

SJIF Impact Factor(2023) : 8.224

ISI I.F.Value : 1.188

ISSN (Online): 2455-3662

DOI : 10.36713/epra2013



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*EPRA International Journal of*

# MULTIDISCIPLINARY RESEARCH

*Monthly, Peer Reviewed (Refereed) & Indexed International Journal*

Volume - 9      Issue - 2      February      2023



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ISSN (Online) : 2455 - 3662  
SJIF Impact Factor(2023) : 8.224  
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EPRA International Journal of  
**Multidisciplinary  
Research**

Monthly Peer Reviewed & Indexed  
International Online Journal

Volume: 9 Issue: 2 February 2023

Indexed By:



Published By :EPRA Publishing

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## EPRA International Journal of Multidisciplinary Research (IJMR)

Peer Reviewed Journal|| Journal DOI URL: <https://doi.org/10.36713/epra2013>

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# ANALYSIS OF MTHFR GENE ALA22VAL POLYMORPHISM SIGNIFICANCE IN THE RISK OF MYOCARDIAL INFARCTION

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## ABSTRACT

*As the assessment of the association between the Ala222Val polymorphism in the MTHFR gene in the study groups shows, the calculated relative risk of developing MI in patients with a history of COVID-19 increased when the Ala/Val, Val/Val genotypes and the Val allele were detected, and the risk of developing MI in patients without COVID-19 in history increased when an unfavorable Val allele and an unfavorable Ala/Val genotype were detected.*

**KEYWORDS:** myocardial infarction, COVID-19, Ala222Val 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. 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 [6, p. 162; 3, p. 683]. 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 [5, p. 2403].

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. To this end, we studied the role of the Ala222Val 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.

## 2. PURPOSE OF THE STUDY

To study and evaluate the contribution of the Ala222Val 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

An assessment of the level of association of the Ala222Val polymorphism in the MTHFR gene in patients with COVID-19 associated MI and controls showed that the proportion of the Ala allele and the favorable Ala/Ala genotype in comparison with the control group was



significantly lower and amounted to 77.5% versus 85.0% and 56.6% versus 73.3%. All this indicates a protective effect against the development of myocardial infarction in patients with COVID-19. Statistical data processing revealed a significant increase in the frequency of the Val allele in patients with COVID-19 associated MI compared with conditionally healthy donors. The detection of an unfavorable Val allele in patients with a history of COVID-19 increased the risk of MI by 1.9-fold compared with the control group (25.5% vs. 15.0% at  $\chi^2=4.8$ ;  $P=0.05$ ; OR=1.9; 95% CI: 1.07–3.5). The frequencies of Ala/Val, Val/Val genotypes Ala222Val in the MTHFR gene in the studied groups of

patients with COVID-19 associated MI and controls were: 35.8%, 7.5% versus 23.3% and 3.3%, respectively. There was a trend towards the risk of MI in patients with a history of COVID-19 in the presence of Ala/Val, 1.8-fold ( $\chi^2=2.6$ ;  $P=0.2$ ; OR=1.8; 95% CI: 0.88–3.85) and Val/Val, 2.4 times ( $\chi^2=1.3$ ;  $P=0.3$ ; OR=2.4; 95% CI: 0.53–10.58) (Tab. 1).

The results of the analyses show that the presence of these genotypes of the JAK2V617F gene does not increase the chance of detecting ET compared to patients with PMF ( $\chi^2=0.1$ ; OR=0.9; 95% CI: 0.4–2.03;  $p=0.9$  and  $\chi^2=0.1$ ; OR=1.1; 95% CI: 0.49–2.48;  $p=0.9$ ) (Table 1).

**Table 1. Association between the Ala222Val 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				$\chi^2$	p	OR	95%CI
	COVID-19 associated MI		Control group					
	n	%	n	%				
Ala	79	74,5	153	85,0	4,8	p = 0,05	0,5	0,29 - 0,93
Val	27	25,5	27	15,0	4,8	p = 0,05	1,9	1,07 - 3,5
Ala/Ala	30	56,6	66	73,3	4,2	p = 0,05	0,5	0,23 - 0,97
Ala/Val	19	35,8	21	23,3	2,6	p = 0,20	1,8	0,88 - 3,85
Val/Val	4	7,5	3	3,3	1,3	p = 0,30	2,4	0,53 - 10,58

In the studied subgroup of patients with MI without a history of COVID-19 virus infection and in the control group, the frequency of the wild Ala allele was 75.6% versus 85.0%. And the proportion of the mutant Val allele was 24.4% and 15.0%, respectively. The results of the study showed an insignificant decrease in the frequency of the favorable Ala allele (at  $\chi^2=3.4$ ;  $P=0.1$ ; OR=0.5; 95% CI: 0.29–1.04) and a trend towards an increase in the proportion of the mutant allele Val in patients with MI without a history of COVID-19 virus infection compared with conditionally healthy donors (at  $\chi^2=3.4$ ;  $P=0.1$ ; OR=1.8; 95% CI: 0.96–3.48). When an unfavorable Val marker was detected, the risk of developing MI increased by 1.8 times. In the subgroup of patients with MI without a history of COVID-19 virus infection and in the control group, the distribution of Ala/Ala, Ala/Val, Val/Val Ala222Val genotypes in the MTHFR gene was: 53.7%, 43.9%

and 2.4% against 73.3%, 23.3% and 3.3% respectively. These studies showed a significant decrease in the proportion of the wild Ala/Ala genotype compared with the control group (at  $\chi^2=4.9$ ;  $P=0.05$ ; OR=0.4; 95% CI: 0.2–0.9), which indicates a protective effect of this genotype against the development of MI. A significant increase in the frequency of the unfavorable marker Ala/Val ( $\chi^2=5.7$ ;  $P=0.03$ ; OR=2.6; 95% CI: 1.18–5.58) was found in the subgroup of patients with MI without COVID-19 virus infection. 19 in history compared with the control group. When an unfavorable marker Ala/Val was detected, the risk of developing MI increased by 2.6 times. An insignificant decrease in the mutant marker Val/Val ( $\chi^2=0.1$ ;  $P=0.8$ ; OR=0.7; 95% CI: 0.07–7.12) was found in the subgroup of patients with MI compared with the control group. When carrying the Val/Val mutant genotype, there was no risk of MI (Table 2).

**Table 2. Association between the Ala222Val 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				$\chi^2$	p	OR	95%CI
	MI without COVID-19		Control group					
	n	%	n	%				
Ala	62	75,6	153	85,0	3,4	p = 0,10	0,5	0,29 - 1,04
Val	20	24,4	27	15,0	3,4	p = 0,10	1,8	0,96 - 3,48
Ala/Ala	22	53,7	66	73,3	4,9	p = 0,05	0,4	0,2 - 0,9
Ala/Val	18	43,9	21	23,3	5,7	p = 0,03	2,6	1,18 - 5,58
Val/Val	1	2,4	3	3,3	0,1	p = 0,80	0,7	0,07 - 7,12

The distribution frequency of Ala222Val alleles in the MTHFR gene in groups of patients with MI without a

history of COVID-19 virus infection and with COVID-19 associated MI: (wild) Ala allele 74.5% vs. 75.6% and





(unfavorable) Val allele 25, 5% versus 24.4% respectively. The results showed that the wild Ala allele and the unfavorable Val allele were found in insignificant amounts in both groups of patients (at  $\chi^2=0.0$ ;  $P=0.9$ ;  $OR=0.9$ ; 95% CI: 0.48–1.84 and  $\chi^2=0.0$ ;  $P=0.9$ ;  $OR=1.1$ ; 95% CI: 0.54–2.06). Calculation analyzes showed an insignificant increase in the number of favorable Ala/Ala genotype (56.6% versus 53.7% at  $\chi^2=0.1$ ;  $P=0.8$ ;  $OR=1.1$ ; 95% CI: 0.5–2.56) and a non-significant decrease in the frequency of the unfavorable marker Ala/Val (35.8% versus 43.9% at  $\chi^2=0.6$ ;  $P=0.5$ ;

$OR=0.7$ ; 95% CI: 0.31–1.64) in the group of patients with COVID-19 associated MI than in the group of patients with MI without a history of COVID-19 virus infection. A trend towards an increase in the frequency of the unfavorable Val/Val genotype was revealed (7.5% versus 2.4% with  $\chi^2=1.2$ ;  $P=0.3$ ;  $OR=3.3$ ; ). In the group of patients with a history of COVID-19, when this marker was detected, the risk of developing MI increased 3.3 times more than in the group of patients without a history of COVID-19 (Table 3).

**Table 3. Association between the Ala222Val 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				$\chi^2$	p	OR	95%CI
	COVID-19 associated MI		MI without COVID-19					
	n	%	n	%				
Ala	79	74,5	62	75,6	0,0	p = 0,90	0,9	0,48 - 1,84
Val	27	25,5	20	24,4	0,0	p = 0,90	1,1	0,54 - 2,06
Ala/Ala	30	56,6	22	53,7	0,1	p = 0,80	1,1	0,5 - 2,56
Ala/Val	19	35,8	18	43,9	0,6	p = 0,50	0,7	0,31 - 1,64
Val/Val	4	7,5	1	2,4	1,2	p = 0,30	3,3	0,39 - 27,18

## 5. CONCLUSION

As the assessment of the association between the Ala222Val polymorphism in the MTHFR gene in the study groups shows, the calculated relative risk of developing MI in patients with a history of COVID-19 increased when the Ala/Val, Val/Val genotypes and the Val allele were detected, and the risk of developing MI in patients without COVID-19 in history increased when an unfavorable Val allele and an unfavorable Ala/Val genotype were detected.

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# IMPLEMENTATION OF IMPROVED LANDSCAPING PROCESS BASED ON ISO 21500:2021 AT SOUTH EASTERN UNIVERSITY OF SRI LANKA

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## ABSTRACT

*Landscaping of the South Eastern University of Sri Lanka faces problem in achieving its standard quality due to, environmental challenges lack of planning and resource allocation. In order to improve the landscaping activities by adopting with ISO 21500:2021 project planning and portfolio Management-Concepts and practices were suggested as an appropriate practice. ISO 21500:2021 is a systematic method used in project planning and implementation.*

*The objective of this study is to create improved lawn maintenance and landscaping method using ISO 21500:2021. In order to succeed in this project total landscaping area were divided into eight manageable plots and resources were reallocated in a way to attain the completion of grass cut and landscape cycle within a specified period. Accelerated process can be incorporated accordance with time to time requirements.*

*According to the identified critical path and non-Critical path, the resources were allocated and used in optimum level. The cycle time has been reduced and the quality output has been achieved.*

**KEY WORDS:** ISO 21500:2021, Critical path, Non- Critical path, Lawn maintenance, Landscaping

## INTRODUCTION

The Landscaping of a University is a vital part not only to attract people, but also it contributes a lot in teaching, learning and research activities by providing a conducive environment. Lawn maintenance is the main factor in overall landscaping. Lawns are open green spaces, highly accepted and massively prefabricated landscape design elements. (Ignatieva & Hedblom, 2018).

South Eastern University of Sri Lanka is located in the coastal belt of the Ampara district which falls under the Agro climatic zone DL2. Climate is a meager challenge to maintain the Landscape of South Eastern University of Sri Lanka. As per the land valuation in 2011 the total extent of land area in the Oluvil premises of the South Eastern University is 178.98 acres (Annual Report, 2018) out of which 120.25 acres is the area with have green cover. Since the University is in Dry zone, it experiences extreme dry seasons in April to August and monsoon rain during November to February. Therefore, there are two types of Landscape exposed to customers depending on prevailing climatic conditions that are the brown landscape in the dry season and green landscape in the rainy season. Proper maintenance of the lawn is important to protect the aesthetic value of Landscape in both seasons.

Lawn pattern of this University is complicated. In some of the areas like in the entrance, in front of Administrative Blocks and in front of the Faculty offices have turf grass. This is homogenous and easy to maintain. Other areas are being covered with conventional grasses and wild grasses. They are heterogeneous in nature and the land pattern also undulates. Therefore, the growth rate and flowering pattern of the plants are differing. Therefore, it is very difficult to maintain the status of the lawn with a pleasant look.

Maintenance of this lawn has been operated at South Eastern University of Sri Lanka in two ways. One is on a regular basis. Moving the Lawn mower and Brush cutter starting from one end to other end and completing a full round. Here the problem is before the completion of a round, the starting areas get over growth of the grass.

The second way is priority basis. On a special request for special events like conducting symposium, opening ceremony, convocation etc. particular area considered and maintained on priority basis.



### Research problems

In order to make a successful landscape and good appearance of land throughout the year, maintenance of the lawn with proper grass height is important. But in an undulated land with naturally erect conventional grasses, it is a difficult job. Due to different growth rate and flowering style of grasses, it needs frequent and systematic maintenance to keep up the standard. Due to lack of planning in the maintenance process of the lawn, it gets less appearance before the completion of every regular cycle of lawn maintenance operation.

According to the current lawn maintenance records and practices at the landscape division of the SEUSL, the current operation cycle is not based on plant growth patterns and flowering style. It is commonly handled considering the priority of locations and time to time requests obtained from the departments concerned. This kind of improper maintenance of the lawn frequently breaks the regular cycle of the clearance of lawn and leads to some areas with good appearance and the other area with dull appearance. Therefore, a systematic methodology is required to address this problem.

Current status	Desired status
Existence of elongated peduncle with flower	No elongated peduncle with flowers
Existence of different size grass growth	Evenly grown grass
Existence of unmanaged areas	Minimize unmanaged areas

Table 1: Current status and desired status of Landscaping

### Needs for new management system for desire State

1. Elongated peduncles with flowers make an unpleasant appearance of the lawn. Therefore, it should be maintained in a regular planned manner.
2. Due to delays in operating the current grass cut cycle, some areas get uneven plant growth. Therefore, regularizing the cycle according to the growth pattern is needed.

### Objective of the study

The general objective of this study is to create improved lawn maintenance and landscaping method to keep it up to the standard using ISO 21500:2021. It can be implemented by reallocating the resources by separating the critical path activities and non-critical path activities and reducing the total cycle time. The objective of this study is broken into three parts as given in the following table.

Standard	Performance	Conditions
<ul style="list-style-type: none"><li>• 3-4 inches grass height every time all over the area in general.</li></ul>	<ul style="list-style-type: none"><li>• Maintaining grass height in an appropriate level in all over the area.</li></ul>	<ul style="list-style-type: none"><li>• Using system chart and Gantt chart based on the standards of ISO 21500:2021 International Standard for Project Management. Without affecting the quality of the process</li></ul>
<ul style="list-style-type: none"><li>• Operate a system with an operation cycle according to studied grass growth and condition.</li></ul>	<ul style="list-style-type: none"><li>• Operate through identified operation cycle with manageable plot size according to growth pattern and priority of location.</li></ul>	<ul style="list-style-type: none"><li>• Using system chart and Gantt chart based on the standards of ISO 21500:2021 International Standard for Project Management. Plot size should match with the total coverage time and resources available.</li></ul>

Table 2: Objectives of the study

### Significant of the Study

This study is based on the ISO 21500:2021 International Standard for Project Management. This study is important to reduce the operation cycle time of the lawn maintenance at South Eastern University of Sri Lanka and make a systematic maintenance schedule to keep ever beautiful grassland.

## REVIEW OF LITERATURE

### Important of Landscape in Universities

The function of University's landscape is not only to merely beautify the surrounding and to provide shade or canopy cover. But it should also assist the learning process. Landscape by the way of plenty of green plants and lawn cover reduces the temperature of the environment. Refresh the air by producing oxygen and taking carbon dioxide from the air, during the photosynthesis process (Wells, 2000). Even landscape helps to a certain extent to reduce environmental temperature and also plays a role as a



security element, contributing to establish students' mental and psychological steadiness. Landscape provides aesthetic value (Mohd Hisyam Rasidi et al., 2013). Landscape plays an important significant role in reducing emotional pressure among students (Ke-Tsung Han, 2009). Students' interaction with plants could contribute to reduce the negative emotions, increase positive thoughts, reduce physical pressure and develop the student's interest towards learning (Taylor et.al. (2001); Harting et al. (1991); Kaplan & Ryan (1998) and Wells (2000)).

The interaction between man and elements of the natural environment such as plants, water or outdoor surroundings, make the mind of students towards experiencing peace, feel freehand and relaxed (Kaplan & Ryan 1998). The theory of evolutionary psychology is about the emotional reaction which plays a significant role in determining an individual's attitude towards the environment (Ulrich 1983; Matsuoka 2010).

### **Maintenance of lawn**

In General lawns are categorized as two types. They are natural lawns and artificial lawn. From the very beginning of the public parks movement in the mid-19<sup>th</sup> century lawns have served the function of public recreation (Jenkins, 1994). Developments of lawns have required both space (land) and labour to provide constant management. Lawn are developed for aesthetic pleasure, as well as for sports or other outdoor recreational purpose (Beard and Green, 1994). The lawn has become a central element in landscapes. (Wong and Harivandi, 2009). Lawns are utilized as a playing surface as it controls erosion and dust generated by huge foot traffic. Further lawns are used as a cushion for players in sports such as rugby, football, soccer, cricket, baseball, golf, tennis, and hockey (Reynolds and Flint, 2009).

Lawn care is crucial, despite the fact that it seems like a difficult chore for most homeowners. Effective lawn maintenance increases air quality while keeping their home's appearance (Sachs, 1996). Grass maintenance guarantees that their lawn can survive the challenges from weeds and insects that might harm it. By having a thorough lawn care and maintenance regime, you can ensure that your customers' flowers, herbs, grass, and hedges are disease-resistant (Owen and Lanier, 2010).

### **ISO 21500**

ISO 21500 is an International Standard, provides high-level description of concepts and processes that are considered to form good practice in project management. Projects are placed in the context of programmes and Project portfolios; however, this International Standard does not provide detailed guidance on the management of programmes and project portfolios (ISO, 2012). It was intended to provide generic guidance, explain core principles and what constitutes good practice in project management (retrieved from <https://www.iso.org/standard/75704.html>).

### **PCDA cycle of ISO 21500**

The outcome of the management system develops based on the above international standard will be achieved using the PDCA (P- Plan, D- Do, C- Check, A- Action). PCDA cycle is heart of the ISO standard.

### **ISO 21500 in project Management**

There are number of methodologies used for project management. These methodologies are usually based on organizational characteristics and good practice standards. In the particular case of the standard ISO 21500 (ISO, 2012), in particular focused on sharing knowledge and developing relevant International Standards that support innovation and provide solutions to global challenges. The standard provides concepts about organizational strategy, life cycle and the difference between projects and operations (Nilton Takagi and Joao Varajao, 2021)

## **METHODOLOGY**

### **Data Collection Methods**

Data were collected using the following methods:

1. Field Visit and direct observations
2. Discussion with the responsible parties.

The process of lawn maintenance at South Eastern University of Sri Lanka has been observed directly during field visits and discussed with the Curator, Landscape Supervisors and Work Aides (Skilled and unskilled).

### **Population and Sampling**

Out of total landscaping area of the South Eastern University, all landscaping process of the lawn area maintenance was selected as purpose sampling, to prepare an improved landscaping to address this issue.

### **Instrumentation of Data Collection**

Data were collected by answering the following questionnaire based on ISO 21500 Standard and the ISO 9001:2015.

1. Who are the external/internal customers? (External/Internal customers)
2. What are the requirements of external/internal customers? (Output)



3. What is the purpose of the intended system? (Outcome)
4. What are the resources available for the intended system? (Resources)
5. What is the system boundary? (Scope)
6. What is the process to transform the resources (input) to achieve the objective (outcome) of the system? (Transformation)
7. How to compare the desired results (outcome) and the achieved results and identify the gap? (Stimulus)
8. How to respond with the resources to bridge the above gap for having the desired results? (Response)
9. How to establish records to provide evidence of conformity to above requirements? (Control of records)
10. How to audit the above steps to ensure continual improvement? (System audit)

### Conceptual Framework (Analysis Plan)

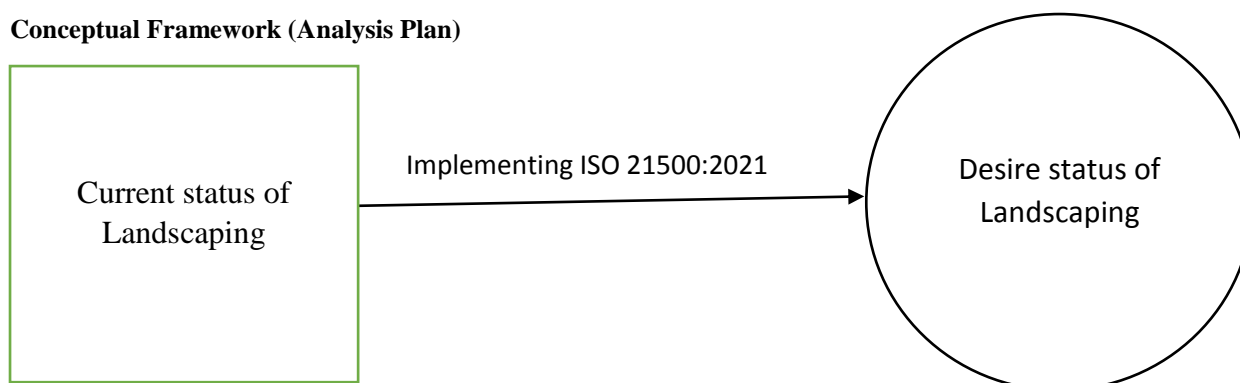


Figure 1

### Project Planning Process

1. Set the purpose of the project - **Project Outcome.**
2. Identify the available resources and categorize them - **Resource Pool (3Ms)**
3. Write the process begin to end - **Process Chart**
4. Write the process end to begin - **System Chart**
5. Send the customer requirements across the process - **Kanban System (Management Information System)**
6. Build Quality standard into each activity of the process - **Quality Plan**
7. Develop an effective & efficient method for each activity by giving top priority for quality standards - **Method Database**
8. Allocate optimum resources into each activity by considering the identified method - **Allocate Resources**
9. Develop the expected time standard for each activity - **Time Plan**
10. Align the resources with time by considering connectivity of activities (series and parallel) and identify critical activities - **Resource Schedule with Critical Path (Gantt Chart)**
11. Balance the resources for maximum utilization of resources and reducing the project duration. - **Balanced Resource Schedule with new critical path. (Revised Gantt Chart)**
12. Add more resources to critical activities and crash the programme - **Accelerated Project**
13. Use appropriate technology and reengineer the project process - **Reengineered Project**
14. Check the actual performance of each activity against the standard performances - **Project Monitoring System**
15. Identify the possible stimuli from the above check and identify the appropriate actions. – **Management Response System**

### Using ISO 21500 to plan Lawn Maintenance:

In this study, in order to develop an improved lawn Maintenance system, the total area has been evaluated for the requirement of the landscape. According to the type of grass, flowering style of the grasses and prominence of the area, the total landscaping area has been divided into small manageable plots. Available resources and time duration were considered when estimating the plot area. According to the above factors, the cycle time has been estimated through a system chart.

The following rules have been considered while drawing the system chart.

- There should be only one output from a given activity, but there can be many inputs to a given activity.
- Underline the variables and take the variables backward from the activity box.

Following standards have been followed throughout drawing the system chart and the Gantt chart.

- The presentation of the resources has to be presented at the top of the square. Resources should be included in the hexagon.

The following formats have been used to draw the ideal system management chart.



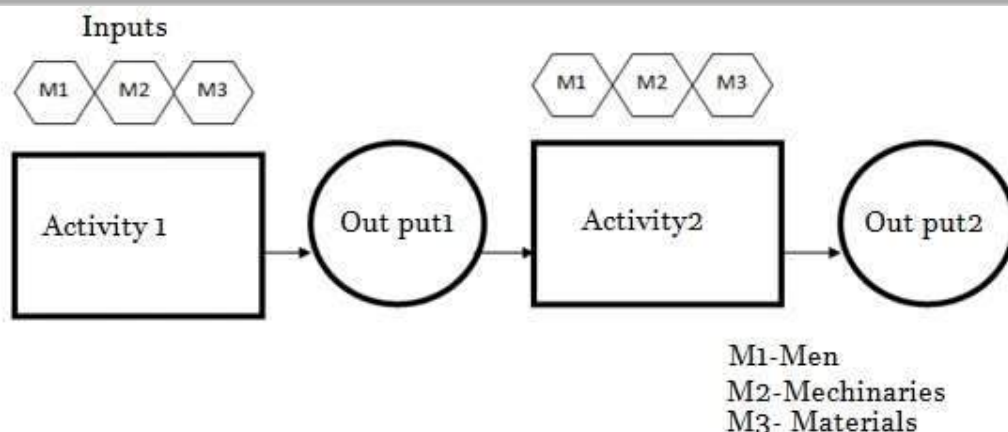


Figure 2: System chart format

This project was conducted according to the ISO 21500:2021 international project management standard under the following framework.

### Scope and Limitation

In this study, attention paid only for the Lawn maintenance process and Landscaping of South Eastern university of Sri Lanka. Designing and establishing the Landscaping, plant propagation activities and nursery managements are not included in this process considering the time constraint.

## DATA PRESENTATION

### Current Management System

#### 1. WHO ARE THE EXTERNAL AND INTERNAL CUSTOMERS?

Students and staff of South Eastern University of Sri Lanka, officers of relevant Ministry, Departments and Institutions and General public visiting the University are the External Customers.

Curator, Landscape Supervisors and the employees of the Landscape Division of South Eastern University of Sri Lanka are the internal customers.

#### 2. WHAT ARE THE REQUIREMENTS OF EXTERNAL CUSTOMERS? (OUTPUT)

Standard requirement of customers for an activity/ service is Right product with Right quality in Right time. In the case of landscaping, standard customer requirements are:

**Right product** : Aesthetic Environment

**Right quality** : Good quality of Landscaping and lawn maintenance

**Right time** : Ever

#### 3. WHAT IS THE PURPOSE OF THE INTENDED SYSTEM? (OUTCOME)

Improve the lawn maintenance up to standard level by reducing the overall total cycle time by a planned operation process.

#### 4. WHAT ARE THE RESOURCES AVAILABLE FOR THE INTENDED SYSTEM? (RESOURCES)

Resources used in a study can be categorized as Men (M1), Machines and Equipment (M2), and Material and Services (M3). In the South Eastern University of Sri Lanka following resources are available for the Landscaping division.

### Human Resource (M1)

- |  |    |
|--|----|
| 1. Supervision Level Staff: Curator and Landscape Supervisors) | 02 |
| 2. Lawn Mower operators  | 03 |



3. Brush cutter operator	05
4. Gardener	01
5. Tree cutter	01
6. Two wheel tractor operator	01
7. Works Aide	04

#### Machines and Equipment (M2)

1. Lawn mower	03
2. Brush cutter machine	05
3. Pole pruner	01
4. Garden equipment	10
5. Pruner	08
6. Secateurs	05
7. Lopper	05

#### Material and Services (M3)

1. Fuel
2. Gloves
3. Garden shoe
4. Repairing Services
5. Manure
6. Half moon
7. Trimmer line
8. Fertilizer
9. Chemicals

#### 5. WHAT IS THE SYSTEM BOUNDARY? (SCOPE)

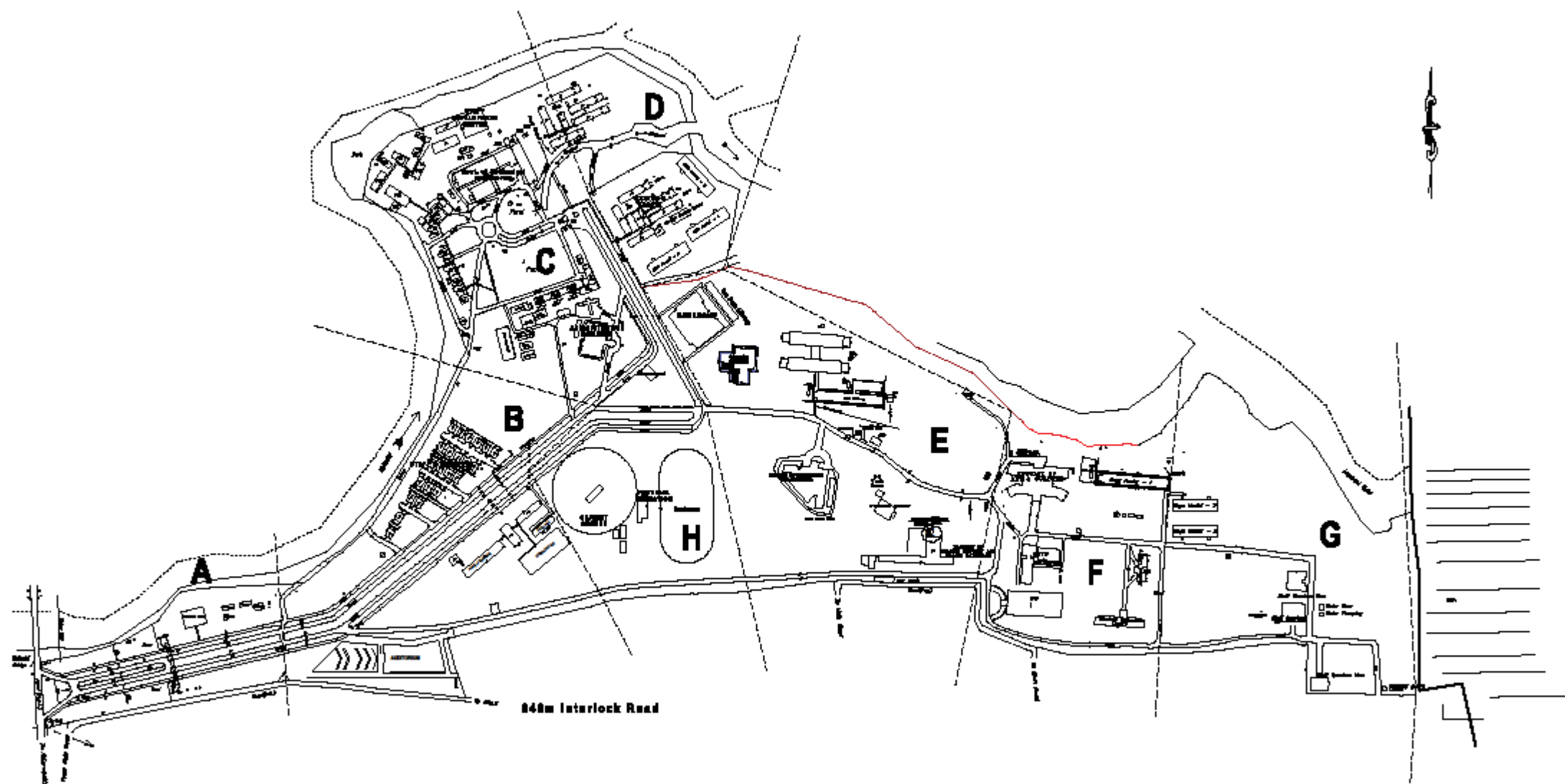
The system boundary of this project is planning of the landscape process to the completion of a full cycle of grass land maintenance.

#### 6. WHAT IS THE PROCESS TO TRANSFORM THE RESOURCES (INPUT) TO ACHIEVE THE OBJECTIVE (OUTCOME) OF THE SYSTEM? (TRANSFORMATION)

#### Planning

The total land area to be maintained with landscape set up has been identified. Accordingly, 145 Acres land area has been identified to be maintained with landscape cover. In Order to identify the actual land area Google mapping has been used. The identified Land area has been divided into manageable plots.

Based on the previous studies and experiences, the land area has been divided into eight Zones according to the handling capacity of a set of available resources. The plots were named as A, B, C, D, E, F, G, and H.



**LAYOUT PLAN**  
**SOUTH EASTERN UNIVERSITY OF SRI LANKA- OLUVIL**



The divided plots were earmarked into two groups according to the intensity of grass cutting requirement. Plots A, B, C, H to be maintained in every 5-6 days interval since prominent Buildings, entrance and main faculties are there in these zones. Plots D, E, F, G to be maintained in every 12-15 days interval.

Schedule a grass cut and maintenance cycle for earmarked area

- Grass cut cycle A-B-C-H-D-E-A-B-C-H-F-G

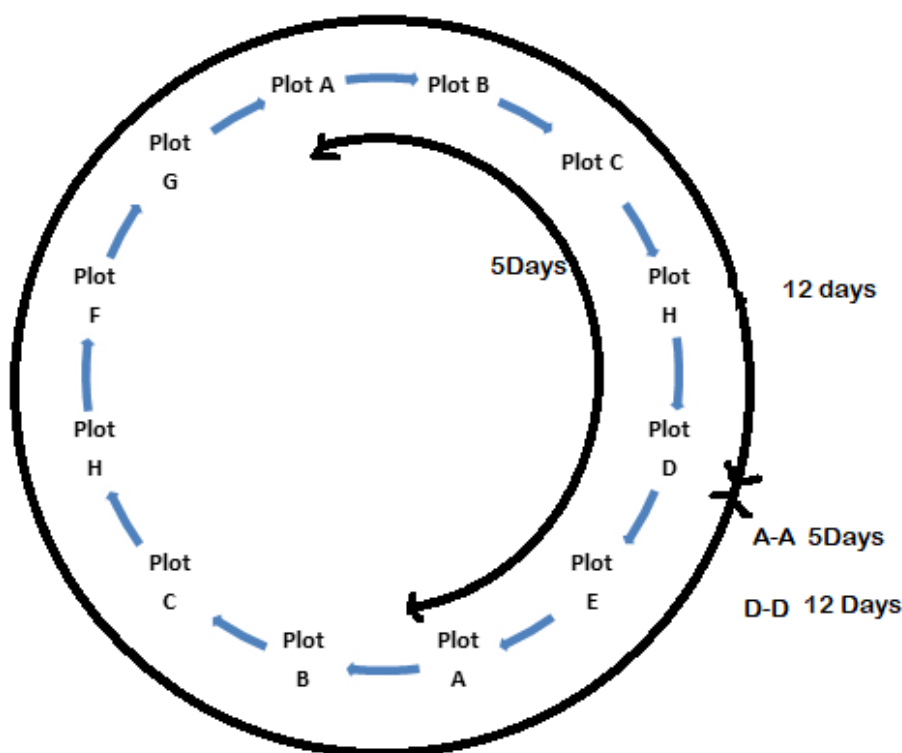


Figure 3: Plot Maintenance Schedule

According to the previous experience, field knowledge the border plants (hedges of Ixora and Duranda) have to be pruned once a month interval. The following places at South Eastern University are with Boarder plant hedges.

Main entrance (plot A), Faculty of Engineering (Plot B), Administrative building (Plot C), hostels (plots D, E and F) and Library (plot E).

The pruning cycle has been handled in the following order.

Plot A – Plot B - Plot C- Plot D – Plot E- Plot F.

### Implementation

The Grass cutting has been commenced in a cycle manner starting from plot A to Plot G in the following order.

A-B-C-H-D-E-A-B-C-H-F-G

In order to complete a plot in a day period the following resources were assigned.

- a Curator
- b Landscape Supervisor
- c1 Lawn Mower operator 1



- c2 Lawn Mower operator 2
- c3 Lawn Mower operator 3
- d1 Brush cutter operator 1
- d2 Brush cutter operator 2

Identify and prune the Boarder plants. Boarder plants have been maintained at the Administrative building (Plot C), Main entrance (plot A), hostels (plots E, D and F) Library (Plot E) and Faculty of Engineering (Plot B). Estimated time for the pruning of Boarder plants are:

A- 5days, B- 2days, C- 2days, D -3 Days, E-7days, F – 5days .

Do pruning, branch cutting in identified trees/area (underbrush) (8 days)

Prepare a manuring schedule for ornamental plants and grass land – It will be done along with pruning activities. Shape the beds and manuring of the ornamental plants and grass land. Manuring will be individually calculated in respect of the plant type.

Check for overall completion conducted twice per month. In mid of the month overall completion checking done by Curator and supervisors for first round of lawn maintenance and the end of the month pruning and manuring round completion was checked.

7. HOW TO COMPARE THE DESIRED RESULTS (OUTCOME) AND THE ACHIEVED RESULTS AND IDENTIFY THE GAP? (STIMULUS)

- Considering whether the target quantity of land area (plots) has been achieved.
- Considering whether the quality standards of the lawn maintenance have been achieved.
- Considering whether the cycle time standard is achieved

Activity	Achieved Result	Desired Result	Gap
Quality	In some area excess growth of lawn have been identified	Even and fully maintained lawn	Reduced cycle period
Quantity	Some portion of the earmarked area have been not covered	No unmanaged area	Time schedule to be followed
Time	Cycle breakage due to non-availability of alternative HR and equipment	Completion of work in actual cycle period	Alternative trained staff and good repair serve

Table 4 : Stimulus

8. HOW TO RESPOND WITH THE RESOURCES TO BRIDGE THE ABOVE GAP FOR HAVING THE DESIRED RESULTS? (RESPONSE)

After implementing the proposed system time taken for a complete cycle of landscape process has been reduced. Resource also allocated according to the need. The non-critical activities can be completed by parallel with critical activities. It can reduce the total time of the project.

9. HOW TO ESTABLISH RECORDS TO PROVIDE EVIDENCE OF CONFORMITY TO ABOVE REQUIREMENTS? (CONTROL OF RECORDS)

The records are taken by inspecting the actual completion of the process cycles. Lack of resources and excess resources are identified and adjusted plot by plot.

10. HOW TO AUDIT THE ABOVE STEPS TO ENSURE THE CONTINUAL IMPROVEMENT? (SYSTEM AUDIT)

The process implemented in different season and shortcoming in resources and other limitation were rectified.

## DATA ANALYSIS

1. Set the purpose of the project - **Project Outcome.**

Since the outcome of the Landscaping creates mental satisfaction to the customers, the purpose of the intended system is also valued in ordinal terms.

- 2. **Target product** :-Aesthetic / Pleasing environment
- 3. **Target quality** :- Fascinated the Visitors and Officers
- 4. **Target time** :- Ever

2. Identify the available resources and categorize them - **Resource Pool (3Ms)**

They were given with the following notations to use in the system charts and Gantt charts.





### Men (M1):

Notation	Resource
a	Curator
b	Landscape Supervisor
c1	Lawn Mower operator 1
c2	Lawn Mower operator 2
c3	Lawn Mower operator 3
d1	Brush cutter operator 1
d2	Brush cutter operator 2
e1	Gardener 1
f	Tree Cutter
g1	Works Aide1
g2	Works Aide

### Machines and Equipment (M2):

Notation	Resource
j1	Lawn mower 1
j2	Lawn mower 2
j3	Lawn mower 3
k1	Brush cutter machine 1
k2	Brush cutter machine 2
m1	Pole pruner
m2	Hedge trimmer
m3	Garden equipment
m5	Pruner
m6	Secateurs

### Material and Services (M3):

Notation	Resource
n	Fuel
o	Gloves
p	Garden shoe
q	Repairing Services
r	Manure
s	planning sheet
t	Half moon
u	Trimmer line

### 3. Write the process begin to end - **Process Chart**

#### Planning

- # Identify the grass land to be maintained (3 hours)
- # Divide the identified grass land into manageable plots (5 hours)
- # Earmark the divided plots according to the intensity of the grass cut need (0.5 day)
- # Schedule a grass cut and maintenance cycle for earmarked area (0.5 day)

#### Implementation

- # Do the grass cut in plots A-B-C-H-D-E-A-B-C-H-F-G (12 days). Two repeat cycles/ month
- # Do pruning of the Boarder plants In the order A-B-C-D-E-F (24 days)- Single cycle
- # Do pruning, branch cutting in identified trees/area (8 days)
- # Prepare a manuring schedule for ornamental plants and grass land (0.5 day)
- # Shape the beds and manuring of the ornamental plants and grass land
- Check for overall completion (4 days)
- # Overall Beautification and Cleaning of pruned and Grass cut plots (0.5 day)

### 4. Write the process end to begin - **System Chart**

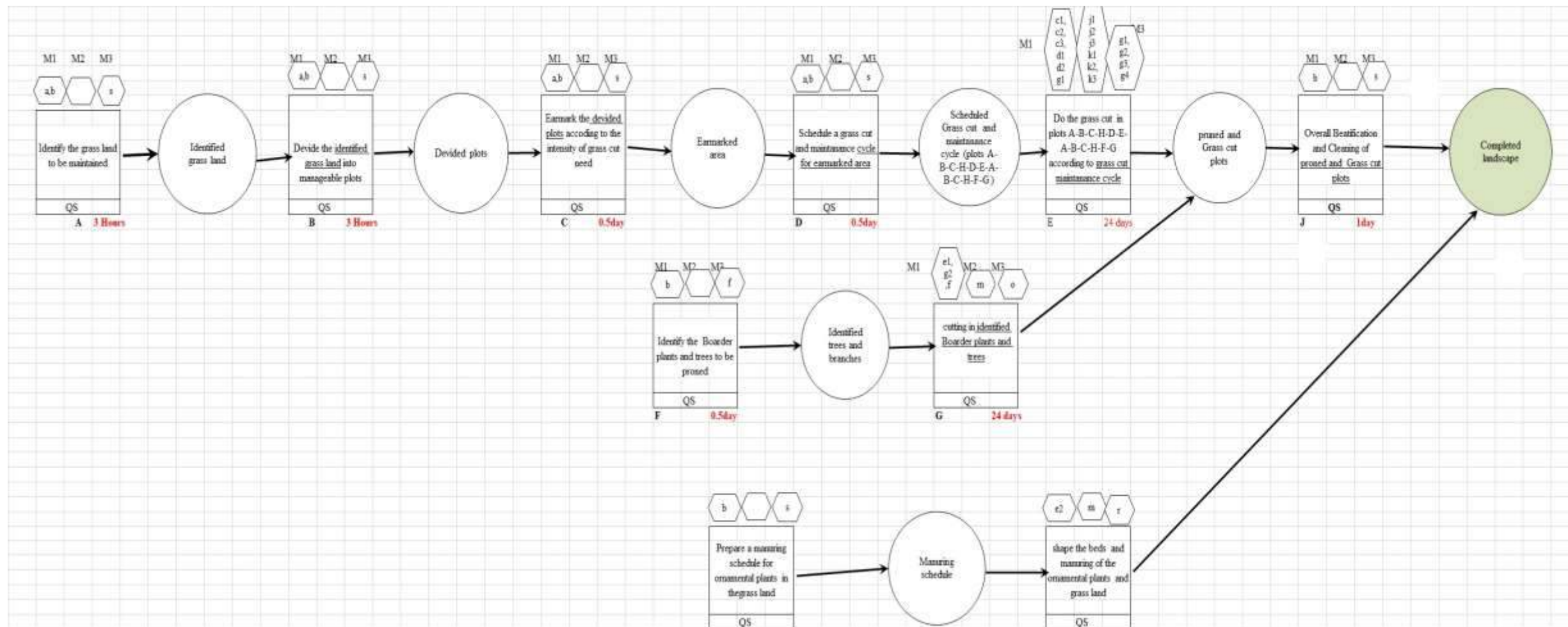


Figure 4: Whole system chart



5. Build Quality standard into each activity of the process - **Quality Plan**

Activity	Desired Quality
A	Identify actual grass land to be maintained.
B	Divide the area in to plots which is manageable in one-day using available resource set.
C	Earmark the plots according to the intensity of grass cut actual cycle time.
D	Prepare Possible grass cut cycle according to the time duration.
E	Complete a thorough and neat grass cut accordance with standard grass height.
F	Identify the area with board hedges and trees to be pruned.
G	Did pruning and tree cutting with specified height.
H	Prepared Manuring schedule for ornamental in the grass in proper interval.
I	Shape the beds and adding correct manure at correct time at the recommended rates.
J	Final observation for beauties done by supervisors and standartizd.

**Table 5: Quality plan**

7. Develop an effective & efficient method for each activity by giving top priority for quality standards - **Method Data Base**

In this data base, standard height of the grass and Boarder hedges to be specified. The pruning shape of the Border plants and other plants to be specified in detail. There may changes in the pruning pattern according to the seasonal differences. Manuring rates and time interval aslo should be specified.

8. Allocate optimum resources into each activity by considering the identified method - **Allocated Resources**

9. Develop the expected time standard for each activity - **Time Plan**

10. Align the recourses with time by considering connectivity of activities (series and parallel) and identify critical activities - **Resource Schedule with Critical Path (Gantt Chart)**





11. Balance the resources for maximum utilization of resources and reducing the project duration. - Balanced Resource Schedule with new critical path. **(Revised Gantt Chart)**

The revised Gantt chart would be developed with balanced resource schedule and new critical path in the repeating cycle of the projects.

12. Add more resources to critical activities and crash the programme -**Accelerated Project**

If there any accelerated project cycle needed additional resources can be added and crash programme can be implemented with expedited critical activities.

## CONCLUSION

ISO 21500:2021 is compatible to various project systems since it allows sequences and the adaptation of processes to be carried out in a flexible way. There is enough freedom to the designer to allocate resources in a flexibility manner to specify the processes. Normal path of the process, accelerated process and re-engineering with higher technologies also possible through ISO 21500.

In this study Lawn and landscaping of South Eastern University of Sri Lanka has been planned to manage by Using ISO 21500 techniques. Project cycle of the Lawn and landscape maintenance reorganized according to the ISO 21500 standard in order to reduce the cycle time and maximize the resource utilization. Critical path and non-critical path were correctly identified and Works have been carried out in a planned manner. Resource idling were eliminated. This study enabled to evaluate the proposed model, showing its feasibility and value added to the lawn maintenance and landscape based on ISO 21500.

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# ASSESSMENT OF THE LEVEL OF IMMUNOGLOBULINS IN THE BLOOD SERUM IN YOUNG CHILDREN DEPENDING ON THE TYPE OF FEEDING

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## ANNOTATION

*The observed patients were divided into 2 groups: the 1st group consisted of 20 children aged from 10 days to 1.5 months; Group 2 included 65 children aged 1.5 to 5 months. 50 children were breast-fed, artificial (children received adapted mixtures "Detolact", "Nutrilak", "NAS") - 15 children. The predominant class of immunoglobulins in the blood serum of the examined children was immunoglobulin G. Its concentration in children of the first age group was  $5.75 \pm 0.26$  g/l. The content of immunoglobulin M in the blood serum of the observed children (in the 1st group -  $0.83 \pm 0.05$  g/l; in the 2nd group -  $0.99 \pm 0.05$  g/l) was significantly higher than in healthy children ( $0.32 \pm 0.14$  g/l and  $0.48 \pm 0.16$  g/l, respectively;  $p < 0.01$ ). The same changes were observed in the concentration of class A immunoglobulin (in the 1st group,  $26 \pm 0.05$  g/l, in the 2nd group -  $0.39 \pm 0.03$  g/l, in healthy children, the IgA content was  $0.07 \pm 0.05$  g/l and  $0.15 \pm 0.10$ ,  $p < 0.01$ ).*

**KEY WORDS:** children, natural feeding, artificial feeding, immunoglobulins, blood serum.

## INTRODUCTION

In our society, proper nutrition is at the center of medical attention and is actively promoted. In all countries, interest in them is constantly growing among the most diverse segments of the population, scientists and government agencies. The problem of nutrition is included in the list of the most important global problems put forward by the UN to mankind along with such problems as environmental protection, energy supply [1,2,8,10,13].

The protective properties of human milk are well known to practitioners. It is natural feeding that is one of the factors that ensure the full-fledged immunological reactivity of the child [3,4,6,9,11,15].

Breast milk protects the baby from infection, allergies, rickets, anemia. Breast milk also contains biologically active components that strengthen the infant's immature system, providing protection against infections, and other components that help with digestion and absorption of nutrients. A sufficient number of works have been devoted to the problem of the formation of humoral immunity in healthy and sick children of 1 year of age. However, on the issue of the formation of humoral immunity in children with different types of feeding, there are only a few works that deal with children of only the 1st month of life and mainly premature babies [5,7,12,14,16].

## PURPOSE OF THE STUDY

Determine the content of serum immunoglobulins of three classes (A, M and G) by the method of simple radial immunodiffusion according to Mancini using standards and antisera of the I.I. Mechnikov Research Institute of Vaccines and Serums.

## MATERIALS AND METHODS

The observed data were divided into 2 groups: the 1st group consisted of 20 children aged from 10 days to 1.5 months; Group II included 65 children aged 1.5 to 5 months. There were 50 children on natural feeding, on artificial feeding (children received adapted mixtures "Detolact", "Nutrilak", "Nan") 15 children.

Among 20 children of group I, 11 had acute respiratory viral infections, of which 4 children had complications in the form of bronchitis, pneumonia, otitis media, pyelonephritis, and 2 had a combined course of acute respiratory viral infections and purulent bacterial infection (omphalitis, pseudofurunculosis). The remaining 9 children were treated for purulent local catarrhal and purulent infections (omphalitis, pyoderma, pemphigus, pseudofurunculosis, purulent conjunctivitis, paraproctitis, pyelonephritis).

In the second age group, the vast majority of children also had ARVI (55). Of these, 19 children had an uncomplicated course, and 24 had such complications as bronchitis, catarrhal and purulent otitis media, bronchiolitis, pneumonia, pyelonephritis; 2 children had a combined course



of SARS and a bacterial infection in the form of pseudofurunculosis, abscess, lymphadenitis, osteomyelitis, and only 10 children had a purulent local infection (pseudofurunculosis, abscess, pyelonephritis, meningitis).

In most children of both age groups, the disease proceeded against a aggravated background: rickets in 18, malnutrition in 17, encephalopathy in 23, exudative diathesis in 13, iron deficiency anemia in 11 children.

The predominant class of immunoglobulins in the blood serum of the examined children was immunoglobulin G. Its concentration in children of the first age group was  $5.75 \pm 0.26$  g/l. The level of immunoglobulin G was practically the same as in healthy children [12] of the corresponding age groups ( $6.17 \pm 0.16$  g/l and  $5.09 \pm 0.17$  g/l;  $p < 0.5$ ), and did not changed during the first 5 months of life.

The absence of an increase in the level of immunoglobulin G during viral and bacterial infections in children of the first months of life indicates the immaturity of

their own synthesis of immunoglobulin G in these children, which corresponds to the literature data [4].

The content of immunoglobulin M in the blood serum of the observed children (in the 1st group -  $0.83 \pm 0.05$  g/l; in the 2nd group -  $0.99 \pm 0.05$  g/l) was significantly higher than in healthy children ( $0.32 \pm 0.14$  g/l and  $0.48 \pm 0.16$  g/l, respectively;  $p < 0.01$ ).  $26 \pm 0.05$  g/l, in the 2nd group -  $0.39 \pm 0.03$  g/l, in healthy children the content of IgA was  $0.07 \pm 0.05$  g/l and  $0.15 \pm 0.10$  g/l according to age groups,  $p < 0.01$ ). With age, the concentration of immunoglobulins of classes M and A increased. An increase in the content of immunoglobulins A and M in the blood serum is due to viral-bacterial stimulation, and an increase in the level of immunoglobulins M and A with age, apparently, reflects the maturation of the child's own humoral immunity system.

The content of immunoglobulins, depending on the type of feeding in the children examined by us, is presented in the table.

**Table 1**  
**The content of immunoglobulins in blood serum with different types of feeding**

Age children	Kinds feeding	Concentration of immunoglobulins ( $M \pm m$ ), g/l		
		IgA	IgM	IgG
From 10 days to 1.5 months. From 1.5 to 5 months.	natural 8	$0.20 \pm 0.02$	$0.84 \pm 0.08$	$6.58 \pm 0.98$
	Artificial 17	$0.31 \pm 0.12$	$0.83 \pm 0.10$	$5.18 \pm 0.95$
	natural 61	$0.30 \pm 0.05$	$0.96 \pm 0.09$	$5.96 \pm 0.60$
	Artificial 17	$0.47 \pm 0.03$	$1.01 \pm 0.05$	$5.55 \pm 0.28$

## RESULTS AND ITS DISCUSSION

Analysis of the content of immunoglobulins in the blood serum, depending on the type of feeding of children, showed that the content of immunoglobulins M and G practically did not depend on the type of feeding ( $p > 0.05$ )

The level of immunoglobulin A with natural feeding was lower than with artificial feeding ( $p < 0.02$ ). This, apparently, can be explained by the earlier maturation of the own synthesis of immunoglobulin A in artificially fed children. With natural feeding, this process is delayed due to the passive intake of class A immunoglobulins with mother's milk. The protective role of immunoglobulins A in human milk is well studied and proven [4]. It is also possible that human milk contains some currently **unknown substances that can affect the synthesis of immunoglobulins.**

## CONCLUSION

Thus, the data obtained by us reveal the relationship between the level of serum immunoglobulins and the type of feeding of children in the first months of life and reflect the processes of formation of the humoral immunity system.

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# ANGER MANAGEMENT STRATEGIES AND BENEFITS OF ANGER MANAGEMENT THERAPY

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## ABSTRACT

*Long-term effects of anger that is too readily or frequently mobilized include relationship breakdown and physical health impairment. Anger's prolonged production of stress hormones can damage immune system function and neurons in the parts of the brain that control judgment and short-term memory. Learning how to recognize and manage this strong emotion can promote growth and transformation in people, whether they experience occasional or chronic outbursts of anger. This paper focuses on the definition, and understanding of anger, external and internal triggers of anger, anger management therapies, and the best therapy for anger. This study looks into the importance of anger management, anger management strategies, and the benefits of anger management therapy.*

**KEYWORDS:** Anger, Cognitive Behavior Therapy(CBT), Relaxation-based interventions, stress inoculation, social skills training, cognitive restructuring, assertiveness training.

## INTRODUCTION

Anger is a normal human emotion, and there are occasionally good reasons to feel angry, such as when you've been hurt by something someone said or did, or when you're frustrated with a circumstance at work or at home. However, unchecked rage can be detrimental to your health and personal relationships. One of the fundamental human emotions, along with happiness, sorrow, worry, and disgust, is anger. These feelings have evolved throughout human history and are essential to fundamental survival. Anger is connected to the sympathetic nervous system's "fight, flight, or freeze" reaction and gets people ready to battle. Punching isn't necessarily a part of fighting, though. By implementing new regulations or standards, communities may be motivated to combat injustice.

It's common to see depictions of anger as a "bad," dangerous, or useless feeling. But despite the fact that it can occasionally result in more harmful behavior, anger serves a crucial self-protective purpose and can promote communal good (Lambert, Eadeh, & Hanson, 2019). Anger serves as a warning sign that something unfair has occurred and that something needs to be done to make it right (Lambert et al., 2019). Anger can be beneficial when it prompts us to deal with a real or imagined threat or rectify an unfair circumstance (Lambert et al., 2019; Thomas, 2001). Violence can result from anger, but the two concepts are not interchangeable. Even without being furious, someone can cause injury to another person, and anger isn't usually accompanied by aggression or violence. If resentment can be expressed in a healthy way and relationships can be patched up, this may even lower the likelihood of aggressiveness (Thomas, 2001).

## THE OBJECTIVE OF THE STUDY

1. To study External and Internal Triggers of Anger, Anger management Therapies, and the best therapy for anger.
2. To study the importance of anger management and anger management strategies.
3. To provide the benefits of anger management therapy.

## DEFINITION OF ANGER

When we receive stimuli that contradict our ideals or principles or when we feel an injustice, we become enraged (Lambert et al., 2019; Thomas, 2001). In contrast to anger, hostility is typically thought of as a more pervasive unfavorable attitude toward other people and the rest of the world (Thomas, 2001). According to Staicu and Cuțov (2010), the intensity of anger can range from mild irritation to fire-breathing wrath and can alter physiology by raising blood pressure (Lochman, Palardy, McElroy, Phillips, & Holmes, 2004).

## EXTERNAL AND INTERNAL TRIGGERS OF ANGER

Anger can have internal or external causes. External triggers for rage include things like:

- Considering your boss has treated you unfairly
- Feeling that your romantic partner is being ungrateful
- Being excluded from a resource on the basis of illegitimate criteria like your gender, age, or race
- Each person has a different set of triggers that can affect how they feel, express, and control their anger, including the following:
- Learned conduct (e.g., watching how parents express anger)



- Biological propensities
- The setting and the experiences
- Difficulty solving problems (Hendricks, Bore, Aslinia, & Morriss, 2013)

Anger can manifest in several ways. Some people experience continual annoyance or can't stop thinking about an upsetting event. Others get angry less frequently, but when they do, they get angry violently.

Uncontrolled rage can have a harmful impact on both physical and emotional welfare, regardless of its form. According to research, feelings of rage and animosity can make people more likely to experience coronary heart disease and worsen its effects in those who already have the condition. Stress-related conditions including insomnia, intestinal issues, and headaches can all be brought on by anger. Additionally, aggressive and dangerous behaviors, such as drug and alcohol use, can be influenced by anger. Additionally, rage has a negative impact on relationships with family, friends, and co-workers.

## ANGER MANAGEMENT

What we see to be threatening or unfair in the world depends on our individual ideas, ideals, and values. One person's extreme rage may not even register on the radar of another person (Thomas, 2001). For a variety of reasons, someone may be predisposed to anger management issues if they have had traumatic or negative events in the past. It may be more challenging to trust others and believe the best of others if you have experienced betrayal or abuse at the hands of loved ones. Anger control disorders can also be exacerbated by other mental health conditions or low self-esteem (Priory, 2020). Our capacities for controlling and expressing rage also vary. Some people find it difficult to control their anger when it arises, and they might not be able to control it. Others may struggle to quietly and properly express their emotions (Priory, 2020).

## 12 SYMPTOMS OF PROBLEMATIC ANGER IN ADULTS

There are currently no clinical standards for diagnosing problematic anger, although the following patterns of conduct could point to problems with anger management:

- Difficulties with emotion management and good expression
- Anger-related behaviors causing issues in social, romantic, or professional Relationships Substance abuse and/or addiction
- Rage that is channelled inside through self-mutilation or social disengagement
- Anger and other related behaviors have an impact on one's capacity to work or study.
- Having trouble peacefully negotiating or reaching a consensus with others
- Anger is strong and/or manifests frequently.
- Being extremely quick to become enraged
- Anger lasts for a very long period.
- Being extremely irate or violent after drinking
- Aggressive, violent, or antisocial conduct

encountering difficulties with the law because of actions motivated by rage (Lench, 2004; Priory, 2020; Thomas, 2001) Ultimately, if your anger is producing issues in your life or not supporting your best interests, health, or relationships, it is probably dysfunctional (Lench, 2004).

## BEST THERAPY FOR ANGER

Cognitive-Behavioral Therapy (CBT) has been the most widely used therapy in the field of anger management therapy since it has been the subject of the majority of research (Lee & DiGiuseppe, 2018).

### 1. CBT and anger management

- CBT is a highly effective treatment for psychiatric and nonclinical populations because it stresses the significant connections between how we feel, the thoughts and beliefs we hold, and the behaviours we engage in (Lee & DiGiuseppe, 2018). In a meta-analysis of 50 studies with 1,640 individuals, it was discovered that those who received CBT for anger had better outcomes than 76% of those who did not receive treatment (Beck & Fernandez, 1998). A range of populations, including those with high blood pressure, irate drivers, inmates, college students, police officers, and parents, have benefited from CBT anger management therapies (Deffenbacher, Oetting & DiGiuseppe, 2002). Interventions for CBT anger management often focus on the physiological and emotional aspects of anger, the cognitive (thinking/behavioral) processes that underlie dysfunctional anger, and/or social and communication skills (Deffenbacher et al., 2002).

### 2. Relaxation-based interventions

- Interventions based on relaxation address the physiological and emotional aspects of rage. People learn to control their excitement and employ relaxation to deal with their rage. People can better analyze their actions and apply their conflict resolution and problem-solving abilities when they are more at ease (Deffenbacher et al., 2002).

### 3. Stress inoculation

- Individuals practice an internal dialogue to simulate how they might respond to a circumstance that might make them angry during stress inoculation training. They might develop a bank of coping phrases or plan how to refute unfavorable assessments of the circumstance. They can learn to approach situations with more self-control and less arousal by working on this self-guiding discourse (Deffenbacher et al., 2002).

### 4. Cognitive restructuring

- Beginning with an error-finding mission, cognitive restructuring helps clients identify dysfunctional or biased beliefs and thought processes that fuel anger, such as unduly personalizing others' statements or unhelpful





convictions like ". People never pay attention to me," After that, clients are helped to adopt new, more advantageous, rational, and realistic mental processes (Deffenbacher et al., 2002).

## 5. Social skills training

- a. Interventions in social skills are intended to lessen negative and antagonistic behaviours while also promoting improved communication and conflict-resolution abilities. The client is encouraged to strengthen their listening and assertiveness skills as well as their ability to negotiate and consider how their actions affect others (Deffenbacher et al., 2002). Anger can be decreased by better communication alone, and conflict can be avoided by learning how to handle situations that make others angry (Deffenbacher et al., 2002).

## 6. Counseling Tips

- a. There are numerous techniques for assisting clients in recognizing, expressing, and managing their anger in more positive ways. It's important to note that people with specific diseases, such as neurological problems, psychosis, personality disorders, or paranoia, are unlikely to benefit from anger management therapy (Thomas, 2001). We've listed a few interventions that could be useful when dealing with someone who has a problem with rage below.

## 7. Retreat, rethink, respond

- a. This straightforward intervention encourages clients to consider how they can defer having an angry reaction to a circumstance. A classic negative reaction pattern is to react (for example, yell at someone), retreat (remove yourself from the situation or be removed), and then, after the damage has been done, rethink (examine your actions and what you might have done differently). You can work with the client to figure out how to change their habitual response to first withdraw into their minds, reflect on the experience, and then reply more wisely in order to break this vicious cycle (Schimmel & Jacobs, 2011).

## 8. The 7/11 technique, Breathing Technique

- a. Clients may find it beneficial to use a tried-and-true anger management breathing method to calm down, clear their minds, and activate their parasympathetic ("rest and digest") nerve system when they are feeling tense (Tyrrell, 2018).
- b. When the client next feels furious, assist them in practicing these techniques:
  - Consider the breath for a moment.
  - Inhale for a rapid count of seven.
  - exhale for a brief count of 11.
  - Continue for at least one minute.
  - Think about the effects of acting from this more tranquil position. 2018 (Tyrrell)

## 9. Norman Cotterell's 7 steps for anger

- a. A senior clinician at the Beck Institute for Cognitive Behavioral Therapy, Norman

Cotterell, PhD, promotes a seven-step prescription for managing anger.

## COST-BENEFIT ANALYSIS PREPARATION

Cotterell (2021) proposes that performing a cost-benefit analysis before diving into the interventions is a quick method to give clients the power to decide how to handle their anger.

- Ask the client to list characteristics of someone who they think has effective anger management.
- Then, have them consider the advantages and disadvantages of acting in this manner and becoming furious.
- Ask the customer to rank the significance of each expense and benefit.
- After tallying the results, ask the client if it is more expensive to stay upset than it is to let it go. Compare the advantages and disadvantages of being like the person they adore. (2021, Cotterell).

What "should" rule be broken in Step 1?

- When one of our "should" rules—for instance, "They should be honest with me" or "He should return my call"—is broken, anger is generated. Knowing which rule was broken allows us to decide whether to accept what happened or keep fighting against it.
- Rules that begin with "should" also provide us with a glimpse of our core values, which is something to consider. He should pay for half, for instance, which could demonstrate your concern for justice and equality (Cotterell, 2021).
- The client is then prompted to consider their long-term goals and ways that they can deal with circumstances where they transgress the rules but still act morally (Cotterell, 2021).

Step 2: What about breaking this rule is painful or frightening?

- Find out why it hurts when someone violates your rules. To you, what does that mean? Does it support unfavorable opinions you may hold about other people or yourself?
- Here, it's helpful to examine the supporting documentation for their ideas and take into account more accurate ways of evaluating other people's actions (Cotterell, 2021).

Third step: "Hot thoughts"

- Change reactive ideas that are extremely "hot" or emotional, such as "He's an idiot," to more contemplative ones, like "He made an honest mistake" (Cotterell, 2021).

Step 4: Fury

- With the help of traditional relaxation techniques like progressive muscle relaxation and visualization, one can learn to control the arousal brought on by anger. According to Cotterell (2021), you might also investigate rage as a potential source of energy that can be beneficial when it's used to realize our ideals and principles.
- Anger can become hypocritical if it leads to actions that we would consider to be morally repugnant or wrong (Cotterell, 2021).



#### Fifth Step: Moral Disengagement

- Examine any theories or reasons you may have for acting violently when you're angry, such as "He initiated it" or "They were purposely setting off my buttons."
- These justifications effectively provide us with a sense of justification for undesirable behaviour.
- Encourage the client to weigh the benefits and drawbacks of these arguments as well as what they stand to gain from developing more tolerance and empathy for others (Cotterell, 2021).

#### Sixth step: aggression

- This step entails looking more closely at the problematic anger-relate behaviors.
- It is possible to ask the client to feel empathy for those who irritate them or whom they act violently toward.
- This exercise in perspective-taking is intended to assist the client in better controlling their own and other people's rage and to boost the likelihood of productive conversation (Cotterell, 2021).

#### Step 7: Results

- The client can be helped in this last stage to lessen feelings of guilt and to realize that they are not failures if they relapse into angry outbursts.
- Every time it occurs, they have a chance to learn and use the techniques and abilities they've developed to break the cycle of rage (Cotterell, 2021).

## IMPORTANCE OF ANGER MANAGEMENT THERAPY

Anger that is problematic or persistent rarely results in positive outcomes for the angry individual. It may result in issues at work, marital problems, and even criminal prosecution (Priory, 2020). Long-term anger can also be detrimental to our health. Anger is one negative emotion that can cause the body's stress response system to become chronically activated if experienced frequently (Davidson & Mostofsky, 2010).

According to a 10-year study, men and women who express less constructive anger and more destructive anger justification are at higher risk for coronary heart disease (Davidson & Mostofsky, 2010). The development of type 2 diabetes has been connected to anger, presumably due to inflammation brought on by a stressed-out body or as a result of bad health habits (Staicu & Cuțov, 2010). Anger can also result in hazardous lifestyle decisions. Anger that is suppressed by violent or destructive ways might result in domestic violence, bullying, or harsh parenting techniques (Deffenbacher et al., 2002). Being able to express anger in a healthy way can improve relationships and prevent unneeded conflict or hostility.

