe that their students can succeed despite struggling with poverty, the students are more likely to achieve at higher levels. When the community becomes involved, people have a vested interest in making sure that their children are getting the services they need to be successful. It takes a collective mindset to positively influence the students in impoverished schools (Kirby & DiPaola, 2011). Without community involvement, the actions of the students, teachers, and administration are left unchecked. Since school funding comes from the local tax base, people should feel more invested in the schools of their community. When employment becomes nonexistent, the academic performance of the student may suffer due to heightened levels of stress.

Poverty

The concept of poverty is multidimensional. Sida divides poverty into 4 dimensions, namely: Resources, power and voice, opportunity and choice, and human security. So the problem of poverty is not only in the form of material fraud but also in other dimensions. According to (Parwadi, 2012), there are three factors that cause poverty when viewed from an economic perspective, namely: (1) unequal patterns of resource ownership which give

rise to unequal distribution of income, (2) Low quality of human resources means low productivity, which in turn low wages, less fortunate fate, discrimination or hereditary. (3) differences in access to capital. These three factors that cause poverty lead to the theory of the vicious circle of poverty. The circle of poverty is a series that influences each other in such a way that a country will remain poor and will experience many hardships. to achieve a better level of development.

Poor people do not have sufficient income and consumption to lift them from the minimum adequate level. So in short, poor people are those who live below the poverty line, which is determined by a national or international institution. So understanding of poverty covers not only economics, but has expanded to cover various aspects of life, including other social dimensions, such as health, and education and even entering the political dimension, although the definition of poverty is the inability to meet minimum standards of needs, both food and non-food. This kind of poverty is also called absolute poverty, contrasted with relative poverty. Apart from that, Indonesia is known for structural poverty and temporary poverty. Structural poverty is certainly worse than temporary poverty because, in this type of poverty, it is difficult to get out of poverty. After all, it has become chronic (chronic poverty) which is characterized by deprivation, discrimination, and living in areas that do not support the improvement of life. broadening also emphasizes that poverty reducing strategies must recognize the interactions among the policies--the impact of appropriately designed combinations will be greater than the sum of the individual parts (Kanbur, R. and Squire, L. 1999). Furthermore, Buck, R., and Deutsch, J., 2014 stated that t. Poverty is a vast and complex issue that plagues communities in a seemingly endless cycle. However, working together to find effective ways of solving issues caused by poverty, the future can become brighter for American youth growing up in poor communities.

Regional Development

Regional Development Theory In much of the literature on development, there are several approaches and theories. Some of them are growth theory, rural development theory, agro first theory, basic needs theory, and so on. These development theories contain various social science approaches that attempt to deal with the problem of underdevelopment. Development theory really took off only after it was recognized that the problems of development in the Third World were special and qualitatively different from the "original transition". Throughout its evolution, development theory has become increasingly complex and non-disciplinary, making it difficult to create a standard definition of development, only proposals regarding development in certain contexts.

One of the regional development theories is unbalanced growth which was developed by Hirschman and Myrdal. Regional development is the process of formulating and implementing development goals on a supra-urban scale. Regional development is basically carried out by using natural resources optimally through local economic development, which is based on the basic



economic activities that occur in a region. The theory of unbalanced growth views that a region cannot develop if there is balance, so there must be an imbalance. Investment cannot be carried out in every sector in a region equally but must be carried out in leading sectors which are expected to attract progress in other sectors. The favored sector is called the leading sector. In fact, development theory is closely related to development strategy, namely changes in economic structures and social institutions that are sought to find consistent solutions to the problems faced. Various approaches concern the themes of development studies, one of which is the issue of regional development. Broadly speaking, regional development is defined as an effort to formulate and apply a theoretical framework to economic policies and development programs that consider regional aspects by integrating social and environmental aspects towards achieving optimal and sustainable prosperity (Nugroho and Dahuri, 2004). Regional development planning is increasingly relevant in implementing economic policies in regional aspects. Hoover and Giarratani (Nugroho and Dahuri, 2004), concluded that there are three important pillars in the regional development process, namely: Comparative advantage (imperfect mobility of factors), Agglomeration (imperfect divisibility), Transport costs (imperfect mobility of good and service).

Myrdal, G. in 1957, argued that the Cumulative Causation Theory argues that the main cause of regional inequality is strong backwash effects and weak spread effects. Gunnar Myrdal explained that each region has an attraction for the entry of labor, trade goods and capital. Furthermore, Hirschman, trickle-down effect, states that in the growth process there is a downward trickle that connects the central and peripheral areas. The trickle down leads to growth and development of the periphery, too. Hirschman argues against Myrdal that trickle down is automatic and government should not interfere in the growth process. Furthermore, Perroux (1950) put forward the pole growth theory, a theory that can combine the concept of "growth poles", stating that economic growth in each region does not occur in any place, but in certain locations. Thus, it includes the principles of concentration and decentralization simultaneously. Thus, the development center theory is one tool for achieving conflicting regional development goals, namely growth and equitable development across all corners of the region. Development can be started only in a few dynamic sectors, capable of providing high output ratios and in certain areas, which can have a broad impact (spread effect) and multiple effects on other sectors and wider areas.

THE METHOD

This type of research is quantitative, taking the type of study of comparative causality that processes numerical data that can be calculated using statistical formulas. The data analysis technique used in this study is path analysis which estimates the direct and indirect influence of exogenous variables on endogenous variables although in this study we only look at and discuss the direct effect, both effects are available in the statistical program used for estimation in this study. This study uses secondary data, namely data that is already available and collected by other parties and it was panel data. The data was taken from the Indonesia Central Statistics Agency (BPS) and the Ministry of Research, Technology and Higher Education Indonesia which covers 34 provinces in Indonesia, where since the end of 2022 there have been 38 provinces, but the necessary data is not yet available. The data used is divided into two groups, Indonesia bagian barat (IBB), disebut Region 1 and Indonesia Bagian Timur (IBT), disebut Region 2. The statistical analysis technique used is path analysis using the Amos 18 statistical application program.

Based on the conceptual relationship in the framework of thinking, mathematically functional relationships can be written as

$$Y_1 = f(X_1, X_2, X_3, X_4, X_5)$$

$$Y_2 = f(X_1, X_2, X_3, Y_1, X_5, D, DX_1, DX_2, DX_3, DX_4, DX_5)$$

Whereas:

X1 = road infrastructure (length of national, provincial, and district roads, km)

X2 = wage (provincial minimum wage rate)

X3 = MSMEs (number of MSMEs for each province)

X4 = Industrial development (number of the manufacturing industry sector)

X5 = electrical consumption (number of KWH purchased by all electricity customers)

Y1 = poverty (percentage of poor people to the total population)

Y2 = education (average length of time the population has attended formal education, year)

D = Dummy variable, D = 0, Western areas (Region 1); D=1, Extern areas (Region 2)

Based on the conceptual relationship in the framework of thinking, mathematically functional relationships can be written as

Based on the conceptual relationship in the framework of thinking, mathematically functional relationships can be written as

$$Y_1 = \alpha_0 + \alpha_1 \ln X_1 + \alpha_2 \ln X_2 + \alpha_3 \ln X_3 + \alpha_4 \ln X_4 + \alpha_5 \ln X_5 + \mu_1 \dots\dots\dots(3.4)$$

$$Y_2 = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 + \beta_6 Y_1 + \beta_7 D + \beta_8 D \ln X_1 + \beta_9 D \ln X_2 + \beta_{10} D \ln X_3 + \beta_{11} D \ln X_4 + \beta_{12} D \ln X_5 + \mu_2 \dots\dots\dots(3.5)$$

Substituting the value of the dummy variable, D=0 in the equation (3.5), a new equation is obtained

$$\ln Y_{21} = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 + \beta_6 \ln X_6 + \beta_7 Y_1 + \mu_3 \dots\dots(3.6)$$

Regression Equation for Region 2, D=1, a new equation is also obtained



$$\ln Y_{22} = (\beta_0 + \beta_7) + (\beta_1 + \beta_8) \ln X_1 + (\beta_2 + \beta_9) \ln X_2 + (\beta_3 + \beta_{10}) \ln X_3 + (\beta_4 + \beta_{11}) \ln X_4 + \dots(3.7)$$

$$\beta_5 + \beta_{12} \ln X_5 + \beta_7 Y_1 + \mu_3$$

RESULTS AND DICUSSIONS

Model fit test

Chi-square statistic, as stated earlier, is the most fundamental test to measure overall fit, it is very sensitive to the size of the sample used and the relation of exogenous variables, almost the same as

the model Regresi Linear Berganda. The model is considered good if the Chi-square value is small. The smaller the value, the more feasible the research, meaning that the more it describes the match between the variance of the sample taken and the research population. The results of data processing that have been carried out using the AMOS 18 program are as shown in Table 1.

Table 1. Goodness of Fit Index

No.	Goodness of fit Measure	Cut-off Criteria	Estimation (cut off Value)	Fit Situation
1	Chi-Square (χ^2) Significance Probability (p)	smaller the better ≥ 0.05	5.460 0.243	Fit
2	RMSEA (the Root Mean Square Error of Approximation)	≤ 0.05	0.043	Fit
3	NFI (Normed of Fit Index)	≥ 0.95	0.987	Fit
4	IFI (Incremental Fit Indices)	≥ 0.95	0.996	Fit
5	CMIN/DF (the minimum Sample Discrepancy Function)	≤ 2	1.365	Fit
6	TLI (Tuckler Lewis Index)	$\geq 0,95$	0.958	Fit
7	CFI (Comparative Fit Index)	$\geq 0,95$	0.996	Fit
8	Hoelter's Index	≥ 200	353	Fit

Sumber: Malkanthie, 2015; Wan, 2022 and Amos Result

Research Findings

As is known, this research divides Indonesia's provinces into 2 regions, so the estimation results consist of two components. The

estimation results for Region 1, which is called Non-Natural Resource Base Areas, D=0, can be seen in Figure 4

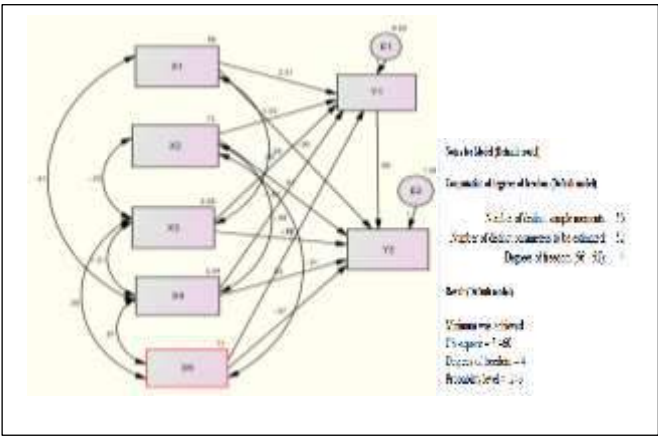


Figure 4. Variable Coefficients untuk Region 1 and Result of Default Model Recourse: Amos 18 data processing results.

As can be seen in Figure 2, where there is no level of confidence or probability for each coefficient or path, the estimation results

are also displayed as a scalar estimate for Region 1 (Group 1), which describes the level of significance of each path, Figure 5.



Estimates (Group number 1 - Default model)

Scalar Estimates (Group number 1 - Default model)

Maximum Likelihood Estimates

Regression Weights (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P
Poverty <-- RoadInfrastructure	2.307	.361	6.389	***
Poverty <-- Wage	-1.031	.798	-1.281	.196
Poverty <-- MSMEs	.900	.242	3.722	***
Poverty <-- IndustrialDevelop	-1.597	.216	-7.387	***
Poverty <-- ElectricalConsump	-.871	.307	-2.833	.005
Education <-- Poverty	-.003	.049	-.064	.949
Education <-- MSMEs	-.118	.124	-.951	.352
Education <-- IndustrialDevelop	.029	.137	.211	.833
Education <-- RoadInfrastructure	-.303	.207	-1.463	.144
Education <-- Wage	.874	.398	2.204	.024
Education <-- ElectricalConsump	-.073	.173	-.426	.674

Figure 5. Scalar Estimates Region1
Resource: Amos 18 data processing results.