## ANGER MANAGEMENT STRATEGIES

Events on the inside or outside can make someone angry. A person, an organization like the one you work for, or an occasion like a traffic jam or a political election may make you angry. No matter where your feelings came from, you

don't have to let your wrath rule your life. Here are some strategies to help keep cool.

- ❖ Check yourself
  - It's difficult to make good decisions when you're in a persistently bad mood. Try to talk yourself down from the cliff rather than trying to ascend it in the first place. Look for signs that you are starting to worry about yourself. To prevent your annoyance from getting worse, leave the location if you notice the signs or use relaxation techniques.
- ❖ Don't linger.
  - Some people have a tendency to bring up an incident that upset them over and over again. That is a useless strategy, especially if you have already resolved the issue that made you angry in the first place. Instead, try to put the earlier event out of your mind. Focusing on the good things about the person or situation that irritated you can help you do this.
- ❖ Modify your thinking.
  - It's simple to believe that things are worse than they actually are when you're angry. Using a technique called cognitive restructuring, you can swap out detrimental false beliefs for more sensible ones. Instead of telling yourself that everything is destroyed, say to yourself, "This is frustrating, but it's not the end of the world."
- ❖ strategies to reframe your thinking:
  - When referring to oneself or another, avoid using the terms "never" or "always." You feel your wrath is warranted when someone says things like You always seem to forget stuff, or "This never succeeds." Furthermore, using such language repels people who might otherwise be eager to work with you to find a solution. Apply logic. Even when it is well-founded, rage may easily spiral out of control. Remind yourself that no one is out to harm you in the world. Every time you feel yourself getting irritated, do this to bring yourself back to the center.
- ❖ Convert wants into expectations.
  - Whether it's fairness, gratitude, agreement, or the desire to do things their way, angry individuals have a tendency to demand things. Try to convert your requests into demands. Likewise, if things don't go your way, try to keep your wrath in check.
- ❖ Relax.
  - Two simple relaxation methods that can be used to lessen anger include deep breathing and picturing peaceful things. If you frequently practice these tactics, it will be easier to employ one or more of them when angry sensations appear.
- ❖ breath control.
  - furious breathing is shallow breathing. Practice taking calm, controlled breaths by visualizing the air rising from your belly rather than your chest. Apply imagery. Imagine a peaceful moment from your past or from your own imagination. gradual muscular relaxation Using this method, you slowly tense and then release each muscle group



individually. For instance, you might begin with your toes and gradually move up to your head and neck.

- ❖ Develop your communication abilities.
  - In a state of rage, people frequently make quick decisions and may speak out of turn, frequently inadvertently. Try to halt and pay attention before acting. After then, consider your response carefully. If you need to leave the room to cool down before continuing, promise to come back later to finish the conversation.
- ❖ Get moving.
  - Regular exercise will help you decompress, release additional tension, and lessen stress, all of which can help you control your temper.
- ❖ Know (and stay away from) your triggers.
  - Think about the things that irritate you. Take the bus or try to rearrange your schedule to make the trip at a less congested time if you know you always feel frustrated while driving downtown during rush hour. If you and your partner frequently disagree at night, try to stay away from heated discussions then. Shut the door if you're continually irritated that your child hasn't cleaned his room so you won't have to.
- ❖ Problem-solving
  - Sometimes the source of our fury and annoyance are the very real, inevitable obstacles in our lives. Although it frequently acts as a good, natural response to these problems, anger is not always incorrect. The cultural assumption that every problem has a solution makes it much more upsetting when we discover that this isn't always the case. The best mentality to adopt in this situation is to focus less on finding a solution and more on how you approach and handle the problem. Make a plan and keep track of your progress as you go. Make a promise to yourself to try your best and to hold off on condemning yourself if you don't get a response right away. You will be less likely to lose patience and fall victim to all-or-nothing thinking if you can approach the problem with your best intentions and efforts and sincerely try to tackle it head-on. Even if the problem is not remedied immediately away.
- ❖ Better communication
  - When someone is upset, they frequently draw judgments too quickly and act on them, some of which may be quite incorrect. Take a moment to collect yourself if you find yourself in a heated dispute before answering. Instead of stating the first thing that comes to mind, take your time and think about what you're saying. Prior to responding, pay close attention to what the other person is saying and take your time. Pay attention to where the anger originated as well. For instance, you might want a certain amount of freedom, whereas your "significant other" may desire more intimacy and connection. Do not portray your

partner as a warden, jailer, or an albatross around your neck in retaliation if they begin to criticize your actions. Even though it's common to become defensive in response to criticism, hold off on taking offense. Instead, focus on the underlying message, which is that this person can feel neglected and abandoned. Don't let a conversation go out of hand because of your or your partner's rage. You may need to carefully probe the situation and give yourself some breathing room. Keeping your cool will help keep the situation from getting worse.

- ❖ assertiveness training
  - The bulk of books and workshops on developing assertiveness are aimed at those who don't experience enough rage, despite the fact that people who are enraged need to learn to be assertive (instead of hostile). These people are meeker and more submissive than the average person and like to let others dominate them. The majority of angry people don't act like that. However, these books might provide some beneficial approaches to use in tough situations.
  - Keep in mind that you cannot and should not rationally suppress your anger. Despite your best efforts, things will still annoy you, and on rare occasions, your annoyance will be warranted. Life will inevitably be filled with frustration, sorrow, loss, and unpredictable behavior from others. Although you can control how these events affect you, you cannot change the reality that they do. In the long term, learning to control your furious impulses may save you from becoming even more unpleasant.
- ❖ Using humor
  - In many situations, "silly humor" might help calm people down. One advantage is that you might be able to develop a more objective point of view. Before you use a derogatory or nonsensical term to describe someone, consider how that phrase could truly sound. If you think of your coworker as a "dirt bag" or a "single-cell living form" at work, then picture a giant sack of dirt (or an amoeba) sitting at your desk, talking on the phone, and attending meetings, for example. Do this each time the name of a different person comes to mind. Draw a representation of how the actual thing could appear if you can.
  - This can dramatically reduce your fury, and comedy is a great way to defuse tense situations. Dr. Deffenbacher asserts that the underlying sentiment of truly angry people is "things ought to go my way!" Many times, those who are offended believe they are morally superior, that any delay or change in their plans is a terrible offense, and that they shouldn't have to go through this. Perhaps some others do, but not them!



- ❖ Imagine yourself as a god or goddess, a supreme monarch who owns the streets, shops, and office space, striding alone and having the final say in every scenario while others bow to you, he advises, when you feel the impulse. You have a greater possibility of realizing that perhaps you are being unreasonable and that the things you are furious over are actually not that essential the more specific your imagined scenes can be. Two warnings should be heeded when employing comedy. First, utilize humor to help yourself address your difficulties more effectively rather than merely trying to "laugh off" them. Second, refrain from employing harsh or sarcastic humor; doing so is just another negative method to express anger.
- ❖ Changing your environment
  - Our immediate surroundings can occasionally be the cause of our irritation and wrath. Due to your issues and duties, you may feel burdened and resentful of the "trap" you appear to have fallen into as well as the people and things that make up that trap.
- ❖ Take a break for yourself.
  - For moments of the day that you are aware are particularly stressful, make sure to schedule some "personal time." As an example, consider the working mother who has a standing rule that for the first 15 minutes after she gets home from work, "nobody talks to Mom unless the house is on fire." After this brief period of alone, she feels more equipped to deal with the demands of her children without losing her temper.

## TIPS TO TAME THE TEMPER OF ANGER MANAGEMENT

- Think before you speak
  - When you're feeling something, it's easy to say something you'll later regret. Take a time to collect your thoughts before you respond. Permit everyone else involved in the incident to follow suit.
- Once you're calm, express your concerns
  - When you can talk effectively, express your displeasure with force while remaining non-aggressive. Without causing harm or seeking to manipulate others, simply and distinctly state your requests and concerns.
- Get some exercise
  - You can reduce your stress levels through exercise, which will reduce your rage. If your fury starts to rise, go for a quick walk or run. Alternately, spend some time participating in another fun physical activity.
- Take a timeout
  - Not just timeouts for children. Give yourself short breaks when the going becomes tough. If you have a couple of peaceful moments to yourself, you could feel better prepared to

handle what lies ahead without getting irritated or furious.

- Identify possible solutions
  - Instead of concentrating on what has angered you, focus on solving the current issue. Are you angry with your kid's filthy room? Make a doorbell ring. Does your partner ever arrive late for dinner? Plan your meals for later. Decide to eat alone perhaps once a week as an alternative. Recognize that some circumstances are simply out of your control. Trying to be practical about what can control and what cannot be changed., try to be practical. Remember that being upset won't solve anything and can even make matters worse.
- Stick with 'I' statements
  - Other people's criticism or blame could only exacerbate the situation. Instead, use "I" phrases to describe the problem. Be thoughtful and specific. Instead of saying, "You never do any housework," try saying, "I'm upset that you left the table without offering to help with the dishes."
- Don't hold a grudge
  - It is a strong instrument to forgive. If you allow anger and other bad emotions to dominate happy ones, you run the risk of being overpowered by your own resentment or sense of injustice. If you forgive the perpetrator, your relationship might improve and you might both grow from the experience.
- Use humor to release tension
  - Laughter can assist reduce tension. Use humor to help you face your problems and perhaps any unreasonable expectations you may have about how events should play out. Avoid employing sarcasm despite the fact that it could harm feelings and make things worse.
- Practice relaxation skills
  - Practice your calming skills for those times when your temper might flare. Try deep breathing exercises, picture a calming scene, or repeat a calming word or phrase, such as "Take it easy." You might also do some yoga poses, write in a notepad, or listen to music to help you relax.
- Know when to seek help
  - At times, it can be challenging to learn how to control your wrath. Seek treatment for your anger issues if it seems out of control, causes you to do things you regret, or hurts those around you.
- Identifying Triggers and Responses
  - Therapy can help you get a deeper understanding of the origins of your anger, your responses to it, and the effects it has on your relationships and on you personally.





- For example, you may find that your yelling at your spouse is a result of hearing your parents yell or that you believe yelling will make you successful.
- Learning Strategies to Diffuse Anger
  - During an anger management therapy session, you can learn methods to moderate your anger by avoiding situations or distracting yourself. You can get help from your therapist in figuring out how to manage your anger. Role-playing offers the chance to put control-improving strategies, such as assertiveness and direct communication, into practice. Additionally, therapy can help you learn relaxation skills and coping mechanisms like slow, deep breathing, leaving the area and coming back when you've calmed down, or utilizing a calming image to lessen the intensity of anger.
- Changing Attitude and Thought Patterns
  - It is also feasible to restructure your thinking and change your attitudes in relation to anger while in treatment, particularly if your therapist is utilizing CBT.
- In order to identify any thought patterns that might be fueling your anger, such as brooding, catastrophizing, judging, fortune-telling, or magnifying, your therapist will work with you to assess your attitudes and ways of thinking.
- Your therapist will also help you practice changing your response habits. They can assist you in mending and accepting strained bonds, provide techniques for letting go of pain and disappointment, and promote forgiveness and compassion.

## DISCUSSIONS

Consider counseling to acquire better-coping strategies if you believe your anger is truly out of control, affecting your relationships and other significant aspects of your life. With the help of a psychologist or other competent mental health professional, you can create a number of strategies for changing your ideas and behaviors. When chatting with a possible therapist, ask them about their approach to anger management and let them know that you want to work on your anger problems. Make sure this isn't just a method to "get you in touch with your feelings and express them," since it can be what's causing your problem. According to psychologists, a person who is extremely angry can shift toward a median level of anger with counseling in 8 to 10 weeks, depending on the situation and the tactics utilized.

## TIPS FOR EASING UP ON YOURSELF

- ✓ Timing:
  - If you and your partner frequently argue when discussing issues at night (perhaps because you're both sleepy, distracted, or it's just habit), consider switching up the times you discuss significant issues to prevent fights.
- ✓ Avoidance:

- Shut the door if your child's disorganized room makes you angry every time you pass by. Avoid forcing yourself to look at what irritates you. It is unacceptable to respond, "Well, my child should clean the room so I won't have to be angry." That is not the point. The most crucial thing is to maintain your composure.
- ✓ Finding alternatives:
  - If your daily commute through traffic makes you angry and frustrated, set a goal for yourself and study or map out an alternate route that is less crowded or more beautiful. Or look for another option, such as a bus or commuter train.

## CONCLUSION

Anger is not formally a disorder that is diagnosed or characterized, like depression or anxiety, for example, even if anger management is a type of treatment intended to help manage anger. According to Engle, excessive, destructive, or uncontrollable anger can compromise the safety, cause severe distress, and cause disability. Anyone suffering wrath or having angry outbursts can benefit from anger management treatment.

## BENEFITS OF ANGER MANAGEMENT THERAPY

- Mental health:
  - Anger can make it difficult to concentrate, make decisions seem wrong, and drain your vitality. It may also result in other mental health issues like depression and drug abuse. Anger management therapy reduces all mental health issues.
- Physical well-being:
  - According to Engle, feeling angry causes the body to physically react by releasing more adrenaline, beating more quickly, having higher blood pressure, and clenching its jaw or fists. This can damage your health over time and result in physical health issues. Anger management therapy decreases all physical health issues.
- Career:
  - Your performance may suffer if you struggle to concentrate on your work or schoolwork due to anger. Your connections with your peers may suffer as a result. Lashing out or having furious outbursts can alienate your friends and result in bad consequences, even while creative disagreements, constructive criticism, and good arguments can be beneficial. Therapy helps in the career development of an individual.
- Relationships:
  - Anger frequently causes the most harm to loved ones and can have a negative impact on your relationships with them. It can make





them uncomfortable with you, undermine their respect for you, and be especially harmful to children.

- Try to identify the triggers and avoid the situation or try to manage the circumstances.
- Use anger management techniques to strengthen and change the unfavorable mental patterns that cause your rage.
- Gain coping skills: Therapy can assist in controlling your emotions, and your behavior, and the development of coping mechanisms to help you deal with events that make you angry.
- Learn how to relax: therapist may teach you how to relax, which can help to control your emotions and unwind your body and mind.
- Identifying solutions or alternatives may be suggested by the therapist if certain situations continually make you furious.
- Communication skills are improved because of anger management therapy since it teaches you how to express your rage politely, forcefully, or constructively without resorting to violence.

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# THE SEPARATION OF VARIABLES METHOD FOR SOLVING THE KLEIN-GORDON EQUATION IN CURVED SPACETIME

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Article DOI: <https://doi.org/10.36713/epra12352>

DOI No: 10.36713/epra12352

## ABSTRACT

*This study was carried out with the aim of finding a solution to the Klein-Gordon equation in a curved spacetime using the separation of variables method. The first step involved transforming the equation into a form that was suitable for separation of variables. This was achieved by using a Fourier transform to separate the time and spatial variables. Next, a separable solution was assumed in the form of  $\phi(t, x, y, z) = T(t)X(x)Y(y)Z(z)$ , which was then substituted into the Klein-Gordon equation. The variables were separated by multiplying both sides of the equation by  $X(x)Y(y)Z(z)$ , resulting in four separate ordinary differential equations (ODEs). These ODEs were solved using standard methods such as separation of variables or characteristic equations.*

*The general solution for the Klein-Gordon equation was found by combining the solutions of the four separate ODEs into a single solution of the form  $\phi(t, x, y, z) = \sum c_n T_n(t) X_n(x) Y_n(y) Z_n(z)$ , where  $c_n$  are constants and  $T_n(t), X_n(x), Y_n(y)$ , and  $Z_n(z)$  are the solutions of the separate ODEs. The final step was to determine the values of the constants  $c_n$  that satisfied the boundary conditions for the Klein-Gordon equation. This was done by using methods such as the method of eigenfunctions or the method of Green's functions.*

*The results of this study showed that the separation of variables method is an effective way to solve the Klein-Gordon equation in a curved spacetime. These findings have important implications for our understanding of quantum field theory in curved spacetime and provide a basis for further research in this area.*

**KEYWORDS:** Klein-Gordon equation, Separation of variables method, Curved spacetime, Quantum field theory, Ordinary differential equations

## 1- Introduction

The Klein-Gordon equation is a relativistic wave equation that governs the behavior of scalar fields in special and general relativity. In its simplest form, it can be written as[1]:

$$\nabla^2 \phi - \frac{1}{c^2} \frac{\partial^2 \phi}{\partial t^2} + \frac{m^2}{\hbar^2} \phi = 0 \quad (1)$$

Where  $c$  is the speed of light,  $m$  is the mass of the scalar field particle,  $\hbar$  is the reduced Planck constant, and  $\phi$  is the scalar field.

The equation can also be written in a covariant form, taking into account the curvature of spacetime in general relativity, as[2]:

$$g^{\mu\nu} \nabla_\mu \nabla_\nu \phi + \frac{m^2}{\hbar^2} \phi = 0 \quad (2)$$

Where  $g^{\mu\nu}$  is the metric tensor,  $\nabla_\mu$  is the covariant derivative, and  $\mu, \nu$  are spacetime indices.

The equation is important in particle physics, as it is used to describe the behavior of spin-zero particles, such as the Higgs boson, which is responsible for giving other particles mass. It is also used in cosmology to study the evolution of scalar fields, such as the inflation field, which is thought to have driven the exponential expansion of the universe in the early stages of its development. Additionally, it plays a role in quantum field theory, where it is used to describe the behavior of scalar fields in quantum states[3].

The solution of the Klein-Gordon equation is important for understanding the behavior of scalar fields in various physical scenarios and for making predictions about their behavior in different conditions. In general, finding exact solutions of the equation is a challenging task and various numerical and analytical methods have been developed for this purpose.



One such method is the separation of variables, where the scalar field is expressed as a product of spatial and temporal functions. This can be written as[4]:

$$\phi(x, t) = X(x)T(t) \quad (3)$$

where  $X(x)$  and  $T(t)$  are the spatial and temporal functions, respectively. Substituting this expression into the Klein-Gordon equation and separating the variables, one can obtain two separate differential equations for  $X(x)$  and  $T(t)$ , which can then be solved separately. The solutions can then be combined to obtain the complete solution for  $\phi(x, t)$ .

The spatial and temporal solutions are typically found using methods such as Fourier analysis, Laplace transforms, and Bessel functions. For example, in certain cases, the spatial solutions can be expressed as a linear combination of sine and cosine functions, while the temporal solutions can be expressed as a linear combination of exponential functions[5].

Once the solutions for  $X(x)$  and  $T(t)$  are found, the behavior of the scalar field can be studied and predictions can be made about its behavior in various physical scenarios. For example, it can be used to study the behavior of scalar fields in the presence of gravitational fields and black holes, or in the early stages of the universe during inflation[6].

In conclusion, the Klein-Gordon equation is a fundamental equation in physics that governs the behavior of scalar fields and plays an important role in various areas of physics, including particle physics, cosmology, and quantum field theory. The separation of variables method is one of many methods developed for solving the equation and is used to study the behavior of scalar fields in various physical scenarios.

## 2- SEPARATION OF VARIABLES

The Separation of Variables method is a technique used to solve partial differential equations (PDEs) by expressing the solution as a product of two or more functions, each of which depends on a single independent variable. The idea is to write the PDE as a product of separate functions, which can then be solved separately. The method is based on the assumption that the solution can be written in the form[7]:

$$u(x, y, z, t) = X(x)Y(y)Z(z)T(t) \quad (4)$$

where  $X$ ,  $Y$ ,  $Z$ , and  $T$  are functions that depend only on one variable each. This assumption can be made for other types of PDEs, such as the heat equation, wave equation, and Schrödinger equation.

Substituting the expression for  $u$  into the PDE and separating the variables, one can obtain a set of ordinary differential equations (ODEs) for  $X$ ,  $Y$ ,  $Z$ , and  $T$ . The ODEs can then be solved separately, and the solutions can be combined to obtain the complete solution for  $u$ .

The method of Separation of Variables is widely used in solving PDEs in various fields, such as physics, engineering, and mathematics. In physics, it is used to study the behavior of fields, such as electromagnetic fields, in different physical scenarios. In engineering, it is used to study the behavior of systems, such as heat transfer and fluid flow, in different conditions. In mathematics, it is used to study the behavior of solutions to PDEs, such as those arising from the Laplace equation and the wave equation [8].

The method of Separation of Variables is a useful technique for solving PDEs by expressing the solution as a product of separate functions that can be solved separately. The method is widely used in various fields and has applications in physics, engineering, and mathematics.

## 3- THE KLEIN-GORDON EQUATION IN CURVED SPACETIME

The Klein-Gordon equation is a relativistic wave equation that describes the motion of a scalar field in a curved spacetime. It is important in physics because it provides a theoretical framework for understanding the behavior of scalar fields in the presence of gravitational fields[8].

The equation is given by:

$$(1/\sqrt{-g})\partial_\mu(\sqrt{-g}g^{\mu\nu}\partial_\nu\phi) - m^2\phi = 0 \quad (5)$$

where  $g$  is the determinant of the metric tensor,  $g^{\mu\nu}$  is its inverse,  $\phi$  is the scalar field,  $m$  is its mass, and the partial derivatives are taken with respect to the spacetime coordinates  $x^\mu = (ct, x, y, z)$ .



The importance of the Klein-Gordon equation in curved spacetime lies in its ability to describe the behavior of scalar fields in a self-consistent manner that incorporates the effects of gravity. This is achieved by expressing the equation in terms of the spacetime coordinates, rather than the global coordinates that are used in flat spacetime. The metric tensor  $g^{\mu\nu}$ , which is determined by the distribution of mass-energy in the spacetime, encodes the geometry of the spacetime and its curvature [9].

In the presence of a gravitational field, the spacetime is curved and the motion of the scalar field is affected by the curvature. The Klein-Gordon equation takes into account these effects and provides a means of calculating the behavior of the scalar field in a curved spacetime.

One of the key applications of the Klein-Gordon equation in curved spacetime is in the study of black holes. Scalar fields can be used to study the behavior of matter near black holes, and the Klein-Gordon equation provides a means of describing the motion of these fields in a self-consistent manner that incorporates the effects of the black hole's gravity [2].

In addition, the Klein-Gordon equation can also be used to study the behavior of scalar fields in cosmology. In this context, the equation provides a means of understanding the evolution of scalar fields in an expanding universe, and the role that these fields play in the formation of structure in the universe.

The Klein-Gordon equation in curved spacetime is an important tool in the study of scalar fields in the presence of gravity. Its ability to describe the behavior of scalar fields in a self-consistent manner that incorporates the effects of gravity makes it a valuable tool for a wide range of applications, from the study of black holes to cosmology [1].

#### 4- SOLUTION METHOD

##### 4-1 Separating Variables in the Klein-Gordon Equation Using Transform Technique:

For express the Klein-Gordon equation in a convenient form for separation of variables. This involved transforming the equation into a different coordinate system or using a different representation of the field. For example, it is often useful to separate the time and spatial variables in the equation by using a Fourier transform.

The Klein-Gordon equation can be written in a convenient form for separation of variables using spherical coordinates and a Fourier transform.

In spherical coordinates, the Klein-Gordon equation is[5]:

$$\frac{1}{r^2} \frac{\partial}{\partial r} \left( r^2 \frac{\partial \phi}{\partial r} \right) + \frac{1}{r^2 \sin \theta} \frac{\partial}{\partial \theta} \left( \sin \theta \frac{\partial \phi}{\partial \theta} \right) + \frac{1}{r^2 \sin^2 \theta} \frac{\partial^2 \phi}{\partial \varphi^2} - \frac{\partial^2 \phi}{\partial t^2} + m^2 \phi = 0 \quad (6)$$

Separating the time and spatial variables in the equation can be done using a Fourier transform with respect to time [6]:

$$\phi(r, \theta, \varphi, t) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} \tilde{\phi}(r, \theta, \varphi, \omega) e^{-i\omega t} d\omega \quad (7)$$

Substituting this into the Klein-Gordon equation and using the orthogonality of the Fourier transform, we obtain [11]:

$$\frac{1}{r^2} \frac{\partial}{\partial r} \left( r^2 \frac{\partial \tilde{\phi}}{\partial r} \right) + \frac{1}{r^2 \sin \theta} \frac{\partial}{\partial \theta} \left( \sin \theta \frac{\partial \tilde{\phi}}{\partial \theta} \right) + \frac{1}{r^2 \sin^2 \theta} \frac{\partial^2 \tilde{\phi}}{\partial \varphi^2} + \omega^2 \tilde{\phi} + m^2 \tilde{\phi} = 0 \quad (8)$$

So, the time and spatial variables have been separated and can now be dealt with separately."

##### 4-2 Separable Solution of the Klein-Gordon Equation using Ansatz

Assumed a separable solution of the form  $\varphi(t, x, y, z) = T(t)X(x)Y(y)Z(z)$ . Substitute this ansatz into the Klein-Gordon equation and separate the variables by multiplying both sides by  $X(x)Y(y)Z(z)$ .

the Klein-Gordon equation is given by [13]:



$$\left( \frac{\partial^2}{(\partial t^2)\phi(t,x,y,z)} - \nabla^2 \phi(t,x,y,z) + m^2 \phi(t,x,y,z) = 0 \right) \quad (9)$$

Substituting the separable solution into this equation [12]:

$$\left( \frac{d^2}{(dt^2)T(t)} + m^2 T(t) = 0 \right) \quad (10)$$

Multiplying both sides by  $X(x)Y(y)Z(z)$ [7]:

$$T(t)X(x)^2Y(y)^2Z(z)^2(d^2/dt^2) - T(t)X(x)^2Y(y)^2Z(z)^2(\nabla^2) + m^2 T(t)X(x)^2Y(y)^2Z(z)^2 = 0. \quad (11)$$

Separating the variables[14]:

$$(T(t)X(x)^2Y(y)^2(d^2/dt^2) - T(t)X(x)^2Y(y)^2(\nabla^2) + m^2 T(t)X(x)^2Y(y)^2 = 0.) \quad (12)$$

Dividing both sides by

$$(T(t)X(x)^2Y(y)^2Z(z)^2)((d^2/(dt^2)) - (\nabla^2) + m^2 = 0.) \quad (13)$$

he separated equation can be written as [15]:

$$\left( \frac{d^2}{dt^2 T(t)} + m^2 T(t) = 0 (for T(t)) \right)$$

$$(\nabla^2 X(x) + m^2 X(x) = 0 (for X(x), Y(y), Z(z))) \quad (14)$$

This leads to two ordinary differential equations, one for  $T(t)$  and the other for  $X(x)$ ,  $Y(y)$ ,  $Z(z)$ . The equation for  $T(t)$  can be solved for  $T(t)$  in terms of time, and the equation for  $X(x)$ ,  $Y(y)$ ,  $Z(z)$  can be solved for  $X(x)$ ,  $Y(y)$ ,  $Z(z)$  in terms of the spatial variables  $x$ ,  $y$ ,  $z$ .

The equation for  $T(t)$  can be solved using standard methods of solving second-order homogeneous linear differential equations. The general solution can be expressed as a linear combination of two linearly independent solutions [7]:

$$(T(t) = C_1 * \cos(mt) + C_2 * \sin(mt)) \quad (15)$$

where  $C_1$  and  $C_2$  are arbitrary constants and  $m$  is the mass of the scalar field.

The equation for  $X(x)$ ,  $Y(y)$ ,  $Z(z)$  can be solved using the method of separation of variables. The general solution for each of  $X(x)$ ,  $Y(y)$ ,  $Z(z)$  can be expressed as a linear combination of the eigenfunctions of the Laplacian operator [8]:

$$\left( X(x) = \sum C_n * \sin\left(n * \pi i * \frac{x}{L}\right) Y(y) = \sum C_n * \sin\left(n * \pi i * \frac{y}{L}\right) Z(z) = \sum C_n * \sin\left(n * \pi i * \frac{z}{L}\right) \right) \quad (16)$$

where  $C_n$  are arbitrary constants,  $n$  are positive integers, and  $L$  is a constant length scale.

The final solution for  $\phi(t, x, y, z)$  can be expressed as a product of  $T(t)$  and  $X(x)$ ,  $Y(y)$ ,  $Z(z)$ , where  $T(t)$  depends on time and  $X(x)$ ,  $Y(y)$ ,  $Z(z)$  depend on the spatial variables

#### 4-3 Solving the Separated ODEs of the Klein-Gordon Equation

Each of the four separate equations that result from the separation of variables. These equations are ordinary differential equations (ODEs) that can be solved using standard methods such as separation of variables or characteristic equations.

The equation for  $T(t)$  is a second-order linear homogeneous differential equation and can be solved using characteristic equations. The characteristic equation is obtained by replacing  $T(t)$  with a characteristic exponent,  $\lambda$  [9]:

$$\frac{d^2}{dt^2 T(t)} + m^2 T(t) = 0 \quad (17)$$

becomes

$$\lambda^2 + m^2 = 0 \quad (18)$$

The characteristic equation has two roots,  $\lambda = \pm im$ . This means that  $T(t)$  can be written as a linear combination of exponential functions:

$$T(t) = C_1 * \exp(imt) + C_2 * \exp(-imt) \quad (19)$$

where  $C_1$  and  $C_2$  are arbitrary constants.

The equation for  $X(x)$ ,  $Y(y)$ ,  $Z(z)$  can be solved using separation of variables. The general solution for each of  $X(x)$ ,  $Y(y)$ ,  $Z(z)$  can be expressed as a linear combination of the eigenfunctions of the Laplacian operator [13-14]:





$$X(x) = \sum C_n \sin\left(n \pi i \frac{x}{L}\right) Y(y) = \sum C_n \sin\left(n \pi i \frac{y}{L}\right) Z(z) = \sum C_n \sin\left(n \pi i \frac{z}{L}\right) \quad (20)$$

where  $C_n$  are arbitrary constants,  $n$  are positive integers, and  $L$  is a constant length scale.

The final solution for  $\varphi(t, x, y, z)$  can be expressed as a product of  $T(t)$  and  $X(x)$ ,  $Y(y)$ ,  $Z(z)$ , where  $T(t)$  depends on time and  $X(x)$ ,  $Y(y)$ ,  $Z(z)$  depend on the spatial variables

## 5- THE GENERAL SOLUTION

The general solution for the Klein-Gordon equation can be found by combining the solutions of the separate ODEs into a single solution of the form  $\varphi(t, x, y, z) = \sum c_n T_n(t) X_n(x) Y_n(y) Z_n(z)$ , where  $c_n$  are constants and  $T_n(t)$ ,  $X_n(x)$ ,  $Y_n(y)$ , and  $Z_n(z)$  are the solutions of the separate ODEs. This solution is known as a Fourier series expansion and represents a sum of normal modes, each of which has a specific frequency and spatial distribution. The coefficients  $c_n$  determine the magnitude and phase of each mode and can be determined from boundary conditions or initial conditions. The solution is a complete and orthogonal representation of the scalar field,  $\varphi(t, x, y, z)$ .

It is important to note that this method of solution is only applicable to homogeneous and isotropic systems. In more general cases, the solution may not have a separable form and may require more sophisticated methods such as numerical methods or Green's functions. Additionally, the normal modes and their coefficients can be used to calculate various physical quantities such as the energy density, stress-energy tensor, and probability density of the scalar field. These quantities can provide important insights into the behavior of the field and its interactions with other fields and matter.

In summary, the separable solution of the Klein-Gordon equation is a powerful tool for understanding the behavior of scalar fields in homogeneous and isotropic systems. It provides a complete and orthogonal representation of the field and can be used to calculate various physical quantities.

The method of eigenfunctions involves expressing the solution of the Klein-Gordon equation as a linear combination of eigenfunctions that satisfy the boundary conditions. The eigenfunctions are obtained from the solutions of the separated ODEs and are used to represent the solution in a convenient form. The coefficients  $c_n$  are then determined by applying the boundary conditions to the solution and solving a system of linear equations.

To use the method of eigenfunctions, the eigenfunctions must be obtained first. This is done by solving the separated ODEs for  $T(t)$ ,  $X(x)$ ,  $Y(y)$ , and  $Z(z)$  and finding the solutions that satisfy the boundary conditions. The solutions can be orthogonal and normalized so that they form a complete set.

The general solution for each of the separated ODEs can be written in terms of the eigenvalues and eigenfunctions. For example, the solution for  $T(t)$  can be written as  $T(t) = \sum c_n e^{i\lambda_n t}$ , where  $\lambda_n$  are the eigenvalues and  $c_n$  are constants. Similarly, the solutions for  $X(x)$ ,  $Y(y)$ , and  $Z(z)$  can be written as  $X(x) = \sum d_n \sin(k_n x)$ ,  $Y(y) = \sum e_n \sin(l_n y)$ , and  $Z(z) = \sum f_n \sin(m_n z)$ , where  $k_n$ ,  $l_n$ , and  $m_n$  are the eigenvalues and  $d_n$ ,  $e_n$ , and  $f_n$  are constants.

Next, the solution is expressed as a linear combination of the eigenfunctions. This is done by assuming a solution of the form  $\varphi(t, x, y, z) = \sum c_n T_n(t) X_n(x) Y_n(y) Z_n(z)$ , where  $T_n(t)$ ,  $X_n(x)$ ,  $Y_n(y)$ , and  $Z_n(z)$  are the eigenfunctions.

Finally, the boundary conditions are applied to the solution and a system of linear equations is solved to determine the values of the constants  $c_n$ . The boundary conditions can be applied by evaluating the solution at the edges of the region of interest and using the values to create a set of equations. These equations can then be solved to determine the values of the constants.

Once the values of the constants  $c_n$  are determined, the solution for the Klein-Gordon equation is complete and satisfies the boundary conditions. The solution can then be used to study the behavior of the field in the region of interest and to make predictions about the behavior of the field at other points in space and time.

In summary, the method of eigenfunctions is a powerful tool for solving the Klein-Gordon equation when the solution is expressed as a linear combination of eigenfunctions that satisfy the boundary conditions. The method is based on solving the separated ODEs, expressing the solution as a linear combination of the eigenfunctions, and applying the boundary conditions to determine the values of the constants.



## 6- RESULTS

The solutions of the separate ODEs are combined into a single solution for the Klein-Gordon equation by assuming a solution of the form  $\varphi(t, x, y, z) = \sum c_n T_n(t) X_n(x) Y_n(y) Z_n(z)$ , where  $c_n$  are constants and  $T_n(t), X_n(x), Y_n(y)$ , and  $Z_n(z)$  are the solutions of the separate ODEs.

The values of the constants  $c_n$  are determined by using methods such as the method of eigenfunctions or the method of Green's functions, to satisfy the boundary conditions for the Klein-Gordon equation.

By applying these steps, a solution for the Klein-Gordon equation in curved spacetime can be obtained. The solution will depend on the specific form of the Klein-Gordon equation, the choice of coordinate system, and the method used to solve the separate ODEs.

the separation of variables method is used to solve partial differential equations, specifically the Klein-Gordon equation in curved spacetime. The method involves separating the variables in the equation into separate parts, solving each part individually, and combining the solutions to find a general solution for the equation.

The first step is to express the Klein-Gordon equation in a convenient form for separation of variables, which may involve transforming the equation into a different coordinate system or using a different representation of the field, such as the Fourier transform to separate the time and spatial variables.

The next step is to assume a separable solution of the form  $c_n \varphi(t, x, y, z) = T(t)X(x)Y(y)Z(z)$  and substitute this into the Klein-Gordon equation. By multiplying both sides by  $X(x)Y(y)Z(z)$ , the equation can be separated into four separate equations. These equations are ordinary differential equations (ODEs) that can be solved using standard methods such as separation of variables or characteristic equations.

The general solution for each of the four equations can then be found by combining the solutions of the separate ODEs into a single solution for the Klein-Gordon equation. This is done by assuming a solution of the form  $\varphi(t, x, y, z) = \sum c_n T_n(t) X_n(x) Y_n(y) Z_n(z)$ , where  $c_n$  are constants and  $T_n(t), X_n(x), Y_n(y)$ , and  $Z_n(z)$  are the solutions of the separate ODEs.

In mathematical terms, the separation of variables method involves transforming a partial differential equation into a set of ordinary differential equations, which can then be solved individually. The general solution for the equation is found by combining the solutions of the individual ODEs and satisfying the boundary conditions. This method is useful for solving equations such as the Klein-Gordon equation in curved spacetime, where the variables in the equation are separated into separate parts and solved individually.

The results of applying the separation of variables method to solve the Klein-Gordon equation in curved spacetime are as follows:

- 1- The Klein-Gordon equation is transformed into a more convenient form for separation of variables, which may involve changing the coordinate system or using a different representation of the field.
- 2- A separable solution is assumed, in the form of  $\varphi(t, x, y, z) = T(t)X(x)Y(y)Z(z)$ . This ansatz is substituted into the Klein-Gordon equation and the variables are separated by multiplying both sides by  $X(x)Y(y)Z(z)$ .
- 3- The resulting equation is of the form  $\left(\frac{1}{T(t)}\right) \partial_t^2 T(t) - \left(\frac{1}{X(x)}\right) \partial_x^2 X(x) - \left(\frac{1}{Y(y)}\right) \partial_y^2 Y(y) - \left(\frac{1}{Z(z)}\right) \partial_z^2 Z(z) + m^2 = 0$ . This equation consists of four separate equations, each of which is an ordinary differential equation (ODE).
- 4- Finally, the values of the constants  $c_n$  must be determined so that they satisfy the boundary conditions for the Klein-Gordon equation. This can be done using methods such as the method of eigenfunctions or the method of Green's functions.

The separate ODEs are solved using standard methods such as separation of variables or characteristic equations.

## 7- CONCLUSION

The conclusion of this study is that the method can provide a general solution for the equation by separating the variables into separate ordinary differential equations (ODEs). The ODEs can be solved using standard methods such as separation of variables or characteristic equations. The general solution for the Klein-Gordon equation can be found by combining the solutions of the separate ODEs into a single solution and determining the values of the constants that satisfy the boundary conditions.



The main findings of the study suggest that the separation of variables method can be a useful tool for solving PDEs such as the Klein-Gordon equation in curved spacetime. The method provides a systematic approach to finding the general solution of the equation, which can have important implications for our understanding of physics in curved spacetime.

Future directions for research in this area could include exploring alternative forms of the Klein-Gordon equation or other PDEs in curved spacetime and testing the applicability of the separation of variables method for solving these equations. Additionally, further study could be done to determine the limitations and limitations of the method and to improve its efficiency and accuracy.

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# INDUSTRIAL DESIGNS AS AN OBJECT AND AN INTEGRAL PART OF INTELLECTUAL PROPERTY

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## ANNOTATION

*This article discusses a number of issues regarding the legal regulation of industrial designs as an object of industrial property rights, as well as an integral part of intellectual property rights. The requirements relating to both inventions and industrial designs were also considered in order to obtain a patent and legal protection for them. In the third part of the article, the issues of liability for violations of the rights of copyright holders to industrial designs were considered.*

**KEYWORDS:** *Intellectual property, intellectual property law, exclusive right, patent law, copyright, industrial property right, industrial property objects, industrial design, invention, utility model, inventive step, technical solution.*

Since our Republic gained independence, the basis for the formation and development of a system of national legislation in the field of intellectual property has been laid down the basic provisions and principles enshrined in international legal acts and recognized throughout the world regarding the protection of the rights and legitimate interests of citizens. Since, the development of the modern world is impossible without the use of the achievements of science, literature, the use of high technologies in production. Without the development of intellectual and creative activity and their respective legal protection, the progress and prosperity of society is impossible. Issues of legal regulation of relations related to intellectual property are becoming increasingly important. Today their importance is equated to relations in the field of material production, which were previously the only sphere of civil regulation.

The Civil Code of the Republic of Uzbekistan provides property owners with a triad of rights of authority as the right to own, use and dispose of their thing and his property right in any way that does not contradict the law. Intellectual property objects such as works of literature, science, inventions, utility models, industrial designs, as well as other results of creative activity, along with the objects specified in Article 8 of the Civil Code, can act as an object of property rights and property, and personal non-property rights apply to them. As stated in Article 97 of the Civil Code, we

understand intellectual property as an exclusive right, that is, the absolute right of an individual to his creative result, as well as commercial firms to means of individualization and other objects.

As indicated above, the results of the creative activity of both a citizen and the means of individualization of a legal entity, which law protects, are objects of intellectual property.

As a rule, the results of intellectual activity as objects of civil rights are intangible. As noted in the Civil Code, ownership is the right of a person to own, use and dispose of his property at his discretion and in his interests, as well as to demand the elimination of any violations of his property right. The transfer of ownership of a thing, as a rule, does not entail the transfer or grant of intellectual rights to the result of intellectual activity or to the means of individualization expressed in this thing. However, the rules on the right of ownership or other property rights do not apply to intellectual rights, with the exception of those cases expressly specified in the legislation

Historically, copyright and industrial property are the earliest branches of intellectual property law.

According to Section 10 of the Law "On Copyright and Related Rights" the author's right to the result of his creative activity arises from the moment such an object is created and does not require specific registration, unlike industrial rights, since legal



protection for industrial property objects arises from the moment of receipt document, that is, a patent for them.

Is it possible to invent a mixer for whipping products? Can. Is it possible to register this invention and get a patent for it? It is possible if the technical solution related to the mixer will be patentable. In modern conditions of technological progress, the owners of each successful technical production are actively introducing their products into civil turnover. It is extremely important for each manufacturer to secure an advantage in the market due to new devices and high-tech products. Summing up, we can say that not every technical solution, which is an artistic and design solution, can be registered as a protected object of patent rights. Patent law is a civil law institution that regulates material and personal non-material relations in the field of creativity within the technical space associated with the emergence, official recognition, distribution and protection of inventions, utility models and industrial designs. Copyright and patent law have a similar space, as the result of the object of patent right creates a designer who is covered by copyright. The above Law "On Inventions, Utility Models and Industrial Designs" and other legislative acts of the Republic of Uzbekistan regulate relations arising in connection with the emergence, distribution and protection of industrial property objects.

New devices and products can receive legal protection in the space of the Republic of Uzbekistan as utility models. To benefit from a utility model created by the author, it is necessary to register (patent a utility model) with the Department of Intellectual Property under the Ministry of Justice of the Republic of Uzbekistan the absolute right to a utility model (an object of creative activity). In order to protect your technical solutions from encroachments by third parties and become the first in your field, you need to get the appropriate patent document for new objects created by utility model designers in time. The Department for Intellectual Property, in accordance with the said Law, is the only body that implements supervision and expertise in the field of protection of industrial property objects. The right to register, that is, to obtain a patent for an industrial property object, belongs to the author of the invention, the designer of the industrial design or their employer, if the object was created as part of the performance of work duties. A patent is a document

certifying exclusive rights issued based on state registration of an object. It gives the right holder all the rights specified in the legislation.

*Can all industrial designs be protected by patent?* Not all. In accordance with the Law of the Republic of Uzbekistan "On Inventions, Utility Models and Industrial Designs", we are aware of a number of restrictions, which lead to the conclusion that not every new invention or its sample can receive a patent that gives an exclusive right. Innovation acts as such restrictions, that is, the result of a person's creative activity referred to as an invention should not be known until the moment of filing an application. The middle requirement is its inventive step, which indicates that not every new thing can be called an invention. Finally, the third requirement is the applicability of the invention in industry. This requirement is a very important requirement not only for specialists who check the compliance of the invention with all three requirements, but also for the applicant himself. Since if an invention does not have functionality, then there is no need to recognize it as an invention and to obtain a patent for it.

Scientific theories and mathematical methods are not recognized as inventions, since a person does not use his creativity to reveal them, but makes a discovery. The rules and methods of mental operations, schedules, methods and management of the economy are also not recognized as inventions. Decisions regarding the appearance of the product, as well as design projects for buildings and structures, do not belong to inventions, because these objects are recognized as industrial designs. In plant varieties and animal breeds there is no invention and intervention of human mental labor, since they are revealed from nature and therefore are not recognized as inventions.

The patentability conditions of a utility model are recognized its novelty and industrial applicability. There is no such condition as an inventive step compared with the invention. The conditions for patentability of an industrial design are its novelty and originality. An industrial design must be original, namely, firstly, be the result of creative activity and not be repeated. From this, we can conclude that the level of novelty is a sign of patent law, and the condition of originality is a sign of copyright. Industrial design - the decision of the appearance of the product of industrial or handicraft production: form, configuration, ornament and color





combination. The difference between an industrial design and an invention or utility model is that utility models and inventions are designed to solve some important technical problem, and an industrial design distinguishes a product thanks to a fundamentally new design approach, which often allows you to significantly expand the range of similar purpose products and significantly increase their competitiveness in the market.

Solutions can be recognized as an industrial design in various fields of activity: furniture industry, interior items, various devices, fabrics, packaging products, confectionery products of an original form, etc. Patent law is a subject to their novelty and originality, protects industrial designs in the Republic of Uzbekistan. The form, configuration, color combination, pattern or ornament, as well as the decorative elements of the product are subject to protection. As mentioned earlier, the document certifying and giving the exclusive right to the applicant in Uzbekistan is a patent, as in many other states. A patent for an invention in Uzbekistan is issued for a period of 20 years, for an industrial design a patent is issued for a period of 10 years and for a utility model for a period of 5 years. This period can be extended in accordance with the law by the Department of Intellectual Property, for example, the term of an industrial design can be extended by 5 years and is generally 15 years. These terms at first glance seem short-term, but are very reasonable. Since, industrial designs do not live up to 10 years and require updating if one or another industrial design wants to get along in an entrepreneurial environment.

A patent for an industrial design certifies the priority, authorship and absolute right of the patent holder to dispose of it. Among them, there are products for long-term use - machines, machine tools, automobiles, as well as "short-lived" industrial designs, the shape and appearance of which undergoes frequent changes in accordance with the requirements of fashion. This primarily concerns the vast majority of light industry products and household goods (seasonal clothes and jewelry, fabrics, shoes, furniture fabrics for upholstery, leather goods).

In case of violation of their rights, the author and the performer are also entitled to demand compensation from the violator for moral damage.

In case of violation of the rights of the author or holder of a patent for an industrial design, he has the right to present a claim to the infringer for compensation for harm. It should be noted that according to Article 149 of the Criminal Code, the patent holder has the right to demand protection of his violated rights, and as a sanction a fine of 25 to 75 percent of the basic units of account is imposed, or corrective labor up to three years, can be replaced by the deprivation of certain rights for a period of 5 years or the imposition of compulsory work for up to one year. The category of sanction depends on the level of infringement of the rights of the patent owner.

In the context of liability for violation of intellectual property rights, I would like to dwell on foreign experience in this area. Responsibility for copyright infringement is provided for in the United States Code of Laws - a collection of basic and permanent federal laws of the United States (United State Code, U.S. Code or U.S.C.). The Copyright Act incorporated into the U.S. Code of Law and contained in Title 17 of the Code.

In the UK, criminal liability for copyright infringement was first established with the adoption of the Theft Act of 1968. The Copyright Act provides criminal liability for copyright infringement in 1988. Art. 107 of the Law criminalizes the illegal manufacture and circulation of copyright objects.

In Spain, there is a punishment in the form of imprisonment for a term of 1 to 4 years, a fine of 8 to 24 monthly salaries and a special deprivation of the right to engage in certain activities related to the commission of a crime for a period of 2 to 5 years.

In Italy, for copyright infringement, imprisonment for 1 to 4 years and a fine of 5 to 30 million lire is punishable by illegal actions (including import) of more than 50 copies or copies of works protected by copyright and (or) related right.

In France, counterfeiting of works, including their illegal sale, export and import, is punishable by imprisonment of 3 months to 2 years and a fine of 6,000 to 120,000 francs, or just one of these two types of sentences.

In Germany, for the illegal use of the author's signature is punishable by imprisonment of up to 3 years or a fine.



Relations in the field of legal protection of industrial designs are regulated by the Law of the Republic of Uzbekistan "On inventions, utility models and industrial designs", international treaties of the Republic of Uzbekistan and other regulatory acts in the field of protection of industrial designs to which Uzbekistan is attached. Namely, the Paris Convention for the Protection of Industrial Property of March 20, 1883, of which Uzbekistan is a member to this day. Uzbekistan has also been a member of the World Intellectual Property Organization since 1991 and of a number of fundamental treaties and agreements.

Department of intellectual property of the Republic of Uzbekistan together with the World Intellectual Property Organization is working on the development of a national intellectual property strategy. In particular, in 2019, in November, a seminar was organized to study the peculiar experience in the field of intellectual property. In particular, in February 2022, amendments were made to the Law "On Inventions, Utility Models and Industrial Designs, namely, it was supplemented with rules on liability for infringement of the rights of a patent owner. There was no such norm in the Law until 2022.

Summarizing, it should be noted that the main purpose of protecting industrial design rights is to ensure the exclusive rights of the right holder. Namely, providing the right holder with the right not only to own, but also to dispose of his object, and to be sure that the Law will provide protection from the encroachment of other persons. An entrepreneur, starting his activity in the field of business, must be sure that his idea, embodied in an object of intellectual property, will not be stolen. Since a new product, which has no analogues, has an important role for business development, its appearance, as far as its design is aesthetic. Without legal protection, an invention or industrial design may serve to complete the activities of an entrepreneur. Some economists believe that the legal protection of intellectual property may slow down the development of the country. An example of this opinion can serve as China, where there is a constant theft of ideas and objects of intellectual activity by small entrepreneurs. But we can give a different point of view, ensuring the legal protection of intellectual property objects over which entrepreneurs operate leads to the expansion of business on a large scale and territorially. This factor is

also a way of developing the country's economy. This explains the importance of legal protection of intellectual property.

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# PAGTATAYA SA SALOOBIN NG MGA GURO SA PAGTUTURO NG FILIPINO SA PAGPAPATUPAD NG KURIKULUM K TO 12

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Article DOI: <https://doi.org/10.36713/epra12356>

DOI No: 10.36713/epra12356

## ABSTRAK

*Ang pag-aaral ay may layunin na kilalanin ang mga saloobin ng mga guro ukol sa mga pagbabagong nagaganap sa sistema ng edukasyon sa bansa bunsod na rin ng pagpapatupad ng bagong kurikulum na K to 12.*

**SUSING SALITA:** *Edukasyon, Saloobin, K to 12, Pagpapatupad ng Kurikulum*

## 1.INTRODUKSYON

Ang edukasyon ay para sa lahat ng tao, anumang kanyang antas sa buhay, at katangiang intelektwal. Siya ay may karapatang makapagtamo ng edukasyon. Ito ay alinsunod sa Saligang Batas ng 1987, Artikulo XIV, Sec. 1 na nagsasaad:

*“Ang karapatan ng lahat ng mga mamamayan sa mataas na uri ng edukasyon sa lahat ng antas ay dapat maisagawa nang naaangkop sa mga hakbang upang matamo ng lahat ang ganoong uri ng edukasyon.”*

Tinukoy ni Contawe (2013) ang kahandaan ng mga Pampublikong Paaralang Sekondarya sa Bayan ng Moncada, Tarlac para sa unang taon ng implementasyon ng kurikulum na K – 12. Natuklasan niyang ang karamihan sa mga guro ay nakadalo na sa mga seminar ng K – 12 sa rehiyon na siyang pinakamataas na antas na lahok-seminar. Kapansin-pansin din ang reaksiyon ng mga ito na sila’y naniniwalang hindi pa lubusang handa ang kanilang mga paaralan sa implementasyon ng K – 12. Pinatotohanan ito ng mga lumabas na resulta sa mga kagamitang pampagtuturo na lubhang mababa sa nakalap na datos na pangkalahatang mean na 1.75. Maging ang bilang ng mga silid-aralan ay hindi akma sa bilang ng mga mag-aaral sa asignaturang MAPE, EsP, at Filipino. Ang mga ito ay itinuturo rin ng ibang mga gurong iba ang medyor o espesyalisasyon na nagpapakita ng malaking kakulangan.

Ayon kay Motshekga (2011), ang ulat sa implementasyon ng *National Curriculum Statement* sa mga paaralan ng South Africa na ang mga guro ay nalilito, walang gana, *stressed* at *overloaded* at sa ganitong kalagayan sila ay hindi nagiging epektibo. Kung kaya’t ang mga ilang rekomendasyon ay ipinakilala upang tugunan at pag-ibayuhin ang sitwasyong ito at ito ay ang mga sumusunod: (1) Magkaroon ng isang malinaw at abot na patakaran, (2) sumulat ng makabagong kurikulum, (3) Balikan ang mga asignaturang may

mahalagang kaalaman, (4) siguruhin ang pag-unlad at pagpapatuloy nito sa mga sumusunod na antas.

Sa pagpapaunlad ng mga paaralan na nagpapatupad ng bagong kurikulum, itinagubilin ni Hellstrom (2004), ang mga sumusunod: (1)Gawing maliwanag at madaling maintindihan ang pambansang kurikulum. Ilahad nang malinaw ang mga pagbabago na gustong gawin sa kurikulum ng paaralan; magbigay ng mga dahilan para sa pagbabago; siguraduhin na makikinabang ang mga mag-aaral sa pagbabago; hikayatin ang lahat upang makibahagi; sagutin ang mga katanungan; huwag babaguhin ang mga inaasahang bunga sa pagpapatupad; at ang kalituhan sa mga estratehiya at patakaran ay mahirap sagutin sa pampaaralang antas. (2)Huwag mabibigay ng utos – magbigay ng panahon sa talakayan. Hindi mainam na ipaubaya ang pagpapasya sa nilalaman ng kurikulum sa paaralan – lalo sa mga paaralang elementarya. (3)Gumawa ng paraan ng para sa pkikibahagi. Isaalang-alang ang iba’t ibang pangangailangan at kakayahan ng mga guro. Ang ilan ay hindi propesyunal, ang ilan ay mga practitioners. Irespeto ang kanilang pagkakaiba. Bigyan sila ng mga tanong na dapat masagot hindi puro trabaho na dapat gawin.(4)Gawing balanse ang pressure at support.(5)Magkaroon ng magandang pakikibahagi sa pagitan ng paaralan at tagapamahala.

Kung kaya’t ang patuloy na pagbabago sa edukasyon ay natatamo sa pamamagitan din ng pagsunod sa kurikulum. Ito ang layunin ng kasalukuyang pag-aaral kung kaya’t patuloy itong sinasaliksik. Ang mga mag-aaral na magtatapos ng labindalawang taon na programa at tatanggap ng diploma para sa elementarya (pagkatapos ng anim na taon), diploma para sa junior hayskul (pagkatapos ng apat na taon), at ang diploma para sa senior hayskul (pagkatapos ng dalawang taon). Ang *K – 12 Curriculum* ay isang panuntunan sa pagpasok ng isang mag-aaral sa kolehiyo (ang mga papasok sa Panunurang Taon 2018 – 2019).

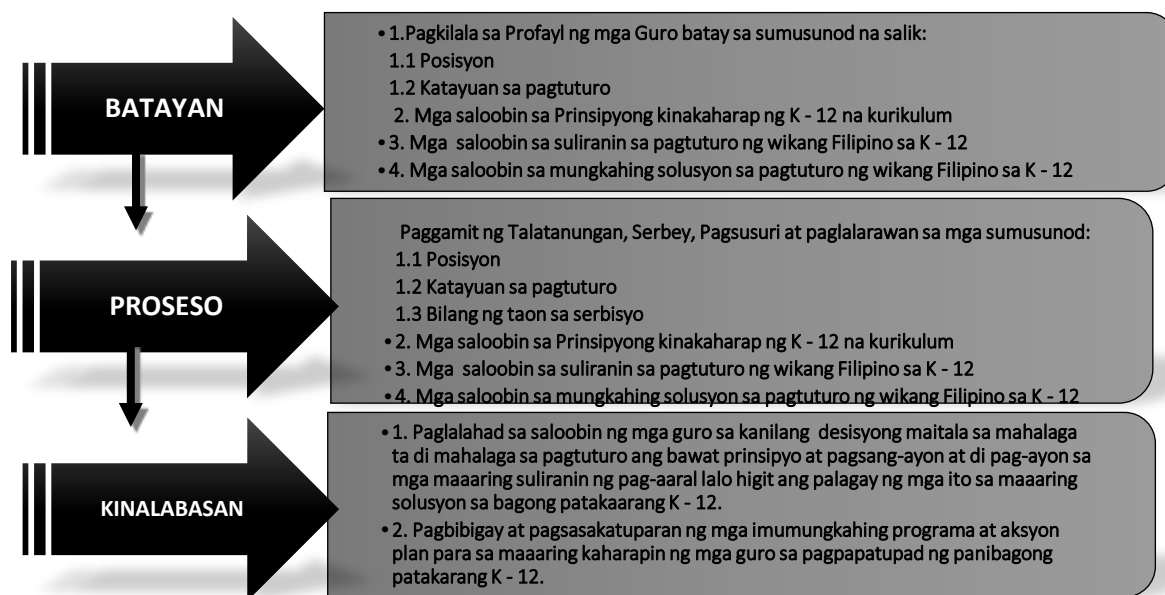


Ang pagpapatupad ng *K – 12 Curriculum* ay nagkaroon ng napakaraming katanungan at agam-agam sa mga kaguruan at maging sa mga ordinaryong taong-bayan. Sa kahandaan ng Kagawaran ng Edukasyon sa pagpapatupad sa bagong kurikulum nakasalalay ang ikapagtatagumpay nito. Lalo't higit ang mga guro ng gumagamit nito sa kanilang pagtuturo.

Nais maipadama ng kasalukuyang pananaliksik ang halaga ng pagtangkilik sa sariling wika, antigin ang kawilihan ng mga mag-aaral, gisingin ang kanilang natutulog na damdamin at kaisipan, at baguhin ang pagwawalang bahala sa wika upang sa gayon ay mabigyang pansin ang wikang Filipino.

Makikita sa Figyur 1 ang mga batayang prinsipyo ng *K – 12* at saloobin ng mga respondent ukol dito. Ipinakikita sa

paradigma ng pag-aaral ang kinasangkapang balangkas konseptwal sa pag-aaral na ito. Ang batayan ng isasagawang pag-aaral ay nakatuon sa saloobin ng mga guro sa mga pamantasang paaralan sa lalawigan ng Tarlac kaugnay ng pagtuturo sa Filipino at sa panibagong patakarang ipinatutud ng Kagawaran ng Edukasyon mula sa mga prinsipyo ng *K – 12*. Ang pagkilala sa profayl ng mga guro mula sa (1) *posisyon* na may set na guro isang (a) Direktor, (b) Head/Chairperson, (c) Professor, (d) Instruktor. Kasama sa pagkilala ang (2) *katayuan sa pagtuturo* ng isang guro sa kaniyang propesyon: (a) Permanent, (b) Part – timer, (c) Contractual/Lecturer at (d) Substitute.



**Figyur 1**  
**Paradigma ng Pag-aaral**

## 2. METODOLOHIYA

Ang deskriptibong pananaliksik ayon kay Glatthorn at Joyner (2005), ay naglalarawan ng isang penomina. Ito ay naglalarawan sa katangian ng isang populasyon sa pamamagitan ng pagsusuri sa populasyon. Ang deskriptibong hakbang na ginawa ng mananaliksik ay survey o pamamahagi ng mga talatanungan, panayam, at obserbasyon na siyang ginamit sa pag-aaral.

Ang palarawang pagsusuri ay isang paraan ng paglalahad at pagpapakahulugan ng mga datos na nakakalap kung saan tutukuyin ang kalagayan at kaugnayan ng mga pangyayari. Pinili ang pamamaraang ito sapagakat ang pangunahing layunin ng mananaliksik ay ang pagtataya at pagsusuri sa mga epekto ng saloobin ng mga guro hinggil sa bagong patakarang kurikulum ng Kagawaran ng Edukasyon, ang *K – 12 Curriculum*.

### Paglalatag ng Estatistika

Gumagamit ng *statistical treatment* na *frequency counts*, at *percentages* sa pagtataya ng saloobin ng mga guro sa bawat set ng nasa kabuuang kahingian sa talatanungan.

Sa paglalatag ng mga figura kaugnay ng mgapagpapahalaga alinsunod sa mga naitalang baryabol kaugnay ng profayl ng mga respondent; ginamit ang formula ng Mean.

$$X = \frac{\sum x}{N}$$

Kung saan:

$\bar{X}$  = Mean

$\sum$  = summation o kabuuang

$\bar{X}$  = Bilang na naitala

$N$  = Bilang ng respondent

Ang fo

rmula na gagamitin para matukoy ang porsyento ay:

$$p = \frac{f}{n} \times 100$$

Kung saan:

$f$  = para sa bilang ng mga sagot sa partikular na kaategorya

$n$  = kabuuang bilang ng mga kalahok





### 3. RESULTA

Layunin ng pag-aaral ang malapatan ng kasagutan ang mga sumusunod na suliranin:

1. Ano ang profayl ng mga respondent batay sa sumusunod na salik:

#### 1.1 Posisyon sa Pamantasan:

##### TALAHANAYAN 1

#### BILANG AT BAHAGDAN NG MGA KALAHOK KAUGNAY NG POSISYON NG KALAHOK SA PAMANTASAN

Posisyon sa Pamantasan	Bilang	Bahagdan
Director	2	1
Head o Chairperson	5	2.5
Propesor	82	41
Instructor	111	55.5
Kabuuan	200	100

Mula sa limang inilatag na varyabol matutunghayan na ang mga kalahok ay may mahlagang posisyon at nararapat na maging bahagi sa/ng pag-aaral.

#### 1.2. Katayuan Sa Pagtuturo

##### TALAHANAYAN 2

#### BILANG AT BAHAGDAN NG MGA KALAHOK KAUGNAY NG KATAYUAN SA PAGTUTURO

Katayuan sa pagtuturo	Bilang	Bahagdan
Permanent	108	54
Part-timer	4	2
Contractual o Lecturer	88	44
Substitute	0	0
Kabuuan	200	100

Makikita sa apat na pamilyan ng pagsasaliksik karamihan ay may permanenteng posisyon at nararapat na maibilang na matatag na lahod bilang respondents sa pag-aaral.

2. Anu - anong mga konsepto ng kurikulum na K to 12 ang itinatayang magdudulot ng epekto sa pagtuturo ng Filipino?

Naglatag ang mananaliksik ng mga sumusunod na kaisipan upang masukat ng mga kalahok ang kanilang opinyon sa nasabing paksa sa pamamagitan ng pagtataya kung ang mga ito ay mahalaga sa pagtuturo ng wikang Filipino, hindi mahalaga sa pagtuturo ng wikang Filipino at walang sagot, kabilang sa mga kaisipang ito ang makikita sa talahanayan.

##### TALAHANAYAN 3

#### BILANG AT BAHAGDAN NG MGA TUGON NG KALAHOK KAUGNAY NG MGA KONSEPTO NG KURIKULUM NA K TO 12 ANG ITINATAYANG MAGDUDULOT NG EPEKTO SA PAGTUTURO NG FILIPINO

Prinsipyo ng K12	Mahalaga	%	Walang Desisyon	%	Hindi Mahalaga	%
Pagiging mandatory ng kindergarten	172	86	16	8	12	6
Paggamit ng "mother tongue"	182	91	13	6.5	5	2.5
Grade 1, itinuturo sa mga mag-aaral na nakafokus sa matatas na pagsasalita	181	90.5	16	8	3	1.5
Grade 4, itinuturo sa paggamit bilang mga pangunahing wika ng pagkatuto ang Fil/Eng	184	92	10	5	6	3
Pagkakaroon ng Senior High School	98	49	15	7.5	87	43.5
Makakapamilya ang mga mag-aaral ng ispesyalisasyon	172	86	13	6.5	15	7.5
Kurikulum na nakafokus sa mga pangangailangan ng lokal na komunidad	183	91.5	0	0	17	8.5
Nababawasan ang mga paulit – ulit na sabjek sa kolehiyo	163	81.5	10	5	27	13.5
Lumiliit ang bilang ng mga elective na sabjek/kurso	167	83.5	28	14	5	2.5
Pagkakaroon na lamang ng 31 sabjek na mayroong tig 80 oras na kabuuan	169	84.5	25	12.5	6	3



Makikita na ang magiging pamamaraan ng pagtuturo ng mga aralin sa makabagong sistema ay sa pamamagitan ng paggamit ng wikang nakasanayan at ang dahan dahang pagsasanib ng wikang Filipino at wikang Ingles nang sa gayon ay maganap ang katatasan sa paggamit at pagsasalita ng bawat wika.

3. Ano ang itinatayang saloobin ng mga guro sa mga naitalang mga suliranin kaugnay ng kurikulum na K to 12 ukol sa epekto nito sa pagtuturo ng Filipino?

Kabilang sa mga resulta ng pag-aaral na ito ay ang mga sumusunod:(1)Sa paggamit ng pangunahing wika ng lalawigan ay nawawala ang fokus sa pagkatuto sa Wikang Filipino;(2)Maaaring maging mahirap ang transisyon ng pagtuturo ng Filipino sa mga mag-aaral sapagkat sa unang limang taon (K hanggang Grade 3) ay ginagamit ang pangunahing wika ng lalawigan sa pagtuturo;(3)Magiging mahina ang komprehensyon ng mga mag-aaral sa pagkakaroon ng dalawang wika ng pagtuturo;(4)Magiging mahirap sa mga guro at tagapagbuo ng mga kurikulum sa lalawigan na ihanay ang mga aralin sa Filipino alinsunod sa ginagamit na wika ng lalawigan bunsod ng pagkakaiba ng mga ito;(5)Malilito ang mga mag-aaral sa kanilang aralin sapagkat ginagamit ang wika ng lalawigan sa pagtuturo;(6)Umiiksi ang panahon sa pagkatuto bunsod ng mas maikling panahon na inilaan sa bawat subjek;(7)Hindi masasakop lahat ng mga aralin na itinaturo sa lumang sistema sapagkat umiksi ang panahon ng pagtuturo;(8)Kinakailangan ang malawakang revisyon ng mga lunsarang aklat upang maihanay ang layunin ng kurikulum sa pagtuturo batay sa mga prinsipyo ng K to 12;(9)Hindi pa handa ang mga naunang guro at propesor sa bagong sistema;(10)Kakulangan ng mga kagamitan upang maiangkop ang umiiral na mga pamamaraan sa mga pamantasan sa bagong kurikulum.

4. Ano-ano ang mga natukoy na hakbang na itinatayang magagamit bilang panlunas sa mga suliranin sa pagtuturo ng wikang Filipino sa K to 12?

Kabilang sa mga mungkahing solusyon ay ang mga sumusunod:(1)Magsagawa ng ekstensibong pagpapasanay sa mga guro at administrador kaugnay ng mga kaisipan ng k to 12;(2)Bumuo ng isang pangkalahatang kumite o pangkat na siyang magsisilbing tagapatnubay sa pagbuo ng kurikulum na maglalangkap ng mga umiiral na pamamaraan ng pagtuturo ng Filipino;(3)Alamin ang mga mahahalagang kaisipan na siyang gagamitin sa pangkalahatang kurikulum ng mga pamantasan sa pagtuturo ng Wikang Filipino alinsunod sa kurikulum na K to 12;(4)Kilalanin ang mga pagkakatatulad at pagkakaiba ng mga pamantayan sa pagsasalita at paglalahad na ginagamit lalawigan at ang pangkalahatang pamantayan sa pagtuturo ng Wikang Filipino nang maihanay ang mga kaukulang panunutan na magiging kapaki-pakinabang sa pagtuturo nito;(5)Gawing kawili-wili ang paglalangkap ng pagtuturo ng wikang Filipino sa makabagong kurikulum nang sa gayon ay manatili ang pagpapahalaga ng mga mag-aaral sa subjek na ito; at(6)Ipakita

sa bubuuang mga pamantayan ang kahalagahan na maidudulot ng pagtuturo ng Wikang Filipino sa mga napiling kurso ng mga mag-aaral.

## Natuklasan

1.Tatlong varybol ang ginamit sa pag-aaral upang mailatag ang pagkakakilanlan sa mga respondent kabilang na ang posisyon sa pamantasan ,katayuan sa pagtuturo at bilang ng taon sa serbisyo. Mula sa dalawang daan (200) na kalahok ng sarbey na isinagawa ng mananaliksik ay natukoy na ang pinakamataas na bilang ng kalahok ng pag-aaral ay ang mga Instructor na may daming 111, samantala, ukol sa kanilang mga katayuan sa pagtuturo nakitang mayroong pinakamalaking bilang sa mga kalahok ang permanent nam nagtala ng bilang na 108.

2.Sampung prinsipyo kaugnay ng binuong bagong kurikulum ng K to 12 ang binigyang diin sa ikalawang bahagi ng pagsasaliksik kabilang na ang mga sumusunod: (a)Pagiging mandatory ng kindergarten;(b)Paggamit ng “mother tongue” o pangunahing wika ng lalawigan;(c)Sa Grade 1, ang mga subjek na English at Filipino ay itinaturo sa mga mag-aaral na nakafokus sa matatas na pagsasalita o oral fluency;(d)Sa Grade 4, ang mga subjek na English at Filipino ay itinaturo sa mga mag-aaral na nakatuon naman sa paggamit nito bilang mga pangunahing wika ng pagkatuto;(e)Pagkakaroon ng Senior High School na masasabing isang espesyalisadong sistema ng mataas na edukasyon;(f)Makakapamilya ang mga mag-aaral ng ispesyalisasyon batay sa mga sumusunod na batayan: kaangkupan, interes at kapasidad ng paaralan;(g)Pagkakaroon ng kurikulum na nakafokus sa mga pangangailangan ng lokal na komunidad;(h)Nababawasan ang mga paulit – ulit na subjek sa kolehiyo;(i)Lumiliit ang bilang ng mga elective na subjek o kurso; at(j)Pagkakaroon na lamang ng 31 subjek na mayroong tig 80 oras na kabuuan.

3. Nilayong malapatan ng tugon sa ikatlong suliranin na inilatag ng mananaliksik ang itinatayang saloobin ng mga guro sa mga naitalang mga konsepto kaugnay ng K to 12. Muling naghain ng sampung pamimilian ang mananaliksik na tinapatan ng tugon na sumasang-ayon at di sumasang-ayon, kabilang na rito ang mga sumusunod: (a)Sa paggamit ng pangunahing wika ng lalawigan ay nawawala ang fokus sa pagkatuto sa Wikang Filipino;(b)Maaaring maging mahirap ang transisyon ng pagtuturo ng Filipino sa mga mag-aaral sapagkat sa unang limang taon (K hanggang Grade 3) ay ginagamit ang pangunahing wika ng lalawigan sa pagtuturo;(c)Magiging mahina ang komprehensyon ng mga mag-aaral sa pagkakaroon ng dalawang wika ng pagtuturo;(d)Magiging mahirap sa mga guro at tagapagbuo ng mga kurikulum sa lalawigan na ihanay ang mga aralin sa Filipino alinsunod sa ginagamit na wika ng lalawigan bunsod ng pagkakaiba ng mga ito;(e)Malilito ang mga mag-aaral sa kanilang aralin sapagkat ginagamit ang wika ng lalawigan sa pagtuturo;(f)Umiiksi ang panahon sa pagkatuto bunsod ng mas maikling panahon na inilaan sa bawat subjek;(g)Hindi masasakop lahat ng mga aralin na itinaturo sa lumang sistema sapagkat umiksi ang panahon ng



pagtuturo;(h)Kinakailangan ang malawakang revisyon ng mga lunsarang aklat upang maihanay ang layunin ng kurikulum sa pagtuturo batay sa mga prisipyo ng k to 12;(i)Hindi pa handa ang mga naunang guro at propesor sa bagong sistema;(j)Kakulangan ng mga kagamitan upang maiangkop ang umiiral na mga pamamaraan sa mga pamantasan sa bagong kurikulum

4.Mayroong anim na mungkahing solusyon na inilatag ang mananaliksik sa bahaging ito ng pag-aaral na kinabibilangan ng mga sumusunod:(a)Magsagawa ng ekstensibong pagpapasanay sa mga guro at administrador kaugnay ng mga kaisipan ng k to 12;(b)Bumuo ng isang pangkalahatang kumite o pangkat na siyang magsisilbing tagapatnubay sa pagbuo ng kurikulum na maglalangkap ng mga umiiral na pamamaraan ng pagtuturo ng Filipino;(c)Alamin ang mga mahahalagang kaisipan na siyang gagamitin sa pangkalahatang kurikulum ng mga pamantasan sa pagtuturo ng Wikang Filipino alinsunod sa kurikulum na k to 12;(d)Kilalanin ang mga pagkakatulad at pagkakaiba ng mga pamantayan sa pagsasalita at paglalahad na ginagamit lalawigan at ang pangkalahatang pamantayan sa pagtuturo ng Wikang Filipino nang maihanay ang mga kaukulang panunutan na magiging kapaki-pakinabang sa pagtuturo nito;(e)Gawing kawili-wili ang paglalangkap ng pagtuturo ng wikang Filipino sa makabagong kurikulum nang sa gayon ay manatili ang pagpapahalaga ng mga mag-aaral sa subjek na ito;(f)Ipakita sa bubuuang mga pamantayan ang kahalagahan na maidudulot ng pagtuturo ng Wikang Filipino.

### Konklusyon

1. Sa pagsasagawa ng isang sarbey mahalang maisali ang mga varyabol na: posisyon sa pamantasan, katayuan sa pagtuturo at ang bilang ng kanilang taon sa pagseserbisyo bilang guro sa Filipino.

2. Sa pagtataya ng mga opinyon, ang kinilalang suliranin ng malaking bilang ng mga kalahok ang inilatag na kaisipang naglalahad na kinakailangan ang malawakang revisyon ng mga lunsarang aklat upang maihanay ang layunin ng kurikulum sa pagtuturo batay sa mga prisipyo ng k to 12, samantalang ang malaking bilang ng mga kalahok na nagpahayag ng kanilang di pagsang-ayon ay naitala sa pahayag na sa paggamit ng pangunahing wika ng lalawigan ay nawawala ang fokus sa pagkatuto sa Wikang Filipino.

3. Sa paglalatag ng rank ng mga naging tugon ng mga kalahok inilatag na mungkahing suliranin sa naunang bilang ay makikita na ang mga pahayag na nagtala ng pinakamataas na bilang sa panig ng sumasang-ayon ang siya namang nagtala ng pinakamaliit na bilang ng mga kalahok na hindi sumasang-ayon sa mga mungkahi. Ipinapakita nito na ang pagkakaiba ng mga kaisipan at pananaw ng mga kalahok ay nababanaag sa kanilang mga isinagot sa sarbey.

4. Sa pagsasagawa ng pagbuo ng mga aralin at kagamitang pampagtuturo sa ilalim ng bagong kurikulum, mahalagang isalalang alang ang mga sumusunod na kaisipan, una ang pagpapasanay sa mga guro, ikalawa ang pagtukoy sa mga kaisipang magagamit sa pagtuturo ng Wikang Filipino sa bagong kurikulum, matukoy ang mga pagkakatulad at

pagkakaiba ng mga pamantayan ng mother tongue sa Filipino (bilang ikalawang wika) at Ingles (bilang ikatlong wika) at gawing kawili-wili ang mga araling lalangkapan ng bagong mga pamamaraan sa ilalim ng bagong sistema.

### Rekomendasyon

Bahagi pa rin ng pagsasaliksik ang pagbibigay ng ilang mungkahi o rekomendasyon para sa mga susunod na pangkat ng mga mananaliksik at iba pang mga may malakig pagpapahalaga sa pagtuturo at pagkatuto.

- 1.Magsagawa ng ilan pang mga karagdagang pag-aaral ukol sa magiging epekto ng Senior High School sa pagtuturo ng Wika at Panitikan kung ang mga ito ay aalisin sa antas tersarya.
- 2.Bumuo ng isang pagsasaliksik ukol sa mga dapat gamiting teknolohiya sa adaptasyon ng pagtuturo ng Filipino sa ilalim ng programang K to 12.
- 3.Maglaan ng pagpapahalaga kaugnay ng MT MLE at ang kaugnayan nito sa higit na pagpapaunlad ng wikang Filipino bilang Wikang Pambansa.
- 4.Magsagawa ng pagsusuri sa magiging epekto ng paggamit ng Wikang Filipino sa pagtuturo sa mga kursong vokasyunal sa ilalim ng Grade 11 at Grade 12.
- 5.Kilalanin ang mga ambag ng Wikang Filipino sa higit na ikabubuti ng kurikulum ng K to 12 kung ito ay gagamitin sa pagtuturo ng mga aralin sa Senior High School.

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## POET PRAFULLA KUMAR MISHRA'S THINKING BASED ON SOCIAL PROBLEMS IN HIS POEMS

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Article DOI: <https://doi.org/10.36713/epra12373>

DOI No: 10.36713/epra12373

Prafulla Kumar Mishra was born in a traditional Bramhin family at the district of Puri in the state of Odisha on 20<sup>th</sup> Feb 1954. According to the Indian tradition, he has born in his maternal grandmother's house. His mother's name was Srimati Pramila Sundari Devi, who was an ideal teacher and his father is Sri Kashinath Mishra, is a renowned advocate at Puri district. He passed his childhood under the care of his parents, families, paternal and maternal grandmothers. As a result of which deep liking towards Indian culture and tradition were developed in him with the super source of inspirations. On the other-hand, he hailed from a highly educated family, as a consequence he is inherited a habit of learning from his childhood days. His father Kashinatha Mishra, working as a famous social worker in Puri district, who is the life-long inspiration for him. He is now retiring as a professor of Sanskrit department of Utkal University, BBSR. And before since 4 yr. Now he is working as a chancellor of DRPC Agriculture University, Bihar.

The poem stands on the foundation of perception. The emotion in the poet's mind, that is permanent emotion, that is awake occur with the perfect person, time and circumstances. These expressions often draw the picture of social order. Which the poet outlines as poetry and writes it on paper with a pen. Whom the general and intellectual section of the society reads and knows the social problem. Society teaches a man how to live life. A person who is not social, is outside the society, his life is very painful and hopeless. It is the job of the successful human being to live in the system of society and to make efforts in the development of society through struggle. The contemporary picture of social problems has been drawn in the poems of poet Prafulla Kumar Mishra. The poet has exposed the game happening with life. Today a young man has been practicing sacrifice and penance for fifteen-sixteen years. Standing at the crossroads of society by fulfilling all educational beliefs and qualifications. In spite of having all qualifications, he is not able to find the mean of earning proper livelihood. He stares at that turn and looks at all the paths and meets every intellectual section of the society. Together, he tells the new of his success and failure. Listening to that news, the intellectual class smiles and walks on his agony. Then, where does that unsuccessful person get success, where is he getting involved. Returns to find him. Which the poet has shown in the lines of his poem as follows.

The poet is very frustrated and disappointed. Such a great journey of life meaning cannot be rejected for doing. From ancient times till today, meaning has been predominant. If someone is others slave, it is for money only. Money is the root of everything. As started in Mahabharata.

It is evident from this line whatever the person does, when the money is important for him. Today the unsuccessful person who is running after success with qualifications is not alone. But his entire family like mother, brother, sister, wife and children are all sitting in the boat of his merit. The boat that has not yet found in the shore. The poet has mentioned the problem of his young man. 'Pravartako ma bhu' In this poem the poet has shown a wonderful unique social problem. Whom the society accepts, but despite knowing everything, it is not able to present the true nature to the society. This is a huge social problem. Today, in order to be well behaved with each other, that person is happy, but the same truth dies prematurely. He walks with untrue truth. When he realizes that what I am carrying is untrue, then where is the truth. This is also a social problem which the intellectual class of today delays in identifying? This is a harsh truth. Poet depicted in the truth in this poem 'jivanasya tane vitane' The problem depicted in this poem in briefly. Which is often present in every section of society being seen. Poet said that a person becomes lonely in the absence of a friend. The Charudatta speaks in Sudraka's Mrchhakatika. everything is empty without a good friend. A true friend is also needed in life.

This is also a social problem which the poet has shown. And one side of today's society is hurt by social maladministration and other side discovers joy in it. This is a very sad situation. Because we live with our Indian tradition. But society runs the opposite.

Which is the opposing tradition. We are human beings and human beings should have humanity and conductors naturally. Due to which good rites and thoughts arise. A cultured person and thought skilled when doing something in society. So the society respected him. But at the same time, when an uncooperative and well-meaning person creates a problem, that that problem is not the problem of a village in a family but is a problem of whole society. Which the poet tried to express in his poems. When a problem arises and solution also arises with it, but we adopt the problem and don't even look the solution. When a problem gradually





increases and when we are young, we go out in search of solutions. After a few days, when we are tired of searching, then suddenly the solution is seen. The poet has also understood this social problem as his problem, and has done in the poetic thoughts. He says again and again, *Satyam Pashya, Sadheyarm sakalam*, that is the true form of solution to the problem with patience. You have the solution that problem with patience. You cannot see it, because this pace of life is very strange. And it is very difficult to find oneself in this weirdness because a person also gives up patience and truth. Due to which, the rays of hope start quenching in the life and the darkness of despair begins to enter. Then he remembers his mother, when any child is in a lot of trouble, he calls his mother. Even when the poet is unable to count his sorrows, he writes the poem.

In the light of the disturbance of society, he roams around and listens to the tune and corruption of incest, misbehaviour and corruption. Then we want to explore the code of conduct. The poet is much sadder than this. This long means free from long darkness. He tries to listen to the truth. He is also unable to hear properly.

The poet is also the conductor of the Renaissance. In spite of all the contradictions, he has given his thought stream freely. As a nutritious poet of any official or feudal system, he did not mention a aspect. But it has presented both sides of the society in an absolute sense. Government intellectuals the class of continues to exploit the public all the time. The poet does not tolerate this. He shows his attitude through poetry "Vanya" is based on social problem. It rains all around and flood also occur. All are unable to save themselves in Mahaplavani, the government announces some grants to get rid of this pandemic trap after seeing the condition of the general public, after the declaration all officers and employees rejoice concerning the grant.

And how much will go into someone's account, their allocation is of the mind, everyone starts doing it. Mathematics starts to get knowledgeable from top to down. They do not know the mathematics in subject, but the mathematics of life is well inherited. Farmer's wealth and animals were destroyed. There is a cry all around. Seeing all this problems the poet get sensitive, and all these officers are hurt by heart numbness.

The poet is unable to tolerate the problem of the general public and the exploitation of the general public by the officials. He is a foster of clean thinking. The wants to be connected with the general public at all times. Wants to see the face of society in a clean mirror, but it is not possible. Social activities give rise to all contradictions simultaneously. Because of which he feels alone. The poet has expressed all these ideas. A problem which is difficult to understand and find a solution. Today's environment has changed into modern environment. Which we are calling in the name of development or industrialism. This evolutionism has deeply hurt humanism and compassion. Which we all understand today, and are also referring in our literature. But they are not trying to erase it. it is a very big problem. So that the poet speaks

That is, education has no value in today's educated society. If you look at all the educational institutes and offices of India, then you are from all the educated and enlightened

class working here. But each other has opponents. All is influenced by casteist communities and sectarianism. Think of yourself as an antagonist. All are influenced by casteism, communalism. A colleague sees his colleague as the antagonist. This is very unfortunate.

Which the poet has also mentioned in his poem. Better than today's education society, the village is an illiterate village society filled with love, harmony, brotherhood. Love is seen which is rare in an educated society. In this educated society appearance is very important. But in this society there is a lack of inner love. And in this every person has his own property jealousy. With whom he sleeps and thinks jealousy is the support of her life and becomes a supporting part of living life. This is the development of today. From teacher to business leader, the general public drinks everyday of the jealous Sanjeevani and it seems that if she does not drink so he will not be able to escape. When he drinks he shows his enlightened knowledge in the light of fuss. The poet has experienced all the social problems by standing on the ground himself.

The poet has experienced a true truth devoid of utilitarian, peachiest, moralistic, idealistic and aesthetic sensibilities. The poet has seen social problems from his point of view. And seeing all this problems he tried to portray it. This poetic consciousness of him is a reflection of original thoughts. In today's ideological era, due to the industrial revolution, the work of cutting the forests and affecting the environment and establishing resource for economic gain has started, the public is more at a loss than profit. The poet gets frustrating seeing this contaminated environment. What is the way to live life now? Nature paid air, which was received without money, today, even if you give money, it will not be available. The poet depicted it as '*Aparam kimasti*' in this poem.

The same 'Qua gata' in this poem is going to sow a sense of belongingness in the universality meaning. The running feet are getting tired after running behind wealth. Yet the meaning is not attained, and here also his tenderness and human sympathy go to Asthachala. Oh! Oh! By doing so, the person is spending his life.

The wants to speaks a person leaves a certain thing and runs to get a uncertain things, the uncertain things is not attained and the certain things also burns.

In today's society, man's life depends on one machine. If the device is burnt then there is no use of this body. The scientific age has made humans into animals by subjecting them to instruments. The poet is not able to bear this suffering.

## CONCLUSION

In the era of modernization, the harmony of society has disappeared. The has exposed all these problems in his mind and created a new vision of truth in front of the society. Analyzing the Punarootanism, Socialism, Politicalism, Communalism, Casteism all are presented a new discussion of the whole social problems have tried to do. I have wholeheartedly accepted the activity that is in front of society today, and have shown the problems in it as social problem. He has also resolved it. No social person can do the work done to test the human mind, not only of his state, but of India. In



which there is full intimacy, compassion, harmony. This poetic thought of the poet can help can in getting rid of social problems.

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# MYTHS AND LEGENDS ABOUT THE SAINTS OF KHOREZM

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## ABSTRACT

*The article is devoted to the history of studying the genesis of myths and legends about the saints of Khorezm. Myths and legends about these saints attract and pilgrims. Particular attention is paid to the myths and legends about the saints Hubbi, Khazret Ali, Said Ata, Hakim-Ata and Ambar-Ana, and they became saints and patrons of various professions for the inhabitants of Khorezm. Particular attention is paid to the myths and legends about the saints Hubbi, Khazret Ali, Said Ata, Hakim-Ata and Ambar-Ana. For the inhabitants of Khorezm, they became saints and patrons of various professions. As a result, myths and legends arose about these saints among the people of Khorezm.*

*The works of the authors are analyzed in chronological order, among which the main place is occupied by the scientific works of domestic and foreign ethnographers.*

**KEYWORDS:** *Myths, legends, shrines, sacred books, Hubbi cult, Sufi sheikh, Goyib bobo (vanished), arangi, Khazret Ali, Said Ata.*

It is known that myths and legends formed an archaic worldview, and are one of the types of "worldview". Myth and legend is a symbol of religion, and in place with the source of people's religious behavior. Having received basic information from myths, the experience of experiencing the "sacred" is institutionalized in the ritual. [Ismailova N. 2016]. The territory of the Khorezm oasis from time immemorial was rich in holy places, which were worshiped by believers. Many of these places, possessing magical energy, have survived to this day, attracting pilgrims who want to partake of the high spirit of saints or get rid of various ailments and diseases. Each sacred place has its own history, legend or myth, which the local population interprets in their own way. Thus, we can say that it is the myths and legends about these saints that attract and attract pilgrims. In this regard, the words of P. Florensky are very appropriate: "On the ashes of shrines - myths, on the ashes of myths - shrines" [Florensky 1976 p. 118]. [Ismailova N. 2016].

The geographical, cultural and economic conditions of the Khorezm oasis, located between the deserts, contributed to the fact that the cult of the water element occupied a central place in religious beliefs, starting from ancient times. This was reflected in the beliefs of the Khorezm oasis and could acquire an independent meaning in the developed pantheons of the images of goddesses of fertility, personifying the water element. An oasis in the full sense of the word is the creation of the Amu Darya [Mankovskaya 1978: 22–23]. The well-being of the Khorezm population was closely connected with the river, and therefore the Amu Darya was an object of worship, this was gratitude for the life-giving force, and fear of the blind destructive element of the mad river. The life-

affirming river has a rich and interesting history, its manifestations are shrouded in a veil of legends [8, p.6]. In Khorezm hagiology, the cult of Hubbi, the patron of the waters of the Amu Darya, occupies a special place and can be traced in the traditions of veneration of the water elements. Here you can often meet places of pilgrimage associated with the cult of Hubbi<sup>1</sup>. Academician Ya.G. Gulyamov, studying the history of the irrigation of ancient Khorezm, recorded a number of legends from the old-timers associated with the Amu Darya. A very curious legend about Hubbi, the young patron of the river, is told by an old boatman: "Long before Feridun and even Jemshid (the mythical kings of the Persian epic), a young man lived on this river, who became the ruler of the river. [10, p.50]. His name was Hubbi, he ate fish: having caught a fish from the water, he held it out to the sun, and the fish was fried. For seven hundred years, while he was on the Amu Darya, there was not a single evil spirit and even mosquitoes on the river. In the reign of Jamshid, Hubbi disappeared [Gulyamov 1959, p.32-33]. "It is believed that he was kidnapped by the beautiful ruler of the heavenly seas. After his disappearance, the mother of Hubbi Ardisura-Anahita appeared on the Amu Darya, she was crying for a

<sup>1</sup> In the process of conducting field research in Khorezm, we found that in the region there are more than 50 places of pilgrimage associated with the names of Hubbi and Goyib bobo (disappeared). In Khanka district two, in the village of Durgadyk, Khorezm region, there is a mazar named after Sulton Khubbi and the local population considers it a place of disappearance. Khazaraspe in three places there are mazars with the name Hubbi.



long time looking for her son. It was she who built the first boat and trained people in navigation for war on the water. For thousands of years she kept mourning, the whole world cried with her, even the underground demons. Then Hubbi's mother disappeared forever. According to the stories of informants, the torso of this woman was previously depicted on the prow of the ships. When the Muslims appeared, they cut down the face of the statuette. Since then, the face of this figure has been cut off and only two braids remain" [Gulyamov 1959, p.33]. With the spread of the Islamic religion, new cults associated with the Muslim ideology entered the historical arena. Hubbi, the patron of the waters of the Amu Darya, turned into Sultan Hubbi (Hubbi Khoja), as a historical figure entered the hagiographic literature of Khorezm [Gulyamov 1959, p.33]. The goddess of water and fertility, Ardisuva-Anahita, turned into the holy Ambar-ana guarding women. According to legend, Sultan Hubbi, the son of the popular Khorezm sheikh Hakim ata (Suleiman Bakirgani), Anbar-ana, his wife, who later married another sheikh Zengi-ata, is known throughout Central Asia as the patron of shepherds [Snesarev 1969, p. 250]. The legend about Hakim-Ata and Ambar-Ana is very popular among the population of Khorezm. However, not the official Muslim version, but numerous folk legends depict the image of Ambar-Ana as the most popular saint in the oasis, the patroness of women [Snesarev 1969, p.240]. The legends about Hakim-ata, his wife Ambar-ana and their sons are very numerous and have a number of variants. The legend of Hakim-ata is a historical figure, one of the sheikhs who spread Islam. The Sufi sheikh is a mystic and miracle worker, married to the beautiful daughter of Burakhan - Ambar-ana, who has three sons: Askar, Mahmud and Hubbi (Sultan Hubbi, Hubbi-Khoja, Ubbi). The eldest and second favorite of his father, the youngest is the favorite of Ambar-ana [8, p.5]. During the obedience test, Hubbi is late and comes home only on the third call of his mother, then it turns out that Hubbi on the Amu Darya saved the sinking ship, a perfect miracle, reviving the slaughtered bulls, which were sacrificed to him by those saved on the water. This process brings to a climax the long-standing conflict between Hakim-ata and the youngest son. Hubby intends to leave the house. His mother locks him in a room, but he takes off his clothes and turns into a dove and flies out of the window. After that, he disappears without a trace, so the people consider him Goyib bobo (**disappeared**) [Snesarev 1969. P.243,258-259]. According to another version of the legend, he plunged along with the cart and horses into the depths of the waters of the Amu Darya, it was believed that he was alive and the time would come when he would appear again [Snesarev 1983, p.62]. There is another version of the legend in Khanki. According to legend, Sultan Hubbi, after turning into a dove, disappears. Durgadik legend says: "A tree grew near Hubbi's house, and a bird flew to it. he bird was sitting on a tree and from it everything was visible [Abidova, 2020. p.4]. The bird said that this is a good place, beautiful, you can live. According to legend, Sultan Hubbi was a bird-dove, who briefly stopped at this place. At that moment, Anbar-ana, Hubbi's mother was drying wheat under a tree [Abidova, 2017. p.343]. The dove pecked at the wheat, and the mother, not recognizing her son, drove him away. The dove said: "Not driving me away with stones, your eyes will

be filled with tears" and flew away". Hubbi in the form of a dove gives an idea of the soul of the deceased, and since the object of veneration, although it has disappeared, is alive [Snesarev 1969. P.243, 258-259]. According to legend, Hubbi disappears into the waters of the Amu Darya, where he becomes a kind of ruler of the underwater world. He regulates the regime of the river that feeds the Khorezm oasis, entering into a struggle with the spirits of undercurrents - aranglars, causing floods [Jabbarov 2014. p.252]. An informant from Khanka, who has worked on Amudarya ships for forty-six years, says: "Sultan Hubbi provides assistance to ships on the river. When there is a disaster in the ship, they turn to him, and he helps [9, p.70.]. Sailors made sacrifices to Sultan Hubbi and other saints. According to legend, during natural disasters, during floods, when the villages were flooded, he, Sultan Hubbi, fought with the Aranglars and told them: "Go get some water!" and underwater spirits obeyed him [Gulyamov 1959, p.33].

Ali achieved popularity in Khorezm as a hero, a wandering knight, a dragon slayer, performing feats in his horse, dul-dul and with zulfikor in the name of truth and justice<sup>2</sup> [Snesarev 1983. p. 186]. There are not so many places of pilgrimage associated with Ali in Khorezm, but the legends associated with his horse Dul-Dul are very famous. The place "Dul-Dul atlagan" where, according to Khorezm legends, Ali on horseback jumped over the great waterway of Central Asia - the Amu Darya, is known far beyond the borders of the region. [Snesarev 1983. p. 53]. This area is located near Khazarasp, 45 km higher than the Tuyamuyun reservoir. Here the width of the Amu Darya is 358 meters, the narrowest point of the river [Gulyamov 1959, p.20]. According to legend, Khazret Ali, making a daily journey to Mecca for prayer, jumped over the Amu Darya on his horse Dul-Dule, and after the jump, the horse caught its front legs on the shore, and its hind legs hung over the water (traces of the jump allegedly survived). In one version of the legend, it is said about the reason for the unsuccessful jump: An informant from the village of Sara-Poyon near Khanka said: "Ali on his Dul-Dul rode along the banks of the Amu Darya, intending to cross to the opposite side of the river[Abidova, 2017. p.343]. He met a crying old woman who could not cross the river. Ali put her on his horse behind him; when Dul-Dul made a jump, his front legs caught on the shore, and his rear ones hung in the air. Ali asked the old woman who she was and what she was doing, she answered that she was a washer of the dead, and then Ali killed her. [Snesarev 1983. p. 54]. In Khorezm, there are professions that are considered "evil", the washer was considered one of them. Ali killed her to protect himself from defilement. In this case, we pay attention to the fact that it was Khazret Ali, the patron of husbands, warriors (Shakhi-Mardan - "King of Men"), who, according to legend, so cruelly dealt with the washer, throughout Khorezm is very steadily considered a feast, the patron of their profession. The ethnographer G.P. Snesarev believes that the roots of this belief lie in the Sunni reaction, in an attempt to discredit the greatest authority of the Shiite world. Another legend is

<sup>2</sup> Ali's wonderful sword; depicted usually with two blades.





connected with "Dul-Dul atlagan" as a place of pilgrimage. One day, Saint Ali turned to the people who gathered in khirman (harvest) to thresh grains, asking them to feed his faithful horse. In response to this request, people lowered several stones into the bag. For such a mockery, Ali allegedly turned them into stones, and this explains the abundance of rocks and stones near the revered place associated with the name of Ali, which is located near Tuyamuyun [Abidova, 2017. p. 50].

Another belief mentions this place. Not only people, but also fish (especially the thorn) rush to *ziarat* - a pilgrimage to sacred places, rising here against the current from the Aral Sea itself. Only after this pious act does the fish allegedly become suitable for catching and eating [Snesarev 1983. p. 54]. In the Khiva region there is another sanctuary associated with the name of the fourth caliph, bearing the name - Shahi-Mardan, the king of men, warriors - the mausoleum of Ali is located. The sheikh, the keeper of the tomb, said that childless women came to the tomb of Ali, hung votive rags on the banners at the tomb and wondered, looking into the nearby well: if they saw a star, a girl would be born, if a month - a boy. At present, mainly washers come to the tomb of Ali, make a sacrifice to the patron of their profession [PMA].

In South Khorezm, a particularly popular cult of Said Ata Khorezmi is one of the mystics - followers of the school of Ahmad Yasawi, his tomb is located near Khanka. Among the people there are legends about the initial settlement of these places, he is associated with his grandfather Said-ata. He is considered the founder of Khanka. According to legend, the coast of the Amu Darya in the area of modern Khanka was once an uninhabited tugai, where people led a wandering lifestyle, hunting wild animals [Snesarev 1969. p. 289]. Said-ata also hunted here, who, according to legend, laid the foundation for settled life and agriculture in these places. According to legend: the first field crop was gourd; after it, wheat and dzhugari appeared in these places. The most profitable variety of pumpkins in these places, *suv kadi* (pumpkin), Said-ata received already in the first spring. Pumpkins reached gigantic sizes, "were the size of a yurt" and became the first settled dwelling of the local people. A year later, there were already three hundred pumpkin houses in these parts. The fields were cultivated only by *ketmen* [Snesarev 1969. p. 290]. The legend says that, for hunting, Said-ata used one of the species of tamed birds and about the first taming of wild bulls and cows. In Khorezm, Said-ata acts as a distributor of agricultural culture. Said-ata are considered patron feasts of hunters [Snesarev 1969. p. 290].

Legends about prophets and saints are part of a vast area of Muslim legends and myths associated with the veneration of saints, who are credited with the ability to resurrect the dead, take on various forms, instantly be transported to remote areas, prevent troubles, heal from diseases. The Khorezm oasis has a truly rich history, full of folk traditions and legends. Stories about beautiful cities, great rulers, legends about saints - all this was carefully preserved and passed down by thousands of generations of our ancestors.

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# INTEGRASYON NG EDUKASYONG GENDER SA PAGTUTURO NG FILIPINO

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Article DOI: <https://doi.org/10.36713/epra12342>

DOI No: 10.36713/epra12342

## ABSTRAK

*Ang pag-aaral na ito ay naglalayong pagtibayin ang integrasyon ng edukasyong gender sa pagtuturo ng panitikan sa kolehiyo at masuportahan ang mga programa ng Tanggapan ng Gender and Development sa mga kolehiyo ng ating unibersidad upang maitaguyod ang pantay na karapatan at oportunidad para sa mga kababaihan at kalalakihan, at mahawan ang diskriminasyon at di pantay na pagtrato sa mga kababaihan sa aspetong ekonomik, politikal, sosyal at kultural na namamayani sa ating lipunan*

*Ang ginamit na pamamaraan sa pag-aaral na ito ay palarawang pananaliksik o “Descriptive Research” na kung saan gumamit ang mga mananaliksik ng talatanungan, obserbasyon, at panayam sa pagkalap ng mga kailangang datos sa pag-aaral. Ginamit na kalahok ang 3 gurong nagtuturo ng asignaturang Filipino at ang mga piling kabuuang isandaan at dalawampung (120) mag-aaral sa Kolehiyo ng Sining at Agham Panlipunan (CASS). Itinuos sa weighted mean ang mga nakalap na datos at matamang sinuri at binigyang interpretasyon.*

**KEYWORDS:**Gender Equality sa Pagtuturo ng Filipino sa Kolehiyo.

## I. PANIMULA

Ang Batas Republika Blg. 9710 o kilala bilang Magna Carta ng Kababaihan ay nalikha upang ipakilala ng estado ang tungkulin ng kababaihan sa pagtatatag ng bansa. Isa itong komprehensibong batas hinggil sa mga karapatan ng mga kababaihan gaya ng sumusunod: pangangalaga mula sa karahasan; kaligtasan sa panahon ng sakuna; kalamidad, at iba pang krisis; pakikilahok at representasyon; pantay na pagtingin sa batas; pantay na pagtatamasa at eliminasyon ng diskriminasyon sa edukasyon; iskolarsyip at pagsasanay; pantay na paglahok sa isports; walang diskriminasyon sa military; pulis at iba pang katulad na serbisyo; walang deskriminasyon at mapanirang paglalarawan sa midya at pelikula; komprehensibong serbisyo; impormasyon at edukasyong pangkalusugan; natatanging benepisyo sa pagliban; at pantay na karapatan sa lahat ng usapin na may kaugnayan sa pag-aasawa at ugnayang pamilya.

Sa madaling sabi ang batas na ito ay pagpapalawig at pagbibigay-lakas sa kababaihan (women empowerment), pagbuwag sa diskriminasyon, pagkakapantay-pantay sa kasarian, at pagkakaroon ng katarungang pangkasarian.

Dahil sa pagkakalikha ng batas na ito ay masusing sinunod ng lahat ng ahensya ng pamahalaan ang pagsusulong ng mga proyekto sa Gender and Development (GAD) na siyang atas bilang Republic Act 10633 o General Appropriation Act of 2014.

Ayon sa Konstitusyon, Artikulo IV Seksiyon I ng 1986 Konstitsuyon “dapat pangalagaan ng estado ang karapatan ng lahat ng mamamayan sa mahusay na edukasyon sa lahat ng antas at dapat magsagawa ng angkop na hakbang upang matamo ng lahat ang gayong edukasyon.

Kinikilala ng CHED ang kahalagahan ng batas na ito kung kaya’t ang bawat institusyon ay hinihikayat na makapagsagawa ng pagsusuri, pananaliksik at pag-aaral ukol sa mga isyung may kinalaman sa pagkakapantay-pantay ng bawat isa sa lipunang kanilang ginagalawan.

Sa Kurikulum ng Filipino makikita ang pagpapahalaga sa karapatang pantao sa pamamagitan ng mga akdang naisusulat sa mga maikling kuwento, nobela, dula, iskrip, tula at maging sa mga talumpatian. Ang integrasyon ng gender sa pagtuturo ng Filipino ay higit na madaling maipamulat at maituro sa mga

mag-aaral ang lubos na kabatiran ng isyung ito. Sapagkat sa paggamit ng wikang naisuso ng mga mag-aaral, madali silang makapaghayag ng kanilang saloobin at mungkahi. Madali nilang maunaawaan ang kahulugan ng mga kaisipang nais nilang iparating sa kanilang kapuwa.

Lubos na maselang gampanin ang nakabalikat sa mga guro upang maipamulat ang maayos at wastong pagpapahalaga sa karapatan ng bawat tao. Alalaongbaga’y silang may pasan sa pagpapamulat ng pagiging mabuting mamamayan, may mataas na pagpapahalagang moral, kapaki-pakinabang sa bayan at may kalakip na pagmamahal sa karapatan ng bawat indibidwal.

Sa loob ng silid-aralan naipapamalas ng guro ang mabuting relasyon sa guro tungo mag-aaral o ng kapwa guro’t kapwa mag-aaral. Sa apat na sulok ng silid na ito ay malayang naituturo’t nagagabayan ng guro ang mga mag-aaral sa mabuti nilang pananaw upang mapangalagan at mapataas ang pagpapahalaga sa moral na mga bagay.

Higit na napag-iibayo ng panitikan ang mga ganitong pananaw sapagkat napakalakang bahagi ng kulturang Pilipino, kabihasnan, tradisyon at saloobin ang makikita sa mga akdang naisulat ng mga paham at dalubhasa. Sadyang nagiging sandata ito ng guro upang labbayin ang imahinasyon ng mga mag-aaral sa mabuting pagkakataon upang maituro nang tama at angkop na mga katangian ng isang indibidwal.

Katulad ng mga akdang “Impeng Negro” na dapat pahalagahan ang karapatang dapat siyang irespeto’t igalang kahit na siya ay may kakaiba’t kakatwang katangian. Ngunit hindi ito ginawa ni Ogor bagkus ang pambubusko nito’y patuloy na ginawa kay Impen.

Gayundin ang akda ni Edroza Matute na “Ang Kuwento ni Mabuti”. Nagpakita naman ng pagpapahalaga sa karapatan ng mga kababaihan sa kabila ng kaniyang immoral na pamumuhay ay hindi naging hadlang upang magpakita ng kabutihan sa kaniyang mga mag-aaral ng tama at angkop na pag-uugaling dapat nilang taglayin sa kabila ng lahat na siya ay isang kabit lamang ng isang doktor.

Masining ang panitikan at higit na kinagigiliwan ng mga mag-aaral kung kaya’t madaling maipamulat sa kanila ang



mabuti at angkop na katangiang dapat taglayin sa pagpapahalaga sa karapatang pantao.

Ang panitikan ay isang kulturang nagpapakilala sa lipunan. Mga saloobing nakakubli sa bawat titik at himig ng mga sitwasyong nagpapaalala sa kasalukuyang nagyayari sa lipunang ating ginagalawan.

Sa larangan ng edukasyon sa ngayon ay nagkaroon ng kultural na pagbabago sa pagtingin sa pagkakapantay-pantay ng oportunidad para sa mga lalaki at babae. Ang ilang pagbabago ay naipakita sa pagtanggap sa mga umaayong mga patakaran at pagkilos ng lipunan. Sa mga pagbabagong ito, kaakibat din ang mga pagbabago sa pananaw kilos gawi at ugali ng bawat indibidwal. Ang pagtanggap sa mga gawaing panlalake na tinaggap ng lipunan upang gawin ng mga babae. Gaya ng hanap-buhay bilang pulis, bumbera, tubera at pagiging sundalo.

Sa seminar na ginanap noong 2015 sa gusaling GSIS, Pasay City na may temang “Ang Panitikang Gender-Based” tinalakay dito ang suliranin ng isang guro sa loob ng silid-aralan sa pagtuturo niya ng panitikan. Napakaraming mga katanungan mula sa pribado’t pampublikong paaralan sa iba’t ibang panig ng bansa ang sinagot ng KWF at lubos na nakapanlulumo ang pinakapalask na katanungan ay kung paano babaguhin ang nakamulang kultura upang maging malaya si Maria sa kaniyang karapatan.

Ang mga akdang pampanitikan na itinuturo’y nagpapamulat sa mga kababaihang tumahimik at makisukob sa idinidikta ng nakamulang kultura. Marami ang nagbigay ng kahulugan sa mga akdang itinuturo na sa bandang huli’y nangingibabaw ang pagkamahinhin at Maria Clara ng mga kababaihan sa mga akda.

Napakalaking hamon sa mga guro sa antas tersyarya na linangin at pag-ibayuhin ang pananaw ng mga milenyal na mag-aaral sa kung ano ang dapat nilang paniwalaan at tupdin sa kanilang buhay sa kabila ng kanilang nakamulatan at nakasanayan. Iba-iba ang kanilang kakayahan, pag-iisip at pag-uugali. Sa pagsagot sa bawat suliraning inihahayag nila sa klase ay may malaking hikayat sa kanilang mga kapuwa mag-aaral upang mapag-ibayo ang pananaw ng isa. Kung kaya’t may malaking responsibilidad ang guro tungo sa paghubog ng kanilang karakter maging ng saloobin at paniniwala.

Ang pananaliksik na ito ay makatutulong kung paano nakatutulong ang mga gawain na nakabatay sa gender-based tungo sa pagbabago ng kanilang aspeto kaisipan, saloobin hinggil sa pagtalakay sa karapatang pantao at pagkakapantay-pantay sa mata ng batas ng lipunan.

## PAGLALAHAD NG LAYUNIN

Ang pangkalahatang layunin ng ginawang pag-aaral ay nailarawan kung paano itinataguyod ng mga guro ang integrasyon ng Edukasyong Gender sa pagtuturo ng Filipino at upang makapagmungkahi ng mga planong gawaing itinataguyod ng R.A. 9710.

Sa kabuuan sinikap na masagot ang mga sumusunod na layunin:

1. Mailarawan kung paano itinataguyod ng mga guro ang integrasyon ng edukasyong gender sa pagtuturo ng Filipino batay sa mga salik ng gender fair tulad ng:
  - 1.1 Wika;
  - 1.2 Kasarian (gender);
  - 1.3 Gampanin (gender roles);
  - 1.4 Kagamitan sa pagtuturo; at
  - 1.5 Pasilidad ng paaralan
2. Matukoy ang prosesong ginamit ng guro sa integrasyon ng edukasyong gender sa pagtuturo batay sa:
  - 2.1 Layunin
  - 2.2 Paksa: at

## 2.3 Gawaing pansilid-aralan

3. Matukoy ang naging bunga ng integrasyon ng edukasyong gender sa pagtuturo batay sa performans ng mga mag-aaral sa resulta ng kanilang pagsusulit.
4. Makapagmungkahi ng mga planong gawain sa pagtataguyod ng R.A. 9710 na magagamit ng mga guro at mga mag-aaral sa pagtulong sa kanilang komunidad sa pagpapatupad ng nabanggit na batas.

## SAKLAW AT DELIMITASYON

Ang pag-aaral na ito ay nakatuon sa integrasyon ng gender sa pagtuturo ng asignaturang Filipino sa kolehiyo.

Saklaw nito ang mga mag-aaral at guro sa Tarlac State University Kolehiyo ng Sining at Agham Panlipunan na may mga asignaturang Filipino. May kabuuang isandaan at dalawampu’t tatlong (123) mga kalahok sa pag-aaral. Nahati ito sa dalawang dibisyon; una, ang mga eksperto sa disiplina ng Filipino, tatlo (3), at ikalawa, ang mga mag-aaral na nasa isandaan at dalawampu (120).

Pinili sa pamamagitan ng *fishbowl technique* na *random sampling* ang mga kalahok sa pag-aaral.

## KAHALAGAHAN NG PAG-AARAL

Ang pag-aaral na ito ay higit na makatutulong sa mga sumusunod:

Sa mga guro, ang resulta ng pag-aaral ay magiging batayan kung paano maisusulong at maituturo nang angkop ang mga akdang pampanitikan na nakatuon sa panitikang gender-based. Malalaman ng mga guro kung ano pa at paanong pagpapahalaga ang kailangan upang mapaunlad tungo sa paghubog ng kamalayang kaisipan at pakikitungo ng mga mag-aaral

Sa mga magulang, na siyang tuwirang nakababatid sa katangian at ugali ng mga mag-aaral ay makatutulong sa paglalapat nang mahusay at angkop na kaisipan at pananaw sa buhay at pakikipagkapwa-tao ng mga mag-aaral.

Sa mga mag-aaral, sa pamamagitan ng pag-aaral na ito ay matututunan nila ang mga bagay na dapat nilang paunlarin at higit na pahalagahan. Sa pakikitungong sosyal sa mga kapuwa mag-aaral, mga guro at sa bawat indibidwal sa lipunang kanilang ginagalawan para sa ikabubuti ng kanilang magandang kinabukasan at kapalaran upang magkaroon ng tamang pakikipamuhay sa kanilang kapuwa.

Sa administrasyon ng paaralan, upang magsilbing gabay sa paggawa ng paaralan kung paano mapabuti at mapaunlad ang karakter ng mga mag-aaral sa kanilang paaralan.

Sa mga susunod pang mananaliksik, magsisilbing gabay at karagdagang batayan sa mga susunod pang pag-aaral.

## KATUTURAN NG MGA KATAWAGANG GINAMIT

Ang mga mahahalagang salitang ginamit sa pagtatalakay ay binigyang paliwanag upang lubos na maunawaan ang mga terminolohiyang ginamit sa pag-aaral.

Ang mga salitang binigyang kahulugan ay batay sa kung paano ito nagamit sa pag-aaral.

**Gender.** Katangian ng taong pinaniniwalaang nakabatay sa kulturang kinabibilangan, kinamulatan at nakaasanayan. Ito rin ay napag-aaralan at nakukuha, nababago mula sa iba’t ibang lugar o panahon.

**Gender Education.** Ang paraan ng pagpapakilala’t pagmumulat sa pagkakapantay-pantay ng karapatang pantao. Nakatuon sa pag-aaral na ito na matulungan ang mga mag-aaral na mamulat sa wastong pakikisalamuha sa kapwa tao ang bawat mag-aaral upang makapamuhay nang ayon sa wastong moral.



**Gender Equality.** Ang pagkatuto sa pagkakapantay-pantay ng bawat indibidwal sa lipunang kanilang ginagalawan.

**Gender Relations.** Pagkakaugnayan ng bawat indibidwal sa kahalagahan nito sa lipunang kanilang ginagalawan. Magkaiba man ng gampanin ang lalaki at babae kapuwa naman mahalaga ang kanilang responsibilidad.

**Integrasyon.** Pagsasama at paglalahok ng anumang ideyolohiya, tema, o paksa sa isa pang kaisipan, tuntunin o kurikulum.

**Kagamitang Pampagtuturo.** Ito ang mga gamit mismo ng guro sa pagpapalawak ng kaniyang paksa at pagpapalalim ng komprehensyong nais matamo sa kurso. Gaya halimbawa ng tsart, meta cards, larawan kasama na rin ng mga sanayang aklat.

**Layunin.** Ang hangarin o nais ipabatid ng guro upang matamo ng isang mag-aaral ang pagkatuto.

**Mga Guro.** Grupo o lupon ng mga indibidwal na responsible sa pagpapamulat at pagtuturo ng edukasyon batay sa umiiral na kurikulum.

**Nilalaman.** Ang mismong panitikang ginamit sa pag-aaral. Ito ang mga akda matamang ginamit ng mga mag-aaral at guro sa kaniyang pagtuturo.

**Pagtuturo.** Isang paraan/teknik ng indibidwal kung paano niya maihahatid ang kahulugan ng kaniyang lektura batay sa umiiral na kasalukuyang kurikulum.

**Panitikan.** Mula sa salitang pantitikan na ang kahulugan ay ang paggamit ng mga titik para sa isang makabuluhang kaisipan na nagpapalabas ng malalim na imahinasyon upang suriin ang kabuuang kahulugan nito.

**Pasilidad sa Paaralan.** Mga lugar at kagamitan ng paaralan. Gaya ng gym, guidance office, silid-aklatan, silid-aralan, o pasilyo at palikuran.

**Suliranin.** Ito ang mga sagabal, sagwil, problemang haharapin sa pag-aaral.

## II. REBYU NG MGA KAUGNAY NA LITERATURA AT PAG-AARAL

Sa bahaging ito maipapakita ang iba't ibang mga manunulat ng aklat, magasin o dili kaya'y mga thesis at disertasyon na may kaugnayan sa kasalukuyang pag-aaral.

### Kaugnay na Literatura

Anumang sangay at ahensya ng gobyerno sa ngayon ay may programa't proyekto ukol sa gender and development. Gaya ng CEARF o Catholic Education Association of the Philippines ay nagkasundo upang palawakin ang kanilang Kurikulum sa layuning maging kasangkapan ang kanilang mga tinuturuang mag-aaral sa pagbabago ng lipunan at ng mundo laban sa karahasan, kahirapan, droga, pagsira ng kalikasan, pang-aabuso at pananamantala. Inilunsad ng CEARF ang mga sangguniang aklat na tumatalakay sa apat na mahahalagang isyu. Ito ay ang 1) edukasyong political, 2) edukasyong pangapaligiran, 3) edukasyong pangkatuparan at kapayapaan, 4) edukasyong ukol sa gender sensitivity. Marahil ay naisipan ng asosasyong ito na higit na makatutulong ito upang mapalawig ang kaalaman ng mga mag-aaral sa wasto at akmang pakikitungo sa kapuwa.

Mula sa aklat ni Belvez, 2000 ang pagtuturo ay isang larangan ng agham. Ito rin ay sangay ng karunungan, lalo na ng

kaalaman kung paano ang isang pangyayari ay nagbibigay daan sa pinagmulan ng isa sa lipunan. Ang mga teknik at estratehiya sa pagtuturo ay umaalinsunod sa maayos, masistematikong pagkakasunod-sunod ng mga hakbang. Hinihingi ng mabisa at mabilis na pagtuturo ang paggamit ng mabuting pamamaraan ng pagtuturo. Nakasalalay sa mabuting pamamaraan ng pagtuturo ang matagumpay, kawili-wili at mabisang pagkatuto ng mga mag-aaral at pagtuturo ng guro.

Magkagayon ang nalikhang babasahing aklat ng CEARF ay makatutulong sa pagtugon sa mga kakulangan ng mga kagamitang pampagtuturo sa Filipino. Kailangan ang pagtuturo sa mga nabasang akda upang mapalawig ang kaisi pang nilalaman ng akda higit sa lahat mabatid ang saloobin ng iba't ibang mag-aaral na siyang batayan sa kung anong uring mag-aaral ang mga ito sa kasalukuyang panahon. Gaya din naman sa pamamaraang ginamit sa kasalukuyang pag-aaral.

Ang panitikan ay may malaking bahagi sa pag-aaral ng Filipino. Sapagkat sa bahaging ito ng asignatura'y lumalabas ang angking talento't galing ng mga mag-aaral sa pagbibigay ng kahulugan at pasusuri sa bawat elemento ng mga akda. Malikhaing naipapahayag ng mga mag-aaral ang kanilang saloobin sa gayon nakikita ng mga guro ang mabuti at di kanais-nais na katangian ng mga mag-aaral kung ang pag-uusapan ay karapatan ng babae at lalake sa lipunan.

Sa isang panayam ni Badayos (1998), "may malaking bagay na nagagawa ang paraan ng pag-aaral at pagtuturo ng panitikan sa ating paaralan. Hinayaang idaos ang iba't ibang paligsahan at masaulo ang nilalaman ng mga akda sa gayon mabatid ang kultura't pinagmulan ng lahi nito" Sa ganito masasabing ang panitikan ay mahusay na lunsaran sa pagpapalawak ng karapatan ng bawat indibidwal bagama't ang mga ugaling ipinakikita sa bawat kuwento ay nakagisnang kultura na ng mga Pilipino.

Naiwika naman ni Simbulan (1998), "hindi natin maituturo ang panitikan sa pamamagitan ng labi lamang, dapat tayong magkaroon ng isang pusong nakauunawa upang makayang pakahulugan ang may may-akda, ang kaniyang hinagpis at kaligayahan, isang pusong maaaring makatarok sa lalim ng kawalang pag-asa sa mga taludtod ng isang makata, masilip ang nakatambad na daigdig ng kagandahan at kapangitan ng buong kaluwalhatian". Sa ganito nakatutugon ang mga guro sa kanilang pagtuturo upang maituro sa kanilang mga estudyante ang angkop na kaisipan sa pagtitimbang-timbang ng mga pananaw ng mga ito.

Sa isang manual na pinamagatang "Gender Sensitivity" ng *National Commission for the Promotion of Equality* ni Malta, 2008, binigyan niya ng pahayag na sa kabila ng pagpapatupad ng gender *education-based* sa edukasyon ay hindi pa rin masapatan ang angkop na paglalapat ng GAD sa sistema ng edukasyon. Hindi paksa ang GAD sa bawat aralin bagkus kalakip nito ang pagpapamulat sa mga mag-aaral kung paano isabuhay ang pagkakapantay-pantay ng bawat tao sa mundo. Inilalahok dapat ang pagkontrol sa malahukom na batas sa mas higit na pag-unawa sa simpleng karapatan ng bawat isa. Mga usaping maaring makapagpagulo sa pananaw ng mga mag-aaral sa sitwasyong maaring sila ang magsabi ng tama at angkop na kilos upang maipakita ang gender equality o pagkakapantay-pantay ng bawat tao.

Sa mensahe ni Pabelo-Ho (2003), kailangang buksan ng guro ang kaniyang kaisipan sa mga pagbabago. Kung sa panahon ng una ay natututo sa pamamagitan ng pagsasaulo, ngayon naman ay iba ang paraan ng kanilang pagkatuto. Sa kasalukuyang kurikulum na umiiral ay natututo ang mga mag-aaral sa kanilang mga paggawa sa gayon ay magiging facilitator ang guro sa mga bagay na kailangan ang higit na malawak na





paliwanag upang mabigyan ng kasagutan ang bumangong suliranin paggawa ng mga mag-aaral sa kanilang gawain.

Ayon sa isang panayam ni Joaquin Alonso, (2016) sa isang guro sa Senior High School sa Kamaynilaan, malaki ang pagbabago ng paraan ng pagtuturo sa ngayon hindi angkop at sapat ang lektyur lamang para sa mga milenyal na mag-aaral. Kung kaya't pinalawig ang pagdalo sa seminar ng mga guro kung paano maging epektibong guro ng K-12 Kurikulum lalo pa at isinangkap ang GAD sa lahat ng aspeto ng mga proyekto't gawain ng paaralan. Idinagdag pa niya na ang paggamit ng iba't ibang teknik sa pagtuturo ay higit na makatutulong sa pag-aangkop ng multiple intelligences ng mga mag-aaral.

Ayon naman kay Tan,(2001), may limang batayan sa Singapore na kailangang isabuhay ng bawat mamamayan nito. Ang pagmamahal sa bansa, pamilya, suporta sa komunidad at kapuwa, pagkakaisa bilang isang lahi, at may paggalang sa relihiyon ay mga responsibilidad ng bawat mamamayan nito sa gayon ay makakamit ang pantay-pantay na karapatan ng babae at lalake ng kanilang bansa.

Sa pahayag naman nina Linda at Richard Erye (2000), mahirap magdisiplina ng kabataan sa Amerika. Kaya naman sa kanilang aklat na may pamagat na "Teaching Young Children Values" sinagot nila ang tanong na bakit, kailan, saan, at sino ang mga batang dapat turuan ng values. Ang malaking kontribusyon sa kanilang anak anila ay ang pagtuturo ng kagandahang asal at wastong pag-uugali. Ibig sabihin lamang ay may malaking kontribusyon ang kultura sa pamilya ng mga mag-aaral sa pananaw nila ng pagkakapantay-pantay sa karapatan ng bawat indibidwal.

Mula naman sa (UN report warns, E-joussour, 2008), ang pagtataguyod ng pagkakapantay-pantay ng kasarian ay makikita bilang isang motibasyon sa mas higit na kaunlarang pang-ekonomiya. Halimbawa, ang mga bansa sa Gitnang Silangan na hindi ipinagkakaloob ang pantay na oportunidad sa mga kababaihan ay binigyan ng babala sa isang 2008 United Nations – sponsored na ulat na ang pagkakait ng kapangyarihang ito ay isang kritikal na kadahilanan na pumipigil sa panunumbalik ng mga bansang ito sa unang ranggo ng mga pandaigdigang lider sa komersyo, edukasyon at kultura.

### Kaugnay na Pag-aaral

Makikita sa bahaging ito ang mga tesis na ginawa ng iba't ibang mananaliksik na may kaugnayan sa kasalukuyang pag-aaral.

### Banyaga

Mula sa pag-aaral ni Fadera (2002), talamak na ang pagkasira ng mga buhay ng kabataan ngayon na tunay na nakakabahala dahil ibang-iba na ang pag-uugali nila kung ikukumpara natin sa mga kabataan noon. Ang mga kabataan noon ay talaga namang pinag-iisipan nila ang anumang desisyon nila sa kanilang buhay nang sa bandang huli ay hindi sila magsisi.

Marunong silang sumunod sa kanilang mga magulang para sa kanilang kabutihan patungo sa rurok ng tagumpay. Taglay nila ang sipag at tiyaga upang sa pag-abot ng kanilang mga pangarap ay makatulong sa kanilang pamilya. Ngunit ang mga kabataan ngayon ay masasabing taliwas sa pag-uugaling taglay ng mga kabataan noon. Kakikitaan ngayon ng kawalan ng disiplina sa sarili na nagdadala sa kanila ng kabiguan at kapahamakan.

Mula naman sa pag-aaral ni Walkerdine (2001), aniya ang mga kababaihang nagmula sa mga propesyunal na pamilya ay nakaka-angat pagdating sa kanilang pag-aaral, samantala ang mga kalalakihan naman na nagmula sa pamilyang nasa may mababang estado ng pamumuhay ay nahuhuli pagdating sa

edukasyon. Ito ay nagpakita na ang performans ng mga kababaihan ay mataas kumpara sa performans ng mga kalalakihan, ngunit ito ay malayo sa katotohanan. Sapagkat, ang mga lalaking nagmula sa mga propesyunal na pamilya ay hindi bumabagsak at ang mga kababaihang nagmula sa mababang estado ng pamilya ay hindi nagpeperform nang maayos.

Ayon naman kay Vinson, et.al. (2000), ang tungkulin ng mga guro sa pagpapanatili ng gender stereotype ay napakalaking impluwensiya sa edukasyon. Gayunpaman, kaunting panahon lamang ang ibinigay sa kanila upang lalong mahasa pagdating sa pagtuturo ng kasarian.

Sa pananaliksik ni Fokufa (2006), na may pamagat na "The Impact of Spirituality on Academic Performance" natuklasan niyang ang pagkakaroon ng malalim na pananampalataya ay nakatutulong sa magandang resulta ng mga mag-aaral pagdating sa akademiko.

Mula naman kina Commak at Philips (2002), isa sa dahilan kung bakit hindi naghahamon ang mga guro pagdating sa kasarian ay natutunan na hindi dapat ang guro ang may tungkulin na ipakilala ito sa kanila kundi ang kanilang pamilya.

### Lokal

Ayon kay Regencia (2010), ang maaayos na pamamahala ng guro sa loob ng silid-aralan ay isang malaking papel na gampanin sa loob ng paaralan. Marami na rin ang nag-aral ng isyung ito noong nakaraang taon. Ang pagtutukan ng pansin ngayon ay ang maayos na pamamahala sa ugali ng mag-aaral upang mapasunod sila sa batas na umiiral sa mga paaralan. Ang paggamit din ng parusa at pabuya ay magagamit upang masubaybayan ang katangian ng mga mag-aaral na dapat nilang taglayin.

Sa pag-aaral naman na isinagawa ni De Irala (2007), na may titulong "Child Rearing and Gender Socialization" natuklasan niyang ang pamilya ang may pinakamalaking bahagi sa pakikisalamuha o pakikitungo ang isang anak/bata sa kaniyang kapwa. Ang pagkakaiba ng trato sa babae at lalake ay nakadepende sa kung paano pinalaki ng mga magulang ang kanilang anak.

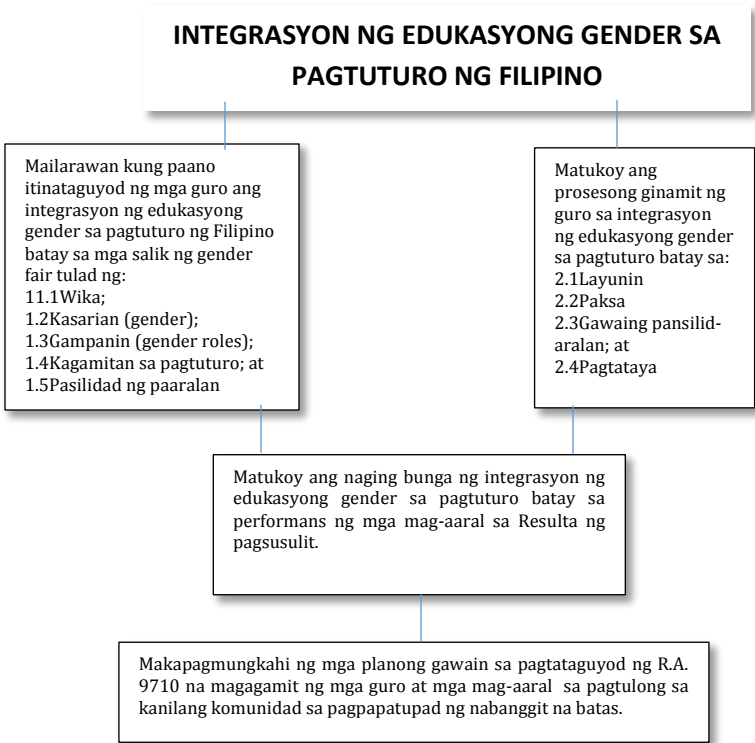
Sa pag-aaral na isinagawa ni De Vera (2013), "Pagsusuri sa mga Emosyonal, Sikolohikal at Sosyal na Kaasalan ng mga Hyperactive na Mag-aaral: Batayan sa Pagsulong ng Estratehiya sa pamamahala ng Kaasalan." Inilarawan niya at sinuri ang batang hyperactive sa loob ng klase batay sa aspetong emosyonal, sikolohikal, at sosyal. Nalaman niya na madalas sumpungin ang pag-aalburuto, ang paghahangad na maging sentro ang atensyon o KSP (kulang sa pansin), ang madalas na paikot-ikot at pagiging balisa ay sa emosyonal na aspeto. Sa sikolohikal na aspeto, ang madalas na kulang sa interes at madalas na makalimutan ang mga gamit ang nakakuha lamang ng madalas na deskripsyon at ang walo ay di-madalas na deskripsyon. Karamihan sa mga sosyal na aspeto ng hyperactive na kaasalan ay nakitang madalas. Ilan sa mga ito ay masyadong masalita, laging kumikilos, madalas nakikipag-away at hindi makatagal sa pagkakaupo. Ang emosyonal at sosyal na aspeto ang nakitang madalas samantalang ang sikolohikal na aspeto y di-madalas sa interpretasyong berbal.

Ang pag-aaral ni De Vera ay may kaugnayan sa kasalukuyang pag-aaral. Ang layunin ng pag-aaral ay may pagkakatulad sa pagsusuri ng aspeto't ugali ng mga mag-aaral ang pagkakaiba lamang ay ang kasalukuyang pag-aaral ay nakapokus sa buong aspeto ng pag-uugali batay sa pagtuturo ng panitikang gender-based.

Ipinakita lamang ng mga kaugnay na literatura't pag-aaral ang patuloy na pananaliksik hinggil sa pagkakapantay-pantay at tamang pagtrato sa dalawang kasarian.



BALANGKAS TEORETIKAL



Figyur 1. Paradigma ng Pag-aaral

III. METODOLOHIYA

Sa bahaging ito makikita ang pamamaraan o metodolohiya na ginamit sa pag-aaral, mga impormasyon tungkol sa mga tagatugon at ang instrumento na ginamit sa paglikom ng mga datos sa pag-aaral.

Disenyo ng Pananaliksik

Ang pamamaraan o metodolohiyang ginamit sa pag-aaral na ito ay palarawang pananaliksik o “descriptive research”. Ito’y angkop sa kasalukuyang pag-aaral dahil hinihingi ng pag-aaral ang kabuuang integrasyon ng *gender-based education* sa pagtuturo ng Filipino sa kolehiyo.

Lokal ng Pag-aaral

Isinagawa ang pag-aaral na ito sa Tarlac State University sa Kolehiyo ng Sining at Agham Panlipunan, taong panuruan 2016-2017.

Pinagmulan ng Datos

Ang mga tagasagot sa pag-aaral na ito ay tatlong (3) guro na nagtuturo sa asignaturang Filipino. Kasama ang isandaan at dalawampung (120) mga mag-aaral sa kolehiyo ng Sining at Agham Panlipunan upang masuri ang

Instrumento ng Pananaliksik

Ang instrumentong ginamit ng mananaliksik ay sa pamamagitan ng tseklist/talatanungan. Ang bahagi ng tseklist na ginawa ng mga mananaliksik ay naipasuri muna sa tatlong eksperto ng gender mula sa Gender and Development Office

upang matiyak ang kaangkupan ng mga katanungan na siyang makasasagot sa kabuuan ng pag-aaral. Ang talatanungang nabuo ay nahati sa dalawa: ang para sa mag-aaral at para sa mga guro.