Further illustrating the estimation results for Region 2, Natural Resource Based Areas, D=1 or Region 2, as carried out in Region 1, can be seen in Figure 6.

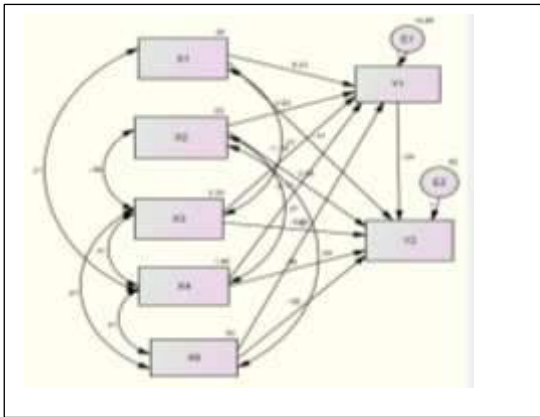


Figure 6. Variabel Coefficients in Region 2
Resource: Amos 18 data processing results

Next, in Region 2, the estimation results are presented, variable coefficients with confidence level or probability (P), Regression Weights for Region 2, can be seen in Figure 7.

Estimates (Group number 2 - Default model)

Scalar Estimates (Group number 2 - Default model)

Maximum Likelihood Estimates

Regression Weights (Group number 2 - Default model)

	Estimate	S.E.	C.R.	P
Poverty <-- RoadInfrastructure	6.226	.877	7.099	***
Poverty <-- Wage	3.953	2.798	1.405	.160
Poverty <-- MSMEs	-1.393	.340	-3.907	***
Poverty <-- IndustrialDevelop	-2.698	.431	-6.263	***
Poverty <-- ElectricalConsump	-2.013	.689	-2.922	.003
Education <-- Poverty	-.044	.017	-2.552	.011
Education <-- MSMEs	.896	.064	1.510	.131
Education <-- IndustrialDevelop	.065	.089	.725	.468
Education <-- RoadInfrastructure	-.407	.189	-2.161	.031
Education <-- Wage	2.059	.501	4.114	***
Education <-- ElectricalConsump	-.056	.127	-.438	.662

Figure 7. Scalar Estimates Region 2
Resource: Amos 18 data processing result



The results of the analysis show the influence of one variable on another variable according to the research objectives so based on Figure 3 and Figure 4, a summary of the influence of independent variables on dependent variables can be represented in Table 2.

The table also shows that Region 1 and Region 2 each have a coefficient and probability according to the relationship between variables.

Table 2. Coefficients of the variables in Region 1 and Region 2,

No		The Relation of the Variables		Region 1 (IBB)		Region 2 (IBT)	
		Dependent variables	In dependent variables	Coefficient	Probability	Coefficient	Probability
1	Unstandardized Direct Effect	Poverty	1. Road Infrastructure	2.307	0.000	6.226	0.000
			2. Wage	-1.031	0.196	3.933	0.160
2	Unstandardized Direct Effect	Education	3. MSMEs	0.900	0.000	-1.193	0.000
			4. Industrial Development	-1.597	0.000	-2.698	0.000
3	Standardized Total Effect	Poverty	5. Electrical Consumption	-0.871	0.005	-2.013	0.003
			1. Road Infrastructure	-0.303	0.144	-0.407	0.031
4	Standardized Total Effect	Education	2. Wage	0.874	0.024	2.059	0.000
			3. MSMEs	-0.116	0.352	0.096	0.131
3	Standardized Total Effect	Poverty	4. Industrial Development	0.029	0.833	0.065	0.468
			5. Electrical Consumption	-0.073	0.634	-0.056	0.662
4	Standardized Total Effect	Education	6. Poverty	-0.003	0.949	-0.044	0.011
			1. Road Infrastructure	-0.310		-0.310	
4	Standardized Total Effect	Education	2. Wage	0.877		1.877	
			3. MSMEs	-0.119		0.148	
4	Standardized Total Effect	Education	4. Industrial Development	0.034		0.183	
			5. Electrical Consumption	0.070		0.032	
4	Standardized Total Effect	Education	6. Poverty	-0.003		-0.044	
				-			

Source: Data processing results, 2024.

Comparing the influence between all the variables included in the model, it is known that, from table 2, it shows that the variable that has the total, or greatest, influence on poverty is road infrastructure in both the eastern and western regions. With path coefficients of 2.307 and 6.226 respectively. This fact shows the importance of road infrastructure in reducing poverty and improving the quality of education in both regions. However, the impact on education is wages, with path coefficients of 0.88 and 1.88 respectively.

RESULTS AND DISCUSSIONS

Paying attention to the relationship between road infrastructure and poverty, it is known from table 2 that road instructors have a significant positive influence on poverty at the confidence level $\alpha = 0.05$ in both Western Indonesia (IBB) and Eastern Indonesia (IBT). Furthermore, it can be seen in the same table that the road infrastructure coefficient is 2,307 in IBB and 6,226 in IBT, which means that if road instructors increase by 1%, poverty will increase by 2.31% in the IBB section and 6.23% in IBT. So this fact shows that road instructors exacerbate poverty in both regions. It is known that the decline in poverty in the research period from 2017 to 2022 was not significant and even fluctuated, where in 2020 it reached above 10%, whereas in the previous year it was only 9.22% and after that year it fell at a slower pace.

Meanwhile, road instructors showed an insignificant increase because the data used included state roads, provincial roads and district roads (excluding city and village roads). So the facts of this research contradict previous research which stated that road instructors had a negative influence on poverty in the 2015-2019 period (Khaira, Alfatih, 2021). This condition cannot be separated from the impact of Covid-19 which has caused poverty to increase rapidly. Furthermore, it is also known that road infrastructure has an insignificant negative influence on education at IBB but is significant at IBT. This fact certainly does not meet expectations because the data used is only the length of national, provincial and district roads, meaning it does not include city and village roads.

The relationship between wages and poverty can be explained by the theory of economic growth where labor or wages contribute to economic growth, both classical and neoclassical growth theories. The research results show that wages have an insignificant negative effect on poverty at the confidence level $\alpha = 0.10$ in both IBB and IBT. This shows that increasing wages is not significant in reducing poverty. This is because the data used is provincial minimum wage (UMP) data, of course it is different from using wages in general. This fact is supported by research which states that the minimum wage has a positive and insignificant effect on poverty (Putri, E. Millenia & Putri, Dewi



Zaini 2021; and Campos Vazquez, R. M. & Gerardo E. (2022), minimum wage and social assistance expenditure limit a negative and significant effect on the number of poor people. This is in line with research (Cindy Devina Nasution and Khairil Anwar, 2023).

MSMEs have a significant positive influence on poverty in the IBB area while in the IBT they have a significant negative influence at the confidence level $\alpha = 0.01$. If MSMEs increase by 1%, poverty will increase by 0.90 % in Region IBB, while in Region IBT it will decrease by 1.19 %. This negative influence dates back to The number of MSMEs had a negative effect on poverty levels (Widowati, M. and Purwanto, A.B. (2021). Education and training provide key benefits in improving the competencies, skills, and knowledge needed by MSMEs to run their businesses more efficiently. Many previous studies have shown that education has a positive influence on the development of MSMEs, such as research, (Sutrisno at al., 2023) and (Meitriana, M. A. at al., 2021). However, this research tries to conduct variable analysis by looking at the influence of MSMEs on education. With the development of MSMEs, people's income will also increase so that education can be more advanced. Thus, this research hopes that there will be a positive influence of MSMEs on education. However, research facts show that there is no influence of MSMEs on education. It should be noted that if we look at the number of MSMEs according to the variables used, the result is that there is no influence on education. This fact can be caused by the low level of human resources for MSMEs, the number of small industries does not necessarily increase income significantly so that indirectly it cannot encourage an increase in education levels.

Industrial growth has a significant negative influence on education both at IBB and IBT at the confidence level $\alpha = 0.01$ with regression coefficients of -1,597 and -2,698. This shows that if industrial development increases by 1%, poverty will decrease by 1.60% in IBB and 2.70% in IBT, respectively. So if industry develops naturally or artificially, it will lead to an increase in income from this sector, thus having a positive impact on economic growth. Furthermore, economic growth will reduce poverty. This fact is in line with research by Dhiyaa'ulhaq, M., Sahara, S., & Juanda, B. (2023). which states that investment in micro and small industries can significantly reduce the percentage of poverty in most sub-districts in D.I. Yogyakarta, except in sub-districts in the Yogyakarta City area and its surroundings. However, contrary to Rahman's research, Arif (2021) stated that the industrial sector has a positive influence on poverty.

So far, the research that can be found is related to human investment theory which states that education has a positive influence on economic growth which ultimately has an impact on reducing poverty. This research highlights the opposite. The research results show that industrial development has an insignificant positive influence on education. This is made clear by research (Mire, at al. 2023) which states that education has had a significant positive influence both before and after COVID-19 in Indonesia. Further research (Federman, M. and Levine, David

I., 2005). which states in more detail that industrial growth has a significant positive influence at the confidence level $\alpha = 0.01$ on education at the age of 25-50 years, but for those aged between 18-22 years it shows a significant negative influence at the confidence level $\alpha = 0.05$.

Electricity consumption has a significant negative influence at the confidence level $\alpha = 0.01$. against poverty both in the IBB area and in the IBT area. If electricity consumption increases by 1%, poverty will decrease by 0.87% in IBB and 2.01 in IBT, respectively. So when compared, the effect of electricity consumption on poverty in IBT (prob. = 0.003) is higher or more significant than the effect in IBB (prob. = 0.005). Furthermore, it was found that electricity consumption had no effect on education. Electricity consumption does not have an influence on education because the impact of COVID-19 on the development of industrial electricity consumption has decreased, and has not yet fully recovered, as seen in 2020, according to BPS data, a decline in the number and output of industry, especially small and medium industries. Electricity consumption tends to decrease due to COVID-19 and Christmas and New Year. On the other hand, the cause is awareness or effectiveness of electricity use by households (Ministry of Energy and Mineral Resources, 2023).

Poverty has no effect on education in the IBB area while in the IBT area it has a significant negative effect at $\alpha = 0.05$. If poverty decreases by 1% in the IBT area, it will lead to an increase in education of 0.04% in that area. Since President VI's administration, poverty has been reduced sharply, the number of poor people in 2004 was 36.1 million or 16.7 percent of Indonesia's population. This figure decreased until in 2013, the number of poor people was 28.1 million or 11.4 percent. The programs launched by President VI include the Mandiri National Community Empowerment Program (PNPM), the Family Hope Program (PKH), and rice subsidies for the poor (Raskin). There is also the provision of Poor Student Assistance (BSM) funds, the Askeskin/Jamkesmas program, and compensation and temporary programs. Furthermore, the decline in poverty from 2018 to 2022 according to BPS was only 9.66%, to 9.57%, so on average poverty fell by only 0.82% because during COVID-19 there was actually a significant increase in poverty from 9.22% to 10.19%. This is why the influence of poverty on education is still weak, especially at IBB. The thing that causes IBB to be very different from IBT when viewed from poverty is that the proportion of the population including poor people who live in IBT is much less than the poor population in the IBB area, where it is known that the percentage of people living on Java alone has reached 60% (BPS, 2023). Thus, it is natural that poverty reduction at IBB is unable to have an impact on education, where it is known that education always increases from year to year, measured by years of schooling.

CONCLUSION AND RECOMMENDATION

Conclusions

Based on the analysis and the results of the previous discussion, the following conclusions are drawn:



1. Road infrastructure has a positive influence on poverty alleviation in both the IBB and IBT regions, but education has a negative influence in both regions.
2. Wages have a negative influence on poverty in Western Indonesia. Therapy in the Eastern region has a positive influence
3. MSMEs have a positive influence on poverty in IBB, but in the IBT area they have a negative influence.
4. Industrial development and electricity consumption have a negative influence on poverty both in IBB and IBT
5. Wages have a positive effect on poverty both in the western and eastern parts of Indonesia
6. MSMEs and industrial development do not have a positive impact on education in both the Western and Eastern regions
7. Electricity consumption has no influence on education in both the eastern region of Indonesia and the western region of Indonesia
8. Reducing poverty does not have an effect of increasing education at IBB but at IBT it has an increasing impact.