Ang talatanungang ipinasagot sa mga mag-aaral at guro’y naibatay sa layunin ng pag-aaral. 1) Ang paglalarawan sa integrasyon ng gender-based education batay sa wika, kasarian, gender role, kagamitan sa pagtuturo at pasilidad ng pamantasan; 2) Ang proseso ng pagtuturo ng Edukasyong Gender batay sa layunin, paksang-aralin at gawaing pansilid-aralan. Bawat kategorya’y may kalakip na katanungang sumasapat sa hinihingi ng bawat kategorya.

Pagsusuring Pang-Istadistika

Ang istatistikang ginamit sa pagsusuri at paglalarawan sa mga datos sa pag-aaral ay ang mga sumusunod:

1. Sa pagtataya ng mga gurong eksperto sa ginawang pag-aaral ng mananaliksik, ang *weighted mean* ang ginamit na batayan.

Ang formula ng *Weighted Mean* ay:

$$X = \frac{\sum x}{N(x)}$$
 kabuuang iskor o tuos bilang ng aytem

Na ang ibig sabihin ay:

X = para sa arithmetic mean

$\sum x$  = para sa karampatang tuos

N = para sa kabuuang bilang ng mga gurong tagataya

2. Ginamitan ng Likert’s Scale upang mabigyan ng pagkakahulugan ang bawat iskor na nakuha sa pag-aaral.

Index	Limitasyon	Interpretasyong Berbal
3	2.5 – 3.0	Madalas
2	1.76 – 2.49	Madalang na nangyayari
1	1.0-1.75	Hindi nangyayari

IV. PAGLALAHAD, PAGSUSURI AT  
INTERPRETASYON NG MGA DATOS

Nakasentro ang kabanatang ito sa paglalahad, pagsusuri at interpretasyon ng mga datos na kinalap ng mananaliksik upang





masistematikong mailarawan ang kabuuang integrasyon ng edukasyong gender sa pagtuturo ng panitikan.

1. Mailarawan kung paano itinataguyod ng mga guro ang integrasyon ng edukasyong gender sa pagtuturo ng Filipino batay sa mga salik ng gender fair tulad ng:

TALAHANAYAN 1  
1.1 Wika

Nakapaloob na Konsepto	Mean	Interpreatsyon
a.Naipaliliwanag na mahalagang kasangkapan ang wika upang mapagtibay ang paniniwala at damdamin ng isang tao tungkol sa gender sensitivity	2.7	Madalas
b. Nabibigyang-diin na nagkakaroon ng gender bias kung paano ipinahahayag ang pangungusap. (hal.Mahina ang mga babae)	2.4	Madalang na nangyayari
c. Nailalarawan na ang wika ay kaugnay ng kultura ng lipunan(hal. Bihira na ang Maria Clara ngayon)	2.7	Madalas
d.Naipapakita na may impluwensiya ang wika sa ugnayan ng mga tao.(hal.Ang lalaking may asawa na gumagawa ng gawaing bahay ay “under de saya”)	2.4	Madalang na nangyayari
e. Natutukoy ang mga salitang gender fair at hindi gender fair kung nais banggitin ang parehong kasarian katulad ng: gender fair : Chairperson hindi gender fair: Chairman	2.7	Madalas
Kabuuang Mean	2.58	Madalas

Nasumpungan ang kabuuang mean na 2.58 na may interpretasyong berbal na madalas nangyayari ang pagtataguyod ng mga guro ng edukasyong gender sa pagtuturo ng Filipino batay sa mga salik ng gender fair sa wika.

Makikita din na karamihan sa naitalang iskor na mean ay 2.7 na halos tumatalakay sa pagpapahalaga sa wikang Filipino at kung paano ito magamit ng angkop at tama sa pagpapakita ng kultura, paniniwala at damdamin.

TALAHANAYAN 2  
1.2 Kasarian (gender)

Nakapaloob na Konsepto	Mean	Interpreatsyon
a.Natutukoy ang pagkakaibang biyolohikal sa pagitan ng lalake at babe. (hal.ang babae ay nanganganak at ang lalaki ay hindi)	3	Madalas
b. Pagkakaloob ng pantay na oportunidad sa mga mag-aaral na: b.1 Kumukuha ng alinman sa mga kursong ipinagkakaloob ng pamantasan b.2 Makakuha ng iskolarsyip b.3 Sumali sa mga kompetisyon o aktibidad sa kolehiyo. b.4 Mamuno sa mga samahang pangmag-aaral.	2.8	Madalas
Kabuuang Mean	2.9	Madalas

Napatunayan sa naitalang resluta na may kabuuang mean na 2.9 na may interpretasyong madalas na alam na alam ng mga tagasagot ang pagkakaiba ng kasariang pagkababae at pagkalalake. Natunghayan ding may patas na pagtingin sa pagkakaloob ng karapatan sa kukuning kurso, iskolarsyip,

pagsali sa mga kompetisyon at pamumuno sa mga samahang pangmag-aaral. Patunay na lamang na ang mga nag-aaral at nagtuturo sa Tarlac State University ay may patas na pagtingin sa bawat kasarian.

TALAHANAYAN 3  
1.3 Gampanin (gender roles)

Nakapaloob na Konsepto	Mean	Interpretasyon
a.Naipaliwanag na ang gender role ay batay sa mga gampaning pangkultura o panlipunan na maaaring baguhin. (hal.ang tungkulin sa pag-aalaga ng bata ay gampanin din ng ama)	2.9	Madalas
b.Nailalarawan na ang bawat uri ng hanap-buhay na dati ay para sa lalaki lamang, ngunit ngayon ay bukas na rin sa mga babae.(hal.pulis, bumbero, construction worker, welder atbp.)	3	Madalas
c. Nabibigyang-katwiran na maaari ding <i>baguhin ang mga pananaw tungkol sa gender stereotypes</i> batay sa: pisikal(ang babae ay mahina); sikolohikal(ang babae ay emosyonal at ang lalake ay lohikal), Moral (ang babae ay hindi nangangaliwa ng asawa samantalang ang lalake ay maaari), Sosyo-ekonomiko(ang ama ang naghahanap-buhay at ang ina ang nanatili sa bahay)	3	Madalas
d. Naipaliwanag ng may pantay na karapatan ang babae at lalaki sa pamumuno,pagbuo ng desisyon, at pamamahala ng gawain ng isang pamilya o organisasyon na nakakapekto sa kanilang pamumuhay at gawain.	3	Madalas
e. Naipaliwanag na may pantay na karapatan ang babae at lalaki sa pagtatamo ng edukasyon, iskolarsyip at mga pagsasanay/training.	3	Madalas
Kabuuang Mean	2.98	Madalas



Mula sa naitalang kabuuang mean na 2.98 may interpretasyong berbal na madalas nangyayari sa gender roles ang pantay na karapatan ng babae at lalake sa lipunang kanilang ginagalawan. Halos ang mga konseptong natuos ay may mean na 3 maliban sa isa na naipapaliwanag na ang gender role ay batay sa mga gampaning pangkultura o panlipunan na maaaring baguhin. (hal. ang tungkulin sa pag-aalaga ng bata ay gampanin

din ng ama). Sapagkat hindi maiaalis na may mga indibidwal pa ring naniniwala sa nakagisnang kultura kaya’t higit ang paniniwala sa pagpapamilya na ang ina ang tagapag-alaga kadalasan ng kanilang mga anak. Ngunit ito ay mangilan-ngilan na lamang sapagkat nakapagtala pa din ng mataas na mean ang konseptong ito na may interpretasyong berbel na madalas.

TALAHANAYAN 4

1.4 Kagamitan sa Pagtuturo

Nakapaloob na Konsepto	Mean	Interpreatsyon
a.Ang ginagamit na silabus sa Filipino ay may integrasyong gender-based.	2.9	Madalas
b. Ang ginagamit na mga batayang aklat at mga sanggunian ay nagtataguyod ng konsepto, paksa at pagpapahalaga para sa gender sensitivity.	2.7	Madalas
c. Nasisiguro na ang ginagamit na mga halimbawang akda ay tumutulong upang mabawasan o mawala ang gender bias, diskriminasyon at karahasan laban sa kababaihan, kabataan at mababang tao sa lipunan.	2.7	Madalas
d. Ang mga nabubuong komposison ng mga mag-aaral ay nagsusulong ng pantay na pagpapahalaga sa mga kababaihan at kalalakihan bilang tao.	2.9	Madalas
e. Ang ginagamit na mga video presentation, mga larawan at lunsarang pampanitikan ay nagbibigay inspirasyon upang lalong magsikap ang mga mag-aaral para sa kanilang maunlad na bukas, pagtataguyod sa kapayapaan at pagmamahal sa Diyos at kapwa tao.	3	Madalas
Kabuuang Mean	2.84	Madalas

Natuklasan sa pag-aaral na may kabuuang mean na 2.84 at may interpretasyong berbal na madalas ang mga natuos na konsepto hinggil sa mga kagamitang panturo. Nagpapatunay lamang na maging sa mga kagamitang pampagtuturo’y

naisasangkap na ang pantay na pagtingin sa bawat kasarian. Marahil resulta din ito sa malakas na pagtataguyod ng Gender and Development Office sa mga oryentasyon ng “gender sensitivity” sa bawat kolehiyo ng pamantasan.

TALAHANAYAN 5

1.5 Pasilidad ng paaralan

Nakapaloob na Konsepto	Mean	Interpreatsyon
a .Nagbibigay ng mga lecture at training ang gender at development office ukol sa gender sensitivity sa mga kolehiyo.	3	Madalas
b. May gender desk sa tatlong campus na nagtataguyod ng R.A. 7877 Sexual Harrasment.	3	Madalas
c. May hiwalay na palikuran para sa babae at lalake.	3	Madalas
d.Tumutulong ang tanggapan ng Scholarhip and Endowmnet sa bawat mag-aaral na karapat-dapat na mabigyan ng benepisyong ito.	3	Madalas
e. May tanggapan para sa Student Development Office na nagtataguyod sa pantay na oportunidad ng mga mag-aaral sa mga organisasyong nais na aniban.	3	Madalas
f. Tumutulong ang Dental and Medical Unit sa mga mag-aaral na nangangailangan ng serbisyong pangkalusugan babae man o lalake.	3	Madalas
g.Bukas ang sild-aklatan para sa lahat.	3	Madalas
h. Nagagamit ang sumusunod na pasilidad para sa mga aktibiti ng mga mag-aaral gaya ng gym, avr, amphitheater, alumni center, swimming pool atbp.	3	Madalas
i.Naghahanda ang TSU MultiPurpose Cooperative Inc. ng mga pagkaing nabibili sa murang halaga.	3	Madalas
j. Nagkakaloob ng serbisyo ang Guidance and Counseling Unit sa mga mag-aaral na may suliraning emosyonal, sosyal at kahirapan sa pag-aaral.	3	Madalas
k. May nagagamit na silid-aralan at mga laboratory sa bawat kolehiyo ng tatlong campus.	3	Madalas
l. May Business Center na mapagbibilhan ng uniporme, ID, souvenir items, aklat na magagamit sa kanilang pag-aaral.	3	Madalas
Kabuuang Mean	3.0	Madalas

Mapapansing nakapagtala ng halos madalas na tugon ang mga tagasagot na may kabuuang mean na 3.0. Ito marahil ang resulta ng angkop at maayos na pamamalakad ng Gender and Development Office ng pamantasan sa pagsulong ng pantay-pantay na karapatan ng bawat indibidwal sa unibersidad.

Dahil na rin sa mataas na pagkilala sa karapatan ng bawat isa ang pamantasan ay nagsusulong ng malakas na suporta sa nasabing opisina.

2. Matukoy ang prosesong ginamit ng guro sa integrasyon ng edukasyong gender sa pagtuturo batay sa:



TALAHANAYAN 6

2.1 Layunin

Nakapaloob na Konsepto	Mean	Interpretasyon
a.Naipapaliwanag ang mga layunin at kahalagahan ng integrasyon ng edukasyong gender sa pagtuturo ng Filipino	3	Madalas
b.Natututkoy ang iba’t ibang suliranin, isyu kaugnay sa di-pantay na karapatan (gender inequalities) ng babae at lalake sa ating lipunan.	3	Madalas
c. Naiisa-isa ang impluwensiya ng Kulturang Pilipino sa persepsiyon ng mga mag-aaral tungkol sa kanilang gampanin (gender roles) sa kanilang pamilya at komunidad.	3	Madalas
d. Nakapagbibigay ng angkop na sitwasyon at kaganaan upang maiwasto ang mga pananaw at saloobin ng mga mag-aaral tungkol sa pantay na karapatan ng mga kababaihan at kalalakihan sa lipunan.	3	Madalas
e. Nakapagsasadula ng mga solusyon upang makatulong sa paglunas ng mga karahasan sa loob ng tahanan, paaralan at komunidad na kanilang kinabibilangan.	2.9	Madalas
Kabuuang Mean	2.98	Madalas

May kabuuang mean na 2.98 na may interpretasyong berbal na madalas na nangyayari ang prosesong ginamit ng guro sa integrasyon ng edukasyong gender sa pagtuturo batay sa layunin. Patunay lamang na maging ang mga guro ay nagsusulong ng angkop at mahusay na pagtatala sa

bawat aralin at gawain sa loob ng silid-aralan na ang mga mag-aaral ay matuto sa angkop na pagtingin sa pantay na karapatan ng babae at lalake, may respeto sa bawat kasarian, at nakikipamuhay ng tama sa komunidad na kanilang kinabibilangan.

TALAHANAYAN 7

2.2 Paksa

Nakapaloob na Konsepto	Mean	Interpreatsyon
a.Ang mga paksang-aralin ay nauugnay sa mga sitwasyon at mga kaganapan sa aktwal na pangyayari sa buhay ng mga mag-aaral upang mapaigting ang kanilang kamalayan tungkol sa gender sensitivity.	3	Madalas
b.Sa mga paksa ay nasusuri ang ginagampanang papel ng babaeng tauhan kung may gender bias o wala sa kuwento, dula, nobela, at iba akdang pampanitikan bilang lunsaran ng pag-aaral ng Filipino.	3	Madalas
c. Natutukoy sa paksa ang pagkakaiba ng mga katangian ng stereotype na babae sa sinaunang panahon kumpara sa mga babae sa kasalukuyang henerasyon.	3	Madalas
d. Natatalakay sa paksa ang mga suliraning panlipunan kaugnay ng mga karahasan laban sa mga kababaihan pati na ng pang-aabuso sa mga kabataan.	3	Madalas
e. Napalalalim ang pag-unawa ng mga mag-aaral na ang karapatan ng mga kababaihan ay karapatan din ng indibidwal na mamamayan.	3	Madalas
Kabuuang Mean	3.0	Madalas

May kabuuang mean na 3.0 na may interpretasyong berbal na madalas na ginagawa ng mga guro sa kanilang mga paksang-aralin ang paglalapat ng tamang moral, tamang kamalayan sa papel at tungkulin ng isang babae o lalake. Sa

gayon dito naipapakita na ang mga guro sa bagong milenya ay may sapat na kabatiran sa umiiral na batas pagdating sa integrasyon ng edukasyong gender sa pagtuturo ng Filipino.

TALAHANAYAN 8

2.3 Gawaing Pansilid-aralan

Nakapaloob na Konsepto	Mean	Interpreatsyon
a.Group Dyamics: Naisasagawa ang pagtutulungan at pagkakaisa para sa matagumpay na pagsasakatuparan ng mga itinakdang gawain.	3	Madalas
b.Role Playing: Nailalarawan ng mga mag-aaral ang mga pangyayari sa kuwento na nagpapakita ng mga tungkulin ng mga anak o magulang na parehong nagagampanan ng parehong kasarian. Bibigyang-diin ang parehong karapatan ng babae at lalake sa loob ng tahanan at pamayanan upang matugunan ang isyu tungkol sa gender bias.	3	Madalas
c. Brainstorming: Natatalakay at nauugnay sa kuwento ang mga isyu tungkol sa gender sensitivity upang mapahalagahan ang damdamin at pantay na karapatan ng babae at lalake.	3	Madalas
d. Debate: Napagtatalunan ang paksang “ Ano ang dapat pairalin sa Pag-aasawa: Damdamin o Kaisipan?”	3	Madalas
e.Paglalarawan: Paglalarawan ng nais na Profayl/Propesyon bilang matagumpay na babae/lalake sa hinaharap.	3	Madalas
f. Panayam: Nakapagsasagawa ng panayam kaugnay sa mga karanasan ng batang ina at maagang nag-asawa.	3	Madalas
g. Pagsulat ng Lathalain: Naitatampok ang kasaysayan ng mga ulirang ina/ama sa matagumpay na pagtataguyod ng edukasyon ng kanilang mga anak bilang mabuting halimbawa ng mga magulang sa pamayanang kinabibilangan.	3	Madalas
h. Case Study: Pag-aaral ng Kaso sa pag-aabuso sa mga kababaihan/kabataan sa loob ng tahanan/komunidad upang makahanap ng makabuluhang interbensiyon sa paglutas ng	3	Madalas



mga karahasan sa paglabag sa karapatang pantao.		
i.Sarbey: Nakapagtatala ng mga datos batay sa estadistika ng gawain/propesyon ng parehong pinapasukang trabaho ng kamag-anak na babae/lalake sa pamilya ng mga mag-aaral bilang: doktor, nars, inhinyero, pulis atbp. Upang patunayan ang pagbabago ng pananaw kaugnay sa stereotype na papel ng babae sa kasalukuyang panahon.	3	Madalas
j.Pagsulat ng balita: Nakasusulat ng balita ukol sa mga proyekto/programa ng pamantasan para sa gender and development.	3	Madalas
Kabuuang Mean	3.0	Madalas

Mula sa naitalang resulta ng mga tagsagot halos lahat ng konsepto ay may mean na 3.0 sa gayon masasabing may interpretasyong berbal na madalas ang kabuuang mean na 3.0 rin nagpapatunay lamang na ang mga guro ay hantad sa pantay na pagtrato at pagtingin sa karapatan ng bawat indibidwal. Malaki rin ang naitulong ng pamantasan sa suporta nito sa mga seminars na dinadaluhan ng mga guro sa mga usapin, isyu at talakayan hinggil sa gender sensitivity. Nagpapatunay lamang na hantad at bilad na sa pamantasan, mga guro’t mag-aaral ang karapatan ng mga kababaihan ay karapatan din ng mga kalalakihan.

3. Matukoy ang naging bunga ng integrasyon ng edukasyong gender sa pagtuturo batay sa performans ng mga mag-aaral sa:

TALAHANAYAN 9  
Resulta ng Pagsusulit

Tanong para sa mga nabasang akda sa Filipino 2 –Pagbasa at pagsulat	Mean	Interpresatsyong Berbal
1.Naramdaman mo ba ang pantay na pagtrato sa karapatan ng bawat tauhan sa mga akdang iyong nabasa?	2.8	Madalas
2.Kadalasan ba’y may nagpapamalas ng isang “Maria Clara” o “Andres de saya” na katangian ng mg tauhan sa mga akdang iyong nabasa na?	2.4	Madalang na nangyayari
3.Binibigayang linaw ba sa pagtuturo ng panitikan ang pantay na karapatan ng babae at lalake.	3	Madalas
4.Nagpapakita ba ng madalas na karahasan o di kaya’y hindi patas na pagtrato sa karapatan ng bawat tauhan sa mga akdang isinulat ng mga manunulat?	2.4	Madalang na nangyayari
5.Ang mga akdang nabasa na sa kasalukuyang Panitikang Filipino ay may mga lahok na din na gender sensitivity? (Hal. Pagpapakita ng ama sa kaniyang karakter na iginagalang niya ang desisyon ng kaniyang asawang babae.	2.6	Madalas
6.Nagkakaroon ng hidwaan sa mga tauhan at kadalasan ang nananaig ay mga kalalakihang tauhan.	2.6	Madalas
7.Karamihan sa mga abusadong karakter ay mga kalalakihan.	3	Madalas
8.Nagpapatuloy ang kulturang nakagisnan hinggil sa hindi pantay na karapatan ng babae at lalake.	3	Madalas
9. Nakabasa ka na ba ng mga akdang pampanitikan sa Filipino na ang pangunahing tauhan ay isang bakla o tomboy?	2.4	Madalang na nangyayari
10. Kadalasan, ang mga akdang pampanitikan sa kasalukuyan ay nagpapakita ng pantay na karapatan sa mga third sex (bakla/tomboy).	2.3	Madalang na nangyayari
11.Tinatanggap na sa lipunan at maging sa mga akdang pampanitikan na ang mga tauhan ay bakla o tomboy?	2.5	Madalas
12. Ang mga akdang pampanitikan sa Filipino ay nagpapakita ng angkop na katangiang dapat taglayin ng isang babae/lalake sa loob ng isang kuwento.	2.4	Madalang na nangyayari
13.Madalas mangyari sa mga bida ngayon sa mga akdang ating nababasa ay babae. Sa una’y inaalipin at sa huli’y lalaban para matamo ang hustisya sa kaniyang kabiguan.	2.4	Madalang na nangyayari
14. Mababasa na sa mga akda ngayon na ang karakter ng mga babae sa kuwento ay nagbabago na. Sila ay palaban at may mataas na estado sa lipunan.	2.4	Madalang na nangyayari
15. Umiiral na sa mga akdang pampanitikan ngayon ang pantay na pagtrato at paggalang sa bawat kasarian sa loob ng mga kuwento.	2.4	Madalang na nangyayari
16. Madalas mang-alipin sa mga akda ay mga kalalakihan.	3	Madalas
17. Nagaganap sa mga maikling kuwento na ang kapangyarihan ito man ay awtoridad o katungkulan ay napapasakamay ng mga tauhang lalake.	2.6	Madalas
18. Kadalasan ang ina sa mga maikling kuwento ay mapag-alaga at maalalahanin gaya ng mga ama sa kanilang pamilya.	2.5	Madalas
19. Ang sumusuway lagi sa mga magulang sa mga akda ngayon ay mga kalalakihan.	3	Madalas
20. Nabibigyan ng pantay na trato ang mga tauhan sa wakas ng kuwento ang bawat tauhan sa loob ng mga akdang pampanitikan.	3	Madalas
Kabuuang Mean	2.6	Madalas



Bagaman ang resulta ng pagsusulit ay nakapagtala ng madalas na interpretasyong berbal may kabuuang mean naman ito na 2.6. Nangangahulugan lamang na sa kasalukuyang mga akda na nakasulat sa maikling kuwento, dula, nobela maging ng tula ay marahil karamihan sa mga akdang pampanitikan ay hindi pa nakapaglalarawan o nagpapakita ng pantay na karapatan ng babae at lalake bagkus namumuhay pa rin ang mga akda sa kulturang nakamulatan pa noong una.

4. **Makapagmungkahi ng mga planong gawain sa pagtataguyod ng R.A. 9710 na magagamit ng mga guro at mga mag-aaral sa pagtulong sa kanilang komunidad sa pagpapatupad ng nabanggit na batas.**  
Ang bawat mungkahi ay nagpapakilala ng magandang solusyon para sa isang programa at proyekto. Sa pamamagitan ng pananaliksik na ito maaaring makatulong ang mga sumusunod na mungkahi sa pagpapalano ng mga gawain

Layunin	Mungkahing Gawain	Target	Time-Frame	Kalalabasan
Masabi at maipamalas sa isipa’t damdamin ng mga mambabasa na ang pagkakapantay-pantay na karapatan ng bawat kasarian ay walang pinagkaiba sa isa’t isa.	<b>Pagsulat ng mga guro sa Filipino ng mga akdang pampanitikan na may lahoc <i>gender sensitivity</i> gaya ng</b> <ul style="list-style-type: none"><li>- Maikling kuwento</li><li>- Tula</li><li>- Nobela</li><li>- Dula</li><li>- Sanaysay</li></ul>	Guro  Mag-aaral  Magulang	Isang taon	Maitatatak ang bagong karansang magtatakip sa kulturang nakagisanan. Na si Eba ay kayang bumuhay ng isang anak sa pamamagitan ng kaniyang lakas at pawis at si Adan nama’y mangalaga nang buong taimtim na may puso’t pagtitiis.
Matukoy ng mga mambabasa ang layunin at hangarin ng R.A. 9710 “Magna Carta for Women”	<b>Bukas at Malayang Usapin</b> <ul style="list-style-type: none"><li>- Open Forum</li><li>- Panel Discussion</li><li>- Pananaliksik</li></ul>	GAD Coordinator/Head Guro Mag-aaral	Dalawang beses o isang taon batay sa pangangailangan ng gawain	Mulat sa karapatan ng mga kababaihan upang malayang maisakatuparan ang kanilang karapata’t kagalingan.
Magampanan nang angkop ang pantay na karapatan hinggil sa moral, sosyal, sikolohikal at mental na aspeto	<b>Palihan at Worksyp na may mga temang:</b> <ul style="list-style-type: none"><li>- “Babae sa milenyal na realidad”</li><li>- “Si Eba noon at si Eva ngayon”</li><li>- Malikhaing Pagsulat ng Akda: Tugon sa Suliraning Karapatan ni Maria</li><li>- “Ipamalas ang nais sa layon ng isip, gawa’t ikabubuti ng bawat kasarian”: Isang Talakayan</li><li>- “Telon mo’y Buksan nang Masilayan ang Lumalambitin na Karapatan”</li></ul>	GAD Coordinator/Head Pinuno ng mga Paaralan Guro Magulang	Lima o Apat na quarter ng taon	Maipakita ang suliraning kinalalagyan ng mga kababaihan sa moral, sosyal, sikolohikal at mental na aspeto
Maikuwento’t maibahagi sa mundo ang karapatan ng bawat kasarian	Pagkakaroon ng: <ul style="list-style-type: none"><li>- <b>Facebook Page ng bawat paaralan</b> para sa mas mabilis na paraan ng pag-alam sa karapatan ng bawat isa.</li><li>- Pagbabahagi ng mga FLYERS o PHAMPLETS na serye sa bawat buwan</li></ul>	GAD Coordinator/Head Pinuno ng mga Paaralan Guro Mag-aaral Magulang	Hangga’t may GAD sa paaralang pinaglilingkuran	Mabilis na pag-alam sa pantay na karapatan ng babae at lalake
akagawa ng proyekto para sa komunidad sa pakikipagtulungan ng mga nanunungkulan sa komunidad gaya halimbawa ng counseling sa mga kabataan o sa mga magulang na rin upang malubos ang pagpapakilala sa karapatan	<b>Literasiya’t Training</b> <ul style="list-style-type: none"><li>- Mga usaping magpapalawak sa karapatan ng bawat isa upang maingatan ang relasyon ng babae at lalake</li><li>- Pangkabuhayang makapaguturo ng pantay na pagtingin sa</li></ul>	GAD Coordinator/Head Pinuno ng mga Paaralan at mga barangay Guro Mag-aaral Magulang	Anim na buwan hanggang dalawang taon batay sa pangangailangan ng mga itinakdang gawain	Makatulong sa pagpapalawig ng impormasyon sa R.A. 9710 “Magna Carta for Women”





ng bawat indibidwal.	bawat kasarian gaya ng “Shop Ko sa Bahay”			
Makagawa ng mga silid-araling gawain ang mga mag-aaral upang malubos ang pagpapalawig ng panatay na karapatan ng babae at lalake	<b>Aktibidad pang media</b> <ul style="list-style-type: none"><li>- Photojournalism</li><li>- Video blogging</li><li>- Paglikha ng mga awitin</li><li>- Pagsasadula sa pamamagitan ng mga short-films</li><li>- Paglikha ng mga kuwentong namamahay sa mundo ng internet</li></ul>	Guro Mag-aaral	Isa hanggang dalawang semestre	Maipalabas ang kakayahang galing at talino ng mga mag-aaral sa paggawa ng mga gawaing kinatatampukan ng makabagong teknolohiya
Makabuo ng mga malaikhaing piyesa	<b>ISULAT mo’t IGUHIT</b> <ul style="list-style-type: none"><li>- Slogan</li><li>- Poster Making</li><li>- Pagsulat ng Tula</li></ul>	Guro Mag-aaral	Isang semestre	Maiguhit at maipamalas ang saloobin ng mga mag-aaral hinggil sa pantay na karapatan ng bawat kasarian.

V. LAGOM, KONGKLUSYON, AT REKOMENDASYON

Nakasentro sa kabanatang ito ang lagom, kongklusyon at rekomendasyon ng kinahinatnan ng pag-aaral at kaangkupan ng integrasyon ng edukasyong gender sa pagtuturo ng Filipino. Na kung saan sa pamamagitan ng pag-aaral at masinsinang pag-susuri ay nakabuo ng sariling hinuha at mga kasagutan sa mga suliraning inilahad.

Lagom

Sa uanang bahagi ng pag-aaral nagkaroon ng layunin na ilarawan kung paano itinataguyod ng mga guro ang integrasyon ng edukasyong gender sa pagtuturo ng Filipino batay sa mga salik ng gender fair tulad ng: 1) Wika na kung saan natuklasan na sa paggamit ng wika ay pinahahalagahan ng mga tagasagot ang pantay na karapatan ng bawat indibidwal. 2) Kung sa kasarian (gender) naman ang pag-uusapan alam at batid ng mga tagasagot ang pagkakaiba ng babae at lalake sa kaniyang katangian. Samantala, 3)ang gampanin (gender roles) ay natuklasan na dahil sa kulturang nakagisnan ay may ialan-ilan pa rin na ang tingin sa pamilya ay patiarkal na ang pinaka-ulo sa pamilya ay ang ama at ang tagapag-alaga ng bata ay ang ina. Sa 4) kagamitan sa pagtuturo naman ay nakatugon ang guro sa kaniyang mga ginagamit na syllabus, aklat, at video presentaions na may lahoc na gender sensitivity sa kanilang pamamaraan. Saa huli ay ang 5) pasilidad ng paaralan. Naipakita ng pag-aaral kung gaano kalakas ang suporta at patnubay ng administrasyon ng pamantasan kung ang pag-uusapan ay pasilidad. Sapagkat sa pakikipagtulungan ng Gender and Development Office ng pamantasan mapatututnyang naisasakatuparan ng paaralan ang pagtataguyod sa Batas Republika Blg. 9710 o kilala bilang Magna Carta ng Kababaihan.

Sa ikalawang bahagi ng pag-aaral natuklasan kung paano ang prosesong ginamit ng guro sa integrasyon ng edukasyong gender sa pagtuturo batay sa: 1) Layunin na nagbigay ng mataas na mean sapat upang masabing ang mga guro ay kaakibat sa pagtataguyod ng edukasyong gender; sa bawat 2)paksa naman na ginagamit ng mga guro laging isisnasangkot ng guro sa kaniyang pagtuturo ang edukasyong gender sa pagtuturo ng Filipino katunayan nakapagtala ng kabuuang mean na 3.0; ang mga 3)gawaing pansilid-aralan naman ay mga estratehiyang nilahukan at kinakitaan ng paglalapat ng edukasyong gender sa pagtuturo. Sa katunayan may kabuuang mmean na 3,0 patunay na ang mga guro ay nahasa at masasabing tunay ngang de klibre sa kanilang larangang napili.

Sa pagtukoy naman ng naging bunga ng integrasyon ng edukasyong gender sa pagtuturo batay sa performans ng mga

mag-aaral sa resulta ng kanilang pagsusulit bagaman natuklasan na may madalas na interpretasyong berbal ang resulta makikita pa rin na may mga tagasagot ang nakakapagtala ng mena na 2.6, 2.5 at 2.4 na kung saan kadalasan ang mga akdang pampanitikang kanilang nababasa ay kinakikitaan na hindi gender-based. Marahil ang mga manunulat ng akda ay may malakas na impluwensiya pa rin ng kultura noong una.

Naipakita din ang mga mungkahi sa planong gawain sa pagtataguyod ng R.A. 9710 na magagamit ng mga guro at mga mag-aaral sa pagtulong sa kanilang komunidad sa pagpapatupad ng nabanggit na batas. Ilan sa mga ito ang patuloy na pag-oorganisa ng mga seminars at oryentasyon sa mga guor man o mag-aaral upang lubos na maisulong ang integrasyon ng gender sa pagtuturo sa gayon ay wala nang sino man ang makapang-aabuso sa kahinaan ng isang kasrian.

Nagkaroon din ng mungkahing hikayatin ang mga milenyal na mga guro na makapagsulat ng kanilang akda upang malubos ang pangangailangan sa kagamitang pampagtuturo na may *gender-based education* na.

Ang pagtulong din sa kapuwa sa pamamagitan ng *counseling* sa mga ina at ama na kadalasang ginagawa sa mga imersyon at ekstensyong serbisyo upang palawakin ang kaalaman ng mga tao sa komunidad hinggil sa pantay na karapatan ng bawat kasarian. Mahirap bakkakin ang kulturang nakagisnan ngunit sa unti-unting pagpapalawig at pagpapalaganap ng R.A, 9710 matututo ang mga mamamayan sa komunidad sa kanilang gamapanin at responsibilidad bilang babae at lalake.

Kongklusyon

Batay sa resultang nakalap na datos, nabuo ang mga sumusunod na kongklusyon:

1. Mula sa pagtukoy kung paano ang pagtataguyod ng edukasyong gender sa pagtuturo ng Filipino batay sa mga salik ng gender fair mula sa wika, kasarian (gender), gampanin (gender roles), kagamitan sa pagtuturo at pasilidad sa paarlan ay may magandang resultang naipakita. Ang lahat ng mga salik ay may madalas na nangyayaring integrasyon ng gender sa patuturo ng Filipino.
2. Ang pagtukoy sa prosesong ginagamit ng guro sa pagtuturo niya ng asignaturang Filipino ay higit na malinaw na naipakita nito ang paglalahok at paglalapat ng edukasyong gender. Marahil ang mga milenyal na guro ay kompetitib din at masigasig sa pagdalo sa kanilang mga seminars at trainings upang malubos ang kanilang kakayahan bilang guro at mapaunlad pa ang pamamaraan ng kanilang pagtuturo sa makabagong henerasyon.



3. Higit na nangibabaw ang kultura sa mga akdang naisulat sa resulta ng pagsusulat ng mga tagasagot mula sa mga akdang pampanitikang kanilang nabasa na. Bagama't madalas ang naging interpretasyong verbal naipakita pa rin na may ilan sa mga ito ang nakapagtala ng hindi madalas makita sa mga konseptong hiningi ng pag-aaral. Dahil dito, naiimpluwensiyahan pa rin ang iba sa hindi patas na pagtingin sa gampanin ng lalake at babae. Gaya halimbawa ng mga kaisipang "Maria Clara" ang pagiging martir ng isang babae at ang "Andres de saya" na pagpapakita ng tunay na katapatan sa pagmamahal at pag-aaruga na tinitignang negatibo ng karamihan dahil mga gawing pambabae ito. Ang alam nilang nakagisnang ay malakas ang lalake at mahina ang babae, kung tutuusin ang lahat ng gampanin sa loob ng tahanan gaya ng paglalaba, paghuhugas ng plato at pamamalantsa ay gampanin ng dalawang kasarian higit lalo ang pag-aalaga at pag-aaruga sa mga bata. Gaya din naman ng paghahanap-buhay bilang pulis, bumbero, sundalo at welder ay maaari ring maging hanap-buhay ng isang babae.

### Rekomendasyon

Ang mga sumusunod na rekomendasyon ay nabuo batay sa natuos at nasuring pag-aaral. Iminumungkahi ng mananaliksik para sa mga susunod pang maglalaan ng pag-aaral na may kaugnayan sa ganitong uri ng pananalik ang mga sumusunod na rekomendasyon:

1. Hikayatin ang mga guro na magkaroon ng sariling akdang pampanitikan gaya sa pagsulat ng maikling kuwento, dula, nobela atbp. Ipasuri ito sa mga eksaperto at ipabalido sa gayon may sapat nang kagamitang panturo na magagamit sa pagpapalawak pa ng edukasyong gender sa pagtuturo ng Filipino.
2. Makapaglunsad pa ng mga palihan at training ang GAD sa maseselang usapin hindi lamang ng oryentasyon ng gender sensitivity sa tulong at suporta ng pamantasan upang higit na mabigyang diin ang Batas Republika Blg. 9710 na Magna Carta for Women.
3. Hinihikayat na magkaroon ng ekstensiyong serbisyo sa pamamagitan ng mga proyekto sa komunidad upang maging ang mga magulang at kabataan ay mabigyan ng angkop at sapat na kaalaman sa pantay at karapatan ng isang babae at lalake sa gayon unti-unting mabago ang kultura't paniniwalang ang babae ay mahina at ang mga lalake ay malakas kaya't hindi kailangan na siya ay umiyak.
4. Nirerekomenda rin na makapagsagawa ng mga katulad na pag-aaral sa iba pang asignatura upang makita ang lawak ng kaalaman ng mga mag-aaral sa pagsulong ng edukasyong gender.
5. Hinihimok ang mga mag-aaral na magsulat ng mga artikulong nakapagpapatid sa patas na karapatan ng babae/lalake sa mga pangkampus na pahayagan at magasin. Sa ganito madaling maikalat at mapalaganap din sa kapwa mag-aaral ang kahulugan ng gender-based education.
6. Makapagsagawa din ng mga pananaliksik na may kinalaman sa pagkuha at pag-aaral ng photo journalism upang mataya kung gaano na kalawak ang pagpapatupad ng Batas R.A. Blg. 7910 sa gayon maipakita ang pang-aabuso sa karapatan at maiwasan ng bawat indibidwal ang mga ganitong suliranin sa *stereotyping* at malaman ang tunay na kahulugan ng gampanin ng kasariang babae at lalake.

7. Hinihikayat ding makapagsagawa ng sarbey ukol sa mga third-sex (bakla at tomboy) na talamak na rin sa lipunan kung paano makaiwas sa ganitong damdamin at paano ito malalabanan. O dili kaya'y paano ito dalhin nang may angkop na katangian sa pagiging bakla at tomboy ng mga ito upang sila ay igalang at tanggapin sa lipunan.

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# PAGBUO AT BALIDASYON NG KAGAMITANG PAMPAGKATUTO SA FILIPINO SA KOLEHIYO

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Article DOI: <https://doi.org/10.36713/epra12343>

DOI No: 10.36713/epra12343

## ABSTRAK

Ang pag-aaral na ito ay nakatuon sa pagbuo, balidasyon at antas ng pagtanggap ng teksbuk, ang Kontekstwalisadong Komunikasyon Sa Filipino bilang sanggunian at lunsaran ng karunungan sa kolehiyo sa pagtataguyod sa wikang Filipino at bilang wikang panturo sa sistema ng edukasyon ayon sa nakasaad sa probisyong pangwika ng Saligang Batas ng 1987 sa Artikulo XIV Sec. 6 at 7.

Ginamit sa pag-aaral ang disenyong Research and Development at random sampling naman sa mga tagasagot na kalahok. Upang mataya ang kabisaan, dumaan sa masusing pagsisiyasat mula sa mga eksperto upang matiyak ang kaangkupan nito sa bawat mag-aaral na kumukuha ng kursong Kom Fil 1.

Ginamit ang ADDIE Model sa proseso ng pag-aaral na siyang nakatugon sa layunin ng pananaliksik. Una, nagkaroon ng pag-aanalisa sa kompetensiyang nakapaloob sa Fil 1. Sumunod ay ang pagdidisenyo, sa kung paano ang kalalabasang mukha ng teksbuk. Sa pagdedebelop naman ay nilinang ang mga kabanta at ilustrasyon at mga pagsasanay na makatutulong sa paghubog at pag-unawa sa araling Fil 1. Kabilang din dito ang mga likhang akda ng mananaliksik upang makatugon sa kompetensiyang hinihingi ng/sa syllabus. Ang implementasyon ay ang prosesong pagganap sa paggamit ng teksbuk sa buong semestre ng klase. At ang huli ay ang balidasyon na siyang kinakitaan ng kahusayan at kagalingan sa nabuong teksbuk.

Natuklasan mula sa mga datos, ang kahalagahan ng teksbuk sa proseo ng pagkatuto at pagtuturo ng mga guro sa kursong Kom Fil 1. Mula sa nabuong teksbuk ang balidasyong natamo nito sa layunin, nilalaman, organisasyon at pagsasanay ay may interpretasyong “Pinakamataas na Katanggap-Tanggap”. Tanging sa presentasyon na may “Mataas na katanggap-tanggap” na interpretasyong verbal. Sapat upang mapatunayan pa rin na ang nabuong teksbuk ay mahusay at nakatutulong bilang kagamitang lunsaran sa pagtuturo’t pagkatuto.

Natuklasan ding ang antas ng pagtanggap ng mga mag-aaral ay nakapagtala ng pinakamataas na katanggap-tanggap at ang nakuhang grado ng mga karamihan ay may napakahusay na interpretasyon.

Gayundin, ito ay naimungkahing gamitin sa kursong Kom Fil 1. Dahil din dito, naimungkahing magsagawa ng ganitong mga uri ng pananaliksik na balidasyon sa mga research and development na disenyo upang malubos at matiyak ang kaangkupan at kahusayan ng isang kagamitang makatutulong sa pagtuturo’t pagkatuto. Maging ang patuloy na pagtangkilik nito sa iba pang mga guro’t unibersidad na may ganitong kurso. Ang paglahok din ng mga seminar sa pagbuo ng ganitong mga kagamitan ay naimungkahi na siya ring sinangayunan ng mga kalahok na nagpapatunay na higit na makikita ang bisa at galing ng isang guro sa pagbuo niya at paglikah ng mga ganitong instraksyunal na kagamitan mula sa mga palihan at seminar na nakatutugon sa mas mataas na lundo ng paggawa at pagdedebelop sa pangunguna ng Pamantasang Sentro ng Wikang Filipino.

**MGA SUSING SALITA** — teksbuk, KOMFIL (Kontekstwalisadong Komunikasyon sa Filipino), balidasyon, at antas ng pagtanggap.

## PANIMULA

Ang guro ay mabisang kasangkapan sa loob ng silid-aralan, ngunit kung ito ay salat sa mga kagamitang panturo at walang pedagohikal na batayan sa kaniyang pagtuturo, walang espasyo ang karunungan at pagkatuto. Ang isa sa layunin ng edukasyon ay mahubog ang kaisipan ng mga mag-aaral at magkaroon ng kaalaman sa mga bagay-bagay at impormasyon sa kasalukuyan, sa hinaharap at sa kinabukasan, upang makamit ang tagumpay sa iba’t ibang larangan ng buhay. Malaki ang

gampanin ng guro sa kaniyang mga mag-aaral at isa ito sa pinakamahalagang propesyon sa ating lipunan. Kailangang tiyakin ng guro na malinang ang pinakamataas na kasanayan ng bawat mag-aaral mula sa kritikal na pag-iisip hanggang sa mga makrong kasanayan. Mahalaga rin na ang guro ay malikhain sa pagbuo ng mga estratehiya sa pagtuturo upang makuha ang atensyon sa aralin at lubos na maunawaan ng mga mag-aaral.

Ayon sa R.A. No. 7722 o mas kilala bilang “Higher Education Act of 1994” nagkaroon ng



resolusyon bilang R-002-2017 noong ika-16 ng Hunyo taong 2017. Nakasaad sa batas ang pagkakaroon ng Filipino at Panitikan bilang kursong panlahat sa kolehiyo bilang bahagi ng *New General Education Curriculum* sa CHED Memorandum Order No. 20 Series of 2013. Mayroong limang (5) bagong asignatura sa Filipino at Panitikan sa kolehiyo: 1) KOMFIL (Kontekstwalisadong Komunikasyon sa Filipino); 2) FILDIS (Filipino sa Ibat't Ibang Disiplina); at 3) DALUMATFIL (Dalumat ng/sa Filipino); 4) SOSLIT (Sosyedad at Literatura/Panitikang Panlipunan) at 5) SINESOS (SineSosyedad/Pelikulang Panlipunan).

Binigyang pansin sa pag-aaral na ito ang pagbuo at balidasyon ng sangguniang aklat o teksbuk para sa KOMFIL na may pamagat na Kontekstwalisadong Komunikasyon sa Filipino. Ang aklat na ito ay naglalayong makatuon sa tamang paggamit ng Filipino sa iba't ibang larangan ng Kontekstwalisadong Komunikasyon na kinasasangkutan ng isang tao sa kaniyang lipunang ginagalawan.

Ayon kay Lenon (2015), sa isang pahayagan na *The Telegraph*, ang teksbuk ay may malaking epekto sa larangan ng edukasyon. Ngunit sa kabila nito, mas marami pa rin ang gumagamit ng *internet* para maghanap ng impormasyon kaysa sa pagbabasa ng teksbuk.

Batay sa karanasan ng karamihan, mas balido ang mga impormasyon na nakakalap sa teksbuk kaysa sa *internet* dahil may mga *website* sa *internet* na maaaring baguhin o palitan ang mga impormasyon ng sino man. Maaari tayong makakita o makakalap ng mga impormasyon sa *internet* na hindi dumaan sa mga pagsusuri o balidasyon mula sa mga awtoridad at hindi nailathala. Ngunit ang teksbuk ay may kasiguraduhang pagkabalido at konkreto sapagkat ito ay dumaan sa masusing pagsusuri ng mga awtoridad bago ito mailathala.

Ang teksbuk ay kailanman hindi mapapalitan ng *internet*, wala nang mas makahihigit pa sa ibinibigay na kaalaman ng isang teksbuk, naibibigay nitong kagalakan sa pagbabasa at sa paglinang nito sa kakayahan ng isang indibidwal na maka-alam ng panibagong karunungan. Ang isang teksbuk ay maihahalintulad sa isang puno. Ang katawan ng isang puno ay siyang pabalat, ang mga dahon nito ay nagsisilbing impormasyon, at ang bunga nito ay siyang pagsasaparakat ng mga kaalaman na ating napupulot sa paggamit o pagbasa ng ganitong mga kagamitan.

Ang teksbuk ay mas mapagkakatiwalaan sa nilalaman o impormasyong taglay nito, sapagkat ito ay dumaan sa masusing proseso gaya ng pagpapatibay, pagrerebisa, at ebalwasyon bago ito mailathala. Hindi tulad ng mga impormasyong nanggagaling at mababasa lamang sa *internet*. Maaaring ito ay tama ngunit walang matibay na diin at sanggunian kung ito ay mapagkakatiwalaan. Katulad na lamang ng *Wikipedia* na maaaring baguhin nang sino mang gumagamit ng *internet*. Ito ay walang maituturing na kabisaan sa pag-aaral at pagkatuto ng isang mag-aaral dahil nagbubunga ito ng katamaran at kawalan ng gana o motibasyon sa isang mag-aaral. Nagdudulot rin ito ng mga kalituhan sapagkat hindi pare-pareho ang ibig pakahulugan dahil ang mga impormasyong nilalaman nito ay nanggaling

lamang sa mga gumagamit ng *internet* na mahirap matukoy kung ito ba ay may katotohanan. Karagdagan, kaya ito nakapagdudulot ng kalituhan at paiba-iba ng impormasyon at nilalaman ay walang sistema at pamantayan na sinusundan.

Naglalaman ang teksbuk ng di mapantayang karunungan ng isa o maraming tao sa iba't ibang larangan ng buhay. Ito ang nagsisilbing gabay at patnubay ng mga mag-aaral at guro sa pag-aaral, nagtataglay ng mga impormasyon na makatutulong sa pag-aaral at pagtuturo, nakasulat din dito ang mahahalagang simulain sa buhay. Hanggang sa modernong panahon ito ay saligan pa rin sa mga batayan ng mga ebidensya at katibayang nakasalig din sa iba.

Ang teksbuk ay di lamang kinasasangkutan ng mga datos o impormasyon, ito rin ay naglalaman ng iba't ibang pagsasanay na may layuning mapaunlad ang kakayahan, kasanayan, at kaalaman, ng isang mag-aaral. Hindi katakatang ang isang taong palabasa ay marunong sa buhay dahil sa maraming impormasyon ang maari niyang makuha at maisabuhay na nagpapabago sa kaniyang pananaw na kadalasang naisasaparakat sa kaniyang buhay. Isa ito sa mga pangunahing layunin ng pag-aaral, ang makalikha ng instruksiyunal na kagamitan upang sa pagtuklas at pagkatuto ng bawat mag-aaral ay malubos sa kursong kailangan nilang gampanin.

Ayon kay Pearson (2008), mula sa kaniyang aklat na *Books as History*, mahalaga ang mga sanggunian at sanayang aklat sa isang lipunan bilang instrumento sa pag-unawa ng mga impormasyon at ideya.

Malaki ang naitutulong ng teksbuk sa paglinang ng kaalaman ng isang mambabasa, mula sa mga impormasyon na kaniyang nakakalap. Sa pagbabasa rin, mas lalo pang lumalawak ang ating pang-unawa sa iba't ibang konsepto ng buhay at aralin mula sa pedagohikal na aspeto. Ang teksbuk ay hindi lamang bungkos ng papel na naglalaman ng mga salita, kundi isa itong babasahin na nagbibigay ng malawak at malalim na kaalaman sa isang mambabasa tungo sa pagkatuto at pagtuturo.

Kayamanan kung maituturing ang bawat teksbuk dahil ito ay naglalaman ng mga malalalim na konsepto, ideya, saloobin at karanasan na siyang nagiging batayan ng mga guro kung ano ang kanilang ituturo sa loob ng klase, kung paano ituturo ang bawat aralin, kung ano ang dapat matutunan ng mga mag-aaral matapos matalakay ang mga gawaing nakapaloob sa teksto.

Binigyang kahulugan naman nina Inalvez, et.al (2012), sa kanilang teksbuk na *Pagbasa at Pagsulat Tungo sa Pananaliksik*, na ang wika ay siyang pinakamahalagang biyayang ipinagkaloob ng Poong Maykapal sa ating lahat. Ito ang instrumento upang maipaabot ang ating nararamdaman kung tayo man ay masaya, malungkot, nagagalit, nagugulat at kung ano pang emosyon at ideya ang nais nating iparating.

Sapagkat sa paggamit ng wika, dito nasasalamang kung ano tayo, sino tayo at kung saan tayo nagmula. Ang wika ay maaaring maging batayan ng ating pagiging isang tao, habang ito ay patuloy na ginagamit at pinapayaman ay nakabubuo rin tayo ng ating sariling pagkakakilanlan. Ang tao ay nilalang na may pinakamataas na antas batay sa anyong pisikal at





intelektwal. Dahil dito tayo rin ay nabibigyan ng kakayahan na makapagpahiwatig ng ating mga saloobin o damdamin at pananaw. Wika ang daan sa pakikipagkomunikasyon, pagkakaisa, pakikisalamuha at paglinang sa kaisipan ng bawat indibidwal.

Isang mahalagang instrumento sa pagkatuto natin sa ating sariling wika at sa epektibong pakikipagkomunikasyon ay ang pagkakaroon ng teksbuk, na siyang pangunahing ginagamit ng mga guro at mag-aaral na sinasang-ayunan naman ni Tran, et.al (2014), sa kaniyang pag-aaral na ang pokus ay pagpapaunlad ng kasanayan sa pakikinig, pagbabasa, pagsasalita at pagsulat ng mga mag-aaral. Ang dapat na nilalaman ng teksbuk sa tersyarya ay ang mga impormasyon na dapat matutuhan ng mga mag-aaral sa tulong ng pagbabasa at pag-intindi sa bawat pahayag na mababasa, at ang *skills book* o kasanayang teksbuk ay makatutulong naman sa pagpapaunlad ng kasanayan lalo na sa paggamit ng wika sa pakikipagkomunikasyon.

Kaya naman ang pag-aaral ay nakasalig sa pagbuo at balidasyon ng sanggunian at sanayang aklat na siyang pangunahing batayan sa pagtuturo sa Kolehiyo ng Edukasyon sa Tarlac State University.

Binibigyang diin naman ni Henderson (2015), sa kaniyang pag-aaral na pinamagatang *Importance of Oral Communication Skills* na ang ating kakayahan sa pakikipagkomunikasyon ay kailangan para sa paglinang ng ating kasanayan sa ating pagbasa at pagsulat pati na rin sa ating pag-iisip at pagkatuto. Binanggit din niya ang mga dapat linangin sa pakikipagkomunikasyon, una ay ang kasanayan sa pakikinig, na siyang pangunahing paraan sa pagtanggap ng impormasyon, ideya at damdamin na nais ipabatid sa ating kausap. Pangalawa ay ang kasanayan sa pagsasalita ng mga mag-aaral upang mabisa nilang maihatid ang kanilang ideya at saloobin. Pangatlong kasanayan na dapat linangin ay ang pagkakaroon ng kamalayan ng mga mag-aaral sa kanilang kahinaan at kalakasan sa paggamit sa wika at iba pang salik sa pakikipagkomunikasyon upang maging masining at makabuluhan ang paggamit ng wikang Filipino sa proseso ng pagpapalitan ng ideya o kaalaman.

Batay naman sa pag-aaral ni Rawat (2013), na pinamagatang *Language and Truth: A study of Nietzsche's Theory of Language* napag-alaman niya ang pananaw ni Nietzsche tungkol sa wika ay may impluwensiya sa tinatawag na "*survival instincts*" na kung saan nagagamit ng tao ang kaniyang kaalaman o natutuhan tungkol sa kaniyang wika ay sa pakikipag-usap sa iba, maaaring sa tahanan, pampublikong lugar, paaralan, pamilihan, at simbahan para sa mabisang pagpapahayag. Pinatutunayan lamang niya na ang wika ay lumitaw at napahuhusay sa lipunan dahil na rin sa pangangailangan ng isang indibidwal para mabuhay.

Samakatwid, ang wika ay sentro ng karunungan magtatawid upang malubos ang pagkakaunawaan at pagkakaintindihan ng karunungan saan mang kagamitan ito maipahayag.

Batay naman sa isinagawang pag-aaral nina Castillo, et.al (2018), may titulong *Pagbuo at Balidasyon ng Estratehiyang Interbensyong Kagamitang Pampagtuturo sa Gramatikang Filipino*, malaki ang gampanin ng mga kagamitang panturo gaya ng sanayang aklat sa pagkatuto ng mga mag-aaral at sa mabisang pagtuturo ng mga guro sa hinaharap. Lubusan nila itong nagagamit at higit na nakatutulong sa kanila upang magsilbing gabay sa kanilang pagtuturo at mas maging magaan ang daloy ng pagtuturo at pagkatuto. Mas napadadali ang trabaho ng mga guro sapagkat may sanggunian nang ginagamit bilang kanilang reperensya na sa kahit ano mang sandali ay maaari na nilang magamit.

Kaya naman mahalaga rin na matukoy ang kabisayaan at pagtanggap ng mga mag-aaral at guro dahil sila ang pangunahing gumagamit ng teksbuk upang mas maging epektibo, kapakipakinabang at upang mapaunlad pa at maipagpatuloy ang paggamit ng teksbuk.

Ang teksbuk para sa kursong KOMFIL ay naglalayon na ituro sa mga mag-aaral ang Kontekstwalisadong Pakikipagkomunikasyon na gaya rin sa mga pag-aaral nina Tran, et al. na ang pokus ay pagpapaunlad sa kasanayan, pakikinig, pagbabasa, pagsasalita at pagsulat ng mga mag-aaral. Binigyang diin ni Henderson na ang ating kakayahan sa pakikipagkomunikasyon ay kailangan sa paglinang ng ating kasanayan sa pagbasa at pagsulat tungo sa pagkatuto na sinang-ayunan ni Rawat sa kaniyang pag-aaral na ang wika ay may impluwensiya sa *survival instincts* kung saan nagagamit ng tao ang kaniyang kaalaman tungkol sa wika, sa tahanan, pampublikong lugar at iba pa. Tulad ng layunin ng teksbuk na KomFil na ituro sa mga mag-aaral ang Kontekstwalisadong Komunikasyon bilang kanilang instrumento sa pagpapahayag ng sarili.

Upang malubos ang kabisaan at pagtanggap, kalimitan sa mga sanayang aklat kinapapalooban ito ng mga pagsasanay bilang pagtataya sa natutuhan ng mga mag-aaral batay sa nilalamang nakapaloob dito. Sa kasalukuyan ang mga teksbuk ay dinesenyo nang interaktibo, kaya't may kakayahan nang matuto ang mga mag-aaral kahit wala ang pamamatnubay ng guro, kahit nasa bahay lamang sila kaya na nilang matuto nang mag-isa dahil may mga tala o mga impormasyon at gawain na maaari ng sagutan sa teksbuk na maaaring makatulong sa pag-unlad at pagpapalawak ng kanilang kakayahan at kasanayan lalo't higit sa pagbasang may pang-unawa sa teksto. Isa na nga rito ay ang Kontekstwalisadong Komunikasyon sa Filipino 1 para sa kursong KOM FIL 1 na siyang batayang sanggunian at sanayang aklat ng mga nasa unang antas ng edukasyon sa Tarlac State University (TSU) taong panuruan 2018-2019.

Bilang mananaliksik mahalagang malaman ang mga saloobin, reaksiyon at mga suhestiyon ng mga gumamit na ng aklat na "Kontekstwalisadong Komunikasyon sa Filipino 1" kung mayroon ba itong magandang naidulot sa pagkatuto ng mga mag-aaral at sa pagtuturo ng mga guro, at kung nagkaroon ba ng salik sa pagkatuto ang mga mag-aaral maging ang mga guro bilang reperensya sa kanilang pagtuturo. At lalong dapat na malaman kung nakatulong o naging epektibo ba ito sa kanila.





Ang sanayang aklat sa pag-aaral ay masusing binuo batay sa pangangailangang komunikasyong nakasalig sa lipunang ginagalawan ng isang mag-aaral. Sa gayon ay maging malay ito sa mga bagay na maaaring makapaghubog sa kaniyang kakayahan, kasanayan at kagalingan.

## PAGLALAHAD NG LAYUNIN

Ang pag-aaral na ito ay nakapokus sa pagbuo, balidasyon at antas ng pagtanggap ng mga mag-aaral sa sanayang aklat na Kontekstwalisadong Komunikasyon sa Filipino.

Sa kabuuan ang pananaliksik na ito ay nakatugon sa mga sumusunod na suliranin:

1. Makabuo ng isang kagamitan bilang sanayang aklat sa kursong KOMFIL 1 batay sa kurikulum na ipinanukala ng R.A.No. 7722 sa resolusyon bilang R-002-2017, ang Kontekstwalisadong Komunikasyon sa Filipino.
2. Makapagpabalido sa mga gurong eksperto mula sa nabuong sanayang aklat batay sa:
  - 2.1 Layunin;
  - 2.2 Nilalaman;
  - 2.3 Presentasyon;
  - 2.4 Organisasyon; at
  - 2.5 Pagsasanay.
3. Matukoy ang antas ng pagtanggap ng mga mag-aaral sa nabuong sanayang aklat sa kursong KOMFIL 1 batay sa:
  - 3.1 Layunin;
  - 3.2 Nilalaman;
  - 3.3 Presentasyon;
  - 3.4 Organisasyon; at
  - 3.5 Pagsasanay.
4. Matukoy ang kahalagahan ng sanayang aklat sa pagkatuto ng mga mag-aaral batay sa natamang grado ng mga mag-aaral sa kursong KomFil 1.
5. Matukoy ang mga mungkahing hakbang upang mapagtibay at patuloy na magamit ang teksbuk sa Kontekstwalisadong Komunikasyon sa Filipino bilang kagamitang panturo sa KomFil 1.
6. Matukoy ang implikasyon ng teksbuk sa pagkatuto ng mga mag-aaral at sa pagtuturo ng mga guro sa Filipino.

## METODOLOHIYA

### Disenyo ng Pananaliksik

Ang pag-aaral ay gumamit ng R & D o *Research and Development* na naglalayong makabuo ng isang kapakipakinabang na instraksyunal na kagamitan upang makatulong sa isang pedagogikal at akademikong larang sa

Filipino. Ito ay nakasalig sa pamantayang silabus na naimungkahi ng CHED Memo. No. 57, Series of 2017 at mga Silabus Sa Filipino Sa Kolehiyo.

### Pinagmulan ng Datos

Ang pag-aaral ay nilahukan ng sampung eksperto (10) na nagtuturo ng KomFil 1 sa Kolehiyo ng Agham, Sining at Panlipunan at ng Kolehiyo ng Panggurong Edukasyon ng Tarlac State University. Kasama din ang tatlong (3) paham na sumuri sa *content validity* ng teksbuk.

Kasama sa pag-aaral ang isandaang (100) mag-aaral na mula sa unang antas ng Kolehiyo ng Panggurong Edukasyon na maingat na pinili sa pamamaraang *random sampling* upang maging kalahok para sa pagsuri ng antas ng pagtanggap sa Kontekstwalisadong Komunikasyong Filipino (KOMFIL1). Tinukoy din ang gradong kanilang nakuha upang masukat ang pagkatuto nila sa paggamit ng sanayang aklat.

Ang mga napiling kalahok ay mula sa iba't ibang seksyon ng bawat departamento at medyor na tanging sila lamang ang nabigyan ng KOMFIL 1 na asignatura sa Taong Panuruan 2018-2019 unang semester. Ito ay ang mga pangkat BEED 1-1, BEED 1-2, BSED FIL 1E-1, 1E-2, 1E-3 at 1E-4, FSM 1-1 at 1A 1-1 at SOCSTUD 1B-1 at 1B-2.

### Instrumentong Ginamit sa Pananaliksik

Ang ginamit na instrumento upang matukoy ang antas ng pagtanggap ng mga mag-aaral sa teksbuk na KomFil ay isang talatanungang sumuri batay sa layunin, nilalaman, presentasyon, organisasyon, at pagsasanay ng nabuong teksbuk, ang Kontekstwalisadong Komunikasyon sa Filipino.

Ang talatanungan para sa mga guro ay batay sa layunin at pangangailangan ng pag-aaral. Ito ay dumaan sa proseso ng balidasyon (*content validity*) ng tatlong gurong eksperto. Pagkatapos ng balidasyon ito ay ipinamahagi na sa mga balideytors na binubuo ng sampung (10) guro na nagtuturo ng kursong KomFil sa unang semestre ng taong panuruan 2018 - 2019 mula sa Tarlac State University.

Ang mga talatanungang ginamit sa mga mag-aaral ay ibinatay sa panukatang ginamit sa pananaliksik ni Balido (2015) na **Interktibong Modyul sa Pagtuturo ng Filipino**. Ang talatanungan ay minodopika at iniangkop ayon sa pangangailangan at layunin ng kasalukuyang pag-aaral upang magamit sa pagtukoy sa antas ng pagtanggap ng mga guro at mag-aaral sa teksbuk na KomFil. Laman nito ang mga tanong na sinagutan sa pamamagitan ng pagtsek sa kahong naaayon sa opinyon ng mga kalahok. Ginamitan din ito ng Iskalang Likert upang ilarawan ang kabuuang anats ng pagtaggap ng nabuong teksbuk.

### Pamamaraan

Una ay ang **pagbuo**, dumaan sa masusing pag-aanalisa ang pagbuo ng teksbuk. Ibinatay ang mga lektura sa kompetensi ng syllabus ng kurso na siyang naging daan upang mabuo ang sanayang aklat. Ang kalahating semestre taong 2016 ay binubo upang masulusyunan at maagapan ang maaring kakulangang



kagamitan ng mga guro sa kolehiyo lalo na sa pinaglilingkurang unibersidad ng mananaliksik.

Ginamit din ng mananaliksik ang **Modelong ADDIE** na siyang mainam na gabay at pamantayan sa ganitong mga pag-aaral. Mula sa **Analisis**, na siyang naging konsepto kung paano mabubuo nang may kahusayan at batayan ang papel. Gayundin ang kompetensing hinihingi ng kursong FIL 1 ay isinaalang-alang. **Disenyo**, ang pamamaraan kung saan nilikha ang mga konsepto ng disenyo at kulay ng nabuong sanayang aklat. Sa **Debelopment** naman kinakitaan dito kung paano nilinang ang mga paksa sa bawat aralin at mga pagsasanay na siyang susuri sa antas ng pag-unawa at kakayahan ng mga mag-aaral upang matuto. Kabilang din dito ang mga likhang akda ng mananaliksik upang makatugon sa kompetensing hinihingi ng syllabus. Ang **Implementasyon** ay ang paggamit ng mga mag-aaral sa teksbuk at ang huli ay **Balidasyon** na siyang kinakitaan ng kahusayan at kagalingan sa nabuong kagamitang pampagtuturo't pagkatuto.

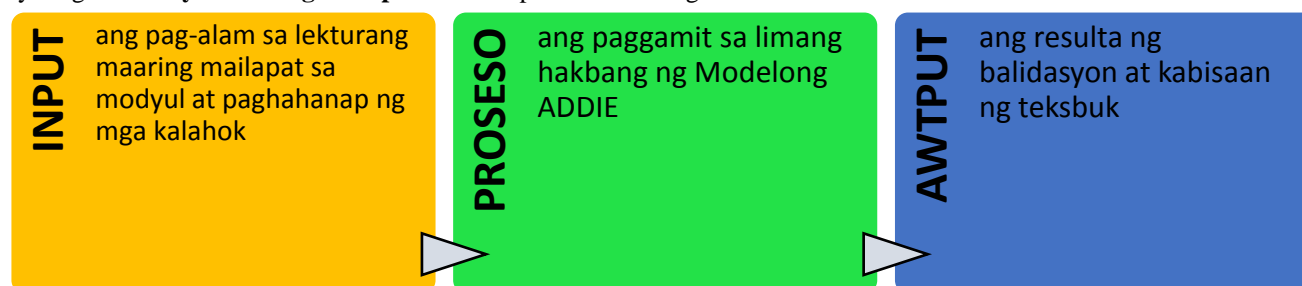
Ikalawa sa pamamaraang hakbang na sinuyod ng papel ay ang **balidasyon sa mga eksperto**. Matapos mabuo ang

teksbuk ito ay pinabalido sa mga paham at eksperto sa ganitong larang sa gayon ay mailathala at mabigyan ng numerong karapatang-ari. Matapos itong mabalido napayuhang magsagawa ang mananaliksik ng *test acceptability survey* upang mataya ang kalidad at kahusayan nito.

Ikatlo ay **pagtukoy sa antas ng pagtanggap**. Tinipon at kinalap ang mga mag-aaral sa kolehiyo ng Panggurong Edukasyon upang matukoy ang kanilang kaantasan sa pagtanggap at paggamit ng nabuong sanayang aklat, ang Kontekstwalisadong Komunikasyon sa Filipino. Mula sa isang semestrenag paggamit ng nabuong kagamitan, tinukoy at sinuri ang gradong nakuha ng mga mag-aaral upang mataya naman ang kabisaan ng nabuong sanayang aklat.

Sa huli ay ang pagkuha sa sarbey ng maaring **maimungkahi** ng mga guro at mag-aaral upang patuloy na mapakinabanagan at magamit ang nabuong sanayang aklat.

Narito ang daloy ng pag-aaral sa pamamagitan ng konseptwal na balangkas at ito ay ang IPO (Input/Process/Output) na siyang figyur na nasa ibaba.



Figyur 1: Paradigma ng Pag-aaral

### Pamamaraang Istatistika

Ang istatistikang ginamit sa pagsusuri at paglalarawan sa mga datos sa pag-aaral ay ang *weighted mean* na siyang naging batayan upang mabalido, masukat ang antas ng pagtanggap ng mga guro at matukoy ang pagkatuto ng mga mag-aaral sa paggamit ng sanayang aklat. Na ang ibig sabihin ay:

*Weighted Mean:*

$$X = \frac{\sum x}{N} \quad \text{Total na Iskor} \quad \text{Blg. ng Aytem}$$

Where as:

$\bar{X}$  = para sa arithmetic mean

$\sum x$  = para sa total ng iskor

$N$  = sa kabuuang bilang ng mga balideytors

Ginamit ang Timbangang Likert sa pagkuha ng iskala sa deskripsyong berbal at interpretasyon ng mga datos nito.

Iskor	Interbal	Interpretasyong Berbal
5	4.50-5.00	Pinakamataas na katanggap-tanggap
4	3.50-4.49	Mataas na katanggap-tanggap
3	2.50-3.49	Katanggap-tanggap
2	1.50-2.49	Di-gaanong katanggap-tanggap
1	1.00-1.49	Di-tanggap

Ang pinakamataas na katanggap-tanggap ay nangangahulugang *napakahusay* ng isinagawang pagsusuri. Ang mataas na katanggap-tanggap ay nangangahulugang *mas*

*mahusay*, ang katanggap-tanggap ay nangangahulugang *mahusay*, ang di-gaanong katanggap-tanggap ay nangangahulugang *mahusay-husay* ang ginawang pagsusuri



bagama't maari pang iwasto. Ang di-tanggap naman ay nangangahulugang *mahina* ang ginawang pag-aaral at nangangailangan pang pag-aralang muli ang resulta ng ebalwasyon mula sa mga tagasagot ng pag-aaral.

## **PAGLALAHAD, PAGSUSURI AT INTERPRETASYON NG MGA DATOS**

Sa bahaging ito ng pag-aaral tinukoy ang presentasyon at interpretasyon ng mga datos ang resulta ng balidasyon, antas ng pagtanggap ng mga mag-aaral at ang pagtukoy sa pagkatuto ng mga mag-aaral sa paggamit ng sanayang aklat.

### **1. Ang nabuong teksbuk ay ang KONTEKSTWALISADONG KOMUNIKASYON SA FILIPINO.**

Ang teksbuk ay nabuo upang magamit sa bagong panukalang ipinatupad ng CHED, ang R.A. No. 7722 sa resolusyong R-002-2017 sa kabila ng kontrobersiya ng Republic Act 10533 o ang Enhanced Basic Education Act 2013 na kinasasangkutan ng pagtatanggal ng mga kurso sa Filipino sa Kolehiyo.

Bagaman may mga ganitong usapin napahintulatang ipatigil muna ang pagdinig sa CHED Memo No. 20 s. 2013. Nagkaroon ng *temporary restraining order* taong 2015 sa bisa ng pagsulong ng Organisasyong Tangol Wika na binubuo ng mga premyadong manunulat at professor ng mga unibersidad sa kabisera ng Pilipinas ang Maynila.

Dahil sa kaganapang ito nakapaglabas ng mga syllabus na maaaring ituro sa kolehiyo na hindi kakikitaan ng reduplikasyon ng mga araling inilatag at itinuturo sa bagong kurikulum na K to 12. Mayroong limang (5) bagong asignatura sa Filipino at Panitikan na maaring ituro sa kolehiyo: 1) KOMFIL (Kontekstwalisadong Komunikasyon sa Filipino); 2) FILDIS (Filipino sa Ibat't Ibang Disiplina); at 3) DALUMATFIL (Dalumat ng/sa Filipino); 4) SOSLIT (Sosyedad at Literatura/Panitikang Panlipunan) at 5) SINESOS (SineSosyedad/Pelikulang Panlipunan). Ito ang naging daan upang mabuo ang sanayang aklat at mataya ang kahusayan nito sa mga mag-aaral.

Ang mga paksa ay masikap at matiyagang binuo bilang instraksyunal na kagamitan sa kursong KOMFIL 1. Narito ang pagkakahati ng mga aralin:

ARALIN 1: Varyasyon at Rehistro ng Wika

ARALIN 2: Pagproseso ng Impormasyon

ARALIN 3: Mga Gawaing Pangkomunikasyon ng mga Filipino

ARALIN 4 Mga Napapanahong Isyung Lokal at Nasyonal

4.1: Kalagayan ng Iba't Ibang Serbisyong Panlipunan: Pabahay, Pangkalusugan, Transportasyon at Edukasyon

Iba't ibang Usapin Hinggil sa Urbanisasyon Usapin sa Malawakang Pagkasira ng

Kalikasan at Pagkakaroon ng Kalamidad

4.2: Korapsyon at Kahirapan

Malnutrisyon

Seguridad sa Pagkain

4.3: Mga Katutubong Pangkat

Manggagawang Kontraktwal

Magsasaka

Tindero at Tindera

Kabataang Manggagawa

Usaping Migrasyon sa Filipinas

Kultural, Politikang, Linggwistikong,

Ekonomikong Dislokasyon/ Displacement

Bunsod ng Globalisasyon

ARALIN 5: Mga Proyekto ng Pamahalaan Tungo sa Kagalingang Pambayan at Pambansang Kaunlaran

Kagawaran ng Kalusugan

Kagawaran ng Edukasyon

Payapa at Masaganang Pamayanan

(PAMANA)

ASEAN Economic Community (AEC)

Blueprint 2025

Iba pang Programa ng Pamahalaan

ARALIN 6: Sining at Kultura ng Filipinas sa Panahon ng Globalisasyon

Ang Konsepto ng mga Filipino sa Bayani,

Pinuno at Manggagawa

Isyung Pangkultural ng Filipinas

ARALIN 7: Ang Pakikibahagi ng Kabataan sa Usaping Panlipunan

Tugon sa mga Kabataan sa mga Isyu ng Lipunan

Pakikibahagi ng mga Kabataan sa mga

Usaping Panlipunan

ARALIN 8: Paglahok ng mga Kabataang Filipino sa Isyung Panlipunan: Dahilan ng Paglahok, Epekto sa Sarili at Lipunan

ARALIN 9: Mga Tiyak na Sitwasyong Pangkomunikasyon Gamit ang Wika

ARALIN 10: Gawaing Pananaliksik Narito ang mukha ng nabauong sanayang aklat.

Narito ang larawan ng kabuuang mukha ng nabauong teksbuk.



2. Makapagpabalido sa mga gurong eksperto mula sa nabuong sanayang aklat batay sa:

## 2.1 Layunin

**Talahanayan 1. Mean Score ng Balidasyon sa Teksbuk ng KOMFIL 1 ng mga Guro na nagturo ng KOMFIL1 sa Tarlac State University batay sa LAYUNIN**

PANUKATAN	MEAN	INTERPRETASYON
Angkop ang mga layunin sa Outcome-Based Teaching Learning (OBTL) ng kursong KomFill.	4.7	Pinakamataas na Katanggap-tanggap
Natatamo ang mga layunin ayon sa talakayan.	4.4	Mataas na Katanggap-tanggap
Naaayon ang mga layunin sa batayang kurikulum na nakasaad sa syllabus ng CHED.	4.7	Pinakamataas na Katanggap-tanggap
Nasusukat ang mga gawain at pagsusulit batay sa layunin.	4.5	Pinakamataas na Katanggap-tanggap
Tiyak ang mga layunin batay sa paksang-aralin.	4.5	Pinakamataas na Katanggap-tanggap
<b>KABUUAN</b>	<b>4.6</b>	<b>Pinakamataas na Katanggap-tanggap</b>

Batay sa talahanayan makikita na ang layunin ng teksbuk ay natamo ayon sa talakayan, tiyak batay sa paksang-aralin, nasusukat ang mga gawain at pagsusuri. Gayundin ito ay naaayon sa kurikulum na nakasaad sa syllabus ng CHED at sa Outcome-Based Teaching Learning (OBTL) ng kursong KOMFIL 1. Sa kabuuan ang layunin ng teksbuk ay may karampatang tuos na 4.6 na may interpretasyong Pinakamataas ng Katanggap-tanggap. Nangangahulugan lamang na ang teksbuk ay tanggap, epektibo at nakatulong sa pagtuturo ng mga

guro. Ang layunin ng teksbuk ay naisakatuparan upang higit na mahikayat ang mga mag-aaral, mapadali at makatulong sa pagtuturo ng mga guro sapagkat ito ay nakakamtan sa isang klase lamang na mahalaga upang matalakay ang lahat ng paksa. Mahalaga rin na maturuan ng mga guro ang mga mag-aaral na matutong mag-isa gamit ang teksbuk at malinang ang kanilang pagkamakabayan sa paggamit ng wikang Filipino.



## 2.2 Nilalaman

Talahanayan 2. *Mean Score* ng Balidasyon sa Teksbuk ng KOMFIL 1 ng mga Guro na nagturo ng KOMFIL1 sa Tarlac State University batay sa  
NILALAMAN

PANUKATAN	MEAN	INTERPRETASYON
Ang nilalaman ng teksbuk ay tumutugon sa OBTL.	4.7	Pinakamataas na Katanggap-tanggap
Naipapahayag ng malinaw ang mga araling dapat na maituro ng mga guro batay sa syllabus.	4.5	Pinakamataas na Katanggap-tanggap
Sapat ang mga nilalaman ng paksang-aralin na kailangan sa kurso.	4.5	Pinakamataas na Katanggap-tanggap
Kaangkupan sa layuning pampagtuturo-pagkatuto ng paksang-aralin.	4.3	Mataas na Katanggap-tanggap
Pag-angkop ng paliwanag ng bawat paksa sa antas ng talino ng mga mag-aaral.	4.7	Pinakamataas na Katanggap-tanggap
<b>KABUUAN</b>	<b>4.5</b>	<b>Pinakamataas na Katanggap-tanggap</b>

Sa talahanayan natukoy na ang nilalaman ng sanayang aklat ay tumutugon sa Outcome-Based Teaching Learning (OBTL), naging sapat ang mga nilalaman ng paksang-aralin na kailangan sa kurso, naipahayag ng malinaw ang mga aralin at naiangkop ang paliwanag sa bawat paksa batay sa antas ng talino ng mga mag-aaral. Sa kabuuan ang nilalaman ay may karampatang tuos na **4.5 na may interpretasyong Pinakamataas na Katanggap-tanggap**. Patunay lamang na sapat ang mga impormasyon, ideya, paliwanag at mga

halimbawa ng teksbuk sa pagtuturo ng KOMFIL1. Natugunan ng guro ang pangangailangan ng mga mag-aaral at nalinang ang pag-unawa ng mga mag-aaral sa mga ideya, impormasyon at kaalamang ibinahagi ng guro na nagmula sa teksbuk na KomFil1. Naging kapaki-pakinabang sa guro ang paggamit ng teksbuk na KomFil1 bilang gabay at reperensya sa kanilang pagtuturo. Naging madali ito sapagkat sapat ang mga nilalaman ng bawat paksa.

## 2.3 Presentasyon

Talahanayan 3. *Mean Score* ng Balidasyon sa Teksbuk ng KOMFIL 1 ng mga Guro na nagturo ng KOMFIL1 sa Tarlac State University batay sa PRESENTASYON

PANUKATAN	MEAN	INTERPRETASYON
Nakapupukaw ng interes ang mga grapikong ginamit sa bawat aralin.	4.5	Pinakamataas na Katanggap-tanggap
Maganda at kaakit-akit ang anyo at paraan ng pagkakagawa ng teksbuk.	3.0	Katanggap-tanggap
Ang mga larawang ginamit ay kaakit-akit at nakapupukaw ng interes at kawilihan.	4.2	Mataas na Katanggap-tanggap
Nakahihikayat ang presentasyon ng paksa sa atensyon at interes ng mga mag-aaral sa patuloy na pagbabasa.	4.5	Pinakamataas na Katanggap-tanggap
Nasusundan ang presentasyon sa pagbuo ng isang sangguniang aklat.	4.5	Pinakamataas na Katanggap-tanggap
<b>KABUUAN</b>	<b>4.2</b>	<b>Mataas na Katanggap-tanggap</b>

akikita sa talahanayan na may interpretasyong **Pinakamataas na Katanggap-tanggap** na nangangahulugan na ang teksbuk ay nakatulong sa pagtuturo ng mga guro, ang presentasyon ng

at atensyon ng mga mag-aaral. Ang presentasyon ng teksbuk ay naging kaakit-akit at nakapukaw ng interes sa pagtuturo sa katunayan ito ay nakakuha ng interpretasyong **Katanggap-**





**tanggap.** Sa kabuuan ito ay nakakuha ng karampatang tuos na **4.2** na may interpretasyong **Pinakamataas na Katanggap-tanggap.**

Nangangahulugan na ang presentasyon ng teksbuk ay malaki ang naitulong sa pagtuturo ng mga guro at sa pagkatuto ng mga mag-aaral upang malinang ang kanilang kasanayan sa pakikipag-komunikasyon

## 2.4 Organisasyon

**Talahanayan 4. Mean Score ng Balidasyon sa Teksbuk ng KOMFIL 1 ng mga Guro na nagturo ng KOMFIL1 sa Tarlac State University batay sa ORGANISASYON**

PANUKATAN	MEAN	INTERPRETASYON
Paggamit ng maayos na paraan upang maipakilala ang bawat pagkakasunod-sunod ng bawat aralin.	4.6	Pinakamataas na Katanggap-tanggap
Lohikal na pagkakaugnay sa isa't isa ng mga aralin.	4.4	Mataas na Katanggap-tanggap
Malinaw ang pagkakalahad at pagkakasunod-sunod ng mga aralin batay sa kurikulum.	4.5	Pinakamataas na Katanggap-tanggap
Akmang paggamit ng mga talasalitaan, pangungusap, at talata na angkop sa pang-unawa at interes ng mga mag-aaral.	4.4	Mataas na Katanggap-tanggap
Lohikal na pagkakaayos ng daloy ng pananalita.	4.7	Pinakamataas na Katanggap-tanggap
<b>KABUUAN</b>	<b>4.5</b>	<b>Pinakamataas na Katanggap-tanggap</b>

Batay sa talahanayan makikita sa lahat ng aytem ay may interpretasyong pinakamataas na katanggap-tanggap. Patunay lamang na maayos at lohikal ang daloy ng pananalita ng gumamit ng teksbuk na KOMFIL 1. Samantala nakakuha naman ng interpretasyong **Pinakamataas na Katanggap-tanggap** sa pagkaka-ugnay ng mga aralin at akma ang mga salitang ginamit na angkop sa pag-unawa at interes ng mga mag-aaral. Sa

kabuuan may karampatang tuos na **4.5** na may interpretasyong **Pinakamataas na Katanggap-tanggap.** Nangangahulugan lamang na ang organisasyon ng teksbuk ay malinaw na nailahad ang mga paksang-aralin at mga gawain para sa mga guro at mag-aaral. Na kung saan ay hindi nagkaroon ng kalituhan at naging organisado ang ayos ng mga aralin.

## 2.5 Pagsasanay

**Talahanayan 5. Mean Score ng Balidasyon sa Teksbuk ng KOMFIL 1 ng mga Guro na nagturo ng KOMFIL1 sa Tarlac State University batay sa PAGSASANAY**

PANUKATAN	MEAN	INTERPRETASYON
Kalinawan ng paglalahad ng mga panuto.	4.5	Pinakamataas na Katanggap-tanggap
Paggamit ng mga pagsasanay sa pagpapalawak ng mga talasalitaan ayon sa mga araling tinalakay.	4.6	Pinakamataas na Katanggap-tanggap
Pag-angkop ng mga pagsasanay na pasalita at pasulat na tumutugon sa pangangailangan ng kurso.	4.5	Pinakamataas na Katanggap-tanggap
Pag-akma ng mga pagsasanay sa kakayahan ng mga mag-aaral.	4.4	Mataas na Katanggap-tanggap
Lohikal na paglalahad ng mga tanong sa pagsasanay.	4.5	Pinakamataas na Katanggap-tanggap
<b>KABUUAN</b>	<b>4.5</b>	<b>Pinakamataas na Katanggap-tanggap</b>

Makikita sa talahanayan na ibinatay sa mga datos na nakalap ay masasabing may kalinawan ang pagkakalahad ng

mga panuto sapagkat ito ay binigyan ng mataas na marka gayon din na nagamit ang mga pagsasanay sa pagpapalawak ng mga



talasalitaan. Ayon sa mga aralin naging angkop ang mga pagsasanay sa pasalita at pasulat na tumutugon sa pangangailangan ng kurso at lohikal na inilalahad ang mga tanong sa pagsasanay at akma ang mga pagsasanay sa kakayahan ng mga mag-aaral. Sa kabuuan may karampatang tuos **4.5** na may interpretasyong **Pinakamataas na Katanggap-tanggap**. Sa gayon ay masasabi na naging epektibo ang mga pagsasanay sa mga mag-aaral at nakatulong sa pagtuturo ng mga guro upang malubos ang kanilang pagkatuto. Ang teksbuk ay higit na

nakatulong upang maging epektibo sa paglinang ng kakayahan at kasanayan sa pagtuturo ng mga guro sa mga mag-aaral. Sapagkat ang mga pagsasanay ay nakasubok nang husto sa mga kakayahan ng mga mag-aaral dagdag na rito ay nalinang pa ang kanilang malalim na pag-iisip.

Narito ang lagom ng interpretasyon ng pagsusuri sa antas ng pagtanggap ng mga guro hinggil sa nabuong teksbuk bilang kagamitang pampagtuturo't pagkatuto.

**Talahanayan 6. Mean Score ng Kabuuang tuos sa antas ng pagtanggap ng mga gurong eksperto sa KOMFIL Teksbuk**

PANUKATAN	MEAN	INTERPRETASYON
Layunin	4.6	Pinakamataas na Katanggap-tanggap
Nilalaman	4.5	Pinakamataas na Katanggap-tanggap
Presentasyon	4.2	Mataas na Katanggap-tanggap
Organisasyon	4.5	Pinakamataas na Katanggap-tanggap
Pagsasanay	4.5	Pinakamataas na Katanggap-tanggap
PANGKALAHATANG MEAN	4.4	Mataas na Katanggap-tanggap

Kung susuriin ang kabuuang tuos na 4.4 mean iskor na inilalahad ng talahanayan 6 ay nagpapakita halos ng mataas na katanggap-tanggap na interpretasyong mas mahusay. Ito ay nangangahulugan lamang na angkop ang nilalaman, lalo na ang layunin sa bawat aralin ng teksbuk. Gayundin naman ang

presentasyon, organisasyon at pagsasanay. Samaktuwid ito ay mabisang gamitin sa kursong KOM FIL 1 ng General Education Curriculum na naka-angkla sa mga kursong kinukuha ng mga mag-aaral tersyarya.

**3. Matukoy ang antas ng pagtanggap ng mga mag-aaral sa nabuong sanayang aklat sa kursong KOMFIL 1. batay sa**

**3.1 LAYUNIN**

**Talahanayan 7. Mean Score ng Antas ng Pagtanggap sa Teksbuk ng KOMFIL 1 ng mga Mag-aaral sa Kolehiyo ng Edukasyon ng Tarlac State University batay sa LAYUNIN**

PANUKATAN	Mean	Interpretasyon
Angkop ang mga layunin sa mga paksang-aralin.	4.7	Pinakamataas na katanggap-tanggap
Natatamo ang mga layunin sa sapat na panahon.	4.4	Mataas na katanggap-tanggap
Nahihikayat ang mga mag-aaral na matutong mag-isa tungo sa ikauunlad pa ng paggamit ng wikang Filipino.	4.7	Pinakamataas na katanggap-tanggap
Kabuuan	4.6	Pinakamataas na katanggap-tanggap

Makikita sa talahanayan na angkop ang mga layunin sa paksang-aralin kaya nakahihikayat sa mga mag-aaral na matutong mag-isa tungo sa ikauunlad pa ng paggamit ng wikang Filipino. Sa katunayan ito'y may karampatang tuos na 4.7 na may interpretasyon **Pinakamataas na Katanggap-tanggap**. Samantalang **Mataas na katanggap-tanggap** naman ang pagtamo sa layunin ng teksbuk sa sapat na panahon na may karampatang tuos na 4.4. Sa kabuuan, ang layunin ng teksbuk ay

may karampatang tuos na 4.6 na may interpretasyong **Pinakamataas na Katanggap-tanggap**. Sumasalamin lamang na ang layunin ng teksbuk ay tanggap, epektibo at nakatutugon sa mga pangangailangan ng mga mag-aaral. Natatamo rin ang mga layunin ng bawat paksa sa sapat na panahon kaya naman naging mabisa ito sa kanilang pagkatuto at sa gayon ay napauunlad ang kanilang pagkamakabayan sa pamamagitan ng paggamit ng wikang Filipino



### 3.2 Nilalaman

#### Talahanayan 8. Mean Score ng Antas ng Pagtanggap sa Teksbuk ng KOMFIL 1 ng mga Mag-aaral sa Kolehiyo ng Edukasyon ng Tarlac State University batay sa NILALAMAN

PANUKATAN	MEAN	INTERPRETASYON
Naaayon ang paksa sa tiyak na pangangailangan ng mag-aaral.	4.5	Pinakamataas na katanggap-tanggap
Ang paglalahad ng aralin ay batay sa antas ng pag-unawa ng mag-aaral.	4.5	Pinakamataas na katanggap-tanggap
Ang mga nilalaman ay tumutugon sa layunin ng teknbuk.	4.6	Pinakamataas na katanggap-tanggap
<b>Kabuuan</b>	<b>4.6</b>	<b>Pinakamataas na Katanggap-tanggap</b>

Sa talahanayan makikita na ang mga nilalaman ay tumutugon sa layunin ng teknbuk at ang mga paksa ay naaayon sa pangangailangan ng mga mag-aaral, gayundin ang paglalahad ng mga aralin batay sa antas ng kanilang pag-unawa na may interpretasyong **Pinakamataas na Katanggap-tanggap**. Sa kabuuan, ay may karampatang tuos na **4.6** na may interpretasyong **Pinakamataas na Katanggap-tanggap**.

Makikita lamang na ang mga paksa at aralin sa teknbuk na KomFill ay nagbibigay ng sapat na kaalaman at impormasyon na madaling maunawaan ng mga mag-aaral at nagagamit nila sa kanilang pang-araw-araw na buhay maging sa kanilang mga pagtuklas ng makabagong kaalaman.

Ang mga paksa sa bawat aralin ay akma sa kakayahan ng mga mag-aaral upang malubos ang kanilang pagkatuto.

### 3.3 Presentasyon

#### Talahanayan 9. Mean Score ng Antas ng Pagtanggap sa Teksbuk ng KOMFIL 1 ng mga Mag-aaral sa Kolehiyo ng Edukasyon ng Tarlac State University batay PRESENTASYON

PANUKATAN	MEAN	INTERPRETASYON
Maganda at kaakit-akit ang anyo at paraan ng pagkakagawa ng teknbuk.	4.4	Mataas na katanggap-tanggap
Ang mga larawang ginamit ay kaakit-akit at nakapupukaw sa interes ng mga mag-aaral.	4.4	Mataas na katanggap-tanggap
Nakapupukaw ng interes ang mga grapikong ginamit sa bawat aralin.	4.3	Mataas na katanggap-tanggap
<b>Kabuuan</b>	<b>4.3</b>	<b>Mataas na katanggap-tanggap</b>

Matutunghayan sa talahanayan na maganda at kaakit-akit ang anyo at paraan ng pagkakagawa ng teknbuk gayundin ang mga larawan at grapikong ginamit sa bawat aralin ay kaakit-akit at nakapupukaw ng interes ng mga mag-aaral na sa kabuuan ay may karampatang tuos na 4.3 na may interpretasyong **Mataas na Katanggap-tanggap**. Katunayan lamang na may mga bahagi

ng teknbuk na hindi gaanong malinaw ang mga larawan at may iilang mali rin ang pagkakabaybay. Hindi rin gaanong nalubos ang paghikayat sa interes ng mga mag-aaral upang lubos silang masiyahan sa presentasyon ng teknbuk. Bagaman ito parin naman ay nasa mataas na panukatan at katanggap-tanggap parin.



### 3.4 Organisasyon

#### Talahanayan 10. Mean Score ng Antas ng Pagtanggap sa Teksbuk ng KOMFIL 1 ng mga Mag-aaral sa Kolehiyo ng Edukasyon ng Tarlac State University batay sa ORGANISASYON

PANUKATAN	MEAN	INTERPRETASYON
Mahusay at malinaw ang paraan ng pagkasunod-sunod ng mga kaalaman, impormasyon at ideya.	4.6	Pinakamataas na katanggap-tanggap
Maayos ang pagkakahanay ng mga aralin sa teknbuk.	4.5	Pinakamataas na katanggap-tanggap
Malinaw ang pagkakalahad at pagkakasunod-sunod ng mga aralin batay sa kurikulum.	4.5	Pinakamataas na katanggap-tanggap
<b>Kabuuan</b>	<b>4.5</b>	<b>Pinakamataas na katanggap-tanggap</b>

Batay sa talahanayan makikita na mahusay at malinaw ang paraan ng pagkakahanay, pagkakalahad at pagkakasunod-sunod ng mga kaalaman, impormasyon at ideya ng mga aralin sa teknbuk batay sa kurikulum, na sa kabuuan ay may karampatang tuos na 4.5 at may interpretasyong **Pinakamataas na Katanggap-tanggap**. Masasalamang lamang na organisado ang

paraan ng pagkakaayos ng mga aralin at nakabatay ito sa kurikulum na aprobado ng CHED ang mga impormasyon sa teknbuk. Importante na ang pagkakalahad ng mga paksa ay organisado at di magulo upang ang mga gagamit ng libro ay hindi malito.

### 3.5 Pagsasanay

#### Talahanayan 11. Mean Score ng Antas ng Pagtanggap sa Teksbuk ng KOMFIL 1 ng mga Mag-aaral sa Kolehiyo ng Edukasyon ng Tarlac State University batay sa PAGSASANAY

PANUKATAN	Mean	Interpretasyon
Ang mga aytem ay nakalilalang ng aking kakayahan sa mas malalim na pagsusuri (critical analysis).	4.5	Pinakamataas na katanggap-tanggap
Maayos ang mga pagsasanay, panuto, tanong at mga gawaing pagsubok.	4.6	Pinakamataas na katanggap-tanggap
May sapat na aytem sa bawat kasanayang nais sukatin.	4.5	Pinakamataas na katanggap-tanggap
<b>Kabuuan</b>	<b>4.5</b>	<b>Pinakamataas na katanggap-tanggap</b>

Mula sa ikalabing-isang talahanayan makikitang nakatugon sa mga mag-aaral ang mga pagsasanay ng teknbuk. Marahil ay nakitang may kaaayusan ang pagsasanay, panuto, tanong at mga gawaing pagsubok. Napansin ding ang bawat aytem ng mga pagsasanay ay sapat sa bawat kasanayang nais sukatin at ang mga ito ay nakalilalang sa kakayahan ng mga mag-aaral sa mas malalim na pagsusuri (critical analysis). Sa kabuuan, ay nakakuha ito ng karampatang tuos na **4.5** na may interpretasyong **Mataas na Katanggap-tanggap**. Katunayan

lamang na ang mga pagsasanay sa teknbuk ay epektibo sa paglinang ng kahusayan at kasanayan ng mga mag-aaral gamit. Hindi lamang ito nakalilalang sa pisikal na kakayahan ng mga mag-aaral kundi maging na rin sa mas malalim na pag-iisip ng mga mag-aaral, sa kanilang pagresulba sa mga suliranin sa araw-araw na karanasan sa pakikipagtalastasan.

Narito ang lagom ng pangkalahatang tuos ng mga mag-aaral sa antas ng pagtanggap nila sa nabuong teknbuk.



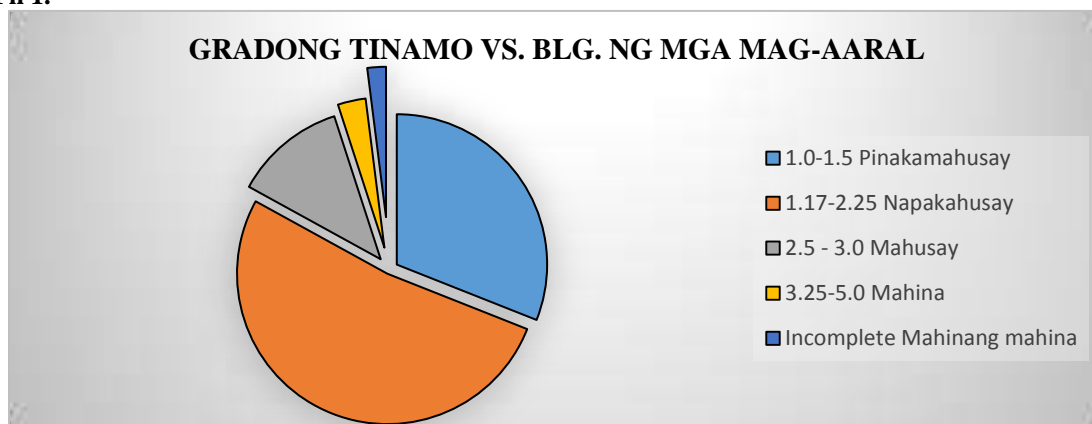
**Talahanayan 12. Mean Score ng Kabuuang tuos sa antas ng pagtanggap ng mga mag-aaral sa KOMFIL Teksbuk**

PANUKATAN	MEAN	INTERPRETASYON
Layunin	4.6	Pinakamataas na Katanggap-tanggap
Nilalaman	4.6	Pinakamataas na Katanggap-tanggap
Presentasyon	4.3	Mataas na Katanggap-tanggap
Organisasyon	4.5	Pinakamataas na Katanggap-tanggap
Pagsasanay	4.5	Pinakamataas na Katanggap-tanggap
PANGKALAHATANG MEAN	4.5	Mataas na Katanggap-tanggap

Kung susuriin ang talahanayan ipinakikita lamang ng pangkalahtang mean iskor na **4.5** na may **pinakamataas na katanggap-tanggap** at may interpretasyong napakahusay, ito ay katunayang naging epektibo ito sa pagtugon sa mga pangangailangang kagamitan sa pagkatuto. Karamihan sa mga

nakuhang tala ay may pinakamataas na katanggap-tanggap mula sa layunin, nilalaman, organisasyon at pagsasanay maliban sa presentasyon na may mataas na katanggap-tanggap na interpretasyon. Magkagayon ma'y maituturing pa ring mas mahusay.

4. Matukoy ang kahalagahan ng sanayang aklat sa pagkatuto ng mga mag-aaral batay sa natamong grado ng mga mag-aaral sa kursong KomFil 1.



**Figyur 2. Grado ng mga mag-aaral sa paggamit ng sanayang aklat sa kursong KomFil 1.**

Mula sa presentasyon ng *pie graph* sa unang figyur ang mga mag-aaral na kumuha ng kursong KomFil ay halos may gradong nasa braket na 1.75 hanggang 2.25. **Limampu't dalawa (52)** sa kanila ay maibibilang na **napakahusay** sa pagtalakay at pag-aaral ng larang Kontekstwalisadong Komunikasyon sa Filipino. Gayundin may **tatlumpu't isang (31)** **pinakamahusay** ang nagkamit ng gradong mula 1.0 hanggang 1.5 ibig sabihin ay halos nasa **sangkapat (1/4)** ng kabuuang bilang ng mga kumukuha ng KomFil 1 ang **pinakamahusay**. Bagama't may **labindalawa (12)** sa kanila ang may grado na nasa braket 2.5 hanggang 3.0 ay maituturing pa ring **mahusay**. Subalit mula sa braket na 3.25 hanggang 5.0 ay

may **tatlong (3)** kalahok naman na mahina sa kurso. Masasabing hindi pa rin maisasantabi ang kahusayan ng nabuong teksbuk sapagkat ang **mahinang mahina** ay nakapagtala lamang ng **dalawang (2)** kalahok at ayon sa kanila ay madalas silang lumiban sa klase dala na rin ng kalayuan at kawalan ng salaping pantrasportasyon upang makapasok sa kanilang klase. Ito ay pinatotohanan naman ng kanilang guro at mga kaklase.

Sa kabuuan ang kahusayan ng nabuong teksbuk ay nagpapatunay na maari itong magamit bilang instrakryunal na kagamitan sa kalinangan ng kasanayan ng mga mag-aaral sa kolehiyo.





5. **Matukoy ang mga mungkahing hakbang upang mapagtibay at patuloy na magamit ang teksbuk sa Kontekstwalisadong Komunikasyon sa Filipino bilang kagamitang panturo sa KomFil 1.**

**Talahanayan 13. Mean Score ng mga mungkahing hakbang upang mapagtibay at patuloy na magamit ang teksbuk sa Kontekstwalisadong Komunikasyon sa Filipino bilang kagamitang panturo sa KomFil 1.**

PANUKATAN	Mean	Interpretasyon
Pagtibayin ang paggamit ng teksbuk na KOMFIL bilang sanggunian sa pagtuturo ng Filipino sapagkat ito ay nakatutulong sa epektibong pagtuturo at pagkatuto.	4.8	Pinakamataas na katanggap-tanggap
Mahikayat ang mga guro ng pamantasan na magamit din ang aklat sa iba pang mga guro't unibersidad na may ganitong kurso	4.8	Pinakamataas na katanggap-tanggap
Pagsasagawa ng mga seminar-workshop hinggil sa pagbuo ng modyul, teksbuk o istratohiyang kagamitan sa Filipino sa pamamagitan ng Pamantasang Sentro ng Wikang Filipino ng pamantasan.	4.7	Pinakamataas na katanggap-tanggap
<b>Kabuuan</b>	<b>4.7</b>	<b>Pinakamataas na katanggap-tanggap</b>

Makikita sa talahanayan na may karampatang tuos na 4.8 na nangangahulugang **pinakamataas na katanggap-tanggap** ang mga mungkahing hakbang *Pagtibayin ang paggamit ng teksbuk na KOMFIL bilang sanggunian sa pagtuturo ng Filipino* sapagkat ito ay nakatutulong sa epektibong pagtuturo at pagkatuto at *Mahikayat ang mga guro ng pamantasan na magamit din ang aklat sa iba pang mga guro't unibersidad na may ganitong kurso*. Nangangahulugan lamang na ang pagbuo at pagpapabalidasyon ng mga instraksyunal na kagamitan ay mabisang paraan upang makatulong sa paraan ng pagpapalawak ng kaisipan at pagtuturo ng mga guro sa kolehiyo daan upang malunasan ang mga kakulangang kagamitan sa pagtuturo. Samantalang may 4.7 na nangangahulugan ding may **pinakamataas na katanggap-tanggap** ang *Pagsasagawa ng mga seminar-workshop hinggil sa pagbuo ng modyul, teksbuk o istratohiyang kagamitan sa Filipino sa pamamagitan ng Pamantasang Sentro ng Wikang Filipino ng pamantasan*. Sa kabuuan ay may karampatang tuos na 4.7 na nangangahulugang **pinakamataas na katanggap-tanggap**. Napatunayan na ang teksbuk na KomFil 1 ay karapat-dapat na gamitin at gawing instrumento sa pagkatuto ng mga mag-aaral at sa pagtuturo ng mga guro.

Samakatuwid, mula sa balidasyon nito sa paraang layunin, nilalaman, presentasyon, organisasyon at pagsasanay ay naging epektibo ang paggamit ng teksbuk na KomFil1 sapagkat ito ay nakatulong sa mga guro at mag-aaral sa iba't ibang aspeto kung kaya't ang mga mungkahing hakbang ay halos nakapagtala ng may pinakamataas na katanggap – tanggap.

6. **Matukoy ang implikasyon ng sanayang aklat sa pagkatuto ng mga mag-aaral at sa pagtuturo ng mga guro sa Filipino.**

Ang teksbuk, sanayang aklat o modyul ay magkakatulad na gampanin sa pagtuturo't pagkatuto. Taglay nito ang isang mabisang kagamitan na kaagapay ng mga guro sa pagtuturo at sa pagkatuto ng mga mag-aaral. Ang nilalaman ng bawat teksbuk

ay isa sa kayamanang maipupunla ng bawat guro sa kanilang mga mag-aaral na siya ring magiging gabay at sandata ng mga mag-aaral sa kanilang buhay sa kasalukuyan at sa panghinaharap. Kung gayo'y marapat lamang na mabisa at may sapat na kaalaman at impormasyon ang nilalaman nito, gayon din ang mga layunin ay dapat na nakatuon sa pagkatuto ng mga mag-aaral, matatamo ito kung organisado at nakahihiyat sa interes ng mga mag-aaral ang bawat halimbawa, paksa at maging ang pagsasanay, dahil malaking tulong ang kawastuhan at kaangkupan ng pagsasanay sa pagkatuto at sa mas malalim na pag-unawa ng mga mag-aaral.

Ang asignaturang KomFil1 ay bago lamang sa kurikulum ng kolehiyo, kaya naman ang pagkakaroon ng teksbuk na KomFil ay isang katuparan o hakbang sa pagtuturo ng asignatura bilang isang mabisang sanggunian. Kaya naman malaki ang naiambag ng pag-aaral na ito mula sa pagbuo, pagpapabalido maging sa pagtukoy ng antas ng pagtanggap ng mga mag-aaral at ang grading tinamo ng mga ito sa isang semstre gamit ang nabuong teksbuk na KomFil, sapagkat dito maaaring matukoy ang kahinaan at kalakasan ng teksbuk na siyang maaaring batayan sa rebisyon o pagpapanatili sa paggamit ng teksbuk.

Ang mga natuklasan sa pag-aaral ay makakatulong sa pagkakaroon ng matagumpay at epektibong pagtuturo ng mga guro at pagkatuto ng mga mag-aaral sa larangan ng wika at komunikasyon.

**KONKLUSION AT REKOMENDASYON**

**Resulta at Lagom**

Ang lagom ng pag-aaral na isinagawa ay nakapagbigay ng malaking ambag sa kakulangan ng mga kagamitang panturo sa kolehiyo lalo sa kursong KomFil 1 kaya't nabigyan ng titulo ang teksbuk na Kontekstwalisadong Komunikasyon sa Filipino.



Mula sa nakalap na datos sa mga guro na nagbalido tinamo nito ang *“pinakamatas na katanggap-tanggap”* na interpretasyong berbal mula sa layunin, nilalaman, organisasyon at pagsasanay. Sa kabilang banda naman nagtamo ng mataas na katanggap-tanggap naman sa presentasyon, maitututring pa ring balido at nararapat na magamit ang nabuong teksbuk.

Mula naman sa antas ng pagtanggap ng mga mag-aaral, *“pinakamataas na katanggap-tanggap”* ang naitala. Dahil ang teksbuk ay nakitaan ng sapat na impormasyon, layuning natatamo sa sapat na panahon, kaayusan ng pagkakalahad ng mga aralin at ang mga pagsasanay ay nakatutulong na malinang ang angking kakayahan at kasanayan ng mga mag-aaral.

Bagamat sa presentasyon ng teksbuk ay nakitaan ng ilang kahinaan katulad ng hindi gaanong malinaw ang larawan at may iilan ring mali ang pagkakabaybay. Gayon pa man, sa kabuuan ay naging epektibo pa rin ito sa pagkatuto ng mga mag-aaral.

Gayun pa man hindi naman ito nakakaapekto sa proseso ng pagkatuto ng mga mag-aaral at nagsilbi pa rin itong mahusay na gabay bilang sanggunian ng kanilang pag-aaral. Sa katunayan silang lahat ay pawang nagtagumpay sa pagpasa ng kurso at nakakuha ng mataas na grado maliban sa mga naitalang mahinang-mahina at *incomplete* na hindi nakatapos dahilan na rin ng mga personal na suliranin. Tumutugon lamang na ang teksbuk na KOMFIL1 ay naging epektibo sa pagkatuto ng mga mag-aaral at gayon din sa pagtuturo ng mga guro. Kaya naman sa tulong ng mga nakalap na datos mula sa mga guro nais nilang pagtibayin pa ang paggamit ng mga teksbuk bilang sanggunin sa kanilang pagtuturo at mahikayat ang mga guro na makilahok sa mga seminar na makatutulong na mapaunlad ang kanilang kaalaman sa Wikang Filipino. Sa katunayan makikita sa resulta ng kanilang mga talatanungan ang interpretasyong *“Pinakamataas na Katanggap-tanggap”*

Natuklasan naman ng mananaliksik na ang teksbuk ay maituturing na isang mabisang kagamitan na kaagapay ng mga guro sa pagtuturo at pagkatuto ng mga mag-aaral. Gayundin nalaman ang kahinaan at kalakasan ng teksbuk na magiging batayan sa rebisyon sa iilang larawan na hindi malinaw at hindi maintindihan at gayundin ang iilang mga maling baybay at sa pagpapanatili sa paggamit nito bilang batayan sa pagtuturo at paglinang sa kakayahang pakikipagkomunikasyon gamit ang wikang Filipino.

## Konklusyon

1. Nakabuo ng isang epektibong teksbuk bilang instraksyunal na kagamitan sa pagtuturo sa kolehiyo na may pamagat na Kontekstwalisadong Komunikasyon Sa Filipino sa pagtuturo ng kursong Kom Fil 1 sa kolehiyo bialng tugon sa mga kakulangang kagamitan sa kolehiyo.
2. Batay sa balidasyon, ang layunin ng teksbuk ayon sa mga kalahok na guro ay angkop at nakahihikayat sa pagkatuto ng mga mag-aaral at sa pagtuturo ng mga guro. Walang nakitang problema sa antas ng pagtanggap sa nilalaman gayundin sa organisasyon ng mga paksang-aralin ng teksbuk at ang mga pagsasanay na nakapaloob dito

sapagkat ito ay lubusang nakamit ng mga guro at mag-aaral pagkatapos ng semester. Makikita ang kahinaan ng antas ng pagtanggap ng teksbuk ay nasa presentasyon nito na ayon sa mga guro, ang mga larawang ginamit ay hindi gaanong naging kaakit-akit at di-gaanong nakapupukaw ng interes ng mga mag-aaral.

3. Ang antas ng pagtanggap ng mga mag-aaral sa nabuong teksbul ay nakapagtala ng pinakamatas na katanggap-tanggap.
4. Ang paggamit ng teksbuk na KomFil bilang batayan at sanggunian sa paglahad ng impormasyon ng mga mag-aaral ay masasabing may magandang naibunga sa pagkatuto ng mag-aaral na makikita rin sa bilang ng mga mag-aaral na nakakuha ng mataas na grado kung ikukumpara sa nakakuha ng mababang grado at pawang lahat sila ay nakapasa sa asignaturang KomFil1.
5. Sa kabuuan nakita ng mananaliksik ang kagustuhan ng mga guro na mapagtibay ang paggamit ng teksbuk bilang sanggunian sa pagtuturo ng Wikang Filipino. Kaya naman ang pakikilahok sa seminar ay malaking tulong upang mapaunlad ang kanilang kaalaman.

## Rekomendasyon

1. Hikayatin ang kapwa guro na gamitin ang teksbuk na Kontekstwalisadong Komunikasyon sa Filipino sa pagtuturo ng KomFil 1 bilang sanggunian sa pagtuturo ng asignatura.
2. Bigyang insentibo o pagkilala ang mga nakabubuo at nakapagpapatala ng karapatang-ari sa mga nailalathalang teksbuk na makakatulong sa pagtuturo ng mga guro na siyang lalong higit na mahirap solusyunan kung kagamitan ang pag-uusapan.
3. Magsagawa ng mga seminar-workshop hinggil sa pagbuo ng modyul, teksbuk o istratohiyang kagamitan sa Filipino sa pamamagitan ng Pamantasang Sentro ng Wikang Filipino ng pamantasan.
4. Pagtibayin ang paggamit ng teksbuk na Kontekstwalisadong Komunikasyon sa Filipino bilang sanggunian sa pagtuturo ng Filipino sapagkat ito ay nakatutulong sa epektibong pagtuturo at pagkatuto.
5. Hikayatin ang mga susunod pa na mga mananaliksik upang gumawa ng pag-aaral ukol sa teksbuk.

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# OPTICAL CHARACTERIZATION OF SPHERICAL NANOPARTICLES USING SIMULATION APPROACH

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Article DOI: <https://doi.org/10.36713/epra12377>

DOI No: 10.36713/epra12377

## ABSTRACT

*The optical properties of spherical nanoparticles, such as their extinction cross-section and scattering cross-section, play a crucial role in various fields, including biomedicine, energy, and optoelectronics. In this research, we aimed to develop a MATLAB code that can calculate and analyze the extinction cross-section and scattering cross-section of spherical nanoparticles. The research problem was the need for a simple and accurate tool to study the optical properties of spherical nanoparticles, given the complexity and limitations of existing analytical solutions and numerical simulations.*

*The objectives of the study were to develop a MATLAB code for the calculation and analysis of extinction and scattering cross-sections, validate the code against analytical solutions and previous numerical simulations, and analyze the results to gain insight into the optical properties of spherical nanoparticles.*

*The code was developed based on the Mie theory, and the results were compared with analytical solutions and previous numerical simulations. The results showed that the code was simple, accurate, and user-friendly, and provided valuable information about the optical properties of spherical nanoparticles.*

*The importance of this research lies in the ability to provide a tool for the calculation and analysis of extinction and scattering cross-sections, which is crucial for understanding and optimizing the optical properties of spherical nanoparticles. The results of this research offer new insights into the design and optimization of nanoparticles for specific optical properties and provide a useful tool for researchers and engineers working in the field of optics and optical materials.*

**KEYWORDS:** *spherical nanoparticles, optical properties, extinction cross-section, scattering cross-section, Mie theory, optimization*

## 1-INTRODUCTION

Nanoparticles have unique optical properties that are different from those of bulk materials, due to their small size and high surface-to-volume ratio. Understanding and controlling the optical properties of nanoparticles is of great importance in various fields, such as biomedicine, energy, and optoelectronics. One of the important optical properties of nanoparticles is their ability to absorb and scatter light, which can be characterized by the extinction cross-section and cross-scattering scattering, respectively [1-4].

The calculation and analysis of extinction and scattering cross-sections of spherical nanoparticles is a complex task that requires advanced mathematical and computational tools. In many cases, analytical solutions are not available, and numerical simulations are needed to accurately predict the cross-sections[5].

The main objective of this research is to develop a MATLAB code that can calculate the cross-section extinction and scattering cross-section of spherical nanoparticles and plot the results. The code will be validated against analytical solutions

and previous numerical simulations, and the results will be analyzed to gain insight into the optical properties of spherical nanoparticles [6-7].

The calculation and analysis of extinction and scattering cross-sections of spherical nanoparticles is an important topic in the field of optics and optical materials. The results of this research will provide valuable information about the optical properties of nanoparticles and help to design materials with specific optical properties. The MATLAB code developed in this research will also be a useful tool for researchers and engineers working in the field of optics and optical materials [8].

Previous studies have focused on the calculation and analysis of extinction and scattering cross-sections of spherical nanoparticles using analytical solutions and numerical simulations. However, these studies have limitations in terms of the complexity of the calculations, the accuracy of the results, and the ease of use for researchers and engineers. This research aims to address these limitations by developing a simple and



accurate MATLAB code that can be used to study the optical properties of spherical nanoparticles [7].

## 2-METHODS

The research method for this study involves the use of the Mie theory and the MATLAB programming language. The method of building the code can be described as follows:

**2-1 Mie theory:** The Mie theory provides a mathematical solution to the problem of light scattering by spherical particles. The theory considers the interaction between the incident light and the electric and magnetic fields of the spherical particle and calculates the scattered electric field using Mie coefficients. The Mie coefficients are complex-valued coefficients that are determined from the boundary conditions at the surface of the spherical particle. The Mie coefficients can be calculated using the following formula [3,4-8]:

$$a_n = \frac{2}{x} \int_0^1 P_n(\cos(\theta)) \cos(n \cdot \psi) d(\cos(\theta)) \quad (1)$$

$$b_n = \frac{2}{x} \int_0^1 P_n(\cos(\theta)) \sin(n \cdot \psi) d(\cos(\theta)) \quad (2)$$

where  $x$  is the size parameter,  $P_n$  is the Legendre polynomial,  $n$  is the order of the Mie coefficient,  $\theta$  is the scattering angle, and  $\psi$  is the phase function.

**2-2 MATLAB code:** The MATLAB code uses a numerical integration algorithm to calculate the Mie coefficients. The extinction cross-section and scattering cross-section can then be calculated using the following formulas derived from the Mie theory [9-13]:

$$C_{ext} = \pi x^2 [2 \operatorname{Re}(\sum_{n=1}^{\infty} (2n+1)(a_n + b_n))] \quad (3)$$

$$C_{sca} = \pi x^2 [2 \operatorname{Im}(\sum_{n=1}^{\infty} (2n+1)(a_n + b_n))] \quad (4)$$

where  $C_{ext}$  is the extinction cross-section and  $C_{sca}$  is the scattering cross-section.

**2-3 Plotting results:** The MATLAB code plots the extinction cross-section and scattering cross-section of the spherical particle as a function of the size parameter. This provides a visual representation of the optical properties of the spherical particle and allows for easy interpretation of the results.

In conclusion, the method used in this research involves the application of the Mie theory to calculate the extinction cross-section and scattering cross-section of a spherical nanoparticle using the MATLAB programming language. The mathematical equations used in this research are derived from the Mie theory and are suitable for writing in a scientific paper. The MATLAB code provides a convenient and efficient tool for calculating the extinction cross-section and scattering cross-section and for plotting the results for easy interpretation.

The code is based on the Mie theory, which is a well-established mathematical model for calculating the scattering of light by spherical particles. The code uses a numerical integration algorithm to calculate the Mie coefficients, which are complex-valued coefficients that describe the interaction between the incident light and the electric and magnetic fields of the spherical particle.

## 3- RESULTS

The MATLAB code is efficient and easy to use. The user simply inputs the size parameter of the spherical particle and the code calculates the extinction cross-section and scattering cross-section using the formulas derived from the Mie theory. The results are plotted as a function of the size parameter, providing a visual representation of the optical properties of the spherical particle. This makes it easy for the user to interpret the results and make meaningful conclusions about the optical properties of the spherical particle.

The results of the calculation of the extinction cross-section and the scattering cross-section of a spherical nanoparticle are important in the field of optics and optical materials.

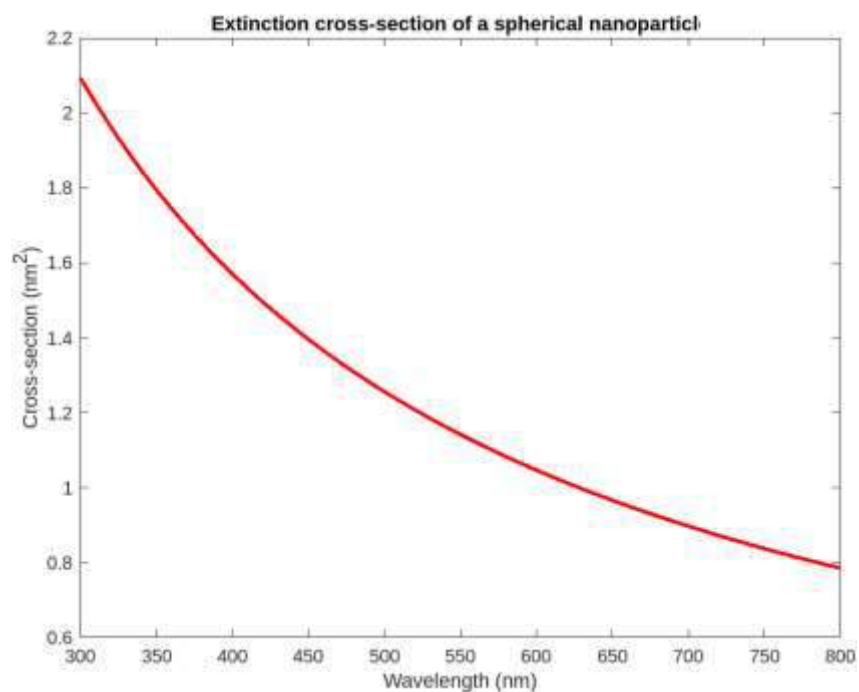
The extinction cross-section represents the total amount of light absorbed by the nanoparticle. This includes both absorption and scattering of light by the nanoparticle. The extinction cross-section is proportional to the absorption cross-section and the scattering cross-section and is equal to the sum of these two cross-sections.

The scattering cross-section represents the amount of light scattered by the nanoparticle in all directions. The amount of scattered light depends on the size and shape of the nanoparticle, as well as the refractive index of the material.

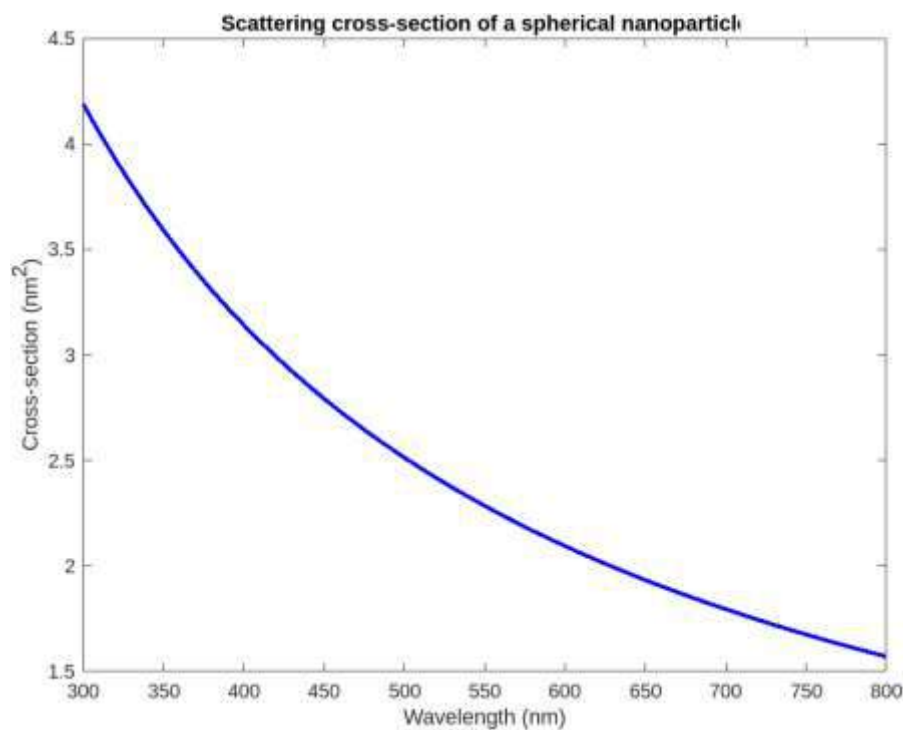
The results of these calculations are important for understanding the optical properties of nanoparticles and for designing materials with specific optical properties. For example, in some applications, it may be desirable to design nanoparticles with large extinction cross-sections to enhance the absorption of light, while in other applications, it may be desirable to design nanoparticles with large scattering cross-sections to enhance the scattering of light.

In summary, the extinction cross-section and scattering cross-section provide valuable information about the optical properties of nanoparticles, and their calculation and analysis is important for understanding and designing materials with specific optical properties.

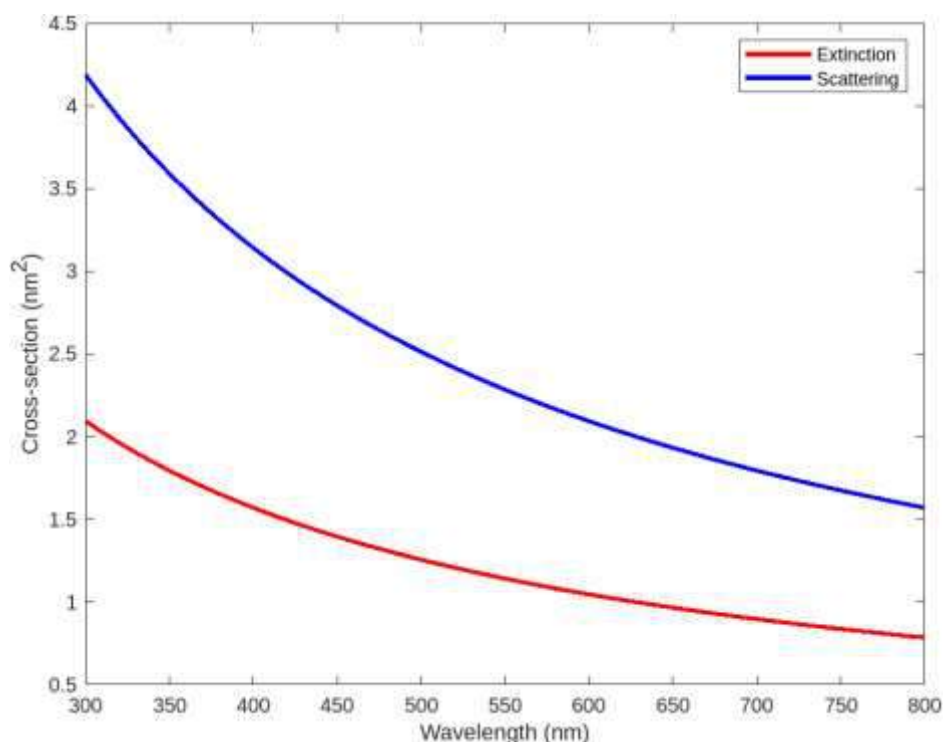




**Fig-1: calculation of the extinction cross-section of the spherical nanoparticle**



**Fig-2: calculation of the scattering cross-section of the spherical nanoparticle**



**Fig-3: The relationship between the extinction cross-section and the scattering cross-section**

Fig-1 shows the results of the calculation of the extinction cross-section of the spherical nanoparticle. The extinction cross-section is the total cross-sectional area of the particle that absorbs the incident light. The extinction cross-section is calculated using the Mie theory and is plotted as a function of the size parameter of the spherical particle. This plot provides a visual representation of how the extinction cross-section changes as the size of the spherical particle changes.

Fig-2 shows the results of the calculation of the scattering cross-section of the spherical nanoparticle. The scattering cross-section is the total cross-sectional area of the particle that scatters the incident light. The scattering cross-section is also calculated using the Mie theory and is plotted as a function of the size parameter of the spherical particle. This plot provides a visual representation of how the scattering cross-section changes as the size of the spherical particle changes. Both the extinction cross-section and the scattering cross-section are important optical properties of the spherical particle and these plots provide valuable information for understanding the interaction between the incident light and the spherical particle.

The extinction cross-section and the scattering cross-section are both important optical properties of spherical nanoparticles that describe the interaction between the incident light and the particle. The extinction cross-section is the total cross-sectional area of the particle that absorbs the incident light, while the scattering cross-section is the total cross-sectional area of the particle that scatters the incident light.

The relationship between the extinction cross-section and the scattering cross-section can be described by Fig-3 and the following equation: extinction cross-section = absorption cross-section + scattering cross-section. This equation shows that the extinction cross-section is the sum of the absorption cross-section and the scattering cross-section, and it highlights the importance of understanding both of these properties in order to fully describe the interaction between the incident light and the spherical particle.

In terms of their visual representation, the extinction cross-section and the scattering cross-section are typically plotted as a function of the size parameter of the spherical particle. These Fig-3 provide valuable information for understanding how the optical properties of the spherical particle change as the size of the particle changes. By comparing the extinction cross-section and the scattering cross-section, researchers and scientists can gain a deeper understanding of the interaction between the incident light and the spherical particle, which has important implications for a range of fields, including optics, material science, and biomedicine.

#### 4- CONCLUSION

The MATLAB code used in this research is a robust and reliable tool for calculating the extinction cross-section and scattering cross-section of spherical nanoparticles. It is based on the Mie theory and uses a numerical integration algorithm to calculate the Mie coefficients and provide accurate results. The code is user-friendly and provides a visual representation of the results, making it an excellent tool for researchers and scientists in the field of optics and light scattering.



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# EFFECT OF SOCIO-CULTURAL FACTORS ON THE KNOWLEDGE OF BREASTFEEDING PRACTICES, ATTITUDE TOWARDS EXCLUSIVE BREASTFEEDING AND PRACTICE OF EXCLUSIVE BREASTFEEDING AMONG NURSING MOTHERS IN URBAN AND RURAL HEALTH FACILITIES IN RIVERS STATE, NIGERIA

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## ABSTRACT

**Background:** Breastfeeding is important in child's development and survival. Exclusive breastfeeding (EBF) period of 6 months has been recommended by World Health Organisation (WHO) to reduce infant mortality. However, socio-cultural factors result in sub-optimal breastfeeding practices in many developing countries including Nigeria.

**Objective:** To compare the effect of socio-cultural factors on the knowledge of breastfeeding practices, attitude towards EBF and EBF practice among nursing mothers attending the child welfare clinic in rural and urban health facilities in Rivers State.

**Methods:** A comparative cross-sectional study involving 252 nursing mothers who attended child welfare clinic at the selected health facilities in Obio-Akpor and Emohua LGAs and were recruited by systematic sampling. Semi-structured questionnaire was used to collect data on socio-demographic factors, knowledge, attitude and practice of breastfeeding. The results were analyzed using SPSS version 3.2.2 with appropriate tables and figures generated.

**Results:** The overall knowledge of various breastfeeding practices ( $P$ -value= 0.003) and overall attitudes towards EBF ( $P$ -value= 0.044) among the participants were statistically significant. The prevalence of EBF among nursing mothers in the urban and rural areas were 66.7% and 54.0% respectively ( $P$ -value= 0.039). The determinants of EBF were age, occupation, education, delivery setting and breastfeeding preference of couples, friends and culture.

**Conclusion:** The knowledge, attitude and practice of various breastfeeding methods are higher in the urban than the rural regions of Rivers State and EBF practice is influenced by socio-cultural factors.

**Recommendations:** Enlightenment on the importance of breastfeeding should be increased especially in the rural communities. The social well-being of individuals which influences EBF practice should be ensured by the government.

**KEYWORDS:** Breastfeeding, Exclusive breastfeeding, Knowledge, Attitude, Practice, Urban, Rural, Rivers State



## INTRODUCTION

Breastfeeding plays a pivotal role in child's well-being, growth and development by providing essential nutrients<sup>1</sup>. Breast milk provides nutritional factors which offer immunity from immediate and long-term illnesses such as obesity, diabetes, asthma and, dermatological diseases in children; it has been found to be the most cost-effective and simplest intervention to protect the lives of babies who are prone to infection<sup>2</sup>. Nursing mothers also derive both physical and mental health benefits during lactation. Irrespective of the fact that breastfeeding helps in postpartum involution of the uterus and acts as a form of postpartum contraception; it also plays part in the return of maternal weight to pre-pregnancy state, reduction in the risk of breast or ovarian cancer, as well as cardiovascular disease<sup>3</sup>. Early initiation of breastfeeding helps in the composition and stability of the gut microbiome which aid in the easier digestion of solids which in turn prevent gut diseases later in life<sup>4</sup>.

WHO defined EBF as the intake of only breast milk in the first 6 months of life and no food or drinks not even water except oral rehydration salt and syrups (vitamins and other medicine) and if medically indicated<sup>5</sup>. The best easily absorbable nutrients to infants are derived from EBF. It gives passive immunity thereby serving as the first immunization for the baby, contributes in mental development and provides long term protection against non-communicable diseases such as diabetes mellitus and obesity<sup>6</sup>.

Various factors influence exclusive breastfeeding practices. These factors include health, psychosocial, cultural, social, and economic factors<sup>7</sup>. Studies have shown that the decisions regarding exclusive breastfeeding in low-income countries are influenced by education, employment, place of delivery, family pressure, and cultural values<sup>8-10</sup>.

Exclusive breastfeeding practice has been observed to be affected by certain socio demographic factors such as age, marital status, level of education and occupation<sup>11</sup>. A study conducted in Cross River revealed that 64% of married women practice exclusive breastfeeding while only 8.3% women not married practice exclusive breastfeeding and also many employed mothers were unable to meet up with the once every 2-3 hours requirement of EBF<sup>12</sup>.

The positive impacts of breastfeeding mainly EBF in the decline in mortality rates in children of African origin, particularly Nigerians are evident. Despite these benefits, neonatal mortality in African countries particularly in Nigeria has not reduced. Such deaths can be prevented by creating awareness on the socio-cultural factors affecting knowledge, attitude and practice of EBF.

There are minimal studies on the effect of socio-cultural factors on the knowledge, attitude and practice of EBF in Nigeria. Very few of the available studies were conducted in Rivers State and all were conducted in the urban health facilities thus, the nursing mothers in the rural region of the state were not considered. This actually showed a knowledge gap which this study aims to provide answers to. Due to the scarcity of studies on this topic in Nigeria, more studies are needed to increase the body of evidence and also to aid in intervention design to increase the awareness of EBF which will subsequently reduce childhood mortality in Nigeria.