Recommendations

The suggestions to be put forward based on the discussion and conclusions that have been stated, among others:

1. Even though road instructors do not have a negative influence on poverty and a positive influence on education, it would be better for the government, including regional governments, not to reduce investment activities in road construction, where this research has not included the length of city and village roads, so it is hoped that in future research using road status data fully.
2. An increase in wages causes a reduction in poverty and an increase in education, but there is still a need for a comprehensive discussion, because these wages can have negative effects such as inflation and also positive effects such as increasing workers' income which can support economic development
3. Efforts to eradicate poverty must still be the focus of the government's attention, because over the past decade the reduction in poverty has been very insignificant
4. Industrial development, especially digital industry, should be prioritized in order to increase added value which in turn leads to poverty alleviation
5. Disparity between the two regions in terms of poverty and education still shows a very large gap in the two regions, so there is a need for greater investment than in previous years, especially road and bridge infrastructure as well as meeting 40% or more of education costs from the development budget in Eastern region (IBT) of Indonesia.

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LIVED EXPERIENCES OF RECEIVING TEACHERS IN HANDLING BEHAVIORAL ISSUES OF STUDENTS WITH SPECIAL NEEDS

Zahra Jane E. Rafailles, Elaiah C. Marikit

Master of Arts in Education, Holy Cross of Davao College

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ABSTRACT

This qualitative phenomenological study provides a comprehensive exploration of the challenges, strategies; coping mechanisms, and insights experienced by receiving teachers in addressing behavioral issues among students with special needs in inclusive education settings. Through in-depth focus group discussions with five receiving teachers from Island Garden City of Samal, Davao Del Norte, the study exposes the real struggle and complexities of managing diverse behavioral concerns. The thematic analysis uncovers the intricate web of both academic obstacles and behavioral manifestations, prompting the development and implementation of tailored strategies, including individualized behavior plans and collaborative problem-solving approaches. Moreover, the study highlights the vital role of coping mechanisms, such as seeking support from colleagues and prioritizing self-care practices amidst the demanding educational landscape. The insights gleaned from teachers' lived experiences underscore the transformative potential of empathy, adaptability, and inclusive teaching methodologies. Ultimately, the research advocates for targeted professional development initiatives and collaborative support networks to empower receiving teachers to effectively navigate the unique challenges presented by students with special needs, especially students with behavioral issues. By promoting inclusive and supportive learning environments, this study contributes significantly to the enhancement of special education practices and resources.

KEYWORDS: *Special Education, Behavioral Issues, Receiving teachers, research, teaching, Inclusive Education, and special education practices.*

INTRODUCTION

At the height of the goal to achieve inclusive education (IE) based on Deped Order 44 s. 2021, and in adherence to the Enhanced Basic Education Act of 2013 (Republic Act No.10533) Section 8, Inclusiveness of Enhanced Basic Education, the regular teachers were pushed to become receiving teachers to ensure the inclusivity of learning of students with special needs worldwide. From having regular learners and learning set-up, most teachers transitioned to becoming receiving teachers with the absence of a shared approach to handle learners with behavioral issues of students with special needs.

Inclusive education believes that every student is unique and should be appreciated regardless of their impairments or disorders. Students with impairments need the same opportunities for progress and self-realization as regular students. Like all other children and learners, they have the fundamental and inalienable right to a primary, high-quality education. For students with severe impairments, this strategy requires more vigorous attention to the paradigm. Inclusive education allows students with disabilities to socialize while avoiding discrimination or

constraints due to their particular requirements. (Roger & Johnson, 2018).

This lack of grounding for a sound practice has affected not only the teachers who need to adjust the way they teach but also the students who need to know the special education needs of other students with behavioral issues. Moreover, behavioral issues arise for these students who are not used to sudden changes are significantly affected. Additionally, behavior problems are a common occurrence for students with special needs, and dealing with them is a significant task for receiving teachers. Regrettably, the way receiving teachers have handled behavioral problems is sometimes forgotten. This study aims to look into how receiving teachers have handled the behavioral problems of students with disabilities.

Several technical papers have focused on inclusion, which requires educational systems to integrate the framework into their curricula, instruction, programs, and other capacity-building mechanisms (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2005). States conduct inclusive education (IE) as a reaction to increased heterogeneity in school



communities. It is rooted in offering similar classroom experiences for various learners while eliminating attitudes and values that aim to exclude and discriminate (UNESCO, 1994). In the Philippines, the study by Jennylyn A. Amado and Precy I. Guerra (2018) revealed that the most challenging problems of special needs students are those with behavioral problems. Many public school teachers also identify student attitudes, such as indifference and disrespect for teachers, as a critical problem facing schools today. The prohibition of corporal punishment in schools challenges teachers as children become aware of the law and refuse to be punished. This increased the frequency and severity of behavioral issues in the classroom, negatively impacting teaching efficiency and learning outcomes for students and their peers. The receiving teachers in public schools have difficulty trying to rectify the situation at one time or another. Some receiving teachers are exposed to their students' behavioral difficulties and are among the many teachers who can tell what, when, why, and how these students behave. Behavioral problems among secondary learners are rampant and difficult to restrain.

Moreover, the education of students with behavioral and developmental issues is supported by national laws and regulations in the Philippines. These regulations seek to advance inclusive education while giving instructors the assistance and tools they need to successfully instruct students with special needs. The special education teachers and the receiving teachers in Mindanao regularly deal with aggressive, disobedient, and impulsive behavior from learners with exceptional needs. To control these behaviors, the teachers employ techniques such as token economy, prompting, and positive reinforcement. The lack of resources, inadequate training, and a lack of support from parents and school administration were among the difficulties the teachers mentioned while trying to control the actions of children with special needs. According to the study of Tuvida, V.L (2023), exceptional education instructors and the receiving teachers in Mindanao should receive ongoing training and assistance to help them become more adept at handling behavioral issues that arise for learners with special needs. The study also emphasizes how crucial it is to include parents and school officials in controlling the conduct of students with special needs.

Handling students with behavioral problems is a challenging task. According to the receiving teachers with experience, learning environments that promote general and individualized learning experiences need a methodical design, implementation, and monitoring process that addresses potential learning challenges and behavioral concerns. These issues necessitate the professional competence of the teachers in order to assist them in putting into practice strategies that promote students' good behavior, encourage the use of problem-solving techniques, lessen aggressive behavior, and increase rule compliance—all of which contribute to the development of a safe learning environment in the classroom. In the field of special education, understanding student behavior and how to handle it is crucial. It is imperative that educators recognize that every behavior shown by students

stems from particular factors that impact their environment. Nonetheless, according to the study of Mitchell (2019) a lot of educators don't have sufficient training in classroom management when they first start their careers, and they will likely encounter difficulties.

As inclusion has become an ideal for school most teachers must handle a diverse group of students within their classroom, including with behavioral issue. The difficulties in handling these students in mainstream classrooms are reported by several researchers. In study conducted by Woodcock and Hardy (2017) revealed that teachers found it excessively demanding to plan and cater the needs of these students.

Moreover, inclusive education values all students' presence, acceptance, engagement, and achievement despite its perceived idealistic and unattainable nature. Due to varying interpretations and implementations, governments and nations need help achieving just and inclusive practices. In Southeast Asia, there needs to be more research on integrating children with special needs (CSN) into general education settings (Hosshan et al., 2019). Similarly, the setting in which Filipino children with special needs. The government should allocate a seminar on how to handle students with special needs and raise awareness among all schools about inclusive education.

This is the reason why the researchers were inspired to do this research to know how to handle the behavioral issues of children with special needs and to understand how the teachers of Special Education handle them so well. The researchers also want to know the relationship between handling behavioral issues in students with special needs and understanding special education teachers' experiences.

RESEARCH OBJECTIVES

Receiving teachers in inclusive education plays an important role in addressing the unique behavioral issues that students with special needs exhibit. Despite the crucial relevance of managing behavioral issues, there is a lack of awareness of special education instructors' lived experiences and perspectives on dealing with such obstacles. This qualitative study aims to investigate and clarify the following objectives;

1. To describe the experiences of the receiving teachers in handling behavioral issues of students with special needs.
2. To discover the strategies typically employed by the receiving teachers when faced with behavioral issues in students with special needs.
3. To uncover the insights gained by receiving teachers through their lived experiences in handling behavioral issues of students with special needs.



REVIEW OF THE RELATED LITERATURE

This section discusses the review-related literature and studies. It is presented here to give a strong foundation for the study and also to give readers sufficient information regarding the variables being studied. It focuses on the topic being studied.

Handling Behavioral Issues in Children with Special Needs

Children with special needs frequently experience behavioral problems, which can have a detrimental effect on their capacity to operate and achieve success in various spheres of life. Thus, it's critical to comprehend the nature of these problems and create workable solutions.

According to previous research, behavioral treatments can help children with special needs reduce problem behaviors and enhance their adaptive functioning. Applied Behavior Analysis (ABA), Positive Behavior Support (PBS), and Cognitive-Behavioral Therapy (CBT) are some of the interventions that are most frequently employed.

PBS is another often applied intervention that emphasizes positive reinforcement and preventative measures to stop undesirable behaviors before they start. In PBS, a team-based approach is often used, with caretakers, educators, and other professionals collaborating to create and carry out unique programs for every child. According to research, PBS can help children with a range of special needs, including ASD, intellectual disabilities, and emotional/behavioral problems, by lowering problem behaviors and enhancing adaptive skills.

CBT is a psychotherapy strategy that focuses on recognizing and changing unfavorable thoughts and actions that underlie problem behaviors. Among children with special needs, particularly those who suffer from anxiety and mood disorders, CBT has been demonstrated to be useful in lowering problem behaviors and enhancing emotional regulation and social skills.

In addition to these intervention techniques, it's crucial to take each child's particular needs and strengths into account while coming up with issue behavior management plans. In order to do this, it may be necessary to identify the causes of problem behaviors, use visual aids to improve comprehension and communication and create opportunities for satisfying social interactions and sensory experiences.

Moreover, for Sibley and colleagues (2016), they also discovered that behavioral interventions, such as parent education and school-based interventions, were successful in lowering problem behaviors and enhancing social and academic performance. Thus, behavioral therapies, such as PBS and functional communication training, were successful in lowering aggressive behavior and enhancing adaptive skills in children with developmental disabilities.

A controlled atmosphere can make special needs students feel more at ease and less anxious. Establishing clear routines and expectations is crucial, as is offering visual aids like timetables and checklists (David H. Rose and Bridget Dalton, 2009). Positive reinforcement is a potent strategy for managing behavior. Praise for students' efforts and accomplishments can boost their motivation and self-esteem and enhance the likelihood that they will repeat positive behaviors. Creating efficient management techniques for a student's conduct depends on understanding the causes of that behavior. Anxiety, inability to pay attention, and learning difficulties are a few major causes of behavioral issues. The creation of a behavior plan might aid the establishment of clear expectations and consequences for the student's behavior. The program ought to be tailored to the needs and objectives of the individual student. A setting that is regulated and predictable is beneficial for many students who have behavioral issues. Having well-defined routines and timetables can lessen anxiety and boost feelings of security (Joan E. Sieber, 2019).

Understanding Receiving Teachers' Experiences

A thorough analysis of the literature that has been published on the retention and attrition of receiving teachers. Given their crucial role in addressing the needs of students with disabilities, the authors begin by talking about how crucial it is to keep hold of qualified special education teachers. They then offer a thorough analysis of the elements—such as workload, a dearth of administrative support, and inadequate professional development opportunities—that contribute to the high rate of attrition among special education teachers (Downey and Ambrose, 2019).

Receiving teachers experience a higher level of stress and burnout than their general education counterparts, according to one of the article's key findings. Teachers must grasp the specifics of the behavioral issues their students are having. To pinpoint the precise causes and effects that are influencing the student's behavior, may entail conducting a functional behavior evaluation. With this knowledge, educators can create a suitable strategy for dealing with the behavior, such as introducing positive behavior supports or employing tailored behavior plans.