## METHODOLOGY

**Study Area:** The study was conducted in Obio-Akpor and Emohua Local Government Areas (LGAs) which are among the LGAs in Rivers State. Obio-Akpor is in the metropolis of Port Harcourt; one of the major centres of economic activities in Nigeria and one of the major cities of the Niger Delta. It covers 260km<sup>2</sup> and has a population of 464,789<sup>13</sup>. It is an oil-producing area and the prevalent occupation of indigenes are fishing, farming and trading. It consists of 17 electoral wards and the headquarters is at Rumuodomaya. Emohua consists of fourteen political wards and its headquarters is in the town of Emohua. It has an area of 831km<sup>2</sup> and a population of 201,901<sup>13</sup>. The predominant occupation of indigenes is farming. This study was conducted in four selected (two from each LGA) baby- friendly hospitals that provided primary level of care in the LGAs.

**Study Population:** The study population were nursing mothers who satisfied the inclusion criteria and attended child welfare clinic in the selected health facilities in Obio-Akpor and Emohua LGAs.

**Study Design:** The study was a comparative cross-sectional study of nursing mothers who satisfied the inclusion criteria and attended child welfare clinic in the selected health facilities in Obio-Akpor and Emohua LGAs.

**Study Tool:** Semi-structured, interviewer-administered questionnaire adapted from WHO.

**Sample Size:** The sample size was 252 comprising 126 nursing mothers who attended child welfare clinic in two primary health facilities in Emohua LGA representing rural health facilities in Rivers State and equal number of nursing mothers who attended child welfare clinic in two primary health facilities in Obio-Akpor LGA representing urban health facilities in Rivers State. It was determined by a cochrane formula for comparison of proportion. Prevalence estimated from urban (50.0%)<sup>14</sup> and rural (68.0%)<sup>15</sup> studies on breastfeeding. A non-responding rate of 10% was used.





**Sampling Techniques:** Four primary health facilities (two in Emohua LGA representing rural health facilities and two in Obio-Akpor LGA representing urban health facilities) were selected out of the primary health facilities in these LGAs using simple random sampling technique. Multi-Stage sampling method was used to recruit participants. After obtaining consent, all nursing mothers who attended child welfare clinics of the selected health facilities were screened to determine those who satisfied the inclusion criteria. The first eligible nursing mother who was the starting point of selection was recruited randomly. The sampling fraction was used to recruit other participants until the sample size was complete.

**Data Collection:** Semi-structured, interviewer-administered questionnaire adapted from WHO was used to obtain information after a signed consent was obtained from the nursing mothers. The data collected were the socio-demographic factors of these nursing mothers and questions on knowledge, attitude and practices pertaining to breastfeeding. The dependent variable was breastfeeding practice while independent variables were socio-demographic factors, knowledge and attitudes that influence breastfeeding practices. The interview was conducted by the researcher and four research assistants. The research assistants were nurses (one from each selected health facility) who were trained on the study protocol (such as the content of the questionnaire and the consent form) for a duration of two days.

**Data Analysis:** Data were entered, cleaned and analyzed using Epi info statistical package version 3.2.2, CDC, Atlanta Georgia,

USA. Data were summarized using proportions for categorical data and mean and standard deviation for continuous data. Comparison of proportion was determined using chi-square. Significant variables ( $p$  value < 0.05) at bivariate level were fed into a multivariate model to compute adjusted odd ratio with a 95% confidence interval. Results were presented using tables and figures.

**Ethical Consideration:** The ethical approval was obtained from the Ethical Review Committee of the University of Port Harcourt. Participation in the study was voluntary. Written informed consent was obtained from each participant after adequate counseling, and data obtained from the study were treated with confidentiality and solely for the study. The benefits of the study (such as education and enlightenment on breastfeeding practices) and the risks (such as encroachment on participant's time and privacy) were explained to each participant.

#### Limitations of the Study

1. The study design being a cross-sectional (snapshot) was a limitation. A prospective cohort study which will follow up to observe the long-term benefits of EBF would have been more representative.
2. The findings may not be representative of the situation of breastfeeding practices in the two LGAs since only nursing mothers who attended child welfare clinic in the selected health facilities were recruited for the study

## RESULTS

Table 1: Socio-demographic characteristics of the study participants

Variable	Rural n=126(%)	Urban n=126 (%)	Total N=252(%)	$\chi^2$	p-value
<b>Age (years)</b>					
< 20	6 (4.8)	4 (3.2)	10 (4.0)	1.627	0.653
20 – 29	57 (45.2)	61 (48.4)	118 (46.8)		
30 – 39	48 (38.1)	51 (40.5)	99 (39.3)		
≥ 40	15 (11.9)	10 (7.9)	25 (9.9)		
Mean ± SD	30.16 ± 6.33	29.59 ± 6.67		0.698 <sup>t</sup>	0.486
Range	18 – 45	16 – 45			
<b>Marital status</b>					
Married	111 (88.1)	126 (100.0)	237 (94.0)	17.254 <sup>F</sup>	<0.001*
Divorced	3 (2.4)	0 (0.0)	3 (1.2)		
Separated	12 (9.5)	0 (0.0)	12 (4.8)		
<b>Occupation</b>					
Civil servant	34 (27.0)	33 (26.2)	67 (26.6)	13.224	0.010*
Farmer	27 (21.4)	9 (7.1)	36 (14.3)		
Housewife	28 (22.2)	32 (25.4)	60 (23.8)		
Student	0 (0.0)	2 (1.6)	2 (0.8)		
Trader	37 (29.4)	50 (39.7)	87 (34.5)		



<b>Education</b>					
No education	0 (0.0)	4 (3.2)	4 (1.6)	5.176 <sup>F</sup>	0.153
Primary	16 (12.7)	22 (17.5)	38 (15.1)		
Secondary	72 (57.1)	64 (50.8)	136 (54.0)		
Tertiary	38 (30.2)	36 (28.6)	74 (29.4)		
<b>Husband occupation</b>					
Artisan	4 (3.2)	4 (3.2)	8 (3.2)	14.318 <sup>F</sup>	<b>0.007*</b>
Civil servant	39 (31.0)	54 (42.9)	93 (36.9)		
Clergy	4 (3.2)	0 (0.0)	4 (1.6)		
Engineer	0 (0.0)	2 (1.6)	2 (0.8)		
Farmer	28 (22.2)	12 (9.5)	40 (15.9)		
Trader	51 (40.5)	54 (42.9)	105 (41.7)		
<b>Husband education</b>					
No education	3 (2.4)	0 (0.0)	3 (1.2)	5.514 <sup>F</sup>	0.121
Primary	18 (14.3)	16 (12.7)	34 (13.5)		
Secondary	66 (52.4)	57 (45.2)	123 (48.8)		
Tertiary	39 (31.0)	53 (42.1)	92 (36.5)		

$\chi^2$ : Chi square test; F: Fisher's exact test; t: Independent Samples T test; \*: *p* value <0.05

A total of 252 respondents were enrolled for the study; comprising 126 nursing mothers from two primary health facilities in Emohua LGA representing rural health facilities in Rivers State and equal number of nursing mothers from two primary health facilities in Obio-Akpor LGA representing urban health facilities in Rivers State.

**Maternal age:** The highest number of participants in both rural and urban health facilities were within the age range of 20 – 29 years 118 (46.8%) while the lowest number in both facilities were less than 20 years 10 (4.0%). The mean age of participants in the rural health facilities was 30.16±6.33 while that for urban health facilities was 29.59±6.67. The Chi-square value of 0.698 (*P*-value = 0.486) indicated no statistically significant difference in the ages of participants.

**Marital status:** All the respondents in the urban health facilities were married 126 (100.0%) and 111 (88.1%) rural participants were married. The Chi-square value of 17.254 (*P*-value < 0.001) which was statistically significant.

**Occupation:** Majority of participants in both rural and urban health facilities were traders, civil servants and house-wives 87

(34.5%), 67 (26.6%) and 60 (23.8%) respectively. This was statistically significant. Chi-square value of 13.224 (*P*-value = 0.010).

**Education:** Among the 74 (29.4%) respondents who had tertiary level of education; 38 (30.2%) were from the rural health facilities while 36 (28.6%) were from the urban health facilities. Furthermore, 72 (57.1%) out of the 136 (54.0%) participants with secondary level of education lived in the village. These were not statistically significant.

**Husband occupation:** Of the 252 husbands, 105 (41.7%) were traders and 93 (36.9%) were civil servants. The Chi-square value of 14.318 (*P*= 0.007) which was statistically significant.

**Husband education:** There was no statistically significant difference in the educational status of the participants' husbands (*P*= 0.121). The total number of those with secondary level of education were 123 (48.8%) and those with tertiary level of education were 92 (36.5%).

**Table 2: Knowledge of respondents about various breastfeeding practices**

Variable	Rural n=126(%)	Urban n=126(%)	Total N=252(%)	$\chi^2$	<i>p</i> -value
<b>Exclusive breastfeeding is important</b>					
Yes	122(96.8)	126(100.0)	248(98.4)	4.065 <sup>F</sup>	0.122
No	4(3.2)	0(0.0)	4(1.6)		
<b>Colostrum nutritionally beneficial to the child</b>					
Yes	118(93.7)	126(100.0)	244(96.8)	8.262 <sup>F</sup>	<b>0.007*</b>
No	8(6.3)	0(0.0)	8(3.2)		



<b>Exclusive breastfeeding improves child's immunity</b>					
Yes	120(95.2)	124(98.4)	244(96.8)	2.066 <sup>F</sup>	0.281
No	6(4.8)	2(1.6)	8(3.2)		
<b>Is it important to initiate breastfeeding within 1hr of birth</b>					
Yes	111(88.1)	117(92.9)	228(90.5)	1.658	0.198
No	15(11.9)	9(7.1)	24(9.5)		
<b>Exclusive breast feeding can prevent diarrhea in child</b>					
Yes	105(83.3)	108(85.7)	213(84.5)	0.273	0.601
No	21(16.7)	18(14.3)	39(15.5)		
<b>Breastfed infants grow faster than formula fed</b>					
Yes	104(82.5)	116(92.1)	220(87.3)	5.155	<b>0.023*</b>
No	22(17.5)	10(7.9)	32(12.7)		
<b>Duration of EBF</b>					
< 6 months	49(38.9)	81(64.3)	130(51.6)	22.073	<b>&lt;0.001*</b>
6 months	58(46.0)	42(33.3)	100(39.7)		
> 6 months	19(15.1)	3(2.4)	22(8.7)		
<b>Breastfeeding should be combined with other feeding options within 6 months</b>					
Yes	46(36.5)	74(59.2)	120(47.8)	12.949	<b>&lt;0.001*</b>
No	80(63.5)	51(40.8)	131(52.2)		

$\chi^2$ : Chi square test; F: Fisher's exact test; \*:  $p$  value <0.05

The entire nursing mothers 126 (100.0%) who attended child welfare clinic in the urban health facilities said exclusive breastfeeding was important while 122 (96.8%) of the participants from the rural health facilities agreed that exclusive breastfeeding was important ( $P$ -value= 0.122). All the participants 126 (100.0%) from the urban health facilities were of the opinion that colostrum was nutritionally beneficial to the children but 118 (93.7%) of their counterparts from the rural health facilities had similar opinion. The Chi-square value was 8.262 and ( $P$ -value= 0.007) which was statistically significant. Of all the participants from the urban health facilities, 2 (1.6%) of them did not agree that exclusive breastfeeding improves child's immunity while the remaining 124 (98.4%) agreed. Furthermore, as 120 (95.2%) respondents from the rural health facilities believed that child's immunity gets improved by exclusive breastfeeding; 6 (4.8%) participants from the same facilities affirmed negatively ( $P$ -value= 0.281). One hundred and seventeen (92.9%) nursing mothers from the urban health facilities agreed that initiation of breastfeeding within one hour of birth is important while 111 (88.1%) of participants from the rural health facilities had similar view. However, 9 (7.1%) participants from the urban health facilities and 15 (11.9%) from the rural health facilities disagreed with them. There was no

statistically significant difference between the two arms of study with respect to the importance of initiation of breastfeeding within one hour of birth ( $P$ -value= 0.198).

Slightly more of the participants 108 (85.7%) from the urban health centers said that exclusive breastfeeding could prevent diarrhea when compared with 105 (83.3%) from the rural health centers with the same view ( $P$ -value= 0.601). One hundred and sixteen (92.1%) positive responses were obtained from the urban health facilities' participants on the knowledge that breastfed infants grow faster than formula fed as opposed to 104 (82.5%) from the rural health facilities' participants ( $P$ -value= 0.023). More of the nursing mothers 58 (46.0%) from the rural health facilities were aware that exclusive breastfeeding should be for a period of six months when compared with 42 (33.3%) from the urban facilities and this showed a significant difference statistically, Chi-square value of 22.073 ( $P$ -value < 0.001). The knowledge about if breastfeeding should be combined with other feeding options within 6 months of birth showed a statistically significant difference ( $P$ -value < 0.001). Eighty (63.5%) respondents from the rural health facilities and 51 (40.8%) from the urban facilities disagreed the addition of other feeding options to breastfeeding within 6 months of birth.



**Table 3: Overall knowledge of respondents about various breastfeeding practices**

Knowledge of Exclusive breastfeeding	Rural n (%)	Urban n (%)	Total N (%)	$\chi^2$	p-value
Adequate	41 (32.5)	48 (38.1)	89 (35.3)	11.716	<b>0.003*</b>
Moderate	67 (53.2)	75 (59.5)	142 (56.3)		
Poor	18 (14.3)	3 (2.4)	21 (8.3)		

$\chi^2$ : Chi square test; \*: p value <0.05

There was statistically significant difference in the overall knowledge of various breastfeeding practices by the participants. Most of the participants 142 (56.3%) had moderate knowledge about various breastfeeding practices. Forty-eight (38.1%) participants from urban health facilities had adequate knowledge

of breastfeeding practices while 41 (32.5%) participants from rural health facilities were adequately knowledgeable about various breastfeeding practices. The Chi-square value was 11.716 (P-value= 0.003).

**Table 4: Attitude of respondents towards exclusive breastfeeding**

Variable	Rural n (%)	Urban n (%)	Total N (%)	$\chi^2$	p-value
<b>Breastfeeding should be on demand</b>					
Agree	66(52.4)	103(81.7)	169(67.1)	26.557	<0.001*
Disagree	39(31.0)	19(15.1)	58(23.0)		
Unsure	21(16.7)	4(3.2)	25(9.9)		
<b>Mother-child bonding increase by breastfeeding</b>					
Agree	108(85.7)	120(95.2)	228(90.5)	8.657 <sup>F</sup>	0.011*
Disagree	6(4.8)	0(0.0)	6(2.4)		
Unsure	12(9.5)	6(4.8)	18(7.1)		
<b>Formula feeding better than breastfeeding</b>					
Agree	13(10.3)	20(15.9)	33(13.1)	8.430	0.015*
Disagree	94(74.6)	100(79.4)	194(77.0)		
Unsure	19(15.1)	6(4.8)	25(9.9)		
<b>Mothers' shape changes with breastfeeding</b>					
Agree	83(65.9)	111(88.1)	194(77.0)	26.900	<0.001*
Disagree	6(4.8)	9(7.1)	15(6.0)		
Unsure	37(29.4)	6(4.8)	43(17.1)		
<b>EBF is time-consuming/more demanding</b>					
Agree	73(57.9)	114(90.5)	187(74.2)	34.975	<0.001*
Disagree	41(32.5)	10(7.9)	51(20.2)		
Unsure	12(9.5)	2(1.6)	14(5.6)		
<b>Breastfeeding should continue till 2 years</b>					
Agree	88(69.8)	48(38.1)	136(54.0)	28.605	<0.001*
Disagree	36(28.6)	64(50.8)	100(39.7)		
Unsure	2(1.6)	14(11.1)	16(6.3)		
<b>Breast milk only is adequate for first 6 months</b>					
Agree	75(59.5)	89(70.6)	164(65.1)	12.897	0.002*
Disagree	49(38.9)	27(21.4)	76(30.2)		
Unsure	2(1.6)	10(7.9)	12(4.8)		
<b>Babies should be given water while being exclusively breastfed</b>					
Agree	39(31.0)	21(16.7)	60(23.8)	14.500 <sup>F</sup>	<0.001*
Disagree	87(69.0)	97(77.0)	184(73.0)		
Unsure	0(0.0)	8(6.3)	8(3.2)		

$\chi^2$ : Chi square test; F: Fisher's exact test; \*: p value <0.05



One hundred and three (81.7%) nursing mothers from the urban health facilities agreed that breastfeeding should be on demand while 66 (52.4%) from the rural health facilities had similar opinion. Chi-square value of 26.557 ( $P$ -value < 0.001). Out of the 228 (90.5%) participants that agreed that breastfeeding increase mother-child bonding 120 (95.2%) were from the urban primary health centers while 108 (85.7%) came from the rural primary health centers ( $P$ -value= 0.011). One hundred (79.4%) respondents from the urban region and 94 (74.6%) from the rural region disagreed that formula feeding was better than breastfeeding. Thirty-three (13.1%) of participants agreed that formula feeding was better than breastfeeding while the remaining 25 (9.9%) were unsure ( $P$ -value= 0.015). One hundred and eleven (88.1%) urban participants and 83 (65.9%) from the rural area affirmed that breastfeeding changes mothers' shape. Thus, a total of 194 (77.0%) out of the 252 participants agreed that mothers' shape changes with breastfeeding ( $P$ -value < 0.001).

With respect to exclusive breastfeeding being time-consuming/more demanding. A total of 187 (74.2%) participants were of the view that exclusive breastfeeding was time-consuming/more demanding. One hundred and fourteen (90.5%) of those with this view were from the urban health facilities ( $P$ -value < 0.001). The number of participants that agreed that breastfeeding should continue till 2 years were more in the rural health facilities 88 (69.8%) while more of those from the urban health centers believed it should not be continued till 2 years 64 (50.8%). The Chi-square was 28.605 ( $P$ -value < 0.001). Regarding adequacy of breast milk only for the first 6 months of life; 75 (59.5%) of mothers from the rural region and 89 (70.6%) from the urban region had similar opinion ( $P$ -value= 0.002). Ninety-seven (77.0%) of respondents from the urban centers and 87 (69.0%) of their rural counterparts disagreed that babies should be given water while being exclusively breastfed ( $P$ -value < 0.001).

**Table 5: Overall attitude of respondents towards exclusive breastfeeding**

Attitude towards exclusive breastfeeding	Rural n (%)	Urban n (%)	Total N (%)	$\chi^2$	$p$ -value
Positive	93 (73.8)	106 (84.1)	199 (79.0)	4.038	<b>0.044*</b>
Negative	33 (26.2)	20 (15.9)	53 (21.0)		

$\chi^2$ : Chi square test; \*:  $p$  value <0.05

A total of 199 (79.0%) of participants had positive attitude towards exclusive breastfeeding comprising 106 (84.1%) from

the urban health centers and 93 (73.8%) from the rural health centers ( $P$ -value= 0.044).

**Table 6: Breastfeeding practices of respondents**

Variable	Rural n (%)	Urban n (%)	Total N (%)	$\chi^2$	<i>p</i> -value
<b>Your child’s first feed</b>					
Breast milk	101(80.2)	108(85.7)	209(82.9)	1.460	0.482
Formula	8(6.3)	5(4.0)	13(5.2)		
Glucose water	17(13.5)	13(10.3)	30(11.9)		
<b>Time of initiation of breastfeeding</b>					
After 24 hours	19(15.1)	7(5.6)	26(10.3)	6.203	<b>0.045*</b>
Within 1 hour	69(54.8)	78(61.9)	147(58.3)		
Within 2-6 hours	38(30.2)	41(32.5)	79(31.3)		
<b>Frequency of breastfeeding</b>					
At random	40(31.7)	49(38.9)	89(35.3)	3.519	0.172
At specific intervals	29(23.0)	18(14.3)	47(18.7)		
On demand	57(45.2)	59(46.8)	116(46.0)		
<b>Breastfed baby exclusively</b>					
Yes	68(54.0)	84(66.7)	152(60.3)	4.244	0.039
No	58(46.0)	42(33.3)	100(39.7)		

$\chi^2$ : Chi square test; F: Fisher's exact test; \*:  $p$  value <0.05

Out of the 209 (82.9%) mothers who gave breast milk to their children as their first feed 108 (85.7%) were from Urban health facilities while 101 (80.2%) were the rural counterparts. Thirty (11.9%) participants fed their babies first with glucose water

while 13 (5.2%) gave formula ( $P$ -value= 0.482). Seventy-eight (61.9%) of urban health centers respondents and 69 (54.8%) from the rural health centers initiated breastfeeding within 1 hour of birth. The next in rank was the commencement of





breastfeeding within 2-6 hours of birth 79 (31.3%). Few participants started breastfeeding after 24 hours of birth 26 (10.3%). The number of urban respondents who fed their children on demand were only 2 (1.6%) higher than the rural respondents while those that breastfed at random were almost

twice 89 (35.3%) that of those that breastfed at specific intervals 47 (18.7%). One hundred and fifty-two (60.3%) participants breastfed exclusively comprising 84 (66.7%) urban participants and 68 (54.0%) rural participants while 100 (39.7%) did non-EBF. Chi-square value 4.244 and ( $P$ -value= 0.039).

**Table 7: Association between determinants of EBF and practice of EBF among respondents in Urban health facilities**

Variable	Do you do exclusive breastfeeding?			$\chi^2$	$p$ value
	Yes n (%)	No n (%)	Total N (%)		
<b>Number of antenatal visit</b>					
> 3	34 (66.7)	17 (33.3)	51	0.000	1.000
≤ 3	50 (66.7)	25 (33.3)	75		
<b>Husband's feeding preference</b>					
EBF	70 (87.5)	10 (12.5)	80	42.799	<0.001
Non EBF	14 (30.4)	32 (69.6)	46		
<b>Your feeding preference</b>					
EBF	72 (85.7)	12 (14.3)	84	41.143	<0.001
Non EBF	12 (28.6)	30 (71.4)	42		
<b>Cultural feeding preference</b>					
EBF	67 (74.4)	23 (25.6)	90	8.575	0.003
Non EBF	17 (47.2)	19 (52.8)	36		
<b>Delivery setting</b>					
Home	7 (25.9)	20 (74.1)	27	25.667	<0.001
Hospital	77 (77.8)	22 (22.2)	99		
<b>Delivery method</b>					
C Section	9 (81.8)	2 (18.2)	11	1.245 <sup>F</sup>	0.334
Vaginal	75 (85.2)	40 (34.8)	115		
<b>Friends' breastfeeding practice</b>					
EBF	62 (75.6)	20 (24.4)	82	8.451	0.004
Non EBF	22 (50.0)	22 (50.0)	44		

$\chi^2$ : Chi square test; F: Fisher's exact test

The number of antenatal visits was not statistically significant ( $P$ -value= 1.000). Seventy (87.5%) respondents breastfed exclusively based on their spouses preference while 14 (30.4%) whose husbands preferred infant feeding actually breastfed exclusively. The Chi-square was 42.799 ( $P$ -value < 0.001). Furthermore, 72 (85.7%) nursing mothers from the urban health facilities practiced exclusive breastfeeding based on their preference while 12 (28.6%) of those who did not prefer exclusive breastfeeding ended up breastfeeding exclusively ( $P$ -value < 0.001). Sixty-seven (74.4%) respondent from background that preferred exclusive breastfeeding were noticed to practice exclusive breastfeeding while 17 (47.2%) of their

counterparts from communities that did not encourage exclusive breastfeeding actually practiced exclusive breastfeeding ( $P$ -value= 0.003). Seventy-seven (77.8%) participants who had hospital supervised delivery and 7 (25.9%) with home delivery practiced exclusive breastfeeding ( $P$ -value < 0.001). Nine (81.8%) participants who had caesarean section breastfed exclusively while 75 (85.2%) of those with vaginal delivery did exclusive breastfeeding ( $P$ -value= 0.334). Sixty-two (75.6%) nursing mothers from urban health centers chose similar exclusive breastfeeding method as their friends while 22 (50.0%) participants whose friends did non- EBF actually breastfed exclusively ( $P$ -value= 0.004).



**Table 8: Association between determinants of EBF and practice of EBF among respondents in Rural health facilities**

Variable	Do you do exclusive breastfeeding?		Total N (%)	$\chi^2$	p value
	Yes n (%)	No n (%)			
<b>Number of antenatal visit</b>					
> 3	16 (51.6)	15 (48.4)	31	0.092	0.762
≤ 3	52 (54.7)	43 (45.3)			
<b>Husband's feeding preference</b>					
EBF	68 (66.7)	34 (33.3)	102	34.759	<0.001
Non EBF	0 (0.0)	24 (100.0)	24		
<b>Your feeding preference</b>					
EBF	67 (69.8)	29 (30.2)	96	40.637	<0.001
Non EBF	1 (3.3)	29 (96.7)	30		
<b>Cultural feeding preference</b>					
EBF	61 (62.9)	36 (37.1)	97	13.493	<0.001
Non EBF	7 (24.1)	22 (75.9)	29		
<b>Delivery setting</b>					
Home	12 (37.5)	20 (62.5)	32	4.683	0.030
Hospital	56 (59.6)	38 (40.4)	94		
<b>Delivery method</b>					
C Section	9 (52.9)	8 (47.1)	17	0.008	0.927
Vaginal	59 (54.1)	50 (45.9)	109		
<b>Friends' breastfeeding practice</b>					
EBF	60 (74.1)	21 (25.9)	81	36.905	<0.001
Non EBF	8 (17.8)	37 (82.2)	45		

$\chi^2$ : Chi square test; F: Fisher's exact test

It was observed that more women with less antenatal visits practices EBF ( $P$ -value= 0.762). Sixty-eight (66.7%) of respondents whose spouses preferred exclusive breastfeeding actually breastfed exclusively while none of those whose husbands preferred non- exclusive breastfeeding practiced exclusive breastfeeding ( $P$ -value < 0.001). Sixty-seven (69.8%) of the participants who preferred exclusive breastfeeding ended up practicing it while only 1 (3.3%) participant among those that preferred non-exclusive breastfeeding practiced exclusive breastfeeding ( $P$ -value < 0.001). Of all the participants that came from the culture that have preference for exclusive breastfeeding 61 (62.9%) of them breastfed exclusively while 7 (24.1%) of those from background that advocated non-exclusive breastfeeding used exclusive breastfeeding method. Chi-square value of 13.493 and ( $P$ -value < 0.001). Of the 68 participants that practiced exclusive breastfeeding 56 (59.6%) had hospital supervised delivery while 12 (37.5%) had home delivery ( $P$ -value= 0.030). Fifty-nine (54.1%) of the respondents who had vaginal delivery exclusively breastfed their babies while 9 (52.9%) of those delivered via caesarean section practiced exclusive breastfeeding ( $P$ -value= 0.927). Sixty (74.1%) mothers whose friends exclusively breastfed their babies practiced exclusive breastfeeding while 8 (17.8%) of those whose friends used infant feeding option other than exclusive

breastfeeding practiced exclusive breastfeeding ( $P$ -value < 0.001).

## DISCUSSION

In this study the nursing mothers in the urban region of Rivers State had more knowledge of various breastfeeding practices and also showed more positive attitudes towards breastfeeding as opposed to their counterparts in the rural part of the State. The prevalence of EBF among nursing mothers in the urban and rural regions of Rivers State were 66.7% and 54.0% respectively.

Adequate knowledge about breastfeeding practices is a basic tool that directs the course of EBF practice among mothers<sup>16</sup>. The mothers in the urban region of Rivers State had higher (38.1%) adequate knowledge of the different breastfeeding practices compared to (32.5%) found in their rural counterparts. The knowledge of breastfeeding practices in these regions was shown in their EBF practice because It was found out that 66.7% of breastfeeding mothers in the urban health facilities in the State breastfed their babies exclusively while the prevalence of EBF in rural health facilities was 54.0%. This could be explained by the fact that mothers in the urban area are more likely to have access to health information. A cross-sectional study in Osogbo, Osun State Nigeria indicated that 97.6% of



mothers had knowledge of EBF but only 64.6% had adequate knowledge and their higher knowledge about breastfeeding correlated with longer duration of practice<sup>17</sup>. Despite the fact that it showed more adequate knowledge of breastfeeding, it was a community-based study, non-comparative and evaluated only EBF. A study by Gurung et al also agreed that good level of knowledge of EBF among women of reproductive age group corresponds to higher EBF practice<sup>18</sup>. However, a Nigeria study by Abdulmaleek et al concluded that irrespective of high level of knowledge on EBF and positive attitude only half of the respondents practiced EBF<sup>19</sup>.

More of the breastfeeding mothers living in the urban (84.1%) in Rivers State had positive attitudes towards EBF as opposed to 73.8% from the local areas of the State who had similar attitudes. It was also discovered that the EBF was also higher in nursing mothers in the urban region of the State. This agreed to the study by Dukuzumuremyi et al that concluded that positive maternal attitudes towards breastfeeding are associated with the zeal to continue to breastfeed longer and having a greater chance of successful breastfeeding; in addition, mothers with a positive attitude towards breastfeeding were likely to exclusively breastfeed their infants<sup>20</sup>. Based on the Food and Agriculture Organization (FAO) guidelines thresholds suggestive of nutrition intervention, an attitude score of  $\leq 70\%$  is considered urgent for nutrition intervention. All mothers who scored  $> 70\%$  in the attitude test were considered to have a positive attitude and those scoring  $\leq 70\%$  were considered to be less positive<sup>21</sup>. However, this index study allotted a positive attitude score to be 50%. A Nigerian survey in 2015 reported EBF rate of 23.7% for the country and 27.2% for South-south region<sup>22</sup>. The survey showed a low prevalence of EBF which could be due to low advocacy on child's survival strategy such as EBF and the knowledge about EBF as at that time.

Socio-demographic characteristics were found to be among the determinants of EBF. Irrespective of the fact that the practice of EBF was higher in mothers who were urban dwellers socio-demographic characteristics such as maternal age (ranged 30-39 years), marriage, occupation such as civil service or trading and higher educational levels were found to increase the practice of EBF in Rivers State. Married nursing mothers were found to practice EBF more than their counterparts who belonged to other marital status. The following factors were found to increase the practice of EBF; couples who preferred EBF, cultural preference of EBF, hospital delivery and mothers whose friends breastfed exclusively. However, it was observed that the higher the number of antenatal visits the reduction in the practice of EBF. A community-based cross-sectional study on factors affecting EBF practice in rural communities of Cross River State, Nigeria agreed that factors that affect EBF include; socio demographic factors such as age, marital status, level of education and occupation<sup>11</sup>. Though the study took into

consideration the rural dwellers it did not compare them with those living in the urban regions of the State as this current study did. A cross sectional study in three comprehensive health centers located at Neni, Ukpo and Nnewi communities of Anambra State, Nigeria concluded that EBF was significantly associated with maternal older age, parity, delivery at government facility, positive family attitude towards EBF and breastfeeding education from government health facility<sup>23</sup>. This had a similar conclusion with respect to family preference of EBF and hospital supervised delivery but deferred with maternal age because in this current study mothers at the extremes of reproductive life had the least EBF practice rate.

## CONCLUSION

The knowledge, attitude and practice of various breastfeeding methods are higher in the urban than the rural regions of Rivers State and EBF practice is influenced by socio-demographic and socio-cultural factors.

## RECOMMENDATIONS

1. Breastfeeding practices should be given a priority during antenatal health education.
2. Advocacy on the importance of breastfeeding should be stepped-up especially in the rural communities.
3. The social well-being of individuals which influences EBF practice should be ensured by the government.

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# REDUCING ACADEMIC STRESS SPIRALS FOR EFFECTIVE READING COMPREHENSION

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## ABSTRACT

*Reading skill is essentially a significant literacy tool. It enhances effective communication in written and oral discourses. Thus, acquiring a good level of reading ability should not be undermined since textual context-oral and written- discourses are only interpreted through reading and this gives credence to the understanding of reading as a mental interpretation of codes. Most often, reading challenges are often perceived as learners' phonemic limitations and/or poor exposure to linguistic codes. However, there are possible psychological impediments that are social forms that impede reading ability. One of such is the concept of stress spirals. Stress spirals are formed or repeated stress patterns that affect psychological balance which controls neurological processes that are activated during reading. Traditional perceptions on stress spirals did not concern itself so much with academic induced spirals but assessed other stress stimulants. However, it is necessary to evaluate the academic environment as a stress stimulant that affects reading. This study therefore focused on assessing the academic stress spirals for reading comprehension using a population of ten students from a private institution at the secondary level, a structured comprehension as an instrument for the study and adapting a Linkert scaled self-developed questionnaire as a tool for data collection. These data were subjected to descriptive analysis. The results of the study showed that academic designs are stress stimulants that forms patterns (spirals) that affect effective reading. It suggested the adoption of a practical learning systems through multimodal forms as a strategy to reducing academic stress spirals and for effective reading.*

## INTRODUCTION

Reading is a cognitive activity that is activated based on the neurological responses of the reader. It combines internal and external stimulant or factors in its process. Importantly, it is the bane of literacy acquisition. By literacy knowledge, we imply knowledge not limited to learnings in language but a wholesome ability to see and interpret codes in any subject area or field of study. When reading is effective, the learner's performance output is equally efficient but where reading is ineffective, the output is valued in the reverse.

Blakeley (2022) defined the concept of reading 'as a cognitive process that involves decoding symbols to arrive at meaning...an active process of constructing meaning of words' (p.1). This simply explains the fact that reading is not an isolated activity but a process which weaves its activity with the brain. By cognition, it is implied that there is a mental (abstract) processing of information. And this can be consciously or unconsciously processed. This information can be acquired through learned experiences or actual experiences as well as senses.

Reading appeals to the sense of sight as the eyes serve as the visible organ in the reading process. However, the eye is connected by several internal organs that are elastic to the

experienced activity carried out while reading. Notwithstanding its elasticity, there are permissible limits of effectiveness. If stretched beyond its capacity, the simulative response of the sight senses (eyes) becomes weakened and therefore inhibits reading. This perspective describes the wholesome concept of stress in reading.

Stress is the result from tension or a reaction to internal or external forces that affects an individual emotionally, psychologically or physically. Whatever the effect, it causes a breakdown of the human system and thus improper functioning which results in poor or no result at expected task. Basically, stress is attributed to the result of a laborious work done and/or an entrenched thought cycle.

In the academic environment which is designed for cognitive task, there is a possibility of being exposed to stress. Stress from this environment is resultant from pecked social or self-imposed expectations that reduces the learners' psychological ability. This could include such factors as excessive assignment, poor time management, extensive class duration, poor social activities or unhealthy peer competition. Richards (2009) quoted a direct statement from a subject in his study; 'there is constant pressure to do really well and live up to





the community's expectations' (p. 1). And when this occurs overtime, it becomes a spiral (pattern).

Jones (2006) voiced that in the world of academics today, the sequence of activities and set expectations have formed the most anxious, stressed, sleep-deprived generation ever. More so, in a society where academic scores are more valuable than residual knowledge, the stressor is also sometimes a transfer from the external academic environment and educational institutions in striving to satisfy societal demands, overburden the learners thereby helping them develop stress spirals in the academic environment.

This academic stress may be absent in some learners but worrisome in others even within the same learning activity. For these affected learners, it is imperative to differentiate learning patterns that will reduce the spirals. Though our bodies are naturally designed to accommodate stress, this could be consequential for learners who cannot fight but adopt the freeze or flight stress management technique.

Undoubtedly, there is a competition of relevance among learners in the world today but the package for it achievement can be redesigned by schools to help learners at all levels experience a reduction in stress spirals as a result of their academic engagements. Parents demand from schools a high level of performance and the students are made to believe same. These demands are sometimes measured from the number of subject offerings and the duration of school hours per day. In this view, there is no consideration of the educational principles that govern learning and content as well as age classification.

The trend and competition among schools especially the basic and secondary schools are channeled towards accommodating this high expectation. However, this is not wrong in totality but not plausible if not carefully managed. The after effect of some of these demands will be a reduction in psychological, emotional and even academic performance. Once the learner's adaptability limit is stressed out, there is a feel of frustration and lack of interest for academics.

Observing these patterns and its function as a factor for developing stress spirals in the academic environment, this paper focused on proposing an alternative method to the inclusion of these demands without an increase in psychological demands thus reducing the learner's stressor. It values that in the 21st Century where creativity and critical thinking are parts of the major definition of the education system, new learnings or expansive learning and all learnings in general should be fashioned in applied forms and less theoretical. The learner would have less codes to simulate to make meaning and learning becomes self-activated and not super-imposed.

## LITERATURE REVIEW

Reading is a key factor in the educational learning process. It is important for every learner to acquire a good and efficient level of competence in reading. To understand any given text, the learner must have the ability to decode the information. The

challenge however is that reading can be easily affected because of its neurological functioning.

Scholars have very much researched on reading and the reading process and have explained this process as solely mental and abstract. Blakeley (2022) emphasized that reading involves a thinking process. The reader defines the information in the present text based on previous knowledge which helps in the organisation of the meaning in the new text. She further mentioned that the process comes in stages of pre-reading, reading and post-reading. The first involves the reader's ability to identify the text and from previous knowledge identifies the purpose of the text and in reading, the information in the text is predicted and confirmed and the last stage involves the ability to recast the information retrieved. It is therefore important to understand that for this to be effective, the learner's psychology and emotions should be in a balance. However, stress acts against such balances and this affects reading.

Equally of importance is Essberger's (n.d) view of reading and the reading process. He defined reading as an act of obtaining meaning by looking at a series of scripted symbols. He noted that reading is a receptive skill (obtaining information and processing same internally) which begins with the use of the eye to identify symbols and then transferred to the brain for conversion into words or structures that are meaningful.

Interestingly, it should be obtained from these definitions that reading is a productive skill that involves a connection and reconnection of organs for meaning to be produced. Therefore, it requires a well fitted psychological composition. The reader must beyond the knowledge of phonemic awareness and other literary awareness skills which help in the identification of the codes or symbols have a composed frame to make meaning out of the retrieved information. In this situation, it is expected that internal and external structures are communicatively balanced but oftentimes, this perceived balance is absent and can be as a result of weakened brain stems, poor visual processing, deficit literacy competence and/or external factors such as psychological imbalance which is factored by such activity as stress.

Marks (2021) defined stress as 'the body's reaction to harmful situations-whether they are real or perceived.' (p. 1). He added that it is a chemical reaction that is activated when an individual feels threatened either by internal or external factors. And often the reaction or response is either a fight or flight technique. According to him, the body can handle a little stress but where this becomes long-term or chronic, consequences are inevitable. Some of the symptoms of stress include frustration, depression, headaches, low energy, racing thoughts, poor judgement, inability to focus, disorganisation, etc. A careful look at these symptoms explains the need to address the challenges caused by stress especially in the academic environment if the learner is expected to be competent. Symptoms such as poor judgement and racing thoughts among others are directly consequentially to reading effectiveness.



Equally from the clinical perspective, Tsigos, Kyrou, Kassi and Chrousos (2020) opined that stress constitute a state of threatened homeostasis triggered by intrinsic or extrinsic adverse forces (stressors) and is counteracted by intricate repertoire of physiologic and behavioural responses aiming to maintain/reestablish the optimal equilibrium (eustasis). The adaptive stress response depends upon a highly interconnected neuroendocrine, cellular, and molecular infrastructure, i.e. the stress system. Key components of the stress system ...interact with other vital centers in the central nervous system (CNS) and tissues/organs in the periphery to mobilise a successful adaptive response against the imposed stressor(s). (p. 1).

The implication is clear that a dysregulation in this interconnection will produce an imbalance which undoubtedly affects effective reading. In this state, it may be possible to read but the effectiveness of the reading remains the unanswered question.

Consequently, the academic environment which is designed for learning success has become a source for academic stress. In the 21st Century, academic demands are on the increase and institutions are compelled to approach this demand competitively with little or no consideration of its effects on the recipients (students) of this choice. Thus, we can refer to school elements as factors of academic stress. It has been long existent though an unidentified factor that has affected academic success.

Studies have researched on what constitutes academic stress as well as its consequences. The need to understand the complexity of learning and the importance of a balanced learning environment have been echoed and re-echoed. However, the academic cry for competitive measurement has left the points unattended and a cyclic repetition of entrenched academic responsibilities. So, we realise that as it were the pressure presently is unconsciously fixed to the learning system.

Academic stress is unarguably a mental distress that is frustrating and demotivating. A study by a group of scholars revealed that learning should not be stressful as the only expected task of the learner is to study. However, they observed that adolescents are very vulnerable to the problems of academic stress due to the physiological and psychological transitions they experience. The main objective of their study was to ascertain the presence of academic stress. They assessed students and reported that academic demands were challenging and stressful to the students. It was considered that the perceived experience of the learners was a factor for the poor academic performance record as learners feel demotivated to reading and learning in general (Reddy, Menon & Thattil, 2018).

Gunnar (1998) simply defined academic stress as the anxiety and stress that comes from schooling and education. Explaining the challenges of the school system and the expectation from learners which contributes to the perceived academic stress Saqib and Rehman (2018) described the need for a parent-teacher relationship for effective learning. In their view it is assumed that the experience of the learner becomes

stressful if learning outcomes are not well detailed by the teacher and when the parents fail to guide appropriately. However, they also agree to the negative effect of educational stress on the learners' performance.

Interestingly, Lal (2014) conducted a study on the challenges of students. His study was specific to assessing academic challenges based on gender difference and intelligence. He observed that the female gender was more prone to academic stress than the male counterpart. Teachers were encouraged to vary teaching patterns and demystify assignments as strategies of helping the learner cope with academic stress. For the adolescents, he mentioned key causes of academic stress to include: academics, dating, extra-curricular activities, peer pressure, and parental expectation. Students who in this sort of environment are likely to feel the pressure of academics.

Going further, MK, Nasla and Thomas (2021) disagreed with the correlation between academic stress and study habit. They opined that academic stress is a subjective feeling and unconnected to study habit. By study habit they referred patterns or modes of preparation for assessment. Invariably, their study posits the non-relevance of academic stress in the learners' academic performance. However, they acknowledged the weakening effect of stress in general to human psychology which subjectively interprets that academic stress as stress would have an effect on a learner.

From these literatures, it is obvious that the academic environment is a stressor and its effect is obvious in evaluative performance and it is long-lasting. This can be held true understanding that academics is a cyclic process and the stress in the process follows same pattern. Therefore, overtime, stress becomes a spiral and the adaptive technique determines the outcome. Stress spirals are recurring patterns of stress that unnoticeably heightens an individual's alertness at which point the individual had developed a pattern of adaptation.

When an individual is stressed, the brain shuts down the higher thinking areas of the frontal cortex and moves to control the brain stems. The reaction thus is a raised emotion that depletes active cognitive functions. Reading requires an active cognitive ability. David Morgan Education (2012) said it is very demanding and often involves a lot of "public" failure. The symptoms of a stress pattern like this are fairly obvious: strong negative emotions to reading, coupled with an apparent ability to read satisfactorily at moments which can downgrade into spiral of stress when making reading mistakes (p.1).

Naturally such level of anxiety should be unexpected from a learner who consciously goes to school for the strict purpose of learning. The reality however is that the demands are much higher than the expectations therefore creating a fear when exposed to them. It is more critical today when competitive education is at its peak. Children are exposed to volumes of work and often scripted. They are expected to read and comprehend within stipulated timelines. This does not only affect general knowledge acquisition but can be measured even in reading comprehension which should serve as a formation for



other reading activities. In spite of this reality of a deficit in reading, there is still a workout to balancing academic stress and effective reading.

McEwan (2007) discussed about the strategies for effective reading. She listed these to include activating, inferring, monitoring-clarifying, questioning, searching-selecting, summarising, and visualising-organising. In a detailed explanation of these strategies she explained that reader for adolescents must be creatively impactful to stimulate the learners interest. This simply would involve not just a mere scripting of content but an emphasis on pictorials that would supply the questioning mind and provide a link to the hidden information required for effective comprehension. This position is applicable and effective in depressing the stress consciousness of the learner in relation to reading. The reader's cognitive function is suppressed to processing visuals and this is more effective than raising a consciousness to process abstract codes. Neuroscience explains that weakened brainstems or gray matters can be entrenched by an enrichment via multimodal concepts.

## METHODOLOGY

This study was conducted at Sacred Heart High School, Aka Offot, Uyo with a population of fifteen JSS2 students and a sample size of ten students purposively selected. The students were randomly divided into two sets. Group A served as the experimental group while group B was control. The structured comprehension was given to group A while group B had a corresponding passage that was unstructured; a corresponding comprehension question was also given after ten minutes of reading time. The passage was withdrawn before administration of the questionnaire. The stipulated time for reading under same condition was ten minutes. The simple self-developed questionnaire with a Linkert scale was administered to individual participants based on groups. The information retrieved were coded and analysed descriptively after a mean score evaluation.

## DATA PRESENTATION AND ANALYSIS

**TABLE I: Individual Responses**

S/N	Reading Skills	Group A					Group B				
	Respondent ID	A	B	C	D	E	A	B	C	D	E
1	Recognizing definitions and examples	4	3	4	2	4	3	2	1	3	2
2	Recognizing enumerations	4	5	5	4	3	3	3	3	2	3
3	Identifying headings and subheads	5	5	5	5	5	4	3	3	2	3
4	Identifying signal words	3	4	3	3	4	2	1	-	2	3
5	Identifying contextual clues for vocabulary	3	3	2	4	-	2	2	2	1	2
6	Identifying the main idea	4	4	4	4	4	2	3	2	1	1
7	Identifying the authors' intention	3	4	4	3	3	-	2	4	3	3
8	Evaluating the text	4	4	4	4	4	3	-	2	3	3
9	Following the organization of the text	4	3	3	5	3	3	1	2	2	3

**TABLE II: Group Value**

	Group A				
	V.Poor	Poor	Average	Good	Exc.
	1	2	3	4	5
Question	Response				
Recognizing definitions and examples	0	1	1	3	0
Recognizing enumerations	0	0	1	2	2
Identifying headings and subheads	0	0	0	0	5
Identifying signal words	0	0	3	2	0
Identifying contextual clues for vocabulary	0	1	2	1	0
Identifying the main idea	0	0	0	5	0
Identifying the authors' intention	0	0	3	2	0
Evaluating the text	0	0	0	5	0
Following the organization of the text	0	0	3	1	1



Group B					
	V.Poor	Poor	Average.	Good	Exc.
	1	2	3	4	5
Question	Response				
Recognizing definitions and examples	1	2	2	0	0
Recognizing enumerations	0	1	4	0	0
Identifying headings and subheads	0	1	3	1	0
Identifying signal words	1	2	1	0	0
Identifying contextual clues for vocabulary	1	4	0	0	0
Identifying the main idea	2	2	1	0	0
Identifying the authors' intention	0	1	2	1	0
Evaluating the text	0	1	3	0	0
Following the organization of the text	1	2	2	0	0

The data above clearly explains the position of the participants' evaluation of their text for analysis. This study ranking from 1 to 5 was very poor, poor, average, good and excellent. Table I shows the responses from individual members of the group based on specific psychometric opinion. Table II is a more specific value codes for each of the Likert items 1 to 9 for each group.

From the data recorded, we observed that the experimental group perceived a better approach to reading the comprehension text than those in the control group. The opinion of group A about their appraisal of the discourse text based on the responses retrieved describes their attraction to the pattern of text-content- presentation.

On Q.1, group A had three participants who perceived that their level of cognition of definitions and examples in the text was good (above average) and only one on the average while group B had a maximum response of two on an average and poor level of cognition ability respectively. Comparatively too, the level of performance for Q.3 on identification of subheads is totally excellent for group A but ranges from poor, average to good ability for group B.

One major objective in reading comprehension is the identification of the main idea as stated in Q.6. The experimental group recorded a good competence level while even the average response on this question for the control group is only one. That means it is more tasking for the control group to pick out the main idea unlike their counterpart who necessarily do not need the codes but work with imageries (multimodal) created in the discourse.

After reading a comprehension, there is a need for passage evaluation and if the content was properly comprehended, the need for the text during evaluation would be insignificant. In the study, the control group expressed their inability to recall details of the text when retrieved hence we recorded, one poor and three average responses on evaluation. The experimental group on the other hand demonstrated competence recording five responses for a good level competence in text evaluation.

The present research affirms studies in other climes on the effectiveness of multimodal in teaching reading. Bao (2017) studied how multimodality can be applied and from his research reported that the use of multimodal will attract learners and activate their desire to read even after classes and within the classroom creates a conducive atmosphere.

This also aligns with the observed challenge of the control group in this study. Both groups had same conditions before administration of test but the process of mental readjustment after a stretch of academic activities posed a challenge to the group's reading competence whereas the experimental group had an advantage of easily understanding the text as a function of the multimodal nature of their text. Hence, the ability of group A is seen as simply a function of the multimodal text.

More so, a general presentation on all items on the scale buttresses the effectiveness of multimodality as an academic stress spiral reduction strategy. This is measurable with groups performance. Group A was presented with a cognitive task that was completed with ease but was difficult for group B. For group A, there was no heightened neuro-sensitivity because of the multimodal. The respondents rather than develop an adaptive strategy to stress and to allow for another series of a cognitive assignment, produced a neurological stem that is productive for cognitive reception as the brain stems remained unthreatened.

## CONCLUSION

Educators must learn to identify that not every poor reader (learner) is inefficient as a result of poor literacy skills. There is need to painstakingly design reading materials in multimodal forms for effective reading. It is no doubt with the high level of educational competition, schools will get more concerned about being in line with what is obtainable and thereby increasing the academic demand and triggering stress. However, it is possible to align this reality with practical teaching methods.

Text and all reading materials should be redesigned to fit in the use of multimodality. Teachers should deploy strategies



of using multimodal tools in teaching to create fun and ease tension in the academic environment.

If a learner is motivated rather than compelled to study, the result will be efficient. Therefore, learning and reading in particular should be demystified. If language teachers and language content developers as well as other subject curriculum developers adopt multimodality in texting, academic stress can be reduced and spirals removed. McEwan (2007) wrote that readers are inventive, thinkers and scholars. This emphasizes the fact that ineffective reading is a challenge to academic development.

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# STRATEGIES OF OVERCOMING COMMUNICATION PROBLEMS IN THE WORK PLACE IN POST COVID-19 ERA

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## ABSTRACT

*Pandemics are not only hazardous to health but they also negatively impact economic and social life. The effect of the latest pandemic, the Covid-19 pandemic, was as deadly as it literally shut down the world. The global impact was both significant and revolutionary cutting across all spheres of human existence as it replaced the physical with a virtual world. This switch to a virtual world brought about a lot of challenges including communication challenges especially in the workplace; how to disseminate information to employees and keep businesses going became a major issue to employers. The study adopted a qualitative research method to examine the various communication challenges encountered in the workplace in post-covid-19 era. The paper analyzed their effect in the business environment and further highlighted strategies to address them. Findings revealed that the traditional model of internal communication is inadequate to cope with the realities in the workplace. The paper therefore proposes strategic mix of communication styles incorporating both the conventional and digital models of communication to tackle communication barriers. It concludes that if adopted, the strategies will not only address the immediate but take care of future needs.*

**KEYWORDS:** pandemic, post-covid-19, communication, strategies, workplace

## INTRODUCTION

The world over time has experienced quite a number of pandemics with devastating impacts. The most recent, the Covid-19 pandemic, was as catastrophic and though the worst days are over, its effect is still being felt globally especially in the business world.

Pandemic, according to Rogers (2021) is the outbreak of infectious disease that occurs over a wide geographical area and that is of high prevalence, generally affecting a significant portion of the world's population. It could last for few months or in some cases years but notwithstanding the duration the effect is usually disastrous.

Covid-19, like other pandemics, was by nature highly infectious. The death toll mounted by the day and to arrest the situation governments the world over literally shut down the global community. Consequently, educational, religious, social and economic activities were grounded.

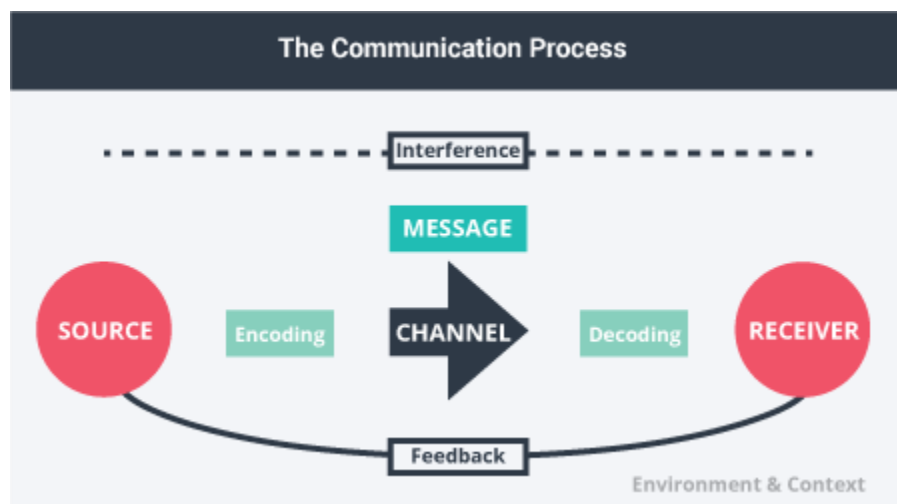
The home became the epicentre of all human activities. The situation demanded lifestyle changes, adaptations and accommodations, not only in the family but more so in social and workplace environment.

The impact of the pandemic on the workplace was quite drastic as it altered the way business is done. Many organizations

devised means to "exist" and conduct their affairs which inevitably led many to operate from virtual offices from the comfort of the homes. However, in spite of the measures adopted organizations to keep the companies going, the major challenge most of them faced was how to communicate their new ideas to their employees. The traditional medium of communication such as inter office memorandum and one-on-one meetings that were the fastest ways of sharing such information were not practicable in the virtual office. Thus organizational survival was threatened as no business could survive without communication which is unarguably the livewire of any organization. It is described as the nervous system of an organization and just as the nervous system transmits signals between different parts of the body and coordinates its voluntary and involuntary actions, so does communication link all the activities in the workplace together and galvanizes employees into action working together towards the realization of a common goal (IntDom, 2016).

It is against this backdrop that Bernard (cited in Marume, Jaricha & Chiunye, 2016) described communication as a major shaping force in an organization noting that its techniques were not only instrumental in the actualization of organizational purpose but poses a problem if not properly handled.

The techniques of communication described by Bernard are suggestive of the elements of communication process which is graphically represented thus:



Source: <https://socialsci.libretexts.org/Bookshelves/Communication/>

Communication is effective when it achieves the desired response from the receiver. However, the process of communication is not as simple and so it can breakdown at any point in the communication process leading to confusion and possible disruption of a company's operations.

The Covid-19 pandemic posed a communication challenge especially at the point of deciding on what channel to adopt by companies in the dissemination of information to their employees.

## LITERATURE REVIEW

Communication makes life happen. It is critical to the survival of any business. It is the way that organization members share meaning and understanding with one another (Koontz and O'Donnell, cited in Emojorho, 2010) without which there will be no cohesion in the workplace. Communication is a process incorporating series of actions or steps taken in order to effectively transmit information from one person to another. It is cyclic beginning with the sender encoding a message and ending with the sender in the form of feedback.

Scholars differ on the exact number of components of the communication process. Nordquist (2020) recognized five components of the communication process – the sender, the receiver, the message, the medium and feedback. He also identified Noise and Context as vital factors in the process that could affect how information is transmitted, received and interpreted. Weaver (cited by Drew, 2021) on the other hand distinguished six key elements – the sender, encoder, channel, noise, decoder and receiver while Weiner (cited by Drew, 2021) while elaborating on Weaver's model of communication included "feedback" as the seventh element in the communication process. Dingwall, Labrie, McLennon and Underwood (cited in Olds College OER Development Team, 2015) also cited seven components comprising the source

(sender), the message, the channels, the receiver, the environment, the context (setting), and interference (noise).

Regardless of the disparities in the composition of the elements which are mostly a matter of nomenclature and grouping, the key point is that the elements interact to enable communication flow in any organization.

## COMPONENTS OF THE COMMUNICATION PROCESS

**The Source:** This is the initiator of the communication process and is also refers to as the "sender". The source conceives an idea and tries to share it by sending out a message in a form and means which could easily be understood by the intended recipient.

**The Message:** The message is the "big idea" or information which is intended to be shared. The message could be an instruction, an appeal or an opinion designed to spur the receiver into action.

**The channel:** This is basically the medium by which messages are transmitted. The channel could be verbal, non-verbal, written and digital. It plays a central role in the communication process by conveying the message from the sender to the receiver hence without the instrumentally of this component, an idea (message) would remain with the sender

**The Receiver:** This is the recipient of the message. The ability of the receiver to decode or interpret the message depends mostly on the mutual understanding of the code employed by the sender while transmitting the message.

**Interference:** This is otherwise referred to as "noise" which constitutes a hindrance in the communication process. Interference may include poor visual or audio quality or even a noisy environment that could pose a challenge such that the message is lost.



**Feedback:** This is the final stage of the communication process when the message has been duly transmitted, received and successfully decoded to produce the desired response. Feedback is the practical demonstration of effective communication. It could be direct taking the form of written or verbal response or indirect manifesting in an act or deed.

The entire process though dynamic and continuous could be affected by many variables at any given point which would result to communication breakdown. Interestingly, the impact of the Covid-19 pandemic in the workplace was more pronounced in the choice of the medium of communication.

In pre-pandemic era, the conventional workplace communication usually took the mode of verbal communication, one-on-one meetings, staff meeting and training, inter office memos, bulletin board notices, posters, letters, reports, newsletters, instant messaging and the informal office grapevine. These conventional channels, however, became grossly inadequate during the pandemic as contact restrictions and isolations made such impracticable. Organizations were faced with the challenges of reaching their staff and transmitting information timely hence teleconferencing and videoconferencing, among others, replaced staff meetings.

PRIMARY THEME	CATEGORIES	CODES
POST COVID-19 COMMUNICATION CHANNELS	<ul style="list-style-type: none"><li>• Personal channel</li><li>• Mobile Channel</li><li>• Digital/Electronic Channel</li><li>• Written Channel</li></ul>	<ul style="list-style-type: none"><li>• Effectiveness of each channels</li><li>• Barriers/Limitations of the channels</li><li>• Orientation to staff</li></ul>

The present study highlights the communication channels adopted by most organizations during the covid-19 outbreak and which has subsisted post pandemic era.

In analyzing the collated data from the study, the respondents' answers to the question "what channel does your organization commonly use in its internal communication?" reveal that their choices as it affects communication channels are limited given the new realities in the workplace post pandemic era. The respondents discussed the different channels of communication in their workplace – personal channel, mobile, digital/electronic and written channels.

On the personal communication channel, notably, one-to-one meeting/staff meetings, respondents agree that though it is an effective channel of communication which was commonly adopted pre-pandemic era, it has become almost non-existence having been replaced with other channels mainly because of staff's fear induced aversion to the workplace and other public places. A principal officer in one of the establishments hinted that "...I think I am better off working from home since most of my colleagues have refused to be vaccinated. You know many Nigerians do not believe that the pandemic is real so they are not

bothered but I know it is very real... I still do my bit and effectively complete my tasks so ...". Apart from health, another reason why people prefer working remotely is that of convenience. These practices have made person-to-person meeting impracticable.

## METHODOLOGY

This study adopted a qualitative research method using the instrumentality of unstructured interviews with select business owners within Port Harcourt metropolis. A total of thirty respondents drawn from fifteen corporate establishments were randomly selected and the principal officers as well as some junior staff were interviewed to evaluate the various communication challenges they faced, its impact on their businesses and measures taken to overcome them. The data retrieved were descriptively and thematically analyzed.

## DATA PRESENTATION AND ANALYSIS

This section discusses the prevalent communication channel most commonly adopted in the workplace post pandemic era. The table below captures the general theme around which the interview revolved. The theme is further categorized and subsequently coded to allow for easier analysis.

Review of the interactions reveal that both mobile and digital communication channels are most commonly adopted in the dissemination of information in the workplace in post pandemic era. Respondents listed mobile channels like SMS text messages, instant messaging App (WhatsApp) as more frequently used channels especially among team members. This is captured in the following excerpts.

"...my office has a WhatsApp platform which was created during the pandemic but which we have continued to use. Most updates are posted on the platform and so whenever I want to know what's going on, I check the platform...sometimes I also receive SMS notifying me of events in the office but prior to the pandemic, such notifications are posted on the notice board, but now, we rely on SMS."



Whatsapp is also used for team communication as a respondent reveals "...whenever I wish to communicate something to my team, I simply post it on the platform I created for just that purpose which is more convenient for me..."

Digital communications such as emails, intranet, chat tools and videoconferencing (e.g. zoom) are preferred in higher level communication in the workplace. An executive intimated that zoom has been effective in bridging the gap of face-to-face meetings. According to her "with zoom meetings, it's like sitting in the conference room...we still see ourselves and share ideas at our convenience"

From the responses garnered, it is observed that written communication incorporating internal memos, letters, and newsletters are almost being bypassed in post pandemic communication. This is deduced from the following excerpt

"...internal memos are out of the question...everything is digital...just send a mail, even newsletters are emailed or dropped on our whatsapp page and letters? Except the occasional ones informing staff of their promotion but even that one is emailed to the staff. I think the only letter you receive now in hard copy is possibly a termination letter..."

The responses affirm that post pandemic communication channel is increasingly more digitalized. However, when asked of the effectiveness of these digitalized communication channels, respondents were of the view that the channels are not totally effective or foolproof. The study reveals the major limitations posed by these digitalized channels to include (1) delayed feedback (2) challenges in reaching everyone at the same time (3) limited real time input from staff team members (4) poor internet connectivity (5) limited access to the company's email network, laptop or Smartphone.

Investigation reveals that most staff especially of the lower cadre have limited access to the company's email network, computer and or Smartphone. Consequently, this group of staff is easily excluded in the digitalized medium of communication. The following excerpts demonstrate this point.

"...most times, I don't even know what's happening, I don't receive mails and I lost my phone so the small one I have is not Whatsapp enabled. It is one of my friends that gives me information..."

Poor internet connectivity poses a bigger challenge in digital communication. Many respondents complained of missing vital information due to connectivity issues. According to one of the respondents "... most times the connection and the audio quality is so poor that I simply switch off in frustration because it makes no sense..."

Staff contribution at meetings is not as easy in this medium because the coordinator may miss a raised hand and if "...you are centrally muted, there is nothing you can do to draw

attention unless the coordinator unmutes you...so you end up not making any contribution at all"

Respondents also complained about delayed feedback which slows down decision making and negatively impacts productivity in the workplace.

Staff attitude is another major challenge in post pandemic communication. From the responses two factors that drive staff attitude emerge; (1) the old school factor (2) financial capacity.

The old school people are technologically backward and not conversant with zoom meetings or such like. They can neither organize one nor can they effectively make presentations through this medium. The following excerpt encapsulate this position "...to tell you the truth, I am old school, I am still struggling to familiarize myself with all these zoom meeting and stuff".

Financial capacity also limit some set of people from accessing internet based communication channels which is expensive; hence, they suffer "exclusion" in getting first hand information but have to rely on third party delivery which may not be as accurate.

## RESULT

The analyses show that post pandemic communication channel tends towards digital. Two major reasons attributed to this trend are (1) it is cost effective and (2) it is convenient. To convene a meeting is just a click away which cuts off the logistics usually associated with meetings (planning, travelling, refreshment etc), its cost implication and the attendant risk. Comparatively, the cost incurred in videoconferencing is minimal. It is without stress and the risk almost non-existence. The only thing required is a good internet connection.

Regardless of the advantages of digital communication, however, it is limiting and cannot therefore effectively replace other channels.

Given this scenario, a harmonized model of communication strategy incorporating personal, digital and written communications should be embraced in the workplace to address all communication barriers and integrate all the staff into the system with equal and unfettered access to information.

## CONCLUSION

Communication takes place everywhere whenever two or more people interact. It is a *sine qua non* to human existence and progress in life. It is simply the nucleus of all human activities and is therefore indispensable. Beyond the message (information), the channel of delivery is equally as important to guarantee effective communication. Consequently, any medium that is not all encompassing and which cannot also be easily accessed by all the intended receivers is inadequate for the required purpose of promptly galvanizing people into action for the actualization of a common goal. Organizations should



therefore incorporate a harmonized communication style to ensure all staff have first hand information. This strategy does not only take care of the immediate but also addresses future communication needs.

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# SOCIAL MEDIA MARKETING: IS IT MORE EFFICIENT FOR TARGETED MEN OR WOMEN SEGMENT

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Article DOI: <https://doi.org/10.36713/epra12387>

DOI No: 10.36713/epra12387

## ABSTRACT

*Social media platforms are utilized by billions of people all over the globe and have speedy become one of the defining technologies of our time. People are utilizing different SM platforms and due to that the whole marketing landscapes are transforming day by day. Huge audiences are accessible who are using a lot of hours daily utilizing SM across the different platform and are mainly comprised in information process, entertainment and social interactions, it isn't surprising that marketing people have begun using SM as a marketing tool. Corporations at present offer substantial values on the way in which SM can be utilized to shape consumer perceptions and influences their purchase decisions. Therefore, the organizations are incorporating SM mechanism to boost the association with customers. Therefore, companies need to better understand the changing behavior of consumers, in order to create mutual benefits from the use of social media. So, the study tried to highlight how user created content assists in marketing of an organization and what will be the prospect of SM platforms and fields the enterprises must target on which will affect the men or women. Is woman more impressionable than man when it comes to basing their buying decision on advertisement?*

*This research paper is an attempt to measure the effect of effects of advertising aired on electronic media mainly on woman's buying behavior. The researches have shown that SM marketing is more effective for targeting woman than man. The outcome of this research study can help in promoting corporations and marketers to spend more financially in SM marketing and assist the marketers who are using social media. The study may support marketers who are considering moving towards utilizing SM websites, or marketers who want to have a better addressing of how consumers behave.*

**KEY WORDS:** Social Media, marketing, men, women

## INTRODUCTION

Social network has become the very influential means for marketers looking to reach out to their prospects and clients. Social networking sites have occupied a vital part as a communication tool. People all over the world use social media to unite to other individuals or corporations. Social media platforms have transformed the game for many companies and fields, including consumer behaviour. This research proposal tries to is to explore various factors and significance of SMM allows the companies more aggressive by creating opinion, review and comments of the various clients which reflect the present market scenario that will assist to shape more consumer oriented strategies for getting more client insight and consumer preference. The study also examines how emotion, attitude and preference influence the purchase behavior of customers. Consumer buying behavior is affected by cultural, societal, individual and psychological variables. These drivers are unmanageable and beyond the hands of companies but they have

to be considered while attempting to recognize the complex behavior of customers. This research also aims to study that how consumers behave, processes, and choose the information before purchase and also analyze the changes SM has brought to buyers in various phases of their decision making.