Effective communication and teamwork between teachers, other school employees, and parents are also crucial. Working with school psychologists, counselors, or behavior experts to plan and execute successful behavior interventions is one way to do this. Another is by keeping parents updated on their child's development and any issues that may come up.

The usefulness of positive behavior interventions and support (PBIS) in enhancing student conduct, lowering referrals for disciplinary action and suspensions, and enhancing academic results is reviewed in this paper. Although there is significant variation in the efficacy of various positive behavior interventions and support (PBIS) interventions and tactics, the authors highlight that the evidence base for positive behavior interventions and support (PBIS) is usually favorable.



In addition to Smith and Daunic (2018), some of the difficulties and restrictions associated with implementing positive behavior interventions and support (PBIS), including the necessity of ongoing support and professional development for teachers and staff, the significance of addressing contextual and cultural factors that might affect PBIS' efficacy, and the necessity of ensuring that PBIS is carried out faithfully and honestly.

Furthermore, Vakil and Lee (2018) list a number of significant difficulties that special education teachers face, such as high levels of work-related stress and burnout, a lack of resources and support, and difficulty dealing with unpleasant behaviors among kids with disabilities. A lack of opportunities for continued professional development and problems with teacher preparation and training, such as insufficient instruction in evidence-based approaches, are among the other difficulties mentioned in the review. For instance, they point out that helping kids with disabilities reach their full potential can lead to high levels of professional satisfaction and contentment for special education teachers. The authors also emphasize the advantages of team-based collaboration in special education, which can assist in overcoming some of the difficulties that teachers may experience.

Also, according to Maureen A. Conroy, et al. (2014), classroom-based interventions including social skills training and behavioral interventions can help kids with emotional and behavioral issues behave more appropriately while also reducing problem behavior. Moreover, a good environment for learners with behavioral issues will probably work on building their attitude also the study indicates the effectiveness of self-monitoring treatments to enhance classroom management and foster student self-regulation, as well as the significance of social-cognitive theory in comprehending and managing behavior issues in the classroom.

In connection with this, the teacher in special education or the receiving teachers of students with special needs plays a big role in their development which is why they need to study their experiences and teach them well how to understand students with special needs. The study emphasizes the significance of using evidence-based therapies for students with emotional and behavioral disorders with fidelity and consistency to control behavior issues. The study's conclusions can be useful to educators and other professionals who interact with these adolescents in determining the most efficient interventions and approaches to enhancing behavior and academic results.

THEORETICAL LENS

This study centered on the two learning theories: the Behaviorist Learning Theory of Ivan Pavlov and B.F Skinner, Constructivist Theory Learning Theory of John Dewey.

The Behaviorist Learning Theory of Ivan Pavlov and B.F Skinner focuses on how teachers give positive reinforcement to help students learn better. These students who receive positive reinforcement become more confident and move forward, which is a direct result of the behaviorism theory. On the other hand, the Constructivist Learning Theory of John Dewey, with the basic approach of this theory is that people as said to learn when they have gained experience from what they learn.

These theories will guide and help the receiving teachers of students with behavioral issues. Teachers with their experience can utilize their coping strategies to address challenges in teaching this kind of student. They can provide enough assistance to the students learn to complete the task independently.

METHODS

Presented in this chapter is the methodology used to answer the research questions posed. This chapter presents the research design, research participants and sampling, the role, ethical considerations, data collection, data analysis, and trustworthiness of the study.

Research Design

The research design employed in this study was qualitative phenomenological in nature. Phenomenology is a qualitative research approach utilized to explore the meanings and implications of an individual's lived experience. In addition, qualitative research frequently employs the technique of purposive sampling to identify and select instances containing a broad range of information while maximizing the use of limited resources as stated by Patton (2002). This involves locating and selecting individuals or groups with specialized knowledge or experience regarding the phenomenon under investigation of Creswell & Plano Clark (2011).

Research Participants

In this study, there are 5 participants receiving teachers from the Island Garden City of Samal. The researchers used a set of questionnaires as a guide for their interview with the respondents. The participants that the researchers chose are receiving teachers handling behavioral issues of students with special needs. The researchers chose the participants and requested their free involvement. The teachers' participants are teaching at secondary schools in Island Garden City of Samal, Davao Del Norte. The researchers conducted focus group discussions with the receiving teachers.

Research Instrument

To answer the objective of the study, an interview guide through the conduct of focus group discussion was employed to facilitate an efficient and productive gathering of responses. In-depth interview was used to gain access to individual's life worlds. Interview guides consisted of either questions, topics, or a combination that ran from unstructured to highly structured. The



guide questions were prepared by the researcher. The questions provided were consistently connected and related to stress and experiences in this time of pandemic and distance learning.

To establish the face or content validity of the interview guide, it was validated by one expert in the field of research. The suggestions and comments of the expert were integrated into the research instrument. Then, an audio/video recording device was used to gather or collect responses from the participants, may it be in oral and non-verbal cues and also if necessary, the researcher will take notes in case the participants refuse to record or video their responses. The data was transcribed for textual analysis, validity, and reliability of the instrument used.

Data Analysis

This study uses thematic analysis, where the information obtained is evaluated by looking through a data set to find, evaluate, and report recurring trends according to Braun and Clarke (2006). Although it is a technique for describing data, it also incorporates interpretation while choosing codes and developing topics. The versatility of theme analysis may be applied within a wide range of theoretic and epistemological frameworks, and to a variety of study questions, designs, and sample sizes, too. While some academics have claimed that topic analysis belongs in the category of ethnography.

Trustworthiness of the Study

A phenomenological approach adapted from Creswell was used to analyze the data gathered from the participants about their experiences of mental stress and coping mechanisms in this time of pandemic. The following steps to elaborate phenomenological analysis are the following. First, the researcher will describe his or her own experience with the object of study to identify personal judgments and prejudices so that they don't affect the process of analysis. Second, the researcher will proceed with the "horizontalization" of data wherein the researcher will list each

of the relevant quotes of the studied topic and give them equal value about the expressions of the group. Third, the researcher will group the relevant topics into units of meaning. Fourth, the researcher will write the textual description and include "ad verbatim" quotations. Fifth, the researcher will write the structural description. Finally, according to the textual and structural analysis, the researcher will proceed to identify the essence of the phenomenon as stated by Creswell (2013).

Member checking was employed to establish the trustworthiness of the results. As cited by McGrath, Palmgren, and Liljedah (2018), member checking is a method of returning an interview transcript or debriefing the analytical results with participants for agreement (Creswell 2013). As such, this method may act as a sounding board and a way of checking that one has understood the reported responses of the respondents, especially when it comes to picking up subtleties such as irony, emotions, silences, or other gestures.

RESULTS AND DISCUSSIONS

This chapter presents the results of the study about lived experiences of receiving teachers in handling behavioral issues of students with special needs. The researchers analyzed thoroughly the data and extracted the core ideas. The analyses of the empirical data yielded five themes on the notable lived experiences of receiving teachers. The analyses on the sharing of the key informants regarding their collective description of their experiences led to the emergence of 3 distinct themes that include each sub-themes; (i) Experiences of the Receiving Teachers; (ii) Strategies Employed by the

Receiving Teachers and Coping Mechanism; (iii) Insights Gained by Receiving Teachers, as shown in Figure 1.

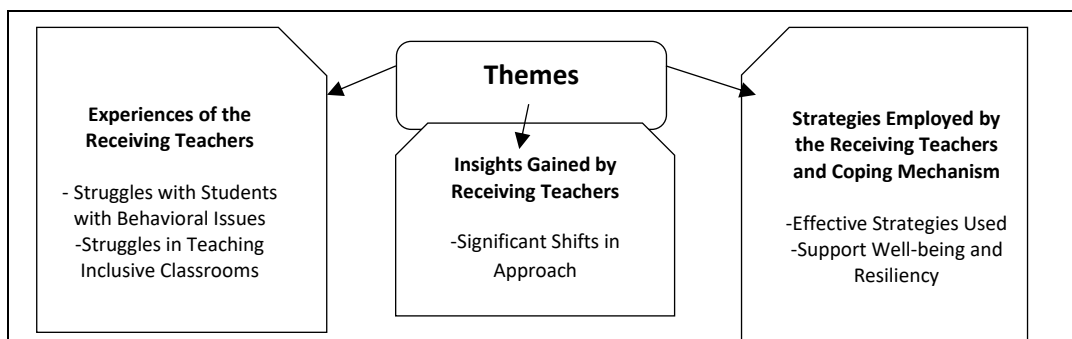


Figure 1. Themes of lived experiences of receiving teachers in handling behavioral issues of students with special needs
Experiences of the Receiving Teachers

The way that teachers educate is greatly influenced by their experiences. These encounters frequently serve as a furnace, honing their methods to successfully meet the particular requirements and difficulties posed by children with behavioral

problems. Educators gain valuable insights from their experiences with diverse behavioral situations, refining their abilities in flexibility, endurance, and compassion.



Based on the conducted focus-group discussion, receiving teachers struggle with students with behavioral issues and it affects as well as their teaching.

“The main challenge for me in addressing behavioral problems of students with special needs is how am I going to extend my patience and how am I going to apply the empathy they need.” -FGD3

“It is hard for me to figure out where or what can I do to address the student’s behavior because I do not have enough knowledge about Special Education. It is a challenge how to make these negative attitudes be positive ones for us teachers and their other classmates.” – FGD4

The experiences shared by receiving teachers highlight the crucial role of empathy, patience, and specialized knowledge in addressing behavioral issues among students with special needs. These challenges underscore the need for ongoing professional development and support to equip teachers with the skills and resources necessary for creating inclusive and supportive learning environment. Moving forward, prioritizing comprehensive training and resources is essential to empower teachers in effectively meeting the diverse needs of their students.

Strategies Employed by the Receiving Teachers and Coping Mechanism

The strategies employed and their coping mechanisms as teachers unveil the resourcefulness and resilience of receiving teachers when faced with behavioral challenges in special education settings. Teachers employ a diverse array of strategies tailored to meet the unique needs of their students, ranging from individualized behavior plans to collaborative problem-solving approaches. These strategies not only aim to address immediate behavioral concerns but also foster long-term skill development and positive behavioral outcomes.

“The approach that I used is first, I call the student privately, then we will have an agreement with signature, and send a communication letter to the parents. I always practice documentation of each action taken. When there is mutual agreement and these students also acknowledge their mistakes or negative behavior, and promise to behave in class, then it is a consider as an intervention already” – FGD1

“Before we can imply strategies, the best thing to do for me is to have self-control and acceptance that we have students with behavioral issues. Embrace these students and have constant communication with parents, set conferences with them.” – FGD5

Additionally, teachers rely on various coping mechanisms, such as peer support networks, professional development opportunities, and self-care practices, to navigate the emotional demands associated with managing behavioral issues in the classroom.

“Seek support from your colleagues. Do not make it your own problem in handling this kind of students, as adviser or subject teacher. Collaborate

with others, your school guidance counselor, the SPED Coordinator, and of course with the parents. If we solo it, we will die early. So, let us have an outlet for ourselves also, travel, sleep, watch K-drama and many more activities.” -FGD1

The experiences of receiving teachers revealed the importance of not only specialized knowledge and skills but also effective coping mechanisms in managing behavioral issues in the classroom. Collaboration, self-care, and maintaining a focus on solutions emerge as key strategies for navigating the emotional demands of teaching while fostering inclusive learning environments. Prioritizing both professional development and personal well-being is essential for receiving teachers to effectively support their students and sustain their own resilience in the face of challenges. *Insights Gained by Receiving Teachers*

Receiving teachers have gained invaluable insights from their experiences with the students exhibiting behavioral challenges. These insights, born from real-world encounters, offer profound benefits for both teachers and students alike. These insights have shifted their perspective, seeing behavioral issues as opportunities for growth rather than obstacles.

“...I realized that they always have their reason that I should better understand them as students have special needs to address. It was not easy but my experience made me see in a much broader look, that they need us, we must help us in little thing we can.” -FGD2

“I may also add, that as receiving teachers, we hold a big part in shaping the future of these students. As hard as it is, as their receiving teacher, it is my responsibility to better understand them. Try to listen to your students, and get their trust by showing them that you understand them. But I hope we will be given enough seminar or training so we know what are the best ways to handle this.” -FGD5

The experiences and reflections of receiving teachers underscore the transformative power of empathy, flexibility, and continuous learning in effectively addressing behavioral issues in the classroom. The teachers have come to embrace the diversity among their students and recognize the importance of understanding and supporting their individual needs. By embracing diversity, fostering understanding, and prioritizing individual support, receiving teachers not only enhance the educational experience for their students but also cultivate inclusive and supportive learning environment that nurture personal growth and development.



CONCLUSION AND RECOMMENDATION

Conclusion

The study investigates the personal experiences of instructors who work with students with special needs and behavioral concerns. It uncovers a complex range of difficulties, approaches, methods of dealing with stress, and valuable understandings. Teachers have substantial obstacles when dealing with academic and behavioral issues, which are further complicated by a lack of specialized expertise in special education. Nevertheless, their ability to recover and adapt is evident in the wide range of tactics utilized, which include personalized behavior plans, cultivating positive connections with students, and seeking assistance from colleagues. Furthermore, the knowledge acquired emphasizes the significant capacity for change that these experiences have, promoting empathy, flexibility, and a transition towards more comprehensive and inclusive teaching methods. Despite the challenges faced, educators get a more profound comprehension of their students' requirements and a revitalized dedication to their responsibility in molding their future.

Recommendation

To further support teachers in effectively handling behavioral issues among students with special needs, it is crucial to allocate resources towards specialized professional development programs and seminars. These initiatives should prioritize improving teachers' understanding of special education principles, providing them with effective techniques for managing behavior, and encouraging self-care activities to reduce burnout. In addition, schools need to cultivate a cooperative atmosphere that facilitates the exchange of knowledge and effective methods among instructors. Furthermore, schools should ensure that teachers have access to support networks, including guidance counselors and special education coordinators. Through the deliberate emphasis on continuous training and the cultivation of a supportive and collaborative atmosphere, educational institutions can enable teachers to address the varied requirements of their students and establish more inclusive learning environments more effectively.

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CLINICAL CASE, RESECTION OF BONE METASTASIS IN THE OLECRANON, AFTER EXCISION OF RENAL CARCINOMA OF PRIMARY ORIGIN

**Bryam Esteban Coello García¹, Galo Fernando Tulcanaza Ochoa²,
Sebastián Cardoso Gives³, María José Sacoto Carrión⁴,
Leonardo Esteban Martínez Calderón⁵, Gabriela Johanna Campoverde Mogrovejo⁶,
Diana Lorena Pedrosa Astudillo⁷, Holger Xavier Rojas Espinoza⁸,
Maricarmen Vélez Chimbo⁹, Carolina De Los Angeles Nuñez Galarza¹⁰**

¹Postgraduate Doctor in Orthopedics and Traumatology at Faculdade de Ciências Médicas Minas Gerais. Belo Horizonte - Brasil. ORCID <https://orcid.org/0000-0003-2497-0274>

²General Practitioner in "Hospital Misereor Ministerio de Salud Pública". Gualaquiza, Morona Santiago- Ecuador ORCID <https://orcid.org/0000-0002-6254-8624>

³General Practitioner at "Corporación Municipal para la Educación y Salud de Melipilla" Melipilla, Región Metropolitana de Santiago, Chile ORCID <https://orcid.org/0009-0003-2002-2477>

⁴General Practitioner at "Instituto del Cáncer SOLCA", faculty of Medical Sciences, Universidad de Cuenca. Azuay- Ecuador ORCID <https://orcid.org/0009-0008-4042-7945>

⁵General Practitioner at "Clínica Santa Ana", faculty of Medical Sciences, Universidad Católica de Cuenca. Azuay- Ecuador ORCID <https://orcid.org/0009-0005-0919-650X>

⁶General Practitioner at "Instituto del Cáncer SOLCA", faculty of Medical Sciences, Universidad de Cuenca. Azuay- Ecuador ORCID <https://orcid.org/0009-0000-4366-1130>

⁷General Practitioner in "Hospital Basico General Plaza". Limón Indanza, Morona Santiago- Ecuador ORCID <https://orcid.org/0009-0002-4899-4043>

⁸General Practitioner at "Hospital Vicente Corral Moscoso". Azuay- Ecuador ORCID <https://orcid.org/0000-0001-8366-7625>

⁹General Practitioner in independent practice, faculty of Medical Sciences, Universidad Católica de Cuenca. Azuay- Ecuador ORCID <https://orcid.org/0009-0006-2830-3312>

¹⁰General Practitioner in "Varicenter Ambato", faculty of Medical Sciences, Universidad Regional Autónoma de Los Andes "Uniandes". Ecuador. <https://orcid.org/0009-0001-2040-2125>

Corresponding Author: Bryam Esteban Coello García **Address:** Rua Tiradentes 266. Campo Belo. Minas Gerais. Brasil **Postal Code:** 37270-000

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SUMMARY

Introduction: Bone is a common site of metastasis, after cancer has spread to the bone, it can rarely be cured, however it can often be treated to stop its proliferation. Bone metastasis is much more common than primary bone cancers, particularly in adults.

Objective: to describe the present clinical case objectively and to make an analysis of the subject.

Methodology: an objective description of the clinical case and a review with analysis of a total of 17 articles, including review and original articles, as well as clinical cases, of which 12 bibliographies were used because the other articles were not relevant for this study. The sources of information were PubMed, Google Scholar and Cochrane; the terms used to search for information in Spanish, Portuguese and English were: bone metastasis, bone tumor, oncologic surgery, renal carcinoma.

Results: renal cell carcinoma represents about 2-3% of malignant neoplasms in adult individuals. Most of the cases occur between 50-70 years of age. One third of the tumors metastasize (synchronous metastases) and another third manifest themselves in the future (metachronous metastases), even up to 20 years after nephrectomy. In order of manifestation, the most common findings in renal cell



carcinoma are: hematuria (59%), pain (41%), fever (7%), anemia (21%) and weight loss (33%). In order of involvement, renal cell carcinoma metastasizes to the lung (60%), bone (20%), liver (8%), adrenal glands and brain (5%), and other organs can also be affected.

Conclusions: Bone is a common site of metastasis, being called metastasis the capacity of a tumor cell to move from the primary tumor and adhere to tissues of a distant organ by hematogenous, lymphatic or contiguous route. After the cancer has spread to the bones, it can rarely be cured, although it can often be treated to stop its proliferation. Bone metastases are now much more common than primary bone cancers, particularly in adults. The clinical management of metastatic bone disease in renal cell carcinoma deserves more attention than it has been given so far. A multidisciplinary approach is required for the management of affected individuals with bone metastases, and each patient's case must be individualized, since not all affected individuals can undergo the same surgical procedure or treatment.

Key words: metastasis, cancer, bone, tumor, renal carcinoma.

INTRODUCTION

Bone is a common site of metastasis and generally shows a short-term prognosis in individuals with cancer. After cancer has spread to the bone, it can rarely be cured, however it can often be treated to stop its proliferation. Bone pain is the most common form of cancer pain, is usually poorly localized, is worse at night and is not necessarily relieved by sleep or bedtime. Most skeletal metastases are caused by breast and prostate cancer. Bone metastases are now much more common than primary bone cancers, particularly in adults. Diagnosis is based on signs, symptoms and complementary imaging. New classes of drugs as well as other interventional approaches give affected individuals a better quality of life and increase life expectancy. A multidisciplinary approach is required for the management of affected individuals with bone metastases. Bone metastases can be subdivided into osteolytic, osteoblastic or mixed, according to the primary mechanism of interference with normal bone remodeling. Hypercalcemia is the most frequent metabolic complication in these malignancies. Pathological fractures occur in 10-30% of all individuals with cancer, with the proximal parts of the long bones being the most common fracture site, the femur bone being the most involved with approximately 50%(1-3).

METHODOLOGY

An objective description of the clinical case and a review with analysis of a total of 17 articles, including review and original articles, as well as cases and clinical trials, of which 12 bibliographies were used because the information collected was not sufficiently important to be included in this study. The sources of information were Cochrane, PubMed and Google Scholar; the terms used to search for information in Spanish, Portuguese and English were: bone metastasis, bone tumor, oncologic surgery, renal carcinoma.

The choice of bibliography exposes elements related to renal carcinoma, bone metastasis, oncologic surgery.

DEVELOPMENT

Clinical Case

This is a 73-year-old male patient who presented with moderate pain, without irradiation, in the right elbow approximately 1 year ago, where he evidenced a mass. The patient also reports pain between the ribs and hip of mild intensity, sporadic fever and weight loss. Patient denies trauma and denies allergies.

The affected individual comments that he sought medical understanding in multiple institutions with various diagnostic and therapeutic hypotheses, all with conservative approach with alternating results of remission and recurrence.

Figure 1. Ectoscopy of the right elbow, presence of a mass.



Source: The Authors.

Symptoms of pain persisted and the patient went for a new consultation. A new physical examination revealed a painful mass in the right elbow with decreased range of motion without neurovascular involvement, and a protrusion in the abdomen. The patient reports other non-specific symptoms such as headache, tiredness and early satiety. Pain control was performed and radiographic studies were performed showing findings compatible with an aggressive behavior of the lesion showing results suggestive of tumor, so he was sent to the orthopedic oncology service.

Figure 2. Anteroposterior radiograph of right elbow, with presence of lesion compatible with tumor.



Source: The Authors.



Figure 3. Lateral radiograph of right elbow, with presence of lesion compatible with tumor.



Source: The Authors.

Patient was referred to the oncological orthopedic oncology sub-specialist for suspected tumor lesion in the right elbow. Complementary examinations and oncological staging were

performed. Examinations with presence of blood in urine observed under the microscope, the red blood cell count showed polycythemia, perhaps due to high levels of erythropoietin.

In addition, the affected individual underwent a cintigraphy, computed tomography and magnetic resonance imaging for staging. The patient presented with a diagnosis of renal cancer with single bone metastasis in the right elbow.

In the first instance the patient underwent biopsies for confirmation, as it was an aggressive lesion, an excision of the renal mass and adjuvant treatment was performed.

Figura 4. Axial cutting. Left kidney presents increased volume at the expense of expansive lesion that covers the middle and upper third involving the renal sinus. Left kidney it presents heterogeneous contrast enhancement measuring 7.5 x 6 cm. In addition more than 4 cortical cystic lesions being the largest of 20 mm.



Source: The Authors.

Figura 5. Coronal section. Left kidney presents increased volume at the expense of an expansive lesion that covers the middle and upper third involving the renal sinus. It presents heterogeneous

contrast enhancement measuring 7.5 x 6 cm. In addition more than 4 cortical cystic lesions being the largest of 20 mm.



Source: The Authors.

In the second instance, a surgical resection with oncologic margins of the tumor tissue in the right elbow was programmed, in addition, due to the location of the lesion, a resection of the compartment with tumor involvement was planned, accompanied by an autologous radial transposition graft. The need for osteosynthesis with a blocked plate for radial humeral arthrodesis was assessed, with resection of the entire soft tissue compartment in addition to teno-muscular transposition for coverage of the oncological resection site and surgical neurolysis of adjacent noble neurological structures for prophylaxis of lesions, especially of the ulnar nerve.



Figura 6. Coronal section. MRI of the right elbow, showing mass and compartment involvement.



Source: The Authors.

Figura 7. Axial cutting. MRI of the right elbow, showing mass and compartment involvement.



Source: The Authors.

Figura 8. Sagittal section. MRI of the right elbow, showing mass and compartment involvement.