Application of internet, social networking sites, smart phone applications and other digital technologies has become an important element of the daily life of billions of individuals. At present, social networking sites are prevalently employed by everyone. Social media is a digital platform like Facebook, Instagram, Twitter, LinkedIn, etc., which is used by the public to share their ideas, photographs, and information in the virtual world. Other activities like blogging, social gaming, business network, advertisement, platform to promote new talent, movie review etc. even politician used social media to create awareness and reach the voters (Stephen, 2016).



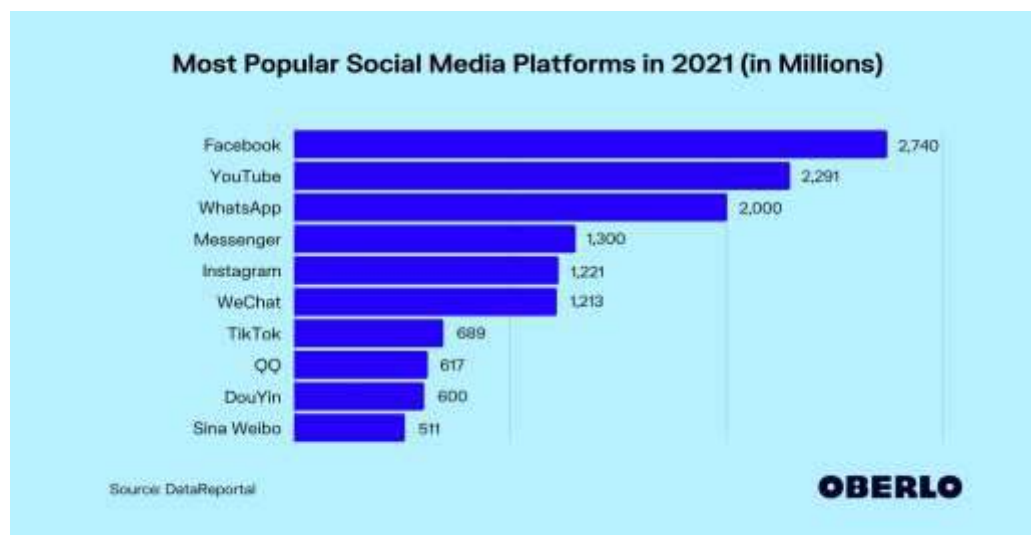
As social media becomes a vital source of latest information, companies have to change their advertising and promotional strategies. Social media has entirely transformed almost all aspects of modern life – from the way we listen to music to our eating habits – and the multi channel marketing is no exception. Social media is changing the way information is communicated to and from people around the world. The rapid use of social media such as blogs and other social networking sites and media-sharing technology is changing the way firms respond to consumer's needs and wants and changing the way they respond to their competitors. Marketers now have the opportunity to engage in broader and more innovative forms of online mass media communications by using the social media marketing tools. Social networking programs group individuals by interests, hometowns, employers, schools and other commonalities. Social networking is also a significant target area for marketers seeking to engage users.

In actual fact, women are 80 per cent more probable to connect with brands on SM platform than man. The key reason is that, women are more likely to utilize SM platform than man. Moreover, woman is more likely to faith and connects with brands that they follow on SM platform..

## SOCIAL MEDIA

Social media are interactive technologies that facilitate the exchange of idea, thought, interest, and information via the building of a virtual network and communities. Social media provides a user fast electronic message of contents. Content comprises individual information, opinions, videos, events in real-time and photos. Viewers engage with SM via a computer or smartphone through web based application.

Social media includes broad ranges of website and applications. Some people prefer Twitter specialize in sharing link and short message termed as tweets. Some others prefer Instagram and TikTok, are made to optimize the exchanging of photos and videos (Hudson, 2020). Many people will utilize SM to stay in touch and interrelate with friends, relatives, classmates and family, while others utilize it to converse with various communities. A lot of business organizations will utilize SM as a marketing and promotional tool to sale their products. Facebook was once the place for all sales promotion but is now favored by an older user group. Gen Z and Millennials have shifted to Instagram.



Source: [www.oberlo.com](http://www.oberlo.com)

Top Features and advantages of a Social Media App

### Key Features of Social Media Sites

All social media sites have their own unique features. Before decide the aspect, they should first find out the form of social media applications that suit their businesses

**User's Profile Customisation:** On SM sites, a user is often ready to make a striking profile according to their feelings, interests, and status. Users can permit them to modify their profiles with their preferred pictures, favorable username, bio, etc. It will offer them entire control over their profiles and feeling of satisfaction. (Kalyan, 2021)

**Effortless Network Creation:** Social networking sites are of no use if it cannot assist users to build networks. Connecting and interrelating with new people is the first conception of social media.

**Content Sharing:** Most social media users need to share things with their network. Hence, users can permit them to share contents in the type of stories, photo, video, and audio. Content sharing is one of the key SM feature because it facilitate conversation among viewers and allow users feel more associated, even when they are distant from each other. It can



comprise the capability to post and send photos or videos as well as the capability to permit users to mention on what is shared.

**Live Video Streaming:** Live video streaming has taken a SM platform by storm since its beginning. Users can stream live video to rejoice an occasion, sharing ideas, and more with their networks. Therefore, they will be allowed to make moments of joy and use quality time with their online family.

**Generate leads:** SM provides a simple and low commitment mode for prospective clients to communicate interests in their businesses and their brands. Lead generation is considered such a significant advantage of SM for businesses that a lot of social media platforms provide advertising format particularly designed to gather leads (McLachlan & Newberry, 2021)

**Privacy and Security:** Offering a higher level of privacy and security to user data is dominant for the success factor SM sites. It will make sure that a user can securely access their applications, and their individual information are devoid of vulnerabilities. Hence, user will be capable to achieve their faith and set up long run association with them (Kalyan, 2021).

#### **Purpose and Significance of Social Media Marketing**

Social Media networking sites are open to all, offering business a chance to pursue their client activities or prospective customers. This helps enterprises be more informed about their target audience, like, dislike, and interest in order that they can create best marketing plans to attract such consumers. Kemp, (2021) points out that the major social media platforms are Facebook, Pinterest, YouTube, snapchat, and twitter. Social media platforms support companies' link with their customers, enhance awareness about their brands, and increase their market share. Above 4.48 billion people worldwide in July 2021 using various SM platforms, the audiences and engagement on significant platforms just remain increasing. This will help in augmenting client retention rate and customer loyalty. Since growing loyal customers are one of the important goals of all businesses, SM should be in their strategies (Fernandes, 2021).

Gadzhova, (2019) points out that Social Media marketing is considered as an intelligent mix of strategies as well as inventiveness. It is the activity of portraying attention to the brands through SM platforms. SM reaches audiences far and broad. SM is cost efficient platform for advertising. For example, Facebook is employed by above 2.6 million businesses in order to endorse their products and services.

The SM platforms such as LinkedIn & Twitter make interests amongst followers who are more reactive to them than deliberate marketing approaches. Social Networking sites broaden awareness about their product and service while giving them the opportunities to continuously remind them about the

items that the company provides (Felix, Rauschnabel & Hinsch 2017).

#### **Social media and its targetting**

Many media affairs tend to target either man or woman exclusively. But even if the media event targeting both sexes, it assists to know that man and woman utilize SM differently, and understand what the difference is.

Tiwari, Bindu (2020) in their research article will further try to trace "women's role and social status that has changed through the study of various marketing themes, message, expressions and characters. There is no one-size-fits-all answer to this question, as the best way to target women using Facebook ads will vary depending on their specific product or services. However, some tips to consider include targeting women who are interested in specific topics, or targeting women who live in specific geographical areas. Additionally, they can use Facebook's targeting options to target women based on their age, interests, and demographics."

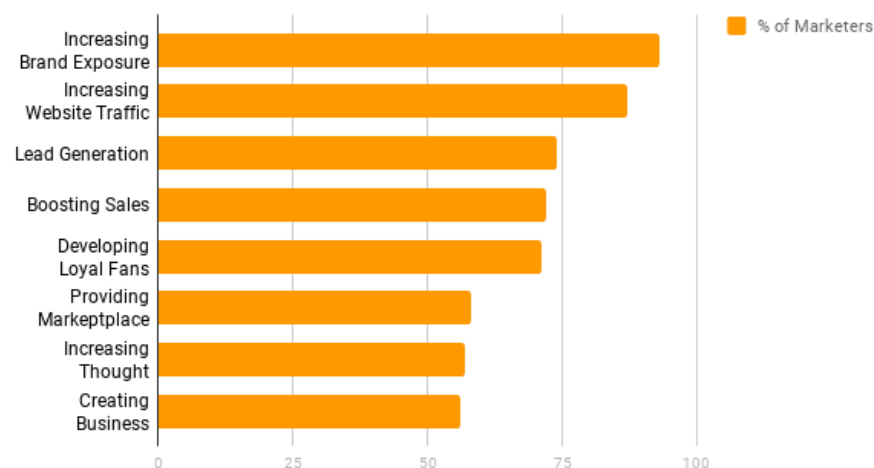
Jenna Jacobson (2020) in his study examines a census balanced sample of online consumers to identify their attitudes towards SMM. This study found out that consumer perceived advantages and disadvantages of utilizing social media platform has an association with their ease with marketers employing their publicly obtainable social media information (Grewal and Levy, 2015).

Asmaand Misbah (2018) carried out a study to analyze the negative effect of firms SM initiatives which influence the overall loyalty and participation of the clients. This research paper gives a mode for uncover managerial issues and for planning better responses to social media strategies of clients. This article attempts to examine the benefits that organizations achieve by effective utilization of social media platforms. Many clients are hunting online for the solutions to their issues, they are cross check for suggestions and conclusions.

Pinterest is the perfect example of a SM platform on which men and woman greatly differ. "They scanned the popular network for gender infographics and were interested to learn from this one that while 15% of online adults use Pinterest, the vast majority of those (70%) are women. Pinterest is the perfect example of a social media platform on which men and women greatly differ. They scanned the popular network for gender infographics and were interested to learn from this one that while 15% of online adults use Pinterest, the vast majority of those (70%) are women."



### Benefits of Social Media Marketing



Source: Vojinovic, 2021

SM platforms like Facebook, Pinterest, Twitter and Snapchat are active instruments that ease online relationship. It is considerably inexpensive type of marketing and permits companies to connect in direct and consumer contacts. Offered the choice made obtainable to buyers and the powerful position of SMM, the products and buyers have changing roles to play in the company strategies in that they now have a financial effect. Products affect customer choices. Buyers affect other clients. This chain of events influence repeat purchases, which further influence future revenues and long run organizational sustainability (Howard et al, 2016).

SM networking sites also provide an in depth look into data marketing companies can utilize to study the perception of prospective clients and their favored channel to progress response rate. Clients who access their websites via Instagram spend around 192 seconds per visit, with YouTube not far behind at around 164 seconds per visit. SM has proven to be a successful media to magnetize engaged audiences. Comparing to Television classically price more for advertising placement, SM networking take slightly cheaper. YouTube is continues to develop, and marketing experts are looking new ways to incorporate their products with high profile YouTubers regarding subscriber counts to affect the prospective target audiences. Since the YouTubersinteractions with their subscriber is continuous, it can be considered as a top most marketing strategy. YouTube is at present observed as a profit making platform for both marketers and YouTubers. For advantages, enterprises are coming into SM sites, and conversely YouTubers are making extra profits from these firms with which they collaborate. It is significant to study more related to social media and particularly the YouTube. YouTube can effortlessly offer advantages to the companies, YouTubers as well as customers.

For the best advertising campaign results, utilize channel that work cohesively together. For example, television advertisements can go hand-in-hand with YouTube or Facebook and Instagram videos. Facebook & Instagram have identified to develop the viewers reach and increase frequency amongst light TV audiences.

In a notable YouTube campaign for the Chevrolet Trax, television advertisement was edited to work with YouTube advertisement. The trial confirmed that irrespective of length, superior quality content functions digitally.

Twitter use small messages to converse with other audiences; these small messages are denoted a tweet. The tweets will only be obtainable to those who follow user on Twitter. Customers generally employ Twitter to find out interesting people and organizations, and they are generally affected by what those people say (Kaur, 2016).

As TV viewers become more distracted, using online platforms to increase your reach can pay off and boost your results. All in all, multichannel advertising provides huge benefits to the advertiser without a huge increase in cost. With social media generally having a lower cost than TV ads, it's a no-brainer with the returns it provides that it should be included in the advertising mix

### CONCLUSION AND SUGGESTIONS

The altering technological advancements has caused increased activity in social network platforms such as Facebook, Pinterest, YouTube, Instagram and Twitter, all of which have made mechanism through which customers can expand rapport and make interrelations with brand-specific content. Social media has been proved to be a vital touchpoint in each part of the consumer purchase journey





The study reveals that the influences of SM platforms are extremely strong on buying intention of women segment. Consumer buying processes large amounts of information and assess it critically before make a real buying decision. Individual factors play an important role throughout information gathering and valuation processes. Despite the fact that convenience is an independent variable but does not play key roles in affecting in buying decision making.

Social Media Networking, which comprises the content, visual, promotion, discount and influencer, has the capability to affect the buying decision making of women.

Growing application of SM platform worldwide has caused the faith that this is an important instrument in assisting women engagement. The changing digital era has caused enlarged activity in SM such as Facebook, Pinterest, YouTube and Instagram, all of which have made mechanisms through which customers can expand relationship and make interrelations with brand specific contents. Perceived YouTube video aspects were found to have an important impact on perceived reliability, worth, perception towards buying intentions. In conclusion, the quality and duration of the videos as well as the preparations and presentations of the content are major factor which influences buying intention of customers.

Trust is the most important factor of any marketing plan. The women audience loyalty would increase as foster a society and build trust. Marketers require focusing on the product value and understanding the intrinsic necessities of woman when marketing to them. The enterprises must keep with multiple blogs, forums and influencers containing relating importance and advantages of their products. There has to be frequent comments and must attempt to make dialogues with the women audiences.

Companies do not essentially require engaging with the people who have the many visible connections. They might not essentially have the largest number of sound relationships among their contacts. Monitoring their blogs, status updates and forum entries will provide a good knowledge of how they interrelate within their social sphere.

Marketers must consider negative comments as a vital resource of information. Review and analyze each comment to realize what exactly their clients do not like about their products or brands. It will assist the company management find ways to improve their brands and take their business to the next level.

Companies can take control of the situation by responding in a supportive, caring and genuine way. The customer complaints and negative remarks in the SM platforms should be managed appropriately for right brand of the organization because if

consumers notice bad comments mechanically they will identify a negative image regarding the brand.

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# KONTEKSTWAL NA PAGSUSURI SA MGA KUWENTONG PAMBATA: TUON ANG KUWENTONG PANGKALIKASAN

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Article DOI: <https://doi.org/10.36713/epra12391>

DOI No: 10.36713/epra12391

## ABSTRAK

Ang panitikang pambata ay hindi lamang pambata, dahil bukod sa kakayahan nitong magbigay ng kaalaman at tulungan ang bata na maintindihan at matutuhang magamit ang wika, taglay din nito ang kakayahang mailipat o maipasa ang kultura ng isang lipunan sa mga batang binabasahan o nagbabasa. Tatlo ang kuwentong Pambata na sinuri at gamit ang Ekokritisismo sa pagsusuri.

Lumabas sa pagsusuri ang direktang paglalahad at paglalarawan sa panimula ng mga kuwento na nagbubukas sa kamalayan ng mga bata. Sa saglit na kasiglahan ay nagpakita ng mga salitang nagpagalaw sa imahinasyon, diyologo at pagsasalaysay, simbolismo at mga tayutay, at matatalinghang salita. Sa Katawan, ipinakita ang kinaharap na parusa ng mga tauhan na nagbigay daan upang magkaroon ng kulay ang mga pangyayari na nagdulot ng pagiging matatag at positibo sa buhay ng mga tauhan, at sa Wakas, ipinakita ang malungkot na kinahinatnan sapagkat naubos ang lahat ng kanilang ari-arian, natuto at nagbago ang pag-uugali.

**SUSING SALITA:** Ekokritisismo, Kuwentong Pambata, Kuwentong Pangkalikasan, climate change

## PANIMULA

Ang panitikang pambata ay hindi lamang pambata, dahil bukod sa kakayahan nitong magbigay ng kaalaman at tulungan ang bata na maintindihan at matutuhang magamit ang wika, taglay din nito ang kakayahang mailipat o maipasa ang kultura ng isang lipunan sa mga batang binabasahan o nagbabasa. Ang panitikang pambata ang madalas na nakakaligtaang uri ng panitikan dahil kakaunting kritiko ang naglaan ng panahon at isip upang suriin ito. Nagiging daan din ang pakikisangkot sa lipunan upang mas maging makabuluhan ang mga kuwentong lilikhain. Noong Dekada '60 at '70 pa lang, may mga nagbabala na tungkol sa malalang epekto ng climate change. Sa *Mankind and Mother Earth*, nakinita ni Arnold Toynbee na ang pagkaganid ng sangkatauhan ang makakasira sa biosphere at hahantong sa “eko-pagtitiwakal” (sipi sa Glotfelty at Fromm 225).

Matapos ang apat na dekada, marami-rami na rin ang natipon na pananaliksik ukol sa kalikasan sa agham. Sa kabilang banda, sa panahong ito ng matinding lagay ng panahon, hindi lang dapat paksa ng *environmentalist*, *ekonomista*, *political scientist*, at *antropolohista* ang kalikasan. Dapat itong gugulan ng pansin ng lahat.

Inilahad ni Rushdie (2008) na ang mga mag-aaral na may taglay na maraming karanasan ay inaasahang magkakaroon ng higit na pag-unawa at pagkalugod sa daigdig ng imahinasyon na nilikha ng mga akdang pampanitikan. Samakatuwid, ang mga genre na ito ay mahalaga sa pag-uugnay ng karanasan ng mambabasa sa mga pangyayari, tauhan, at mga sitwasyong inilalahad.

Mula sa nabanggit na kalagayan, tinangka ng mananaliksik na humanap ng solusyon kung papaano makatutulong upang ang malawakang problema ay mabigyan ng bahagyang solusyon. Sa pag-aaral ni Adigue, A. P. (2022), sinasabi na kung ano ang itinuro sa bata ay bitbit niya hanggang sa kanyang pagtanda, kung kaya mas mabuting ituro ng mas maaga ang pagbabasa ng mga maikling kuwentong pambata na makapagbubukas sa kanilang pang-unawa at kamalayan sa mga paksang tumatalakay sa mga panlipunang usapin at partikular sa pagbabago ng klima o *climate change*.

Bilang pagtugon sa mga nabanggit na kalagayan, ang pokus ng pag-aaral na ito ay ang Kontekstwal na Pagsusuri sa mga Kuwentong Pambata: Tuon ang Kuwentong Pangkalikasan. Ayon sa aklat na “*Book Smart: How to Develop and Support Successful*,



*Motivated Readers*” nina Cunningham at Zibulsky (2013) isa pang kritikal na aspekto ng pagbabasa para sa mga bata ay ang pagkakaroon ng potensyal na mabago ang kanilang pag-iisip, pakikipag-ugnayan sa kapwa at maintindihan ang mundo.

Samakatuwid, tunay na malaki ang pangangailangan para sa paglalangkap ng kamalayang sa pangkalikasan, na lalo higit na makatutulong ang mga kuwentong pambata sa pagbubukas ng mahalagang kamalayan sa mga batang mag-aaral. Ang pananatiling buhay ng kalikasan ang tinutukoy na moral na obligasyon ng bawat Pilipino sa kaniyang kapuwa at sa susunod na henerasyon (Camacho 2004).

### Mga Layunin Ng Pag-Aaral

Layunin ng pag-aaral na ito ang Kontekstwal na Pagsusuri sa mga Kuwentong Pambata: Tuon ang Kuwentong Pangkalikasan. Ang tiyak na layunin ng pag-aaral ay ang mga sumusunod:

1. Masuri ang mga tema ng Kuwentong Pambata: Tuon ang Kuwentong Pangkalikasan na tumatalakay sa *climate change*?
2. Mataya kung papaano inilahad upang mabuksan ang kamalayan sa isyu ng *climate change* sa mga Kuwentong Pambata: Tuon ang Kuwentong Pangkalikasan ayon sa:

- 2.1 Panimula;
- 2.2 Saglit na Kasiglahan;
- 2.3 Katawan;
- 2.4 Wakas;
- 2.5 Kakintalan

### METODOLOHIYA

#### *Instrumento at Kagamitan ng Pananaliksik*

Ginabayan ng Ekokritisismo ang pagsusuri sa mga aklat pambata. Tinutukoy ng ganitong dulong sa pagsusuri ang “pag-aaral sa ugnayan ng kapaligiran at panitikan” (Dobrin at Kidd 2004,3). Nakatuon ang ganitong panunuring pampanitikan sa kalikasan.

Dagdag pa rito, naglatag din si Lawrence Buell kaugnay sa mga akdang makakalikasan:

*The nonhuman environment is present not merely as a framing device but as a presence that begins to suggest that human history is implicated in natural history.*

*The human interest is not understood to be the only legitimate interest.*

*Human accountability to the environment is part of the text's ethical orientation.*

*Some sense of the environment as a process rather than as a constant or given is at least implicit in the text.*

Nakatuon ang pag-aaral na ito sa nosyon na dapat turuan ang bata ukol sa kalikasan dahil ang mga Kuwentong Pangkalikasan ay nakapaloob sa mga Kuwentong Pambata.

#### *Panimulang Datos*

Pumili ang mananaliksik ng tatlong kuwentong pambata ukol sa pangkalikasan, ayon sa pag-aaral na isinagawa sa *University of Alberta International Institute for Qualitative Methodology* nina Nowell, Norris at White na *Thematic Analysis: Striving to Meet the Trustworthiness Criteria, 2017*. Mayroong apat na hakbang upang matiyak ang temang ipinahihiwatig nang isang akda. Ito ay ang mga sumusunod;

1. Maging pamilyar sa akda o datos na susuriin.
2. Suriing mabuti ang mga detalye. Ang mga nakakubling mensahe sa bawat pangayayari.
3. Buuin ang temang nakita.
4. Muling balikan ang kabuuan ng mga datos at suriin kung akma ang nakitang tema.

Ang apat na hakbang na ito ang ginamit ng mananaliksik sa pagsusuri sa paksa o tema ng bawat Kuwentong Pambata.



### **Pagtalakay sa Resulta ng Pag-aaral**

Matutunghayan sa bahaging ito ang mga naging resulta sa Kontekstwal na pagsusuri sa mga Kuwentong Pambata: Tuon ang Kuwentong Pangkalikasan.

### **Tema ng Kuwentong Pambata, tuon ang Kuwentong Pangkalikasan**

Inilahad sa talahanayan ang mga temang nakita sa mga Kuwentong Pambata, tuon ang Kuwentong Pangkalikasan.

#### **Talahanayan Bilang 1.**

*Mga Kuwentong Pambata, tuon ang Kuwentong Pangkalikasan sa mga Kuwentong Pambata*

<b>Mga Kuwentong Pambata: Tuon ang Kuwentong Pangkalikasan</b>	<b>Tema</b>
1.1 Signal number 3 Ni Luis P. Gatmaitan, M.D.	Bagyo at Pagbaha
1.2 Si Emang Engkantada At Ang Tatlong Haragan Haragan Ni Rene O. Villanueva	Pag-aaksaya ng tubig at kuryente, pagpuputol ng mga puno at pagtatapon ng basura sa hindi tamang lalagyan.
1.3 Ang Baha ng Kabaitan Ni Grace D. Chong	Pagbaha

#### **1.1 Signal number 3**

Ang kuwentong Signal Number 3 ay pumapaksa sa malakas na bagyo at malawakang pagbaha. Ipinakita rin dito ang kawalan ng tamang impormasyon upang mapaghandaan ng mabuti ang pagdating ng ganitong uri ng sakuna.

“Habang kumakain ay nakinig kami ng balita sa radyo.”

“Itinaas napo sa signal number 3 ang bagyong Koring sa Katimugang Luzon. Ipinapayong mag-ingat ang lahat. Unti-unti nang tumataas ang tubig kaya ang mga naninirahang malapit sa karagatan ay pinapayuhang lumikas sa mataas na lugar. Malakas na po ang hangin at ulan ...”

“Diyos ko po! Sana’y hindi naman tayo mapupuruhan ng bagyo.”

Sa kabila ng ilang kaalaman tungkol sa paghahanda kapag may darating na bagyo lumalabas lamang magpasahanggang ngayon na kulang pa rin ng sapat na kaalaman o impormasyon upang mapaghandaan ang mga hindi inaasahang pangyayari.

#### **1.2 Si Emang Engkantada At Ang Tatlong Haragan**

Ang kuwentong pambata na ito ay patungkol sa mga tatlong batang haragan na hindi alam ang tamang gawi sa kalikasan. Mahilig silang mag-aksaya ng tubig at kuryente, hindi rin nila alam ang tamang pagtatapon ng basura at higit sa lahat hindi sila marunong mag-ingat sa mga likas na yaman ng ating kalikasan.

“Ito naman ang tatlong haragan. Si Pat Kalat ay hari ng basura. Kalat dito, tapon doon. Ito ang ugali niya. Si Pol Putol ay kaaway ng mga halaman. Putol dito, bunot doon. Ito ang libangan niya. Si Paz Waldas ay reyna ng aksaya. Aksaya sa tubig. Waldas sa kuryente. Ito ang gawain niya. Ito naman ang tatlong haragan. Si Pat Kalat ay hari ng basura. Kalat dito, tapon doon. Ito ang ugali niya. Si Pol Putol ay kaaway ng mga halaman. Putol dito, bunot doon. Ito ang libangan niya. Si Paz Waldas ay reyna ng aksaya. Aksaya sa tubig. Waldas sa kuryente. Ito ang gawain niya.”

Pinatutunayan lamang nito na maraming bata pa rin ang hindi marunong magpahalaga sa ating kalikasan, sumisimbolo rin si Emang Engkantada sa ating kalikasan at nagpapaalala na tayong mga tao ang siyang magdurusa sa mga maling gawain natin at pang-aabuso sa ating kalikasan.

#### **1.3 Ang Baha ng Kabaitan**

Tumatalakay sa pagkakaroon ng baha na naging bunga ng pagtutulungan at pagkakaisa ng mga tao.



“Oo, ang kanyang kayamanan ay naanod ng baha, pero hindi ang mga taong mahalaga sa kanya. Ginawang pangit ng baha ang kanyang nayon, pero ang mga buhay na mga bayani ay gagawin itong magandang-muli!”

Marahil nga’y tayo rin ang nagiging sanhi kung bakit nagkakaroon ng mga sakuna at dahil din dito tayo rin mismong mga tao ang magtutulong- tulong upang maisalba ang ating mga sarili.

**Papaano inilahad upang mabuksan ang kamalayan sa isyu ng *climate change* sa mga Kuwentong Pambata: Tuon ang Kuwentong Pangkalikasan ayon sa Panimula?**

## Talahanayan Bilang 2.

***Kuwentong Pambata: Tuon ang Kuwentong Pangkalikasan na nagbubukas sa kamalayan ng bata sa isyu ng climate change ayon sa Panimula***

Ang mananaliksik ay nagkaroon ng kaalaman tungkol sa mga impormasyon tulad ng oras, tagpuan, mga tauhan, konteksto ng mga pangyayari at ng mga suliranin bago magsimula ang kuwento. Ang suliranin ay inilahad sa simula bago ng kuwento. Ito rin ang naging daan sa pangalawang yugto, ang saglit na kasiglahan. (Bozer, 1995).

<b>Kuwentong Pambata: Tuon ang Kuwentong Pangkalikasan na nagbubukas sa kamalayan ng bata sa isyu ng <i>Climate Change</i></b>	<b>Panimula</b>
1. Signal Number 3	Direktang inilarawan sa panimula ang tagpuan at ipinakilala na rin ang mga tauhan. Malinaw na inilarawan dito ang kasalakuyang nagaganap sa tagpuan sa simula pa lamang ng kuwento.
2. Si Emang Engkantada at ang Tatlong haragan	Sa panimula pa lamang, direktang ipinakilala at inilarawan ang mga pangunahing tauhan maging ang tagpuan.
3. Ang Baha ng Kabaitan	Paglalarawan sa paligid ang estilong ginamit ng may akda. Ang may akda ay gumamit rin ng tanong sa panimula upang kuhanin ang atensiyon ng mga mambabasa.

## PAGSUSURI SA PANIMULA

### 1. Signal number 3

Inilahad sa simula ng kuwento ang isang tagpo na kung saan ay nagsisimula na ang pabugso-bugsong pag-ulan at malakas na hangin. Inihayag din dito ang mga tauhan na kasangkot sa kuwento at kung ano ang kanilang mga ginagawang paghahanda para sa paparating na malakas na bagyo.

*“Maagang sinuspinde ang aming klase. Walang tigil ang ulan nang araw na ‘yun. Lalakas, hihina. Tapos, bubuhos.*

*“Nanay, ang lakas ng kulog!” hiyaw ni tintin, ang bunso kong kapatid. Nagtago ito sa palda ni Nanay. Parang galit ang langit!” sabi ni Inang Pelang.*

*“Huwag naman sanang bumaha,” sabi ni Nanay. Dumungaw ito sa bintana at tinawag si Tatay na nasa labas ng bahay namin.*

*“Carding, pasok ka na! Mababasa ka.”*

*“Inaayos ko pa ang bubong natin!” Nakipag-agawan sa titik ng ulan ang pagpukpok ng pako ni Tatay. “Mahirap na. Umaanggi kasi sa loob ng sala.”*

Sa simula pa lamang ng kuwento makikita na ang mga paghahanda ng mga tauhan sa kuwento. May linya rin dito ng ilang mga bagay na dapat ihanda sa tuwing may darating na sakuna. Maaaring mayroon ng kaalaman hinggil dito ngunit masasabi ring hindi pa rin ito sapat.

### 2. Si Emang Engkantada at ang Tatlong haragan

Nagsimula ang kuwento sa pagpapakilala ng mga tauhan. Unang tinalakay sa kuwento ang katangian ng bawat isa. Si Pat Kalat ay hari ng basura. Kalat dito, kalat doon, ito ang ugali niya. Si Pol Putol ay kaaway ng mga halaman. Putol dito, putol doon, ito ang libangan niya at si Paz Waldas ay reyna ng aksaya. Aksaya sa tubig at waldas sa kuryente kanyang gawain.



“Ito naman ang tatlong haragan. Si Pat Kalat ay hari ng basura. Kalat dito, tapon doon. Ito ang ugali niya. Si Pol Puol ay kaaway ng mga halaman. Putol dito, bunot doon. Ito ang libangan niya. Si Paz Waldas ay reyna ng aksaya. Aksaya sa tubig. Waldas sa koryente. Ito ang gawain niya.”

Sapaglalarawan pa lamang na ito mahihinuha ang hindi magandang pag-uugali ng mga pangunahing tauhan na hindi naman dapat ginagawa ng isang pangkaraniwang bata.

### 3. Ang Baha ng Kabaitan

Sa simula pa lamang ng kuwento inilarawan ang pagtataka ng pangunahing tauhan. Ipinapakita sa bahaging ito na hindi pa rin makapaniwala si Teo na syang pangunahing tauhan sa pangyayari na kanilang sinapit.

“Pagkaraan ng dalawang araw, di masabi ni Teo kung siya’y gising o tulog. Nananaginip o sumisingap-singap. Gabi ba o araw? Gusto niyang malaman. Madilim ang lahat ng nasa loob ng ikalawang palapag ng kanilang bahay. Pakiramdam niya’y isa siyang bilanggo sa isang barko.

Sa linyang ito dama ang lungkot, bigat at takot na nararamdaman ng pangunahing tauhan. Sa pasimula pa lamang ng kuwento ay nagkaroon na agad ng isang suliranin.

#### Talahanayan bilang 3.

*Kuwentong Pambata: Tuon ang Kuwentong Pangkalikasan na nagbubukas sa kamalayan ng bata sa isyu ng climate change ayon sa Saglit na Kasiglahan*

Kuwentong Pambata, tuon ang Kuwentong Pangkalikasan	Saglit na Kasiglahan
1. Signal Number 3	Sa tagpong ito nagsimula nang ipakita ang kakaharapin nilang problema. Gumamit ang may akda ng mga salitang magpapagalaw ng imahinasyon ng mga mambabasa. Ang ginamit na salita ay sa paraang paglalarawan ng pangunahing tauhan sa nangyayari sa tagpong ito.
2. Si Emang Engkantada at ang Tatlong haragan	Sa puntong ito higit na inakit ang mga mambabasa upang patuloy itong basahin. Gumamit ang may akda ng dayalogo at pagsasalaysay upang mas lalong makatotohanan ang mga pangyayari.
3. Ang Kaha ng Kabaitan	Makikita sa bahaging ito ang pagiging mahusay ng may akda sa paglalahad, gumamit siya ng matatalinhagang salita upang mas lalong mapalutang ang mga pangyayari. Sinamahan din ito ng mga dayalogo upang maging mas makatotohanan.

Makikita sa Talahanayan 3 ang saglit na kasiglahan ng bawat kuwentong pambata. Makikita rito ang pagiging malikhain ng mga may akda, kung paano niya binigyan ng sulyap ang problema na maaaring kaharapin ng mga tauhan.

### PAGSUSURI SA SAGLIT NA KASIGLAHAN

Ang saglit na kasiglahan ay inilalahad sa pamamagitan ng pagsasadula ng mga pangyayari na nagpapakumplikado sa mga sitwasyon at unti-unting pinapatindi o ginagawang palaisipan ang problema at nakakatulong sa mga paparating pang labanan sa pagitan ng mga tauhan. (Ariogul, 2001)

#### 1. Signal Number 3

Ipinakita sa kuwento ang tagpo kung saan ang mga tauhan ay naghahanda nang matulog para sa gabing iyon. Nagsimula nang bumugso ang malakas na hangin at ulan at ang maya’t mayang pagkulong at pagkidlat.

“Naghanda na kaming matulog. Ang sarap magkumot kapag umuulan. Ang lamig! Hindi na kailangan ng bentilador. Ilang saglit pa at pumailanlang na ang halik ni Tatay sa kabilang kuwarte. Hindi pa nagtatagal ang tulog ko nang maramdaman kong parang basa ang hinihigan ko. Nananaginip ba ako? Pinakiramdaman ko ang paligid. May tubig. Basa na ang likod ko!”





Sa bahaging ito ng kuwento atin ng makikita ang pagsubok na kanilang haharapin.

## 2.Si Emang Engkantada At Ang Tatlong Haragan

Dahil sa mga hindi magandang ginawa ng tatlong haragan ito ang naging dahilan upang palayasin at itaboy sila ng mga tao. Marami na ang kanilang napinsala at apektado na rin dito ang maraming mamamayan sa kanilang lugar.

*"Mga salbahe! Wala na kayong ginawang mabuti!" Galit na galit ang mga tao sa tatlong haragan. At hinabol ng mga tao ang tatlong haragan."*

Sa linyang ito, ipinakita na hindi na ng nakatiis ang mga tao sa hindi magandang asal at gawain ng tatlong haragan.

*"Nakarating ang tatlong haragan sa magandang bakuran ni Emang Engkantada. "Ang sarap sirain," sabi ni Pol. "Sige, sirain natin," sabi ni Pat. "Sirain natin ng todo," sabi ni Paz."*

Sa bahaging ito tuluyan ng ipinakita ang pangit na gawi ng tatlong haragan sa ating kalikasan.

## 3. Ang Baha ng Kabaitan

Sa kabila ng pagkasira at pagkasira ng mga gamit ni Teo, ipinaalala ni Mang Ador sa kaniyang anak na magpasalamat dahil sila ay ligtas.

*"Ang espesyal na basurahan ko... nabahala si Teo. Laman nito ang koleksyon niya ng mga mahahalagang lumang bagay. Di pansin ang putik na tumilamsik, at ang kulay-kapeng tubig-baha, nagmamadaling bumaba si Teo. Pagkakita sa kanyang basurahan, napahagulgol siya, "Hindi!" Tumatagas mula dito ang burak o putik na malapot, nakataob at-wala na ang laman! At nawawala ang kanyang pulang bisikleta!"*

Hindi lamang materyal na bagay ang mahalaga sa mundo kung hindi, higit na mahalaga rin at dapat na pakaingat ang buhay ng tao.

## Talahanayan bilang 4.

**Kuwentong Pambata: Tuon ang Kuwentong Pangkalikasan na nagbubukas sa kamalayan ng bata sa isyu ng climate change ayon sa Katawan**

Makikita sa Talahanayan 4, ang suliranin o problema at mga pangyayari na maaaring makapagpabago sa buhay ng bawat tauhan.

Kuwentong Pambata, tuon ang Kuwentong Pangkalikasan	Katawan
1. Signal Number 3	Salitan ang pagsasalaysay sa pagitan ng dayalogo ng tauhan at sa paglalarawan ng mga pangyayari sa paligid. Sinamahan rin ng mga tauhan ng dasal ang kanilang kalagayan.
2. Si Emang Engkantada at ang Tatlong haragan	Maganda ang naging daloy ng paglalahad ng katawan ng kuwento dahil maayos at magkakasunod ang mga naging pangyayari. Ipinakita rin ng may akda ang kinaharap na parusa ng mga tauhan na nagbigay daan upang magkaroon ng kulay ang pangyayari sa kuwento. Ganoon pa rin ang estilo ng may akda, salitan ang dayalogo at pagsasalaysay sa bahaging ito.
3. Ang Kaha ng Kabaitan	Salitan ang pagsasalaysay ng kuwento sa pagitan ng dayalogong binibitawan ng mga tauhan at paglalarawan ng mga pangyayaring nagaganap sa paligid na nagdulot ng pagiging matatag at positibo sa buhay ng mga tauhan.

Makikita sa Talahanayan 4, ang suliranin o problema at mga pangyayari na maaaring makapagpabago sa buhay ng bawat tauhan.

## PAGSUSURI SA KATAWAN

Sa katawan makikita ang pinakamahalagang yugto ng pagkakabuo ng mga pangyayari sa loob ng kuwento. Ang pinakamahalagang punto sa yugtong ito ay dito nagaganap ang suliranin kung ito ay malapit ng maresolba. (Bozer, 1995)



#### Talahanayan bilang 5.

**Kuwentong Pambata: Tuon ang Kuwentong Pangkalikasan na nagbubukas sa kamalayan ng bata sa isyu ng climate change ayon sa Wakas**

Kuwentong Pambata, tuon ang Kuwentong Pangkalikasan	Wakas
1. Signal Number 3	Malungkot ang naging wakas ng kuwento sapagkat naubos ang lahat ng kanilang ari-arian ngunit sa kabila nito maganda ang natanggap nilang balita dahil ligtas ang kanilang mga kamag- anak sa kabilang lugar.
2. Si Emang Engkantada at ang Tatlong haragan	Maganda ang kinalabasan at naging resulta ng pakikipagtunggali ng mga tauhan sa mga suliraning kinaharap nila. Sa puntong ito natuto at nagbago ang pag-uugali ng tatlong haragan.
3. Ang baha ng kabaitan	Sa huli ay natauhan ang pangunahing tauhan dahil nalaman niya ang kahalagahan ng buhay ay higit pa sa anumang materyal na bagay.

#### 1. Signal number 3

Nagising ang mga tauhan dahil sa pangyayaring kanilang lubos na ikinabigla at ikinabahala sapagkat ang kanilang bahay ay lubog na sa baha.

*Sa bubungan, nagulat kaming lahat nang makita ang buong paligid. Para na itong dagat! Lubog na pala ang aming buong barangay! Puro bubungan na lang ng mataas na bahay ang makikita, at puro tuktok na lang ng mga puno ang nakalabas. Hindi lang pala kami ang nasa bubungan!*

*"Diyos ko po! Ano 'ng nangyari?" hiyaw ni Nanay.*

*"Delubyo ito!" sabi ni Inang Pelang.*

*"Tumanda na 'kong ganito. Pero ngayon lang ako nakakita ng ganito!" gulat na sabi ni Tatang Piding.*

Dito na nagsimula ang hindi inaasahang pangyayari. Tuluyan ng nilamon ng malaking baha ang kanilang lugar. May ilang paalala ang ilang ahensya patungkol sa mga ganito ngunit tao ang makulit, ayaw sumunod sa mga taong may higit na kaalaman sa mga dapat gawin na paghahanda.

#### 2. Si Emang Engkantada at ang Tatlong haragan

Hindi naging maganda ang naging tagpo dahil sa hindi magandang pag-uugali na inasal ng tatlong haragan sa pamamagitan ng pagsira sa magandang bakuran ni Emang Engkantada na naging sanhi upang sila ay parusahan.

*"Dumating si Emang Engkantada. Binawalan niya ang tatlong haragan. Tumawa lamang sila nang tumawa habang sinisira ang magandang bakuran. Nagalit si Emang Engkantada. "Dapat kayong bigyan ng aral," sabi ni Emang Engkantada. May dumating na malakas na hangin. Umikot ang malakas na hangin sa tatlong haragan. Nahilo ang tatlong haragan."*

Ang masamang gawain ay hindi dapat hinahayaan bagkus ito ay sinusuwat at itinatama.

Ipinaranas ni Emang Engkantada sa tatlong haragan ang maaaring mangyari kung ipagpapatuloy pa rin nila ang hindi magandang gawain katulad na lamang ng paninira, pagkakalat, pagpuputol, pag-aaksaya at pagwawaldas.

*"Hindi na po ako magkakalat," sabi ni Pat. "Hindi na po ako maninira," sabi ni Pol. "Hindi na po ako mag-aaksaya," sabi ni Paz. "Maawa na po kayo," sabi ng tatlong haragan."*

Sa parusang kanilang natamo, makikita sa bahaging ito ang pagsisisi ng tatlong haragan sa kanilang hindi magandang gawain.

#### 3. Ang Baha ng Kabaitan

Naging maganda at masaya ang tagpong ito dahil sa naranasan nilang kalamidad sa bayan ng Umingan ay nagtulong-tulong ang lahat ng mga tao upang muling maging maayos ang kanilang lugar.

*"Wow, ang pinakamatinding bagyo ay nagbunga ng pinakamabuti mula sa mga tao. Ang daming mga bayani!"*



*Maraming bayani?! O hindi! Natakot si Teo na baka marami ang nangamatay, dahil iniisip niya si Jose Rizal, Andres Bonifacio, at Ninoy Aquino na mga namatay para sa bayan."*

Makikita sa bahaging ito na nagkaroon ng katanungan at pagkalito si Teo. Napaisip s'ya na baka marami ang nasawi dahil sa dumating na kalamidad at doon din nya napagtanto na totoo ngang walang buhay na bayani.

*"Sa isang malayong sulok ay naroon sina Titser Milagrang, Titser Ligaya, at Ma'am Lita. Nililinis nila ang tumpok ng mga prutas at inilalagay ang mga ito sa mga sako."*

Makikita sa linyang ito ang pagkakaisa at pagtutulungan ng mga tao sa naging karanasan nila sa nagdaang kalamidad. Naging positibo pa rin ang kanilang pananaw na parang walang nangyari at naninindigan na magiging maayos rin ang mga bagay-bagay.

"Maaaring maraming bagay ang nawala sa atin, pero walang nawala ni isang buhay."

Sa linyang ito, ipinabatid lamang na ang anumang bagay na nawala ay maaaring palitan pero ang buhay kapag nawala kailanman ay hindi na maaaring maibalik pa.

"Nakita mo? Bumubuti na ang mga bagay-bagay," sabi ng tatay ni Teo, bumubulong sa tenga ng kanyang anak, si Teo ay isa ring bayani.

Ang pagtutulong- tulong ay nagkakaroon ng isang magandang resulta. Ang pagiging isang bayani ay isang karangalan na hindi dapat tanggihan, ito ay ipinagkakaloob sa mga taong nagtataglay ng magandang kalooban at mabuting hangarin hindi lamang sa patay maging sa mga buhay.

#### Talahanayan bilang 6.

**Kuwentong Pambata: Tuon ang Kuwentong Pangkalikasan na nagbubukas sa kamalayan ng bata sa isyu ng climate change ayon sa Kakintalan**

Kuwentong Pambata, tuon ang Kuwentong Pangkalikasan	Kakintalan
1. Signal Number 3	Maraming bagay ang dapat nating ipagpasalamat marahil bulag lamang tayo sa mga ito kung kaya't hindi nating nakikita ang mga bagay na hamak na mas mahalaga. Maaaring nawala ang mga materyal na bagay ngunit hamak na mas mahalaga ang buhay nating lahat.
2. Si Emang Engkantada at ang Tatlong haragan	May mga bagay na dapat nating iniingatan at pinahalagahan marahil kulang lamang tayo sa gabay at patnubay. Katunayan, ang paggawa ng hindi kanais-nais ay magdudulot ng hindi maganda.
3. Ang baha ng kabaitan	Dumarating sa punto na nagkakaroon tayo ng problema o suliranin sa ating buhay marapat lamang na ito'y ating harapin at labanan. At higit sa lahat ang anumang problema na darating sa ating buhay ay may solusyon, kadalasan kailangan lang pala natin ng tulong upang tayo ay makabangon.

Makikita sa Talahanayan 6 ang kakintalan o mensahe ng bawat kuwentong pambata. Ito ang pinakasustansya ng isang kuwento sapagkat ito ang aral na puwedeng makuha ng isang mambabasa.

#### PAGSUSURI SA KAKINTALAN

Ang isang kuwento ay nagpapahayag sa bawat tao sa paraang magkakatulad. Sa pamamagitan ng pagbabasa ng isang kuwentong may aral o kakintalan, natututuhan ng isang bata o mambabasa kung gaano kahalaga ang mabuhay ng may taglay na kabutihan at nakakakuha sila ng mas malalim na pang- unawa sa mga aral ng buhay. Narvaez, Does Reading Moral Studies Build Character? 2002 (p.156)



### 1. Signal number 3

Sabi nga ng isang kilalang *tagline* sa patalastas sa telebisyon at radyo hinggil sa mga bagyo, “Ligtas ang may alam”. Bilang isang tao marami pa tayong dapat malaman lalo’t higit na sa mga epekto ng Inang Kalikasan na tayo rin naman ang may kasalanan. Sa mga ganitong pangyayari walang dapat sisihin kung hindi ang ating mga sarili. Kung ang bawat isa ay mayroong sapat na kaalaman tungkol sa tamang gawi sa ating kalikasan naniniwala akong hindi mangyayari ang ganitong sakuna.

### 2. Si Emang Engkantada at ang Tatlong haragan

Tatlong pilyong bata ang nasisiyahan sa pagputol ng mga halaman, pagsasayang ng tubig at kuryente, at pagtatapon ng basura kahit saan. Si Emang Engkantada ang magtuturo sa kanila ng kahalagahan ng pangangalaga sa kalikasan.

Ang kalikasan ang nagbibigay kulay sa ating kapaligiran na siyang ipinagkaloob sa atin ng Maykapal na dapat nating ingatan at pangalagaan. Ipinabatid lamang sa kuwento na ang pagsira sa kalikasan ay hindi isang magandang gawain na dapat itanim sa isipan ng bawat bata.

### 3. Ang Baha ng Kabaitan

Ang bawat tauhan sa kuwento ay may kanya-kanyang gampanin upang muling maibalik ang dating ganda ng kanilang Bayan. Ang pagiging matulungin ay isa sa mga pag-uugali ng mga Pilipino na maipagmamalaki natin sa buong mundo. Minsan sa mga kalamidad na ating nararanasan may mga taong nawawalan na ng pag-asa sa buhay, dahil hindi na nila alam kung papaano sila magsisimula at babangong muli. Sa kabila ng mga ito ay may mga taong handang tumulong sa mga nasiraan o nawalan.

Ang mensahe ng kuwentong ito, anumang unos na dumating sa ating buhay ay hindi isang dahilan ang pagsuko at pagkawala ng pag-asa sa ating buhay bagkus ay gawin natin itong inspirasyon upang muling bumangon at harapin muli ang hamon ng buhay.

### Mungkahing hakbang upang maging lunsaran ang mga kuwentong pambata sa pagtuturo ng Climate Change

Ang mga sumusunod na hakbang ay maaaring maging basehan upang maging lunsaran ang mga kuwentong pambata sa pagtuturo ng *climate change*.

1. Gumawa ng maikling patalastas na maaaring mapanood sa pamamagitan ng mga *social media sites* tulad ng facebook patungkol sa ilang paraan o paalala ukol sa pag-iwas sa sakuna na dulot ng *climate change* katulad ng tamang pagtatapon at hindi pagsusunog ng basura.

2. Maglimbag ng mga paalala at mga impormasyon tungkol sa *climate change* sa pamamagitan ng paggawa ng pamphlet na nilapatan ng ilustrasyon upang mas maging kaaya-aya sa paningin ng mga bata.

3. Magsagawa ng seminar na kasangkot ang mga magulang ng mga mag-aaral sa elementarya lalo na ang mga nasa una hanggang ikatlong baitang patungkol sa usapin ng *climate change*.

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# IMPACT OF GLOBALISATION ON EMPLOYEE ATTRITION AND RETENTION IN INDIAN IT INDUSTRY

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Article DOI: <https://doi.org/10.36713/epra12399>

DOI No: 10.36713/epra12399

## ABSTRACT

*The cues of globalization have been impacting the management decisions and various management disciplines over the years of every industry around the globe. Employee retention and attrition are the two major activities within the HR domain of I.T. industry and since the beginning of global integration; the spontaneity in those activities has been a key indicator for employee engagement and have driven firms towards sustainability of the workforce. This research focuses on the outcomes globalization have had on the attrition rate and retention policies of top five Indian I.T. industry in last 4 years; which paves the path for developing better employee engagement activities and policies. There is also a comparison made between the top engagement practices, I.T. firms in India, indulges in order to effectively endure their human resources amidst the increasing challenges of future of the I.T. sector, towards better workforce sustainability. The analysis and the results determine the negative impact of global expansion of the firm while improving the employee engagement helps curb these unconstructive effects. The article also drives future researchers to enhance the crucial spheres of employee management.*

**KEYWORDS:** Globalization, Employee Retention, Employee Attrition, Employee Engagement, Workforce Sustainability.

## INTRODUCTION

Information technology has always been the center of research and evolution since the upcoming of the modern age and the management practices developed so far is the result of the far-fetched human behaviour for controlling the workforce to achieve the best outcomes. Human Resource Management deals with one of the biggest asset and resource of any organization, that is Humans and it is to be noted that every other disciplines are to excel only if the human resource management is proper. Thus, this makes HRM a superior discipline then others in the paradigm of management, yet equally stated one. The global integration trend has taken over almost all the sectors of modern economy, with every other organization striving to be internationally sustainable and well established. Globalization can thus be explained as expansion of the organization or a company or may be a sector as whole beyond the boundaries of their home nation and integrating the business and management internationally. Most of the experts refer globalization in monetary terms but to our opinion, it is way beyond something fiscal and it is encompassing all the functions of management.

To narrow down the focus of study, we have tried to understand effect globalization have had on major functions of the HRM discipline, which are engagement of employees, workforce attrition and workforce retention. Ideology behind

studying this function is the hidden fact for the HR professionals that these three functions in themselves are interconnected and have their relevance when optimizing the other function. To have a sustainable workforce is utmost important for any IT industry as there are major challenges in today's IT market that can only be catered by such strength. Engaging and retaining the experienced and valuable employees is the key towards sustainability in IT sector, which is proved in this research article. It has been speculated that globalization has many negative effects, especially on HR domains, and increase in the rate of attrition and actual increase in the number of employees laid-off within the IT sector, have to be studied and evaluated. With the help of secondary data collected, we have tried to quantify the effect of globalization on employee attrition among the top five IT players in India, in terms of size of the employee base. Simple formulations of trend within the last five years for the top five players have indicated a relation between globalization and the worker's attrition rate. On the parallel lines, the relations between the level of employee engagement and the retention rate of the employees have been established as well. A simple single-factor ANOVA analysis method to test the hypothesis has been adopted to support the outcomes. The results have confirmed the ill-impact of globalization on attrition rate and that higher order of employee engagement is required by the I.T. firms as they expand. The doors to further research the



types of engagement practices and interpolate future attrition rate on lines of steady global integration and challenges have also been opened through this research.

## OBJECTIVES OF STUDY

The volatility and dynamics of the market has been spontaneous ever since the liberalization of the economy has started and this research paper focuses on the same. Enlisted below are the major objectives, we have tried to achieve through our work.

1. To evaluate the percentage change in the attrition rate and the retention rate of the top five I.T. companies in India, in terms of employee-base, due to globalization.
2. To study the effect of the level of engagement activity on the employee retention and sustainability and establish the relation in terms of mathematical equation.
3. To establish a clear relation between employee attrition/retention rate and globalization

## MAJOR DEFINITIONS

Indian I.T. sector is currently reeling under the pressure as the wave of 'The great resignation' has kicked in and the segment is seeing its highest ever attrition rate, also owing to the global cues of recession, pandemic and wars. The major location where they are designated as I.T. hubs, are metro cities of India like Bangalore, Hyderabad, Chennai, Mumbai, Kolkata, Delhi NCR and Ahmedabad. The mass lay-off that started with likes Twitter Inc. and Amazon Inc. in month of November 2022, has forced major I.T. players globally to attrition of employees, with shadows in Indian I.T. sector as well. (Mukhopadhyay, 2022). Rafiq Dossani, in his paper on Origins and Growth of Software Industry in India, (2005), focuses on the factors which lead to the seed of a complex industry like Information Technology can not only come to India but excel in a weird yet phenomenal way. The paper also compares the scenario or other nations to India, in dealing with the sustainability of the I.T. business. (Dossani, 2005). The definitions of the major keywords being focused in the research does not vary much according to various experts but can be put together in a simpler terms.

Samuel O. Idowu and Rene Schmidpeter in their book of 2014 on "Sustainability and Human Resource Management", defines sustainability as the art of procreation and self-reliance, so that the organization is viable for a long period of time. (Ina Ehnert, 2014). Aditya Pratama of Lampung University, states in his research article that globalization can be defined as freedom to move anywhere across the globe. (Pratama, 2018) While Mana Akter Lina in her paper describes globalization in terms of reductions of hurdles and barrier for international mobility of the firm and its business and that the world has become more incumbent to integrate itself. (Lina, 2018). In I.T. sector context, globalization can be noted as the expansion and inclusion of the I.T. companies beyond the national periphery and then operation of the firm on international level. Mr. Khanka in his article about Employee attrition defines attrition in terms of warfare,

sampling describing it as the destruction of the talent or just leaving of employees from the organization. While the amount of people not leaving the job from the organization, excluding the new hires is termed as employees retention. The percentage of the total employee base is termed as the attrition/ retention rate of any organization. (Khanka, 2008). Employee engagement is a qualitative term and is more measured on qualitative basis in most of the sectors of the economy. It can be termed as the involvement of the workforce in the organizations management and operation, which is not just limited to decision making, but will expand up to values, activities and objectives.

Globalization, although being a qualitative term, it can be measured in terms of globalization index, derived from various quantitative parameters within the organization. Generally, the globalization Index is a degree from 0-100, 0 being the least globalized and 100 being the highest globalization. This index varies from nation to nation and also through sector to sector, but we have considered the overall globalization index (KOF Globalization Index), as defined by the Axel Dreher of Konjunkturforschungsstelle of ETH Zurich, Switzerland.

## LITERATURE REVIEW

The research paper by Somesh K. Mathur, 2006 with title Indian Information Technology Industry: Past, Present & Future and A tool for National Development, argues strongly on hiring technically sound workforce and to develop them for a longer term roles in the I.T. industry, which will have positive impact on their development. (Mathur, 2006) The research paper published by Niyaz in 2014, on case study on Managing Diversity in MNC, purely highlights the trend of companies going global and how this can be dealt with by H.R.M. practice. This research shows how it was done by Infosys Ltd. and why it needs to be adopted by other firms as well. The paper also highlights a model used for HRM by I.T. giant. (Niyaz, 2014) The paper by Peggy De Prins, Lou Van Beirendonck, Ans De Vos, and Jesse Segers, 2014, briefs about the importance of Sustainable HRM, and pitches in a model named ROC- model for H.R.M practice, which could be adopted by any I.T. firm if they deal with Globalization. (Peggy De Prins, 2014) Professor S.S. Khanka in his article pitches the importance of the study and control in the attrition rate within the organization and also the inescapable reality to develop more employee engagement practices to attract and retain talented and crucial workforce, to cater the challenges, globalization put forward in future. (Khanka, 2008) The study conducted by Professor Vivekanand Gaikwad, Professor Aparna Shastri and Professor Vijaykumar Dhole of MMIMERT, Pune dwells the importance of effective employee engagement for tackling the emerging trends and challenges in the business and how it can be a boost for the I.T. companies to comprehensively manage the attrition and retention rate of the employees. (Vivekanand Gaikwad, 2021) While employee engagement being a qualitative matter, have formulated the Employee Engagement; modeling it through the factors of self-evaluation, Fairness in treatment of workforce on individual scale and the environment pertaining



to the organization. This research enlightens the further research to understand the effect and impact of engagement required within a company. (H.A. Hassan, 2018)

## RESEARCH DESIGN AND DATA COLLECTION METHOD

This is a qualitative research aimed at exploration of relationship between the two major emerging trends in the information technology sector in India. The exploratory design of the research enables us to focus on the top five information technology organization, operating in India with a research timeline of latest four year. The major focus of the design is to collect quantitative data of amount of employees leaving the company with respect to the engagement cues and the global expansion of the firms. The data collected is entirely secondary, which was obtained from internet, quantitative research papers, journals, company's official websites and blogs. The evaluation of the data is done to formulate a relationship and develop a model, which can estimate the future trends in attrition rate with globalization; which can also be applied to other I.T. firms in the market.

## HYPOTHESIS FORMULATION

The main focus was to observe the change in overall globalization index in the I.T. domain of India and then to evaluate its impact by collecting the number of employees being relieved from the organization at the end of the year alternatively from March, 2018 to March, 2022. Two hypotheses were formulated for testing through ANOVA single factor method for each of the five I.T. companies, which were Tata Consultancy Services (TCS), Infosys Ltd., HCL Technologies, Wipro Ltd., and Tech Mahindra.

Null Hypothesis  $H_0$ : The attrition rate of the employees does not change with the change in globalization, within the Indian I.T. companies.

Alternative Hypothesis  $H_a$ : There is a proportional change in the attrition rate of the employees with the change in globalization, within the Indian I.T. companies.

## RESULTS

The table below represents the data collected from the secondary source, which is tabled according to the requirement of the analysis.

Table A: Data of number of employees in top five I.T. firms of India with percentage change in overall globalization index

Top Five Indian I.T. Firms	Year	Total No. of Employees	Attrition Rate	% Change in Attrition Rate	% Change in Retention	% Change in Globalization Index
TCS	2017-2018	394,998	11.80%	9.70%	-8.12%	5.94%
	2019-2020	488,649	17.40%			
	2021-2022	592,195	21.50%			
INFOSYS	2017-2018	204,107	19.50%	8.20%	-15.15%	5.94%
	2019-2020	259,619	28.40%			
	2021-2022	314,015	27.70%			
HCL	2017-2018	110,000	15.50%	8.30%	-84.13%	5.94%
	2019-2020	210,966	11.80%			
	2021-2022	219,325	23.80%			
WIPRO	2017-2018	160,000	17.70%	5.60%	-7.80%	5.94%
	2019-2020	200,000	20.50%			
	2021-2022	240,000	23.30%			
TECH MAHINDRA	2017-2018	112,807	18.80%	2.20%	9.39%	5.94%
	2019-2020	125,236	19.10%			
	2021-2022	151,173	21%			

(Source: Company's official website)

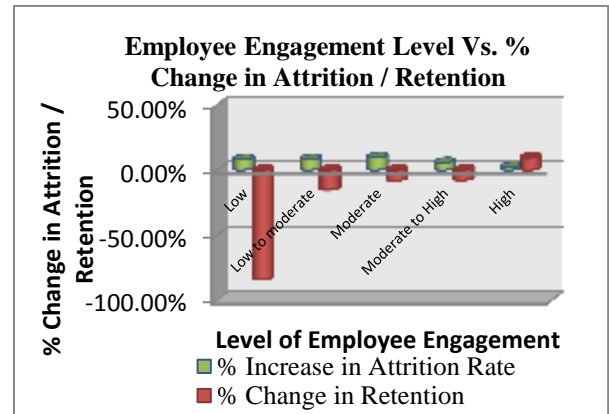
It is evident from the data that there was a significant increase in the number of employees but it was more astonishing to note that the rate of attrition also increased simultaneously. This can be justified by the decrease in retention rate in all the companies except Tech Mahindra. The increase in overall globalization index was at 5.94%; with index rating of 62.48 in year 2017-2018 and 68.42 in year 2021-2022. Thus, this clearly indicates the variation in retention as well as attrition rate with respect to the globalization. To prove this based on the statistical analysis method, the hypothesis formulated were tested and the result of the Single Factor ANOVA is shown in the table below.



**Table B: Result of Single Factor ANOVA performed for the data in Table A and Test results**

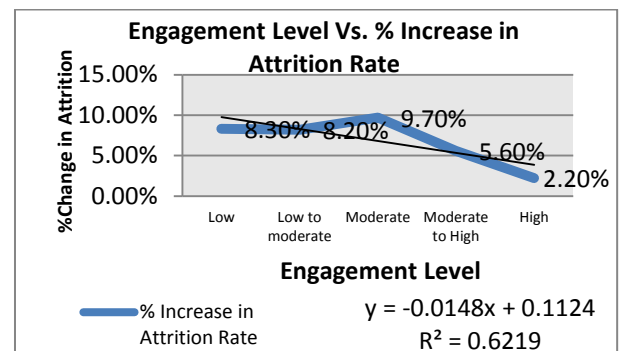
Company	Year	Attrition rate	Globalization Index	F-Value	F-Crit Value	P-Values
TCS	2017-2018	11.80%	62.48	1116.269571	7.708647422	4.78656E-06
	2019-2020	17.40%	62.81			
	2021-2022	21.50%	68.42			
INFOSYS	2017-2018	19.50%	62.48	1113.386	7.7082	4.81131E-06
	2019-2020	28.40%	62.81			
	2021-2022	27.70%	68.42			
HCL	2017-2018	15.50%	62.48	1113.386338	7.708647422	4.81131E-06
	2019-2020	11.80%	62.81			
	2021-2022	23.80%	68.42			
WIPRO	2017-2018	17.70%	62.48	1113.386338	7.708647422	4.81131E-06
	2019-2020	20.50%	62.81			
	2021-2022	23.30%	68.42			
TECH MAHINDRA	2017-2018	18.80%	62.48	1113.386338	7.708647422	4.81131E-06
	2019-2020	19.10%	62.81			
	2021-2022	21%	68.42			

The graphs plotted below shows the relationship between the employee engagement and percentage change in attrition and retention of the employees within the I.T. companies.

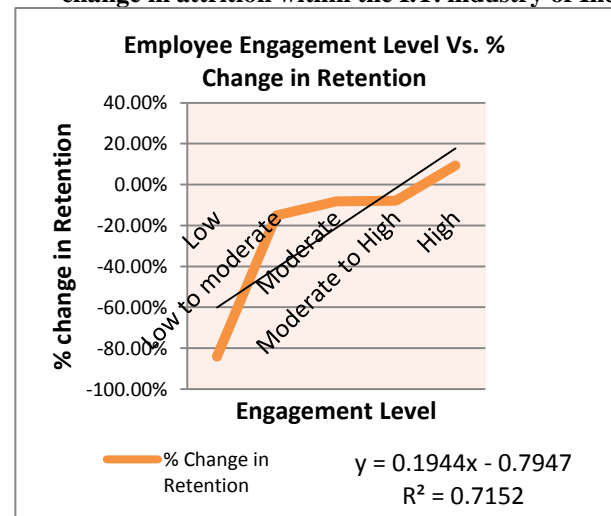


**Figure A: Bar graph of employee engagement level versus the percentage of attrition and retention of the employees**

The graph delineates that the level of employee engagement activities is directly proportional to change in the employee attrition rate and inversely related to retention rate. To represent it in numbers, the following charts below were prepared using the data collected, which generates a trend-line fit to relate employee engagement with attrition rate as well as retention rate.



**Figure B: Curve graph of employee engagement versus % change in attrition within the I.T. industry of India**



**Figure C: Curve graph of level of employee engagement versus the %change of retention within the I.T. industry of India**





## FINDINGS

All the ANOVA test results suggest that the null hypothesis  $H_0$  is rejected and the alternative hypothesis  $H_a$  is selected and it suggests that with increase in globalization, the attrition rate of the organization increases simultaneously. This can be derived by understanding the F-Value, F-Crit Value and the P-Value. For null hypothesis to be true the F-Crit value must be less than F-Value and in our case, it's exactly the opposite. This can also be verified by p-value which is near to zero, as for the case of null hypothesis to be wrong. Thus, the alternative hypothesis is resulted to be true by the statistics. By fitting the curve of percentage change in attrition versus employee engagement activity, we have derived on the below equation.

$$y = -0.0148x + 0.1124$$

Where, y is the % change of employee attrition, and x representing the level of employee engagement, with each level at 20% level. This empirical equation deduced can be useful for any I.T. firms, having an employee base of average 200,000 or more and the % change in the globalization index remaining between 5.5% and 6.5%. The similar equation derived from chart C suggest the empirical relation between % change in retention and level of employee engagement within the I.T. firm, considering the above basis of employee base and overall globalization index. The equation is below.

$$y = 0.1944x - 0.7947$$

Where, y is the % change in retention rate and x is the level of employee engagement with each level at 20% level. To conclude, the research assures us about the relation between globalization of I.T. firms and the increase in attrition rate due to it. There are multiple factors more which can be explored to find out more accurate effects.