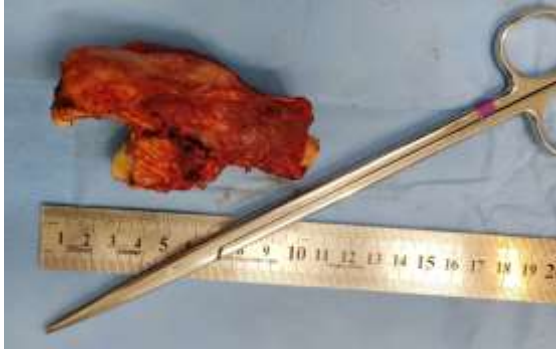
Source: The Authors.

It should be emphasized that the surgical procedure is of great size and complexity, due to the fact that the patient is a carrier of a

malignant bone tumor, so that if the intervention is postponed, the affected individual could have a worse prognosis.



Figure 9. Tumor mass of the right elbow after extirpation.



Source: The Authors.

Our patient did not approve the performance of locked plate osteosynthesis for radial humeral arthrodesis so he underwent bone tumor resection with margins, grafting, interposition arthroplasty, transposition of more than one tendon and neurolysis of the ulnar and anterior interosseous. Neurovascular deficits were not investigated at the time due to anesthetic block. The surgery was performed without interurrences, a drain was left which was removed after two days. The material was sent for anatomopathological study and the prognosis of complications such as infection, post-traumatic arthritis, pathological fracture, deep vein thrombosis, transient or permanent neurovascular deficit, among others, was strongly warned. In addition, the patient was oriented on postoperative care, such as keeping the injured region elevated, the use of a type of bandage, moving the fingers and joints, taking the medication properly, recommendations for the care of the healing, alarm signals for immediate return in case of fever, intense pain, exaggerated inflammation, paresthesia and pallor of the fingers, and a return consultation was also scheduled.

Figure 10. Image of the immediate postoperative period with the drainage system in evidence.



Source: The Authors.

The immediate and mediated postoperative outcome were satisfactory for the affected individual, the patient continued his treatment with a multidisciplinary approach.

DISCUSSION

Renal cell carcinoma accounts for about 2-3% of malignant neoplasms in adult individuals. Most of the cases occur between 50-70 years of age. One third of tumors metastasize (synchronous metastases) and another third manifest themselves in the future (metachronous metastases), even up to 20 years after nephrectomy. Some investigations show reports of up to 31,000 new cases per year, with a mortality of 2.3%, being more common in men with a 1.5:1 ratio. Bone radiology does not exclude the coexistence of metastasis. Other bibliographies recommend early diagnosis of bone metastases with scintigraphy as opposed to conventional radiology. The main signs and symptoms of the condition are pain, hematuria and palpable flank mass in approximately 9% of affected individuals. In order of manifestation, the most common findings in renal cell carcinoma are: hematuria in 59%, pain in 41%, fever in 7%, anemia in 21% and weight loss in 33%. Nowadays, about 40% of the cases are diagnosed by chance, by means of an abdominal ultrasound, and in approximately 30% of the cases metastasis is identified at the time of diagnosis. The great clinical diversity and evolution of the tumors, as well as the relative number of related paraneoplastic syndromes, sometimes lead to this tumor being called the "internist's tumor". In order of involvement, renal carcinoma metastasizes to the lung (60%), bone (20%), liver (8%), adrenal glands and brain (5%), and other organs can also be affected(4,5).

A metastasis is the ability of a tumor cell to spread from the primary tumor and adhere to tissues of a distant organ by hematogenous, lymphatic or contiguous routes. The main sources of bone metastases are: breast, prostate and lung cancer. These usually occur in individuals over 50 years of age, showing a predilection to metastasize to the axial skeleton(6).

Skeletal metastasis is common in advanced renal cancer, leading to debilitating skeletal complications including severe pain, increased fracture rates and spinal cord compression. Bone metastases arising from renal cancer are highly osteolytic and very destructive. Continued development of antiresorptive drugs is improving the clinical management of metastatic bone disease in various tumor types and significantly improving quality of life. Zoledronic acid bisphosphonate is now approved for use in advanced renal cell carcinoma, showing a greater benefit in terms of reduction of skeletal-related events compared to bone metastases originating from other tumor types. Several drugs directed at specific targets in the bone metastasis pathway have now been developed, such as denosumab, a fully human monoclonal antibody against nuclear factor kappa B receptor activator ligand. The incidence of renal cell carcinoma is increasing at approximately 2% per year and recent advances in targeted antiangiogenic therapy for advanced disease are expected to lead to longer survival times. In cases similar to this



one, interposition arthroplasty may be preferred as a life-saving alternative for young individuals(7,8).

The primary objective in surgical cases of bone metastases is to restore the function of the compromised region. Trying to give the following effects: the partial or total disappearance of pain by means of bone stabilization ensuring the best function that can be given, not interfering in the management of the primary cancer, showing immediate and lasting results due to the fact that these are individuals with limited life expectancy, preventing or reducing the anxiety and depression generated by pathological fractures in individuals who are already alerted by the diagnosis of a serious disease(9-11).

Modifications in the surgical treatment of bone metastases have been generated by a greater multidisciplinary approach to metastatic cancer, in addition to the thought that a specific type of surgery does not work for all affected individuals. So individual goals are generally set in the treatment of the compromised determining surgical procedures. Advances in radiation similar to adjuvant therapy and more targeted chemotherapies have developed less invasive surgical approaches, showing faster recoveries, in addition to lower surgical morbidity(12).

CONCLUSIONS

Bone is a common site of metastasis, being called metastasis, the ability of a tumor cell to spread from the primary tumor and adhere in tissues of a distant organ by hematogenous, lymphatic or contiguous route. After the cancer has spread to the bones, it can rarely be cured, although it can often be treated to stop its proliferation. Bone metastases are now much more common than primary bone cancers, particularly in adults. The clinical management of metastatic bone disease in renal cell carcinoma deserves more attention than it has been given so far. A multidisciplinary approach to the management of affected individuals with bone metastases is required, and each patient's case must be individualized because not all affected individuals can undergo the same surgical procedure or treatment.

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A REVIEW ON ROLE OF TRIDOSHA IN HEALTH AND DISEASES

Dr. Basavanthrao patil ¹, Dr. Shashikala. K²

¹Final Year PG Scholar ²Assistant Professor

¹Department of Kriya Shareera SJG AMC Koppal -583231

²Department of Kriya Shareera MRN AMC Bagalkot-587101

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ABSTRACT

Healthy and unhealthy state of a human being depends on normal and abnormal functional state of Tridosha, considering the physiological importance of Dosha in maintenance of homeostasis of the body. Tridosha have been called as root (Dosha Dhatu Mala Moolam hi Shariram) of the body. All the functions of the body could be explained in terms of Dosha, Dhatu, and Mala. Panchamahabhuta are chief controllers of universe. By Loka purusha saamyavaada existence of entities in universe and living body is similar. Hence controllers in human body must also be Panchabhoutika. Since Dosha are functional representatives of Panchamahabhuta, they are controllers of body functions. They are structurally Panchabhoutika in nature. Synthesis of Dosha is brought about in two stages. Those synthesized in unicellular zygote and impress every cell after differentiation are Prakruta Dosha, which are decisive factors for body characteristics. Those synthesized from food material which control routine body metabolism are called Vaikrta Dosha, which are decisive factors for homeostasis. Both stages are observed in intra uterine as well as extra uterine life. Both these kinds of Dosha work in synergism to carry out all bodily functions. Vatadosha is divided into five types and These types are according to function, chief location etc. Similarly, Pitta as well as Kaphadosha are also divided into five types. Within limits Doshas are maintaining living body, as they maintain homeostasis. Doshas are only and direct responsible factors for genesis of diseases. Even though there are exogenous and endogenous etiological factors in pathogenesis, Ayurveda suggests that any cause leads to vitiation of Dosha in the first place and then next events start for generation of diseases. Doshas control other two entities namely Dhatu and Mala.

Aim & Objectives: Observing the role of Doshas in health and disease conditions

Materials and Methods: All the classical texts of Ayurveda with available commentaries, published research papers, PUB med, Google scholar, research Gate, subject related data on Internet and other sources were reviewed for the present study

Results and Conclusion: The Doshas having the primary role in maintaining health and any disturbance in Doshas will causes disease

KEY WORDS: Doshas, Ahara, vihara, vikruti, vyadhi

INTRODUCTION

Doshas are the biological administration which maintain structure, function, and psychology of human being within physiological limits. They maintain homeostasis beyond the limits, and they are responsible for the generation of disease. The entity in the body which has the capacity to vitiate body and mind is called *dosha*. One which undergoes vitiation of themselves along with start to vitiate other factors is called *Dosha*. *Doshas* are functional representatives of *panchamahabhuta*. They circulate in the entire body and carry out specific functions. *Doshas* causes vitiation of other entities in body and produce diseases. The *Doshas* are material substances present in the body always, they have their own definite *Pramana*, *Guna*, and *karma*. When they are normal, they attend to different functions of the body and so maintain it. But they have the tendency to become abnormal undergoing increase or decrease in one or more of their quantities and functions. When they become abnormal, they vitiate their places of dwelling the *Dhatus*, because of this tendency of vitiation, they are called as *Doshas* or vitiators. These three

Vata, *Pitta* and *Kapha* are more intimately concerned with the body, hence called as *Shareerika Doshas* in distinction to two *Manasa doshas* the *Rajas* and *Tamas* which are concerned with the mind.

PRAKRUTA AND VAIKRUTA DOSHA

Prakruta doshas are one which will form naturally during *Garbhavastha* in the form of *Prakruti* and during the process of *Paachan* or *Paka* of *Ahara*. Origin of *Prakruta Dosha* during *Garbhavastha*, *Prakruti* is a *Doshik* status which exists from birth to death and occurs at the time of fertilization due to the dominance of *Doshas*. At the time of fertilization itself, *Prakruti* is determined by the *Doshas* of *Shukra* and *Artava*. This *Doshik* influence is harmless to the *Garbha*. Just as the poison of insects is not harmful to them in the same way *Doshas* involved in the formation of *Prakruti* are not harmful to their body. Based upon the dominancy of three *Doshas*, three individual *Prakruti*'s are framed.



VAIKRATA DOSHA

Vikruta Doshas are one where their normalcy will be lost. They become abnormal because of involving in *Mithya Ahara Vihara*. Such *Vishamaavastha* of *Dosha* will lead to disease

condition. Thus, considered as *Vaikratadosha* and *Saamyata* of *Doshas* will lead to *Arogya*. Normal status of *Vata*, *Pitta* and *Shleshma* are known as *Prakruta doshas*. *Doshas* when are in abnormal condition i.e. being in either *Vruddhi* or *kshaya* condition then are known as *Vaikruta Dosha*.

DOSHA, TRIGUNA AND PANCHAMAHABHUTA

DOSHA	TRIGUNA	MAHABHUTA
VATA	RAJO	VAYU +AKASH
PITTA	RAJO +SATVA	TEJO+JALA
KAPHA	TAMO +SATVA	APA + PRITHVI

DOSHA AND RUTU

DOSHA	CHAYA	PRAKOPA	PRASAMANA
VATA	GREESHMA	VARSHA	SHARAT
PITTA	VARSHA	SHARAT	HEMNATA
KAPHA	SHISHIRA	VASANTA	GREESHMA

BIOLOGICAL RHYTHMS OF PREDOMINANCE TRIDOSHA ON THE BASIS OF DAY -NIGHT-AND FOOD INTAKE

DOSHA	DAY	NIGHT	AGE	FOOD
VATA	EVENING	LATE NIGHT	OLD AGE	BEFORE FOOD
PITTA	MID DAY	MID NIGHT	YOUTH	MID OF INGESTED FOOD
KAPHA	MORNING	EARLY NIGHT	CHILDHOOD	AFTER INTAKE OF FOOD

TRIDOSHA AND SHADRASA

DOSHA	SHAMAKA RASA	KOPAKA RASA
VATA	MADHURA, AMLA, LAVANA	KATU, TIKTA, KASHAYA
PITTA	KATU, TIKTA, MADHURA	AMLA, LAVANA, KASHAYA
KAPHA	KATU, TIKTA, KASHAYA	MADHURA, AMLA, LAVANA

DOSHA AND AGNI

DOSHA	STATE OF AGNI	SYMPTOMATOLOGY
KAPHA	MANDAGNI	MAHAT KALENA PACHATI, UDARA GAURAVAM, KASA, SWASA, CHARADI
PITTA	TIKSHNAGNI	PRABHOOTAM PACHATI, GALASHOSHA, GALADAH, TALU SHOSHA
VATA	VISHAMAGNI	VISHAMA PACHATI, ADHMANA, SHOOLA, ATISARA
SAMDOSHA	SAMAGNI	SAMAN PACHATI

DOSHA AND KOSHTA

DOSHA	KOSHTA
VATA DOSHA	KRURA KOSHTA
PITTA DOSHA	MRIDU KOSHTA
KAPHA DOSHA	MADHYAMA KOSHTA

CHARACTERISTICS OF VATA DOSHA

Ruksha, (Dryness) *Laghu*, (Lightness) *Sheeta*, (Cold) *Khara*, (Roughness) *Sukshma*, (Minuteness) and *Chala* (*Movements*) these are the properties of *Vata Dosha*. It is primarily situated in the *Pakwashaya*, *Kati*, *Sakti*, *Srotas*, *Asthi*, *Sparshanendriya* etc. This maintains the circulation and energy-related functions in the body and provides movement. It imparts enthusiastic vitality, the capacity to learn, oversees inspiration and expiration, regulates movement, and the body's internal transportation mechanism and the elimination of diseases etc.

CHARACTERISTICS OF PITTA DOSHA

Tikshna, (sharp) *Ushna*, (Hot) *Amla*, (Sour) *Sneha*, (Oiliness) *Visra*, (Smell) and *Katu* (pungent) are the properties of *Pitta Dosha*. Primarily this *Dosha* present in the *Nabi*, *Amashaya*, *Sweda*, *Lasika*, *Rudira*, *Rasa*, *Drik*, *Sparsha* etc. *Pitta Dosha* regulates metabolic and digestive processes, controls enzymatic activity, hormonal activity, and produce heat. *Pitta* dominating individuals own with a sound physical and mental condition, this *Dosha* gives bravery and wrath in a person's nature. *Pitta* provides optimal muscle strength and a fair complexion. The



total metabolic activity is dependent on the condition of *Pitta Dosha* inside the body, this *Dosha* is also responsible for vision, lustre, and nourishment

CHARACTERISTICS OF KAPHA DOSHA

Sheeta (Cold) *Guru*, (Heaviness) *Snigdha*, (Unctuousness) *Manda*, (Dull) and *Picchila* (Sticky) are the properties offered by *Kapha Dosha*. It mostly presents in the *Ura*, *Kanta*, *Sira*, *Kloma*, *Parvani*, *Amashaya*, *Rasa*, *Medha*, *Jhiwa*, etc. The *Kapha dosha* keeps the body lubrication and facilitate joint movements. The qualities of *Kapha* include graceful appearance, calm mentality, fair complexion, and relaxed mood behaviour. *Kapha* aids in holding body's contents, offering astringent and unctuousness effects to regulate the excretion of fluid, providing firmness & gives the body a sense of weight and lubricates the joints so making it easier for them to move and manage hyperactivity.

COMBINATIONS OF DOSHAS

The predominant *Doshas* constitution contributed to the inherent characteristics of individuals that were described as the individual's *Prakriti*. The different combinations of different *Prakriti* are given by *Dohsas*.

ROLE OF DOSHA IN DISEASE CONDITION

Vata governs upward and downward movement and it is connected to touch, sound, and speech senses, but a vitiated *Vata* can result in the pathological scenarios. Emaciation, blackish discoloration, desire for hot things, tremors, distension of abdomen, constipation, loss of strength, loss of sleep, loss of sensory function, irrelevant speech, giddiness, and timidity. Although *Pitta* is helpful in digestion and metabolism, *Pitta* vitiation can result in the following abnormalities in health. If *pitta* increases it will cause yellow tinge to stool, urine, eyes and skin and sleeplessness, thirst, and burning sensation, person feels drowsy. And in decreased condition it will cause weak digestive strength, coldness, and lustre. Since *Kapha* governs fluidity and liquidity in the body, an imbalance in this energy can result in the following pathological conditions. An imbalance of *Kapha dosha* causes whitish skin, experience of cold, numbness, heaviness of extremities, and sense of drowsiness, person feels sleepy, obesity, and looseness of joints

Example

Rheumatoid Arthritis (Amavata)

Doshas Involved

Vata: *Vata dosha* is primarily responsible for the movement of joints and tissues. In rheumatoid arthritis, vitiated *Vata* leads to joint pain, stiffness, and inflammation.

Ama: *Ama* refers to undigested toxins. In this disease, *ama* accumulates due to impaired digestion and weak *Agni* (digestive fire). *Ama* combines with vitiated *Vata* to affect the joints.

Pitta: *Pitta Dosha* contributes to inflammation and heat. In rheumatoid arthritis, aggravated *Pitta* worsens joint inflammation.

Pathogenesis

Ama Formation: Poor digestion leads to the formation of *Ama*.

Ama Aggravates *Vata*: *Ama* combines with *Vata*, causing joint pain and stiffness.

Inflammation: Aggravated *Pitta* leads to joint inflammation.

Autoimmune Component: The immune system attacks healthy joint tissues, causing further damage.

Symptoms

Painful swollen joints (especially small joints like fingers and toes)

Morning stiffness

Fatigue

Ayurvedic Approach

Panchakarma: Like *Vamana*, *Virechana* (Detoxification therapies) to remove *ama*.

Vata-Pacifying Diet: Warm, nourishing foods to balance *Vata*.

Herbs: *Guggulu*, *Ashwagandha*, *Turmeric*, etc.

Lifestyle: Gentle exercise, stress management, and adequate rest.

Prevention

Maintain digestive health. Avoid cold, damp environments. Manage stress.

Remember, *Ayurveda* focuses on individualized treatment, considering the unique constitution (*Prakriti*) of each person.

DISCUSSION

In *Ayurveda*, *doshas* are the governing principles of physiology and pathology. They are the primary and essential constitutional factors of the human being. They maintain the integrity of the human body. The three *doshas* i.e. *Vata*, *pitta*, and *Kapha*, vitiate different body tissues (*Dhatu*) and can lead to diseases in disequilibrium state. They are the actual intrinsic factors which become excited and imbalance, either conferring a predisposition to causing morbidities or disease (*Vyadhi*). Their state of equilibrium is one of the important pre-requisites for disease free state (*Arogya*) health. The *dosha* have been correlated with systems theory in the field of physics, providing a sound theoretical basis for this. *Ayurvedic* concept, and research is utilizing a biostatistical approach to quantify the *dosha* reveals a sound empirical basis as well. Being the units of microcosm in body, the three *dosha*, *Kapha*, *pitta* and *Vata*, maintain integrity of the organism by creating, assimilating, and diffusing strength in the same way as the Moon (*soma*), Sun (*Surya*) and Air (*Anila*), maintain integrity of the macrocosm respectively. The *dosha* govern all the physiological activities, Growth, development (*Upachaya*), strength (*bala*), complexion (*varna*), blissful state (*Prasannatman*) etc. *Vata dosha* governs functions in the body related to initiation and movement e. g. food through the digestive tract, transportation of oxygen in the blood stream, communication between cells via nerve impulses, excretion of metabolic wastes etc. *Pitta dosha* governs functions that relate to transformation (e.g., digestion of food, processes of metabolism, etc.), hunger, thirst, vision, sensory perception, intelligence, complexion, and heat generation. *Kapha dosha* governs the structure and cohesion of the body. It relates with function of strength, stability, and moisture in body.



CONCLUSION

Dosha's are the fundamental principles of body that are responsible for every physiological as well as pathological events in the body. *Dosha* forms the fundamental body constitution (*prakriti*), play a vital role in digestion and metabolism (*Agni*), preserve, and maintain health while in state of equilibrium. The *dosha* are the factors they get vitiated themselves in the initial stage of the disease. Further they vitiate other body constituents (*dhatu and mala*). Therefore, disequilibrium of *dosha* is the primary and fundamental cause of any disease. The factors influencing *dosha* in body are diet and lifestyle. The diet dominant in similar properties of *dosha* increases the proportion of *dosha* in body. The diet which is opposite to the properties of *dosha* decreases the proportion of *dosha*. Therefore, diet which maintains equilibrium state of *dosha* in the body is advised for preservation of health. The endogenous diseases (*nija Vyadhi*) are caused by the vitiation of *dosha* (*Vata, pitta, and Kapha*). The diseases caused due to combination of two or three *dosha* are called as general (*Samanya*) diseases. The diseases caused due to vitiation of one *dosha* only are called as '*nanatmaja*' disease. If any disturbance in *doshas*, causes disease depending upon their *gunas*. It may be *ekadoshaja, dwidoshaja or Sannipataja*. The *doshas* are like a functional entity, it has the capacity to maintain health and has the capacity of vitiating the *dushyas*. It is only possible to *doshas* not for *dhatu*s and *malas*. If we concentrate on *Dosha Chikitsa* then person will be free from the diseases early. The *Doshas* are also responsible for formation of *Prakruta* and *Vaikruta of Shareera*. So, the *Doshas* are placed at 1st among *Tri dhatus*. Therefore, *Doshas* are considered as supreme in maintaining health and diseases.

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ILLUMINATION OF ISLAMIC HISTORY IN JADID'S WORKS

Abdukadirov Jasurbek

International Islamic Academy of Uzbekistan, Trainee Teacher at the Department of IRCICA-Chair for the Study of Islamic History and Source Studies

ABSTRACT

This article shows the activities of Jadids and their examples of creativity, including their views in the direction of Islamic history. Also, the works of Jadids on the history of Islam are compared and studied.

KEYWORDS: *Jadids, Islamic history, Turkestan, textbooks, Samarkand, Bukhara.*

ILLUMINATION OF ISLAMIC HISTORY IN JADID'S WORKS

It is known that the language, narrative style, and methodology of the textbooks written by the Jadids for new schools differed from each other. The main reason for this is probably the preservation of the old madrasa language and the new Uzbek literary language among them. Because Behbudi, Avloni and some other representatives of Jadid preferred the old language and wrote their articles, speeches and books on this basis. Also. Fitrat, Cholpon, Qadiri and similar representatives founded a new language of literature by using the language of Uzbek fiction. Among the Jadid teachers, Haji Muin also wrote and published textbooks. In 1908, he wrote "Rahnamoi Sawad" in Persian, and "Teacher" in Uzbek in cooperation with I. Rahmatullazoda. In this sense, there are some differences in the languages and methodology of jadid textbooks dedicated to the study of Islamic history.

Abdurauf Fitrat's "Mukhtasar History of Islam" textbook, as mentioned above, has a language and methodology very close to modern textbooks, while Abdulla Avlani's "Mukhtasar History of Anbiyya and History of Islam" textbook preserves its religious reforms, due to the existence of old language rules has a different style. There are books on Islamic history such as "Short History of Islam" by Abdulla Avlani of Jadid exponents "History of Mukhtasar Anbiya and history of Islam" and "Mukhtasar History of Islam" by Abdurauf Fitrat, "history of Mukhtasar Islam" by Adib such as Mahmudhaja Behbudiy (1914), Shokir Sulaiman (1918). Similarly, Munavvarqori Abdurashidkhanov also made a short Islamic history, although it was not published in Uzbek.

The structure of Abdurauf Fitrat's "Mukhtasar History of Islam" is somewhat similar to current textbooks, that is, it consists of parts and separate topics. Its first part is called "The Age of Happiness". Usually, the period of bliss refers to the period after the revelation to our Prophet. But Fitrat, in covering this part, also dwells on the social and political situation in the Arabian

desert on the eve of the Prophet's birth, and the situation in the neighboring countries.¹ For example, the constant struggle between Rome and Iran regarding the pre-Islamic situation, "the peoples of these countries would revolt, try to overthrow their kings under the pretext of various religious differences, in short, immorality, immorality, riots and raids were widespread in these countries," he writes.²

Allama Muhammad Khuzari ibn Sheikh Afifi, who lived in Cairo, Egypt at the end of the 19th century and at the beginning of the 20th century, in the preface of his historical work "Nuril Yakin" emphasizes that Islamic history books are large and boring: "Recently, I was deeply saddened by the fact that Muslims are not very interested in the biography of the Prophet and the history of Islam. The books written on this subject were too boring and too big to frighten people. That's why I decided to start this good work with the help of the scientist Mahmudbek Salim from Mansura and his encouragement.³ Judging from Huzari's confession, it is necessary to convey the history of Islam to people in a concise manner. In this sense, the Jadids classified the history of Islam briefly. Unlike Fitrat Awlani, he describes the situation of the Arabian Peninsula and the people there under a separate topic. Another aspect of it is that the textbook provides geographical information related to the event so that the students can clearly imagine and memorize the described events. "They called it the Arabian Peninsula (Jazirat al-Arab). The people of this place are mainly Arabs. The Arabian Peninsula was not as prosperous as the countries of Rum and Iran, but most of its land consisted of sand, and there were prosperous settlements only on some continents. The most famous and blessed of these continents is Hijaz, because Mecca and Medina are located in this continent.

"If you look at the map, you will see that one side of the Hejaz continent is the Red Sea and the other side is a desert."⁴ Awlani, unlike Fitrat, focuses on the ethno-national situation and ethno-cultural history of the Arabs in this regard, rather than geographical information. "Arabia is a large peninsula (island)

¹ Encyclopedia of Islam. -T., UzME publishing house, 2004. -P

² Abdurauf Fitrat "Mukhtasar History of Islam" -T.

³ Muhammad Khuzari ibn Sheikh Afifi "Nuril Yakin" -T

⁴ Abdurauf Fitrat "Mukhtasar History of Islam" -T 6.P



in the south-west of the Asian continent, where Arabs have been living since ancient times. As for the Arabs, they spread from the descendants of Hazrat Nuh's son named Sam and divided into three factions named Arabi Boyda, Arabi Oriba, and Arabi Musta'taraba. The Arabs of Boida are the people of Od and Thamud in the times of Hazrat Hud and Lut, and there is no historical information about them. The Arabs of Oriba are from the tribe of Bani Qaht, and in ancient times they built a great government called Bani Khamir in Yemen, they were the capital city of Sabo, and they claimed the land for more than two thousand years. Musta'rab Arabs are the people who were scattered in the Arabian continent from the wives of Hazrat Ismail from Jarham tribe. These Arabs used to make a living as merchants and sheep farmers.⁵

According to Fitrat, the states of Rum and Iran could not occupy these places because of the vast desert and the scattered people. The peoples living here did not have their own governments, like Rum and Iran, but lived in tribes, that is, in groups. All Arabs are ignorant and Bedouin. Those who made a living by shepherding and piracy. There was not a year when one tribe did not attack another, and blood was not spilled between them. The religion of all tribes was paganism. 360 idols (sanam) were installed in the Kaaba room in Makkah, and each tribe worshiped its own idol. While describing the socio-economic situation of the people of Hijaz, Fitrat mentions the customs of that society, such as gambling, alcoholism, and burying innocent babies alive when a girl is born.

"After sending many prophets, Allah has decided to send the last prophet, but he did not choose the prophet of the end times from the great countries like Rome and Iran, because the people in these countries are very immoral and immoral. and they became restless." If we analyze the opinion of Fitrat, the fact that the last prophet did not come from among the Ernoites and Rumis was because of their excessive immorality, and the Arabs were in a better situation than them. But many historians refrain from such opinions and do not clearly state such personal opinion. Hazrat Fitrat also provides brief information about the birth of the Holy Prophet.

In this regard, Awlani studies the story of Phil, the genealogy and birth of our Prophet in separate topics. "...on the 12th of Rab'ul-Awwal, 570 years of the Islamic calendar, on Monday, by the grace of God, our prophet Muhammad, peace be upon him, bin Abdullah was born in the city of Makkah from Amina."⁶ According to Awlani, "Our Prophet was born in the city of Makkah on the twelfth of Rabi ul-Awwal in the year of the elephant, in the 7th month of Naysan, and was named Muhammad by his grandfathers. At the time of the birth of the Prophet, may God bless him and grant him peace, his mother was not in pain, he did not labor, he was circumcised and his navel was cut. On their backs was a sign like a pigeon's egg. This is called "seal of prophecy". On that day, his grandfather Abdul Mutallib made a great feast (aqeeqah) and entertained many people. At that time, several unusual cases appeared. The

idols in the Kaaba fell to the ground. The year of the Elephant is 52 days before the Hijra, 571 AD, it corresponds to April 20 according to the Farangi calendar, and April 17 according to the Romanian and Russian calendar.⁷ Here, too, there are two different approaches to the birth dates of the Prophet in the two manuals. Fitrat shows the date 570 AD, while Awlani shows the date 571.

CONCLUSION

In this place, Fitrat clearly indicated the birth years of our Prophet, because Al-Khorazmi and Beruni conflated the event of Phil, which happened 50 days before the birth of our Prophet, and indicated that it was 570 years. The date of birth of Prophet Muhammad (pbuh) is one of the most controversial topics among historians. Some historians indicate the years 569 and 577, while others try to prove that 571 is the year of the Prophet's birth. The author of the book "Higher History" says: "The Prophet (pbuh) visited the world in the year of the Elephant, on Sunday night, on the 12th night of Rabiul Aval." Most Islamic scholars believe that this is the day. That is, they agreed that the 12th day of the first month of Rabiul, the night of Shtar to Monday, was the day of the true birth of Rasulullah (s.a.w.).⁸

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⁵ Abdulla Awlani "History of Mukhtasar Anbiya and history of Islam" - T.28. P

⁶ Abdurauf Fitrat "Mukhtasar History of Islam" T 7.P

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TEACHING ONLINE ENGLISH CLASS

Kasimova Yulduz Malikovna
Teacher, Namangan State University

ANNOTATION

In this article dedicates the most important aspects of online teaching. Some teachers choose Google Classroom, which is a free online learning management service for schools. It facilitates collaboration, creativity, file sharing and grading – and of course works well with all other Google platforms, like G Suite for Education, Google Docs, Google Slides. You'll be planning and delivering excellent online classes.

KEY WORDS: *flipgrid, teaching platform, Google Hangouts*

Аннотация: В данной статье освещены наиболее важные аспекты онлайн-обучения. Некоторые учителя выбирают Google Classroom, бесплатный сервис управления онлайн-обучением для школ. Он облегчает совместную работу, творчество, обмен файлами и выставление оценок — и, конечно же, хорошо работает со всеми другими платформами Google, такими как G Suite for Education, Google Docs, Google Slides. Вы будете планировать и проводить отличные онлайн-классы.

Ключевые слова: Flipgrid, обучающая платформа, Google Hangouts.

Alternatively, you could explore Flipgrid. Free for teachers to sign up, Flipgrid is designed for all levels of education – from pre-primary to postgraduate. It's especially good for sharing videos, collaboration and storytelling.

In addition, there's Zoom, a video conferencing and teaching platform which has exploded in popularity recently. It comes with a built-in interactive whiteboard, space for up to 100 students, file sharing, breakaway rooms for group work and chat features.

Skype is another option, however it will require all your students to download the software and create an account.

Google Hangouts is a useful tool if you have a Google account. Providing screen share, file sharing, live captions and chat, it's simple to use but is not specifically designed for teaching. Learners can sign in without a Gmail address.

As a teacher, you'll need to administer your course, create materials, broadcast your class, interact with your students and grade their work. For efficiency, you'll need a laptop, a desktop computer or a professional tablet.

Your students will also need a laptop or computer if they want to fully participate in your classes. However, smartphones or tablets with an internet connection can be used when there's no alternative. When delivering any kind of class online, you need to take safety and privacy seriously. The General Data Protection Regulation (GDPR) ruling in Europe means teachers (and their schools) have the responsibility to treat their students' data carefully, safely and with respect. GDPR may also affect educators who work outside of Europe if their students live abroad. Dedicate a portion of your first class to

helping your students get to grips with the technology. Even if you spend half of the first session doing so, it will save you time explaining things to individuals over and over again. Many online teaching and conferencing platforms also have guides and video explainers to help you get started.

You can even use these introductory videos as listening activities and play games on the whiteboard to try out functionality. Where possible, set aside a dedicated area in your home or office to teach from. Make sure you have all the visual aids and materials you need to hand. This will help you feel you are in a classroom and will help you be more spontaneous and creative during your lessons.

Encourage your learners to do the same and set up a designated study area. If your students are very young, ask their parents to help. This will help them get in the right frame of mind to focus on learning.

Additionally, ensure that nothing in view of the camera can identify your home address, any sensitive information like bank details, any book titles you wouldn't want to be associated with, any information about your children, etc. If this information is accidentally (or purposefully) shared online it can be a security risk. It can be difficult for students to adjust to online learning, especially when they're joining your class from their homes. Bring them into your lessons by starting all your classes with learning objectives.

Use your chat box or interactive whiteboard to share what you will cover during the class and explain what you expect from your students. This will help students focus and feel like they are in a regular classroom. At the end of the class, you can



reflect on what you've done together and whether you have achieved what you set out to do.

Do your best to develop a routine in the classroom. This will help your students feel they're in a safe learning environment and makes giving instructions faster and more efficient.

For example, you can start with a warmer activity that involves all the students (for example, a game, a review or a few student-centred discussion questions), then go into your class objectives and review homework or project work. Also, make sure you mix study with energising games or mini-breaks and have students share their ideas.

Online teaching lets you deliver instructions to all your students verbally and in written format. You can also ask students to confirm their understanding in chat boxes and speak to individuals if they are unclear about what to do. Unlike in a physical class, every student can do this at the same time – so you can check everyone is on track.

Depending on which platform you use, there's a good chance you'll also be able to share your materials, documents and presentation slides, and display and use other activities like online quizzes and games with the class, which will help them follow along with ease.

While it is true that there are many variables which may determine whether an approach is more optimal than others, there are certainly methods you can adopt to improve your classroom atmosphere. Through trial and error, teachers and psychologists throughout history have assessed different teaching methods to establish which one is most effective.

One size doesn't fit all, however. And that's why we've created a list of teaching methods which you should familiarize yourself with to become the best possible teacher. Whether you teach online or in-class, prepare to become the swiss army knife teachers. Here are our top picks when it comes to teaching methods in the TEFL classroom.

We can safely say that there aren't many methods as effective as Total Physical Response, or TPR. This is the case whether you are teaching in-class or online. TPR is a teaching method which heavily emphasizes body language to elicit response and consolidate memorization for students.

When you employ TPR in your classroom, it instantly creates a more engaging classroom atmosphere. You combine new vocabulary and target language with mimes and gestures. This doesn't mean just playing charades in the classroom. But to constantly communicate with your body as well as speech.

This is effective because it prevents 'L1 interference' or first language interference. Often, classrooms rely heavily on direct translations to learn a new target language. However, this can create many problems. For example, in Spanish, the adjective usually follows the noun, whereas in English the adjective precedes the noun. A Spanish student might start saying "you're big is dog" instead of "your dog is big", for example.

The idea that we were all without another language when we learned our first reinforce the Direct Method. Because of this, we should be able to learn our second without external support.

The teacher should create a classroom which has audio, visual, auditory and tactile activities to create a direct relationship between the language and the world. Instead of their language acquisition being facilitated by their first language, it is being facilitated independently within the context of the world.

Potential drawbacks are always present, though. The way a student learns their first and second language will always be different. With their first language, they grow up learning through the real world, the classroom, and social situations.

With their second language, however, they may fall into the trap of only learning English within the classroom. Depending on the teacher's methods, it may hinder progress. It is imperative that students utilize English outside of the classroom or in task based contexts to maximize language acquisition.

Students can use one style and it could create a positive reception in one class, however, evokes almost nothing in the next class. Teachers should be adaptable and ready to improvise, and they can always be ready if they familiarize themselves with diverse teaching methods.

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