## LIMITATIONS IN RESEARCH AND FUTURE SCOPE

There are limitations pertaining to the data collected, as although they are from reliable secondary source, they are limited in it and the parameters focused in this study are more general, as they are the only ones which are quantifiable. The change in attrition rate of the organization depends on many factors like external emergencies (pandemic, political crisis, change in market economy, etc.) or internal factors like (expansion, lay-offs, change in management, etc.); which may hinder the formulation of model. While we focus on one factor, which is globalization of the economy, other factors are thus required to build a solid model, giving us the future scope and agenda to work after this research. Researchers can thus work on parallel line to develop more clear understanding about the attrition and retention in the I.T. firms in India and thus produce a ground theory common to apply to all the companies in I.T. sector of India. One of the other major limitations is for quantifying the level of employee engagement practices within any firm. There is no standard for rationalising the engagement level and thus research needs to be undertaken to build a ground for that as well. Thus, not only this paper opens a way for understanding impact of globalization on H.R. domains but also gives future scope to

strengthen the qualitative functions of Human Resource Management.

## CONCLUSION

This evaluation proves to be a corner stone to suggest and prove that, global integration has a negative impact on the Human Resource Management within the I.T. industry of India, and that it has to be controlled. The top finding from the research enlightens us about the scenarios of employee attrition and retention within the last five year of the top five I.T. organization of India. We evaluated the ratio change in the number of employees mobilising themselves out of the firm and also the ones who choose to stay against the globalization process and the results obtained were on proper lines. The organization having low employee engagement suffers highest attrition and lowest retention while the company with high level of employee engagement leads to lowest attrition and highest retention. While increase in employee engagement practices may help to retain the best talent for future growth and edge, globalization provided enough opportunity to the experienced workforce, to get themselves mobilised from one firm to another; and that it should be inculcated in the engagement practices adopted by any organization.

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# ASSESSMENT MONITORING OF LAND USE AND LAND COVER CHANGES ANALYSIS USING REMOTE SENSING AND GIS TECHNIQUES - A CASE STUDY OF REDANG ISLAND, TERENGGANU, MALAYSIA

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## ABSTRACT

*One of the factors behind global environmental change is land use and land cover modifications. The changes in the earth's surface can provide valuable insights into the interaction between the natural environment and human activities. This study was conducted to analyze Landsat satellite data to map the surface characteristics of the area and analyze land use pattern and land cover (LULC) changes in Redang Island, Terengganu. The remote sensing and GIS method is used as the key application by researchers to analyse the extent of changes in land use that occur. Researchers are also using the supervised application process to classify the form of land change in the study area based on the selected Landsat picture. Review of changes in land use in the study area between 2000 and 2020. The outcomes of the current research indicate that the location of the water land use study always dominates for the selected year's study and in 2020 recorded land use for the water of 8071.98 hectares (72%), forest land use recorded of 1781.80 hectares (16%), clouds of 395.30 hectares (4%), and built up 922.20 hectares (8%).*

**KEYWORDS :** Land use change, Redang Island, Remote Sensing, GIS

## INTRODUCTION

The concept of land use is the action of humans on land, while land cover refers to the external environment of the surface of the earth (Meyer & Turner 1994). There has been pressure on land use/land cover (LULC) and environmental damage due to the rising human population and socio-economic needs (Holdgate, 1993). LULC changes occur due to ineffective governance of planning agricultural land, cities, forest areas and water are therefore causing negative effects on the environment, such as landslides, floods, and so on. (Seto et al. 2002; Prakasam 2010). Anthropogenic activity, rapid urbanisation and deforestation are starting to cause LULC changes (Li et al. 2018). The urbanisation process has also led to the loss of agricultural land, the destruction of flora and fauna habitats (Lopez, Bocco, Mendoza, & Duhau, 2001; Alphan, 2003). Moreover, according to (Sun et al., 2008) stated that changes in LULC will also impact on the quantity of water and the relationship of water supply and demand. Thus, The environment will be affected by excessive exploitation and unsystematic management of natural resources.

Remote Sensing and Geographic Information Systems (GIS) can assist in obtaining information related to the spatial distribution of land use and land cover (LULC) accurately and quickly in an area (Carlson & Azofeifa 1999; Dezso et al. 2005; Guerschman et al. 2003; Rogana & Chen 2004). GIS software also plays a role in helping to collect, store, display, and analyze the digital data needed for LULC change

detection (Demers 2005; Wu et al. 2006). While image through remote sensing is essential information for the GIS analysis process. By using satellite images to obtain synoptic data of the earth's surface (Ulbricht & Heckendorf 1998). Landsat Data Multispectrum Scanner (MSS), Thematic Mapping (TM), Enhanced Additional Thematic Mapping (ETM+), and the latest Land Imaging Operations (OLI) have been widely used in land cover studies since the inception of the Landsat program in 1972, especially in agricultural areas and forests (Campbell, 2007). The large data archive and the suitability of the Landsat satellite image spectrum resolution are important reasons for the use of such data. In this study Landsat 4-5 TM C1 Level-1 and Landsat 8 OLI / TIRS C1 Level-1 were used to take images for the years 2000 to 2020.

Malaysia is famous with beautiful and peaceful island. Since 1985, 42 islands have been gazetted as Marine Parks in Malaysia to protect and conserve various aquatic habitats and marine life (Department of Marine Malaysia, 2014). The status of the marine park as a tourist destination has increased the arrival of tourists.

This study aims to analyze Landsat satellite data to identify the surface area and evaluate the pattern of land use change and land cover (LULC) in Redang Island, Terengganu Malaysia. Four Landsat images covering the entire Redang Island captured by Landsat 4-5 TM and Landsat 8 OLI / TIRS C1 Level-1 were used. These images have been processed in advance and classified into four things namely built up, clouds, forest, and water. Each of the data analyzed can assess

the level of changes in land use patterns from 2000 to 2020 from four different perspectives. The results of this study will help stakeholders in formulating strategies for land use in the Redang Island more prudently and efficiently. This LULC change data is also an important indicator of environmental management and future planning (Fan et al. 2007; Prenzel 2004). The results of this study are also expected to contribute and assist in future tourism and physical development activities in the Redang Island.

## RESEARCH OBJECTIVES

The purpose of this research is to analyze the LULC changes in the Redang Island, Terengganu Malaysia through using GIS technologies and data from remote sensing. In order to attain the objective, the following specific goals are pursued;

- To identify the Redang Island LULC changes based on satellite images from the years 2000, 2009, 2015 and 2020 using remote sensing and GIS software.
- To analyze the patterns and trends of LULC changes in Redang Island for year 2000, 2009, 2015 and 2020 through GIS analysis.

## STUDY AREA

Redang Island (5 ° 46'30 " N 103 ° 0'54 " E) is an island in the Terengganu District of Kuala Nerus, Malaysia. It is one of the largest Island off Peninsular Malaysia east coast. Its clear waters and beautiful beaches make it very famous. It is one of nine Island that form a marine sanctuary park, providing visitors with opportunities for snorkelling and diving (Wikipedia Contributors, 2021). The island is a breeding site for turtles, and these turtles serve as an ecotourism draw.

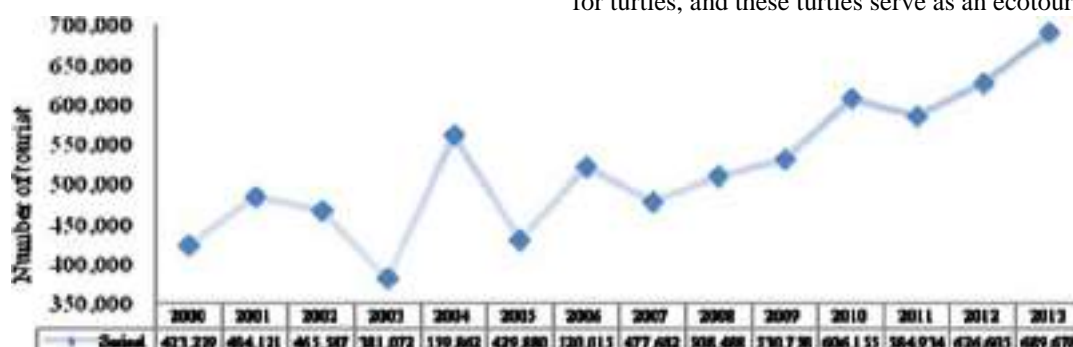


Figure 1: Number of tourists to the Marine Park in Peninsular Malaysia from 2000 to 2013

Source: (Department of Marine Malaysia, 2014)

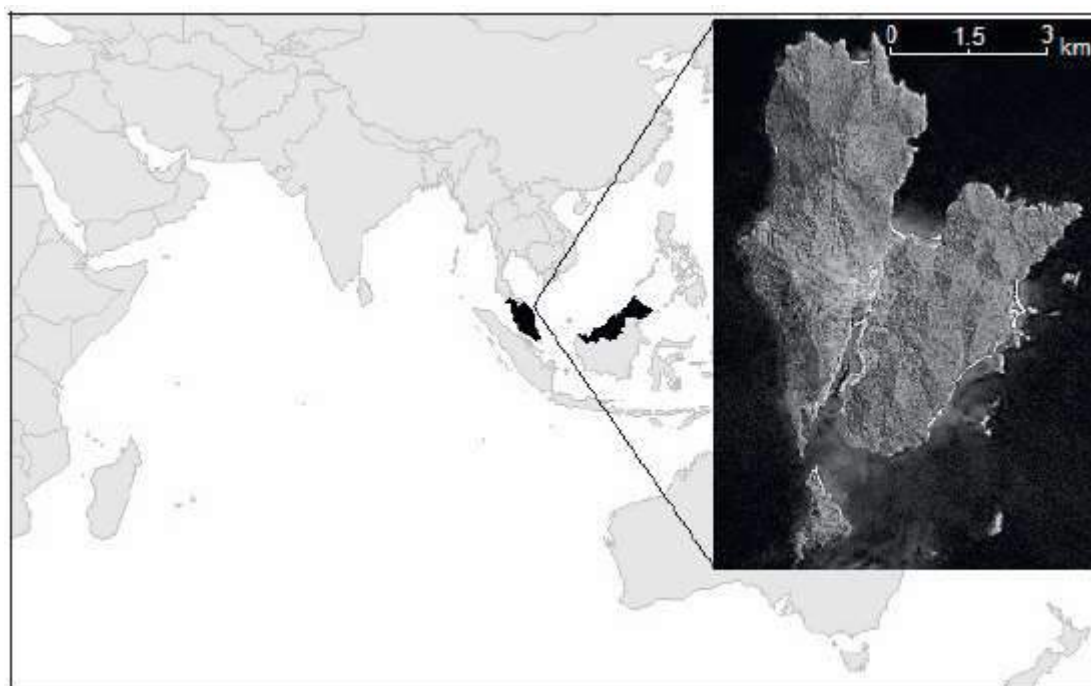


Figure 2: Redang Island

Source: (Fisher et al., 2008)

## METHODOLOGY

### Satellite Image Data (Landsat)

Landsat data is one of the most frequently used programs in analyzing the image of the earth since the year it was introduced in 1972 (Campbell, J, 2007). Land satellites are widely used in various applications such as agriculture, land use, environment, water, development, transportation, and so on (Ulbricht, KA, & Heckendorff, W. D, 1998). This program is one of the programs provided openly and can be accessed by anyone by downloading the satellite image through the website *United States Geological Survey*

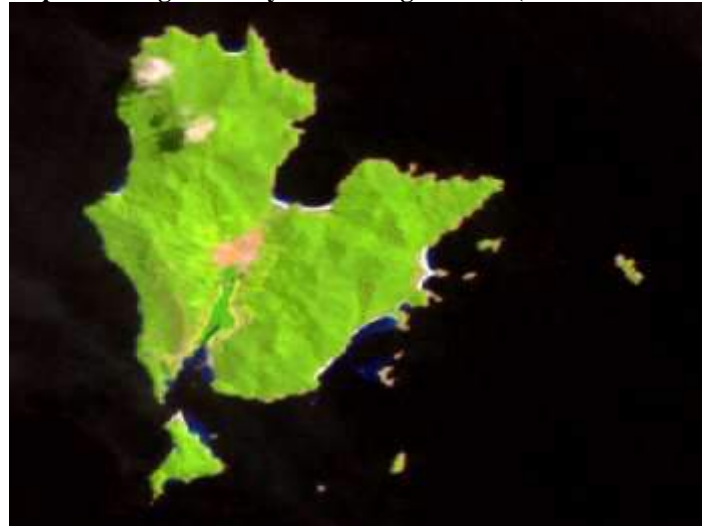
(<https://earthexplorer.usgs.gov/>). In this study, the images selected through the website have some criteria that are emphasized as the satellite image must have less than 10 percent (%) cloud coverage or no cloud coverage that will interfere with the clarity of the image. Among the Landsat images that have been selected are 2000, 2009, 2015, and 2020. There are several colors used to produce thematic maps based on Band such as red for Band 5, green for Band 4, and blue for Band 3. The colors can be selected and determined by the researcher to help in processing the images.

**Figure 3: Composite image of study area Pulau Redang Terengganu (Landsat 4-5 TM C1 Level-1)**



(Source: <https://earthexplorer.usgs.gov/>)

**Figure 4: Composite image of study area changed Band (Landsat 4-5 TM C1 Level-1)**



(Source: <https://earthexplorer.usgs.gov/>)

**Table 1: Satellite Images used in the study**

YEAR	Landsat type
2000	Landsat 4-5 TM C1 Level-1
2009	Landsat 4-5 TM C1 Level-1
2015	Landsat 8 OLI / TIRS C1 Level-1
2020	Landsat 8 OLI / TIRS C1 Level-1



### Image Pre-processing

Downloaded satellite data needs to go through several pre-processing processes such as a geometric correction to improve distortion, geometric projection transformation from projection WGS1984 to MRSO 2000, and conversion of pixel value from digital number (DN) to surface reflection value (Choy, LK, & Noor, NNH M, 2018). After the pre-processing steps are done, the clipping process will be performed. Images downloaded from the USGS will usually cover a very wide area that covers the sea area and the overall image of the Terengganu state area. The next step is the zoom in and zooms out process carried out using ArcGIS software. This process aims to get a clearer image and reduce the oversize of data.

### Landsat Classification and Accuracy Assessment

The classification of images has been made using satellite images is to identify the types of land use and land cover. Each image classification that has been generated will be grouped by class to generate a thematic image classification. The selected location will be determined by the classification of land use type and land cover by using polygons. Image classification using supervised data classification method or supervised data classification. The researcher decides the supervised data, such as the identification of sea areas, forest areas, etc.

### Land Use Changes

Land use changes in the area are carried out by comparing the study location by year through ArcGIS 10.3 software.

Table 2: Classification of Land Use and Land Coverage

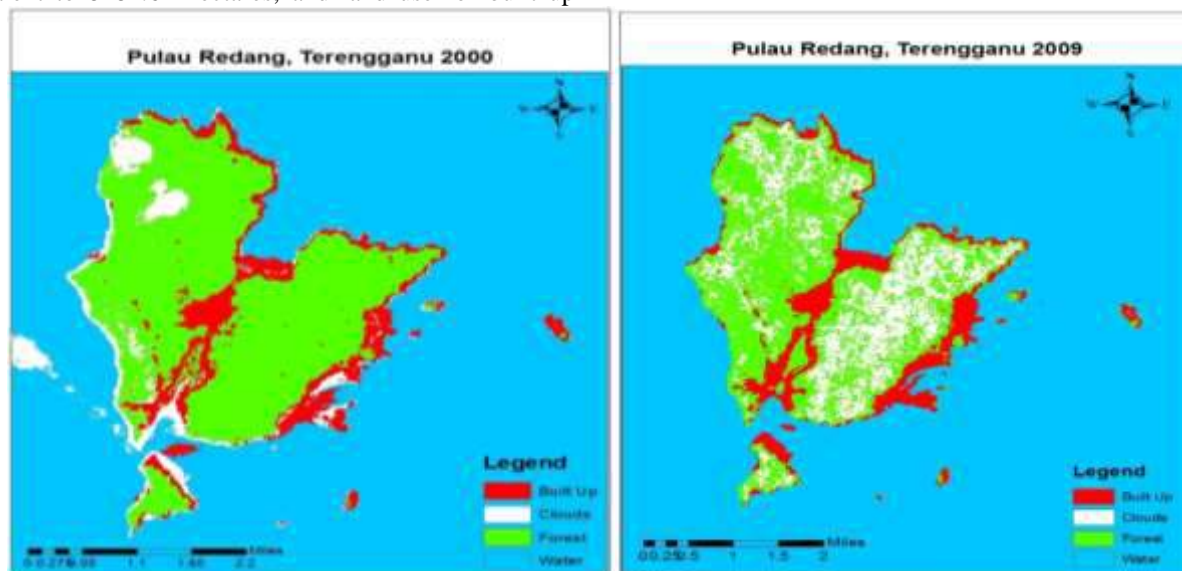
Land Use and Land Cover Class	Description
Built Up	Housing, commercial stores, industrial and light industry stores, services, transportation
Clouds	Clouds
Forest	Mixed forest
Water	Seawater

## RESULTS AND DISCUSSION

### Redang Island land use changes in 2000, 2009, 2015, and 2020

Significant changes can be seen in the land use of Redang Island, Terengganu. Figure 5 shows the land use in Redang Island in the year specified. Table 3 shows that in 2000, land use of water dominated Redang Island which was 74% which is equivalent to 8184.61 hectares, and land use for built up

recorded as much as 4% which is equivalent to 491.44 hectares. Meanwhile, in 2009 the land use has increased by 4% which makes the land use of water in 2009 in Redang Island is 9821.05 hectares (78%). While the lowest land use in 2009 was built up which recorded 500.68 hectares (4%). Land use of water is increasing probably due to erosion which causes the area of seawater to increase.





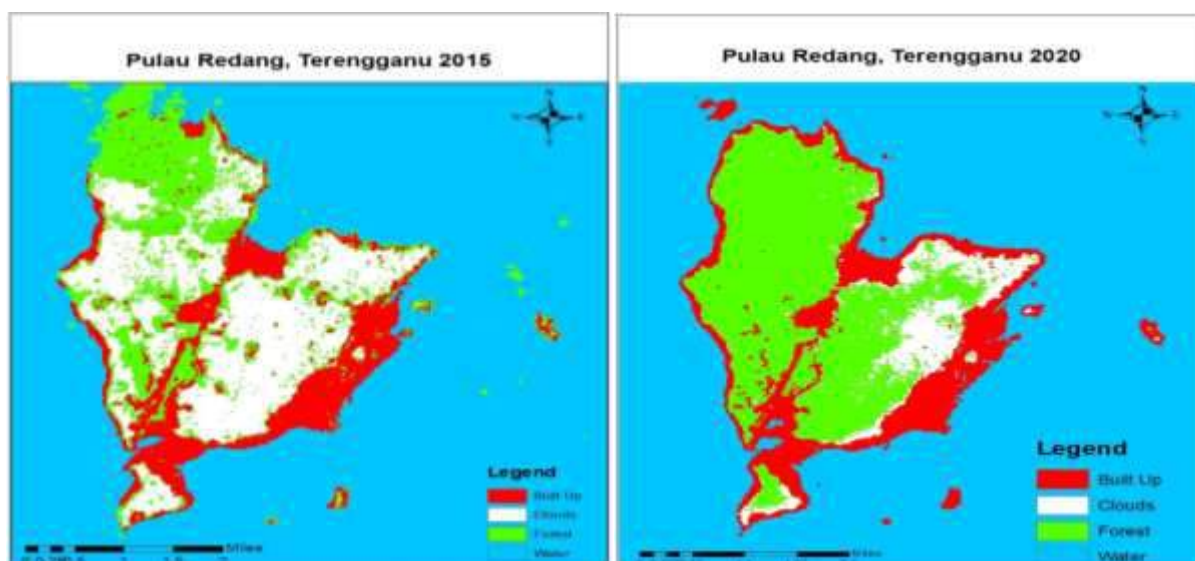


Figure 5: Land use changes in Redang Island in 2000, 2009, 2015, and 2020.

Class	Sum of Area (ha), (2000)	Percentage (%)
Built Up	491.4439504	4
Clouds	342.399062	3
Forest	2038.043037	18
Water	8184.613951	74
<b>Grand Total</b>	<b>11056.5</b>	<b>100%</b>
Class	Sum of Area (ha), (2009)	Percentage (%)
Built Up	500.669926	4
Clouds	761.9329269	6
Forest	1468.559981	12
Water	9821.047166	78
<b>Grand Total</b>	<b>12552.21</b>	<b>100%</b>
Class	Sum of Area (ha), (2015)	Percentage (%)
Built Up	790.8655247	7
Clouds	1394.357028	13
Forest	1006.825674	9
Water	7513.451773	70
<b>Grand Total</b>	<b>10705.5</b>	<b>100%</b>
Class	Sum of Area (ha), (2020)	Percentage (%)
Built Up	922.1829372	8
Clouds	395.2859012	4
Forest	1781.799468	16
Water	8071.981694	72
<b>Grand Total</b>	<b>11171.25</b>	<b>100%</b>

Table 3: Land use changes in Redang Island in 2000, 2009, 2015, and 2020.

In 2015, there was a reduction in forest land use in Redang Island which recorded a total area of 1006.83 hectares (9%) because it was cleaned for built up activities which caused the use of built up land to increase 790.87 hectares (7%). This has also caused the land use of water has been reduced to 7513.45 hectares (70%).

In 2020. Forest, water, and built up land use has started to increase, recording 1781.80 hectares (16%), 8071.98 hectares (72%), 922.18 hectares (8%) respectively. But in terms of clouds coverage in 2020 there has been a decrease to 395.30 hectares (4%).





### *Differences in land use and land cover (LULC) changes from 2000 to 2020*

Types of land use	2000		2020		Area changes	
	Area (ha)	(%)	Area (ha)	(%)	Area (ha)	(%)
Built Up	491.44	4	922.18	8	+430.74	4
Clouds	342.40	3	395.29	4	+52.89	+1
Forest	2038.04	18	1781.80	16	-256.24	1
Water	8184.61	74	8071.98	72	-112.63	2

**Table 4: Redang Island land use and total land use changes differences**

In terms of differences in land use and land cover (LULC) changes over 20 years in Redang Island is as shown by the type of land use. The type of land use built up in 2000 recorded 491.44 hectares (4%) and increased to 922.18 hectares (8%) in 2020. While for the type of clouds in 2000 was 342.40 hectares (3%) and increased to 395.29 hectares (4%) in 2020. Next, forest land use is 2038.04 hectares (18%) in 2000 and there is a decrease in 2020 which is 1781.80 hectares (16%). And for water land use, it recorded an area of 8184.61 hectares (74%) in 2000 and decreased to 8071.98 hectares (72%) in 2020.

### **CONCLUSION**

In conclusion, land use and land cover (LULC) changes are the main focus in the study area. Land use and land cover around the study area tend to change to the use of saturated land, namely housing. The development of economic development, especially the services sector and the construction of infrastructure networks have greatly influenced the expansion of saturated areas. This study proves that the use of a remote sensing approach and GIS application can facilitate efforts to identify land use changes that occur in an area. Through a systematic mapping system and database, indirect identification of land use changes that occur can help in providing efficient land use planning. The objective of the current study is to analyze Landsat satellite data to identify and map the surface characteristics of the area on Redang Island. All analyzes in this study were conducted using available satellite images. This study uses Landsat 4-5 TM and Landsat 8 OLI / TIRS C1 Level-1 data for the study period 2000, 2009, 2015, and 2020 for the analysis process. The results of the current study clearly show that land use of water areas and forests is still plentiful. This situation is significant with relatively modest urbanization on the East Coast of Redang Island. The results of the analysis that has been done can show that the area of land use study for water always dominates for the selected year's study and in 2020 recorded land use for the water of 8071.98 hectares (72%).

### **Declaration of Interest Statement**

The authors declare no conflict of interest.

### **Acknowledgments**

Not applicable.

### **Funding**

None

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# ELEMENTS OF PEACE EDUCATION IN GANDHIAN THOUGHT AND ITS RELEVANCE IN CONTEMPORARY SOCIETY, WITH SPECIAL REFERENCE TO NATIONAL EDUCATION POLICY 2020

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Article DOI: <https://doi.org/10.36713/epra12374>

DOI No: 10.36713/epra12374

## ABSTRACT

*In the present situation peace education is a very important part of our life. Peace education is the process of acquiring some values, knowledge, and developing attitudes, skill, and harmony with one another. It helps people to resolve conflict peacefully or create a peaceful society. Gandhiji is one of the greatest leaders in India who has been associated with peace and non-violence. So, we will always remember Gandhiji as a symbol of peace and non-violence. Everyone wants to live a peaceful and happy life and be able to resolve conflicts. But we each come from different backgrounds and we are influenced by our family, friends, and community. Gandhiji started the Satyagraha movement not only for Indian independence but also for solving all the conflicts in human life. Gandhiji thought that there is no entity in the world without truth because peace and love are achieved through the real truth. This ideology of Gandhiji now has a special effect on the social and personal life of the individual. The main factors of peace education according to Gandhiji are Non-violence, truth, internal growth and stability, goodwill, equality, change of negative attitude, the law of love, avoiding conflict, inherent goodness, etc. These factors play a vital role in peaceful living in a society which is the main objective of National Education Policy 2020 administered by the Govt. of India. National Education Policy 2020 has also described various issues like Justice, Equality, liberty respect for others, democratic spirit, respect for public property, responsibility, cleanliness, the spirit of service, etc. which are deeply influenced by the thoughts and ideas of Gandhiji. . So, the present study seeks to analyze the concept of peace education and the elements of Peace Education in Gandhian thought and its relevance in Contemporary Society, with special reference to National Education Policy 2020. The study was qualitative in approach and data were collected from secondary sources i.e. different types of edited books, newspapers, articles, and journals.*

**KEYWORDS:** Mahatma Gandhi, Peace, Non-Violence, Truth, Peace Education.

## INTRODUCTION

Mahatma Gandhi, the father of the nation, was a great philosopher of the twenty-first century, a great thinker, educator, educational and social reformer, and a great man of India. Mahatma Gandhi was a great leader who lived a simple life and high thinking. No other prominent leader in the history of the world has been as associated with peace and non-violence as Gandhiji. So, we will always remember Gandhiji as a symbol of peace and non-violence. Everyone wants to live a peaceful and happy life and be able to resolve conflicts. But we each come from different backgrounds and are influenced by our family, friends, and community. Gandhiji started the Satyagraha movement not only for Indian independence but also for solving all the conflicts in human life. He is still now remembered among us as the symbol of peace and truth. For the present and future generations of the world, Mahatma Gandhi is a perfect example of peace, non-violence, social harmony, communal

unity, simplicity, and determination (Manjre, M. R. et al 2020). Every year the world celebrates 'International Day of Non-Violence'. The purpose of the celebration is to convey Gandhi's contribution to present and future generations and to establish his message of peace and non-violence in the heart of society. Along with this I also want to add information about peace that United Nations sanctioned a holiday observed annually on 21 September to celebrate World Peace Day. I think the real purpose of this celebration is to end world wars and conflicts forever. We can say to establish peace all over the world. Everyone seeks peace. It may be private or domestic life. Remember, Nation is nothing without you. You are the beginning of peace, non-violence, truth, or anything. So human being is the priority to establish peace, which Gandhiji fully realized. He has always tried his best to bring people to the path of truth by giving up the path of non-violence. Because he knew that the path of truth is the path of peace, the path of salvation.



To get rid of all kinds of unrest Gandhiji has chosen the way of peace. And peace is the only way to make a Nation free from conflicts and war. The progress of a Nation always depends on its leadership and Gandhiji was the most remarkable leader among them in the time of leading the country from colonial rule.

### OBJECTIVES OF THE STUDY

1. To find out the meaning and concept of 'peace' and 'peace education'.
2. To find out the major elements of peace education according to Gandhiji.
3. To find out the major elements of peace education according to National Education Policy 2020.
4. To elaborate on the relevance of Gandhian peace in contemporary society.
5. To explain how Gandhian thoughts on peace education influence the elements of peace education of NPE 2020.

### METHODOLOGY OF THE STUDY

The present study is qualitative. The data were collected from various secondary sources like books, journals, research papers, research articles, newspapers, and various e-sources.

### NEED AND SIGNIFICANCE OF THE STUDY

In our modern society education has an important role in our life. It teaches everyone to build up a peaceful culture and spread peace by forming a good relationship with each other. It helps to develop people's inner and outer peace and also helps to teach the quality of moral values and non-violent behavior. Gandhiji is one of the greatest leaders to spread people peace and non-violence. So the thought of Gandhian peace education is universally recognized. Gandhiji builds up different types of elements in his peace education. These elements are highly related to our new education policy in 2020. So the study will discuss how much significance of Peace Education in Gandhian thought and its relevance in contemporary society to National Education Policy 2020. So we can say that this present study has a great need and significance. I have tried to highlight all these aspects in my study.

### CONCEPT OF PEACE

The word 'Peace' means living together irrespective of race, religion, or caste. The concept of peace depends on non-violence, morality, tolerance, and compromise. Another thing that can be said in this context is that it is often used instead of the war. That is, the word peace is generally associated with humanity.

The English word 'peace' is derived from the Latin word 'Pax'. This means an agreement, a control, or an agreement to end war or any dispute and conflict between two individuals, two nations, or two opposing groups (Patra, J.N. et al 2015).

### Definitions

- Ian Harris and John Synott have described peace education as a series of "teaching encounters" that draw from people (Wikipedia).
- According to Johan Galtung "Peace is the absence of physical and structural violence."
- Albert Einstein explains peace is not merely the absence of war but the presence of justice, law, and order- in short, of government (Kushre, S. L. 2020).

### Elements of Peace Education according to Gandhiji

According to Gandhiji, the elements of peace education are-

1. **Non-Violence:** The concept of non-violence is an invaluable resource of Gandhian philosophy. According to Gandhiji, non-violence is a universal principle. Gandhiji had no confidence in the principles of violence and coercion. He wanted to establish non-violence at the center of political thought. His non-violent policy is not to harm or kill anyone out of anger or selfish motives. Non-violence is a characteristic of the soul and is therefore practiced by everyone in all areas of life. He believed that the principle of non-violence was the only way to establish peace.
2. **Unity in existence:** Around the world, individuals and groups are divided by fear, suspicion, and hatred towards each other, depending on whether the division has manifested itself in religious, economic, political, ethnic, or color lines. Gandhi thought that if Hindu-Muslim unity was established, the unity with other communities which was already there could be easily strengthened. Gandhiji considered Islam to be a religion of peace in the same sense as Christianity, Buddhism, Hinduism, and Jainism. My experience in India tells me that Hindus and Muslims know how to live in peace among themselves (Bagchi, R.,2003). He always believed in the unity of existence.
3. **Eternal truth:** Truth is God, the one and only reality. According to Gandhiji, there is non-violence in truth and there is truth in non-violence. Gandhi's life was dedicated to the search for truth. He realized that to remain steadfast in the path of truth he was non-violent. According to Gandhiji, truth is like a huge tree that will bear more fruit the more you nurture it. True behavior is essential in all spheres of public life, be it social, economic, political, etc.
4. **Internal growth and stability:** The path to peace ensures internal growth and stability. We reject it because we think that surrendering to the will of the ruler, who has only imposed so-called, and that, through our reluctance to suffer a loss of life or property, we are inclined to impose, we need to change that negative attitude to passive approval. He thus suggested that the growth and stability of society depended solely on peace (Manjre, M. R.,2020). We





also know that the path to peace is true and non-violence.

5. **Good will towards all human beings:** If you want to establish peace in our society or nation then create goodwill among every human being in our society. Goodwill helps people to move forward on the path of truth. If we can develop a person's good personality, good behavior, good quality, and then it is possible to establish world peace. So Gandhiji identified the creation of goodwill in every person as an element to build up peace education.
6. **Equality:** Mahatma Gandhi said that all people should be given equal respect and consideration because they have equal intrinsic value. Gandhiji believed that equality was logically pursued from non-violence; Non-violence involves non-exploitation and non-exploitation is impossible without equality thus equality and non-violence are interdependent. In Gandhiji's view, freedom and equality are interrelated, without social and economic equality there can be no freedom and without freedom, there can be there is no social and economic equality.
7. **Change the negative attitude:** One of the main causes of trouble in our lives is negative attitudes. If a person continues to have a negative attitude, then his life will be in turmoil forever and lead him to destruction. So Gandhiji is talking about changing this negative attitude among the people. We need to overcome negative attitudes and develop positive attitudes in our life. This positive attitude helps us to stay on the right path at all times. So if we can change the negative attitude then it is possible to establish peace in society as well as the world.
8. **Law of Love:** Those who have discovered the rules of love for us are people with bigger minds than ordinary people like us. Gandhiji was such a big-hearted man, he loved people all his life, and he stood by people. The welfare of the individual lies in the welfare of all human beings. That is one's own good for the good of all. For example, judging from the point of view of earning a living, the work of a lawyer and the work of a barber is equally valuable. It can be said that Gandhiji looked at everyone with equal eyes and believed in the principle of love.
9. **Avoid Conflict:** Conflict is a disagreement of opinion, it can happen individually or in groups with individuals. Gandhiji envisioned a conflict-free society. Because he knew that such a social curse of conflict would lead to the destruction of the social system. According to Gandhiji, the universal human value of non-violence should be developed not only at the individual level but also at the social, national, and international levels if we want to avoid personal, social, national, and international conflicts. It is an extremely

powerful way to avoid conflict since it stems from the insight into the equality of all human beings.

10. **The inherent goodness of human beings:** Every human being has some inherent Goodness. We have to use this inherent goodness in our real life. These good qualities of man teach him to live a healthy life and to understand the value of life. That's why Gandhiji spoke of awakening this inherent goodness in human beings to build up peaceful education.

### Elements of Peace Education according to National Education Policy 2020

The National Education Policy 2020 is the third stage of the national education policy. However, the National Education Policy of 1968 and 1986 was amended in 1992. National Education Policy 2020, is the first national education policy of the 21st century. In this education policy, school education from pre-primary to higher secondary has been covered in multiple subjects. Earlier the structure of the education system was on a 10 + 2 basis. That structure has been completely broken in the New National Education Policy- 5+3+3+4 (Uttam, M., 2021). That is, three more years have been added to the current education system. This new education policy mentions some ethics and human & Constitutional values like-

- ❖ **Justice:** The Indian Constitution places justice' above freedom, equality, and a sense of brotherhood. However, 'justice' is not limited to receiving justice from the judiciary. Justice now speaks of social, economic, and political justice. Where everyone receives equal status irrespective of birth, race, caste, religion, gender, or title. The National Education Policy 2020 places special emphasis on this aspect because it is the only way to establish peace.
- ❖ **Equality:** The preamble to the constitution speaks of equality, social status, and equality of opportunity. In this equality, regardless of race, religion, caste, gender, or place of birth, there will be no difference in terms of opportunity, employment, travel and entry. That is, people of one class will not exploit another class. As a result, peace will be maintained in society.
- ❖ **Liberty:** The Indian Constitution gives every citizen the freedom to think, express himself, practice his religion, to believe in his own choice. National education policy believes in this freedom.
- ❖ **Respect for Others:** Respect and affection for human beings and one of the virtues of human beings is to respect and love human beings. Every worldly religion has been specially urged to show respect to others.
- ❖ **Democratic Spirit:** Democracy is a term that has fascinated the world of political thought for hundreds of years. The basic meaning of the word democracy is the rule of the people. Democracy is a system of government in which the ruling power rests with the people of the society. It has now been included in the





national education policy to awaken the democratic consciousness in every human being.

- ❖ **Respect for Public Property:** Just as the state is responsible for our security as citizens, so is our responsibility as citizens to protect the resources of the country or the state. Under no circumstances can state property be harmed. Harm or damage to public property will be severely punished. In other words, through this, the people of the country will develop a sense of dignity toward wealth.
- ❖ **Responsibility:** Responsibilities are the act of fulfilling one's responsibilities properly. Responsibility is a very important issue in human life. Everyone is responsible. Everyone has a responsibility. But not everyone is equally responsible. Responsibility is innate. With it, man is born and he has to carry it all his life.
- ❖ **Cleanliness:** Cleanliness is an important aspect of one's spiritual well-being. Cleanliness is not only for the body but also for the environment around us. Everything perceived by our senses can cause either impurity or goodness in us. Therefore, special emphasis has been laid on cleanliness.

## RELEVANCE OF GANDHIAN PEACE IN PRESENT SOCIETY

Mahatma Gandhi was a cosmopolitan and an eminent humanist of all time. India has gifted the world with more humanitarian personalities. But no one like Gandhiji has been able to influence the thoughts and deeds of mankind except Swami Vivekananda alone. According to eminent political scientist BS Sharma, Gandhiji tried to mix morality with politics and emphasized the value of truth and non-violence in solving national and international problems. Moreover, Gandhiji thought that there is no entity in the world without truth because peace and love are achieved through the real truth. This ideology of Gandhiji now has a special effect on the social and personal life of the individual.

- ❖ **Truth:** Truth was the cardinal principle of Mahatma Gandhi's life. He not only believed in the power of truth but also condemned lies. Gandhiji preached three things of truth in thought, truth in words, and truth in deeds. Today's society believes in Gandhi's ideals of truth and the emphasis is on establishing this truth.
- ❖ **Non-Violence:** Non-Violence is the core concept of Gandhi's philosophy. He chose the path of non-violence in his personal life and political life. He rejected any kind of violence in his life and wanted to build a non-violent society. According to Gandhiji, violence can do no good to people. Gandhi's concept of non-violence as well as peace exists in today's society.
- ❖ **Sarva Dharma Sambhav:** To prevent conflicts caused by religious orthodoxy, Gandhiji suggested 'Sarva Dharma Sambhav'. According to him, all religions are true and people cannot live without religion, so he has

an attitude of respect and tolerance toward all religions (Biswas, P. 2015). Gandhi's ideology of inter-religious harmony is very important in today's society because it is through this ideology that peace is maintained in society.

- ❖ **Creation of Casteless Society:** Gandhiji was against the caste system and coined the term Harijan to pay homage to the lower castes. Gandhian philosophy is conducive to building a casteless society where everyone is treated equally regardless of caste. Gandhi's anti-caste ideology is conducive to world peace.
- ❖ **Ethical importance:** Gandhism has a lot of significance today from the moral and behavioral point of view because society is witnessing the erosion of values.

## CONCLUSION

As we already know that each and every individual in society wants to be happy and such kind of happiness depends on a peaceful and non-violent attitude among the masses of the society. In the history of Indian society, various great personalities emerged in various periods of time and every one among them contributed a lot to the transformation of the society towards a new direction. M.K Gandhi was one of the great people who had a remarkable contribution to making a free and peaceful India. The main factors of peace education according to Gandhiji are Non-violence, truth, internal growth, stability, goodwill, equality, change of negative attitude, the law of love, avoiding conflict, inherent goodness, etc. These factors play a vital role in peaceful living in a society which is the main objective of National Education Policy 2020 administered by the Govt. of India. National Education Policy 2020 has also described various issues like Justice, Equality, liberty respect for others, democratic spirit, respect for public property, responsibility, cleanliness, the spirit of service, etc. which are deeply influenced by the thoughts and ideas of Gandhiji.

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# USE OF INFORMATION TECHNOLOGIES IN ENGLISH LESSONS IN PRIMARY SCHOOLS

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## ABSTRACT

*The article describes the importance of employing ICT that help to open up new opportunities in teaching a foreign language. The paper deals with the current state of teaching and learning process inclined to receive information using ICT tools. In the paper, foreign language lessons are considered as a fertile ground for the formation of all types of competencies since as language as a means we study the world around us in all its manifestations. Also, the author notes that the use of ICT could allow not only to improve the effectiveness of learning many times over, but also to encourage students to further independent study of the English as a foreign language (EFL).*

**KEY WORDS:** *English as a foreign language (EFL), teaching, learning, ICT (Information Communication Technology), communicative culture, competence.*

## INTRODUCTION

In recent years, the question of the use of new information technologies in secondary schools has been increasingly raised. These are not only new technical means, but also innovative forms and methods of teaching, a modern approach to the learning process. The main goal of teaching foreign languages is the formation and development of the communicative culture of schoolchildren.

The task of the teacher is to create conditions for the practical acquisition of the language for each student, to choose such teaching methods that would allow each student to show their activity, their creativity. Modern pedagogical technologies such as collaborative learning, project methodology, the use of new information technologies, Internet resources help to implement a student-centered approach to learning, provide individualization and differentiation of learning [1], taking into account the abilities of children, their level of learning, inclinations, etc.

At present, it is necessary to be able to receive information from different sources, use it and create it yourself. The widespread use of ICT opens up new opportunities for teachers in teaching a foreign language. Modern children spend a lot of time playing computer games, and therefore they are more inclined to receive information using ICT tools. In addition, computer technology greatly facilitates the work of the teacher in preparing and searching for material for the lesson. Foreign language lessons are fertile ground for the formation of all types of competencies [3, 4], since using language as a means we study the world around us in all its manifestations. Internet resources, being the main source of information for the modern student, are a huge fund for the teacher. In English lessons I mostly use ICT in the following:

- create multimedia presentation notes to explain new grammatical material; adding a story about the sights of the country of the language being studied;
- use electronic textbooks. The advantages of electronic textbooks are: firstly, their mobility, and secondly, the availability of communication with the development of computer networks;
- use modern electronic educational resources in preparation for the exam in English.

The specificity of the computer as a learning tool is associated with its characteristics such as complexity, versatility, interactivity. Interactive learning based on multimedia programs allows you to more fully implement a whole range of methodological, didactic, pedagogical and psychological principles [7], makes the learning process more interesting and creative. However, it must be remembered that a computer cannot replace a teacher in a lesson. It is necessary to carefully plan the time of working with the computer and use it exactly when it is really needed. Currently, no one needs to be convinced that early learning a foreign language contributes not only to a more solid and fluent practical knowledge of it, but also carries a great intellectual and moral potential. Starting communication from the 2<sup>nd</sup> grade, it is very important that the processes of education and development of students go in line with modern methods.

The main goals of using ICT in English lessons in elementary schools are in the following:

- increasing motivation to learn the language;
- Development of speech competence: the ability to understand authentic foreign texts, as well as the ability to convey information in coherent reasoned statements;
- Increase in the volume of linguistic knowledge;
- expanding the volume of knowledge about the socio-cultural specifics of the country of the language being studied;



- Development of the ability and readiness for independent study of the English language.

The use of ICT in primary school allows to:

- activate the cognitive activity of students;
- conduct lessons at a high aesthetic level (music, animation);
- employ individual approach to the student, applying multi-level tasks.

Also, here a question may arise: What is the role of a foreign language teacher here?

- It should contribute to the early introduction of younger students to a new space for them at an age when children do not yet experience psychological barriers in using a foreign language as a means of communication [5, 6]; to form in children a readiness to communicate in a foreign language and a positive attitude towards its further study;

- The teacher should form elementary communication skills in speaking, listening, reading and writing, taking into account speech capabilities and needs of younger students.

- To acquaint younger schoolchildren with the world of foreign peers and with samples of children's fiction available to children in the foreign language being studied.

- Introduce children to a new social experience using a foreign language by expanding the range of playable social roles in game situations typical of family, everyday, educational communication; to form ideas about the rights and customs of the countries of the language being studied that meet the interests of younger students;

- Priority in elementary school is the educational and developmental aspect of teaching the subject. A foreign language introduces students to the world of another culture, orients them to the formation of the skill and ability to independently solve the simplest communicative and cognitive tasks in the process of speaking, reading and writing, forms such personality traits as initiative, the ability to work in a team, the ability to defend one's point of view and sustained interest in the subject. Options for using ICT in the educational process of primary schools in the following:

#### **1. Lesson with multimedia support.**

The most effective forms of working with ICT for me are Power Point presentations and the use of electronic textbooks. Presentations are convenient for both the teacher and the students. This helps to increase the efficiency of perception and memorization of the submitted material. Presentations prepared for the lesson, capacious in content, vivid, memorable. The undoubted advantage of a multimedia presentation in comparison with conventional visual materials is a greater emotional impact on students, which contributes to the concentration of attention and, consequently, better assimilation of the material.

Multimedia technologies can be used:

#### **1. As an accompaniment to the teacher's explanation.**

In my practice, I use multimedia presentation notes created specifically for specific lessons, containing a short text, basic formulas, diagrams, drawings, animations. When using multimedia presentations in the process of explaining a new topic, a linear sequence of frames is sufficient, in which the most advantageous moments of the topic can be shown. Definitions, diagrams may also appear on the screen, which

the children write off in a notebook, while the teacher, without wasting time on repetition, manages to tell more.

#### **2. For knowledge control (evaluation).**

The use of computer testing increases the efficiency of the educational process, activates the cognitive activity of schoolchildren. Tests can be variants of cards with questions, the answers to which the student writes down in a notebook, at the request of the teacher, the change of slides can be configured to automatically switch after a certain time interval.

The following features of this technology can be distinguished:

1. Increasing the level of use of visibility in the lesson.

2. Improve lesson performance.

3. Establishment of interdisciplinary connections with other subjects.

4. A teacher who creates or uses information technology is forced to pay great attention to the logic of the presentation of educational material, which has a positive effect on the level of knowledge of students.

5. The attitude towards the PC is changing. The guys begin to perceive it as a universal tool for working in any area of human activity. The use of a computer allows not only to increase the effectiveness of learning many times over, but also to motivate students to further independent study of the English language.

Modernity places ever higher demands on learning and practical knowledge of a foreign language in everyday communication and in the professional sphere. The use of information technology reveals the enormous potential of the computer as a means of learning [2]. After analyzing the experience of using ICT in foreign language lessons and after school hours, we can conclude:

- Multimedia technologies speed up the learning process:

- contribute to a sharp increase in students' interest in the subject;

- improve the quality of mastering the material;

- allows to individualize the learning process;

- make it possible to avoid the subjectivity of the assessment.

The use of computer technology allows us to:

- To fill the lesson with new content;

- To develop a creative approach to the world around, the curiosity of students;

- To form elements of information culture;

- To instill skills of rational work with computer programs;

- maintain independence in the development of computer technology;

- To keep up with the times.

In conclusion, it should be emphasized that the introduction of information technology into the educational process does not at all exclude traditional teaching methods, but is harmoniously combined with them at all stages of education: familiarization, training, application, control. However, the use of information technology allows not only increase the effectiveness of learning many times over, but



also to encourage students to further independent study of the English language.

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# EMOTIONAL INTELLIGENCE AS PREDICTORS OF SUICIDE IDEATION AMONG NIGERIAN YOUTHS IN FEDERAL UNIVERSITIES IN THE SOUTH-SOUTH

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## ABSTRACT

*The study investigated emotional intelligence domains (self-awareness and self-management) as predictors of suicide ideation among Nigerian youths in Federal Universities in the South – South. A sample of 380 youths identified as suicide ideators were drawn from a population of 7851 using simple random sampling and proportionate sampling technique. The study adopted the correlational research design. Two research questions and two corresponding hypotheses guided the study. Emotional Intelligence Questionnaire (EIQ) and Suicide Ideation Scale (SIS) were used as instruments for data collection. The construct validity of the instruments was determined through factor analysis SPSS software. Copies of the multivariate instrument were administered to 30 youths for pilot test. Each instrument was subjected to factor analysis, the following coefficients were obtained; self-awareness 0.70 and self-management 0.72 while reliability index of 0.69, 0.69 and 0.79 were realized for; self-awareness, self-management and suicide ideation respectively using Cronbach Alpha Method. Simple linear regression was used to analyze the data generated. Specifically, the associated Anova was used to test the tenability of the null hypotheses at 0.05 alpha level. Findings were that self-awareness does significantly predict youths' suicide ideation while self-management does not significantly predict Nigerian youths' suicide ideation in South-south.*

**KEYWORDS:** Self-awareness, Self-management and Suicide Ideation among Federal University Youths.

## Introduction

A society that is bedeviled with so much hardship and little or no opportunity for its citizens to find a legitimate means of sustenance can only breed all kinds of atrocities, delinquencies, anxiety and depression among the young people. Rise in level of unemployment has also resulted in increase and rise in the degree of crimes being committed. A soothsayer is not required to see that crimes are mostly carried out by the youths who by virtue of age are more energetic, courageous and fearless. The act of committing crime in itself is a very daring one and highly risky.

In the researcher's opinion, only a handful of the Nigerian youths would willingly disregard a good job or business and plunge into crime in order to make quick money. The current situation is such that the youths cannot be accused of wanting to make quick money but rather majority of them are sincerely seeking for a means of survival. Quite a number have put aside their certificates in view of the absence of white collar jobs, and have gone into trading and other vocations. This also, has proved to be a very herculean venture.

Let us recall to mind, that those youths who for one reason or the other didn't even obtain a certificate through formal education have been struggling in their different fields and vocations to make ends meet, but not with so much success. All these put together seems to be part of the reason why suicidal ideation among Nigerian youths pose as a threat that should be addressed. There is need to take a close look at the variables associated with, and considered to be risk factors for suicide ideation. Emotional intelligence has been seen and ascertained to serve as a protective factor for both suicidal ideation and suicide attempt, among samples of adolescents without any history of traumatic events (Cha, C.B. & Nock, M.C., 2009). Similarly, previous researches confirmed that among the youths who are depressed, high emotional intelligence protects against suicidal ideation (Abdollahi, Carlbring, Khanbani & Ghahfarokhi, 2016).

The term 'Emotional Intelligence' came into definite use in the 90s. It is a term that was used to point to a form of social intelligence which involves the ability to check a person's feeling by himself or herself and also check other persons' feelings. The essence of checking this feeling is to enable the individual to discern between the various existing feelings both



within him and within others or among them and then use the information gotten to guide one's way of thinking and approaching or viewing issue, alongside one's actions. Goleman (1995) categorized emotional intelligence into the following categories: Self-Awareness, Self-Management or Regulation, Relationship-Management, Social Awareness or Social Skills and lastly Motivation. For the purpose of this study, only two of the categories is discussed which are: self-awareness and self-management. An individual is considered to be emotionally intelligent if same individual is able to decipher and understand not only his own feelings but that of others as well, and capable of reconciling the two and applying the outcome in his operations in order to make positive impact and have success in whatever is involved. Goleman (1995) perceives emotional intelligence to be abilities such as being able to motivate one self and persist in the face of frustrations; to control impulses and delay gratification, to regulate one's moods and keep distress from swapping the ability to think, to empathize and to hope. More accurate analysis and presentation of emotions is done through emotional intelligence. This bears on, and enhances effectiveness in solving problems. When emotions are not properly deduced and presented, the probability of handling issues incompetently becomes rather higher. In effect, for accurate problem or task solving, accurate understanding and presentation of emotion cannot be overemphasized or neglected. Self-awareness as one of the component of emotional intelligence is the possibility of one recognizing his emotions, his drives, strengths and weaknesses and how they relate to others. The ability of one to know or realize his values, goals and feelings at any given time constitutes self-awareness. This recognition and awareness guides the individual in decision making, in guiding actions and making choices. According to Olowo (2011) individuals with high level of self-awareness are inclined towards understanding their emotions and needs and how they influence their thinking pattern, behaviour and achievement. Proper self-assessment poses as the focal point of achievement. They are also able to find out or seek out those who are better placed to be of help and add value to them. Goleman (2006) sees self-awareness as recognizing a feeling as it happens, and this he says is the keystone of emotional intelligence. This makes for self-understanding. People with greater certainty of their feelings are better pilots of their lives. Self-awareness means being "aware of both our mood and our thoughts about that mood". Self-awareness is the ability to identify one's own internal states, preferences, resources and intuition (Goleman, 2006). It involves recognizing one's emotions and their effects, as well as self-confidence which refers to a strong sense of strength and limit. It is a general knowledge and understanding of one's strength and limitations.

Self-awareness is the most crucial competency associated with emotional intelligence in every area of life. According to Yeung (2009); the first step to becoming emotionally intelligent is to become as self-aware as possible. Self-awareness is the ability for one to recognize his or her emotions and their effects. Self-

awareness refers to the capacity of becoming the object of one's own attention (Duval & Wicklund, as cited in Morin, 2011). The concept of self-awareness was perceived to have two dimensions (Duval & Wicklund as cited in Carden et al, 2021). First, subjective self-awareness, which is a state of consciousness where attention is focused on events external to the person, and second, objective self-awareness, which is focused exclusively upon the self. This two-dimensional approach also proposes that self-awareness is attained through focusing attention on oneself, which initiates a comparison against self-developed standards.

Self-awareness consists of emotional abilities that enable us to be more effective and form outstanding relationships in the school, work place, and family, among others. Self-awareness is the ability for an individual to recognize his or her emotions and their effects. Studies suggest that people who are aware of their emotions are more effective in their every area of their lives. They recognize and understand their moods, emotions and needs and can perceive and anticipate how their actions affect others. People with great certainty about their feelings manage their lives well and are able to direct their positive feelings towards accomplishing tasks. Self-awareness competencies include emotional self-awareness, accurate self-awareness and self-confidence. Accurate self-Assessment involves knowing one's inner resources, abilities and limits. People with this competency are aware of their strengths and weaknesses, reflective, learning from experience, open to candid feedback, new perspectives, continuous learning and self-development. Self-confidence involves a strong sense of one's worth and capabilities. According to Goleman, (1998), People with this competence present themselves with self-assurance, have presence, can voice views that are unpopular and go out on a limb for what is right, are decisive, able to make sound decisions under pressures. People with self-confidence typically see themselves as efficacious, able to take on challenges and to master new jobs or skills. They believe themselves to be catalysts, movers and initiators, and feel that their abilities stack up favourably in comparison to others. Research suggests that individuals with high levels of self-awareness, that is, when there is congruence between self-other ratings, have good working relationships with others in his/her environment. This implies when students have high self-awareness, they will be able to manage their challenges and improve their abilities to stay strong under pressures or crisis as well as improve academic performance thereby limiting mental health disorders.

People, who are self-regulate, usually do not allow themselves to become excessively angry, too disappointed or jealous even in the face of situations that normally elicit such energies. They do not make impulsive and careless decisions even when they are upset. That is to say, they think before they act. Regulating emotions in order to make better and profitable sense out of them is self-management. Self-management of emotions empowers youths to get a grip on their internal make-up thereby



helping them adjust their behaviours to the presiding environment. This leads to high self-worth and image. Suicide ideation is defined as thinking about, considering, or planning suicide. The first step towards ideation is pain, regardless of the source of pain (Klonsky, May and Saffer, 2016). According to APA (2013) Dictionary, suicide ideation refers to thoughts or a preoccupation with killing oneself, often as a symptom of a major depressive episode (<https://dictionary.apa.org/ideation>) it goes further to differentiate between suicide ideation and suicidality by expressly panting out suicidality as the risk of suicide, usually indicated by suicidal ideation or intent, especially as evident in the presence of a well elaborated suicidal plan.

However, the researcher noted that some scholars use the terminologies terms, suicidality and suicide ideation interchangeably. This implies that suicide ideation and suicidal ideation means one and the same thing and considered same in this study. From the stables of National Youth Mental Health Foundation, NYMHF, suicidal ideation refers to thoughts that life is not worth living and ranges in intensity from mere passing thoughts to definite and precise well thought out plans for killing oneself. It is a total engrossment with self-destruction and annihilation (Nock, Borges & Bromet, 2008). Suicide Ideation (SI) is categorized into passive suicide ideation and active suicide ideation. Passive suicide ideation has to do with the ideation that is limited to mere wish to die but never goes further to make any plan of how to inflict lethal self-harm to kill or end one's life. Also, passive ideation at the same time shows a level of indifference to any accidental death. Active suicidal ideation simply put, is the extension of thoughts of suicide to include the different ways to die or way to actually carry out the act of killing oneself. This means forming a plan to die, which goes beyond mere thoughts of death or wishes to die (Kumar, 2017).

Suicidal ideation means entertaining thoughts, ideas or ruminations about the possibility of ending one's life (Barry, 2019). According to Grosby Ortega and Melanson (2011) suicide ideation is defined as thinking about, considering, or planning suicide. Some scholars have expressed some concern over the mix ups in terminologies and how it affects research processes. Suicide ideation, suicide attempts, suicidal behaviours, suicide, etc are some of the concepts that are mixed up. As earlier noted, high self-awareness has influence on performance in various areas of life and that includes performance and social relationships. In the same vein, feelings of low self-esteem, depression or anxiety might also be affected by self-awareness of the student. This is why the researcher intends to examine if a relationship exist among the variable of self-awareness and self-management with suicide ideation among youths or undergraduate students. Self-management is the ability to regulate distressing effects like anxiety, anger and inhibit emotional impulsivity (Goleman, 2016). Activities and happenings around is more than enough to elicit negative reactions to situations. Emotions result in impulses which if not

properly guided could disrupt well set out events or plans and goals. Managing one's impulses, controlling and redirecting emotions enables one adapt to unforeseen circumstances and changes that occur. This is self-management and therefore capable of inhibiting suicide ideation.

### Research Questions

The following research questions are raised to guide the conduct of the study:

1. To what extent does emotional intelligence domain, self-awareness, independently predict suicide ideation among Nigerian youths in the south-south?
2. To what extent does self-management independently predict suicide ideation among Nigerian youths in the south-south?

### Hypotheses

The following hypotheses were formulated to guide the conduct of the study:

1. Emotional intelligence domain, self-awareness independently does not significantly predict suicide ideation among Nigerian youths in the south-south.
2. Self-management independently does not significantly predict suicide ideation among Nigerian youths in the south-south.

### Methodology

The design of this study is correlational. According to Kpolovie (2010, p. 108), "correlational design is a design that is patterned after the statistical tools most suitable for eliciting the form and nature of relationship that exist among the variables under investigation". He went further to say that the design has a predictor and criterion variable which are correlated and the correlation coefficient resulting from it serves as the basis for prediction.

The population for this study comprised of youths from federal universities in three faculties (one faculty from each university) from three states in the South-south geo-political zone. The universities are university of Port-Harcourt: 2817, university of Uyo: 4154, federal university Otuoke: 880, making a total of 7851. From the population of 7851, 380 sample size formula via Taro Yamens consisted the sample size which is made up of 137 students from university of Port-Harcourt, 201 from university of Uyo in Akwa Ibom State and 42 from Federal university Otuoke in Bayelsa State. Proportionate stratified random sampling was used to select the sample size. Instruments for the data collection were adapted for this study. Emotional Intelligence Questionnaire, developed by Daniel Goleman in 1995 and Suicide Ideation Scale developed by M.D. Rudd in 1989. The EIQ instrument consists of subsections that elicited information on the various variables. The instruments utilized four point likert scales which required the respondents to indicate the level of agreement or disagreement with the items, thus: Strongly Agree (SA), Agree (A), Disagree (D) and



Strongly Disagree (SD). Emotional Intelligence Questionnaire (EIQ) consisted of sub-sections with 5 items each on self-awareness and self-management respectively. Suicide Ideation Scale (SIS) consisted of one section with 10 items. To ascertain the validity of the instrument, draft of the questionnaires were given to two (2) experts in the department of Educational Measurement and Evaluation for vetting. All corrections and modifications were later incorporated into the final draft. Validated copies of the instruments were pilot tested with 30 students from federal university of technology Owerri (FUTO) in Imo state of Nigeria. Their responses were analysed using the Cronbach Alpha method and reliability coefficient of 0.69, 0.69 and 0.75 were obtained for self-awareness, self-management and

suicide ideation respectively. Simple linear regression was used to answer the research questions, while t-test and analysis of variance (ANOVA), associated with regression analysis was used to test the null hypotheses at 0.05 level of significance.

## RESULTS

The results are presented on table 1-4 according to the research questions and hypotheses that guided the study.

**Research Question 1:** To what extent does self-awareness independently predict suicide ideation among Nigerian youths in federal universities in the south south?

**Table 1: Simple regression analysis showing R correlation of self-awareness independently predicting suicide ideation among the Nigerian youths in federal universities in the south south.**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.115 <sup>a</sup>	.013	.011	6.654

From the analysis in table 1, the relationship between emotional intelligence domain (self-awareness) and suicide is  $R = .115$ ,  $R^2$  value is .013, the adjusted  $R^2$  value is .011 while the standard error of estimates is 6.654. Furthermore, the  $R^2$  value of .013 signifies that about 1.3% of emotional intelligence domain (self-awareness) predict suicide ideation among Nigerian youth in federal universities in the south south.

**Hypothesis 1:** Emotional intelligence domain (self-awareness) independently does not significantly predict suicide ideation among the Nigerian youths in federal universities in the south south.

**Table 2: Summary of ANOVA test associated with Simple Regression of Emotional intelligence domain (self-awareness) on suicide ideation among Nigerian youths in federal universities in the south south.**

Model	Sum of Squares	Df	Mean Square	F	Sig.	Result
1 Regression	224.935	1	224.935	5.080	.025 <sup>b</sup>	significant (reject $H_0$ )
Residual	16735.686	378	44.274			
Total	16960.621	379				

The calculated F value in table 2 is 5.080 while the sig value is .025, therefore since the sig ( $P=0.025<0.05$ ) is less than the alpha value of 0.05 at 379 degrees of freedom, the null hypothesis is rejected, and the alternate retained meaning that actually emotional intelligence domain (self-awareness) does predict suicide ideation among the Nigerian youths in federal universities in the south south.

**Research Question 2:** To what extent does emotional intelligence domain (self-management) independently predict suicide ideation among Nigerian youths in federal universities in the south south?





**Table 3: Simple regression analysis showing R correlations of emotional intelligence domain (self-management) independently predicting suicide ideation among the Nigerian youths in federal universities in the south south.**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.073 <sup>a</sup>	.005	.003	6.681

From the analysis in table 3, the relationship between emotional intelligence domain (self-management) and suicide is  $R = .073$ ,  $R^2$  value is .005, the adjusted  $R^2$  value is .003 while the standard error of estimates is 6.681. Furthermore, the  $R^2$  value of .005 signifies that about 0.5% of emotional intelligence domain (self-management) predict suicide ideation among Nigerian youth in federal universities in the south south.

**Hypothesis 2:** Emotional intelligence domain (self-management) independently does not significantly predict suicide ideation among the Nigerian youths in federal universities in the south south.

**Table 4: Summary of ANOVA test associated with Simple Regression of Emotional intelligence domain (self- management) on suicide ideation among Nigerian youths in federal universities in the south south.**

Model	Sum of Squares	Df	Mean Square	F	Sig.	Result
1 Regression	90.538	1	90.538	2.029	.155 <sup>b</sup>	Not significant (accept Ho)
Residual	16870.083	378	44.630			
Total	16960.621	379				

The calculated F value in table 4 is 2.029 while the sig value is .155, therefore since the sig ( $P=0.363>0.05$ ) is greater than the alpha value of 0.05 at 379 degrees of freedom, the null hypothesis is retained, confirming that actually emotional intelligence domain (self-management) does not predict suicide ideation among Nigerian youths in federal universities in the south south.

## DISCUSSION

The result revealed that among the emotional intelligence domain (self-awareness) independently does predict suicide ideation among the Nigerian youths. The finding of this study is not in agreement with the study of Okafor and Oyana (2022), who investigated the relationship between emotional intelligence and suicidal tendencies (ideation) among undergraduate students of the University of Benin. The finding of the study revealed that there was no significant relationship between self-awareness domain of emotional intelligence and undergraduate students of University of Benin. But some other works differed from the result of these studies. The studies of Johnson, Ogusanmi and Ayokanmi (2021) who examined risk factors for suicide ideation, self-harm and self-awareness among Babcock University students revealed that there is a significant prediction of suicide ideation among the students by self-awareness. Some other studies that revealed self-awareness to significantly predict suicide ideation include the works of Ishikura, Morimoto, Yoshizawat, Otsuka, Tanaka, Kinulawa, Horluchi and

Nakashima (2001), and Mohammad (2019). Ishikura et al examined factors associated with anxiety, depression, self-awareness, and suicide ideation while Mohamad (2019) investigated Empathy/relationship management, self-regulation, adaptability (self-awareness) and depression as factors influencing suicide ideation among graduates and post graduate students in Padesh.

The result revealed that among the emotional intelligence domain (self-management) independently does not predict suicide ideation among the Nigerian youths. Self-Management or Self-regulation is the ability one has to recognize and be in control of their feelings and emotions at different times. Some studies have also shown self-regulation as having no predictive powers on suicide ideation. The results of Jose, Limonero and Sabado (2018), who examined relationship between Emotional Intelligence and negative affect on suicide risk (ideation) showed that self-regulation does not have any significant prediction of suicide ideation in young university students. On the contrary, some works are not in agreement with the above studies. The findings of Mohamad (2019) who investigated Empath/relationship management, self-regulation, adaptability (Self-awareness) and depression as factors influencing suicide ideation revealed that the emotional intelligence domain of self-management does predict suicide ideation among students. Same goes for Okafor and Oyana (2022) that showed self-management to have predictive powers on suicide ideation.





## Conclusion

Suicide ideation is a major challenge among the youths across the nation, particularly in the South south. Identifying and discussing the emotional intelligence as predictors of suicide ideation among the Nigerian youths in south-south is very essential in curbing the growing and increasing menace. Several studies have been carried out on suicide more than on suicide ideation in the south - south geopolitical zone of Nigeria. Also, from the result it was revealed that self-awareness does predict suicide ideation while self- management do not predict suicide ideation.

Future research should focus on further identifying other domains of emotional intelligence and risk factors that may contribute to suicide ideation among the youths.

## Recommendations

Recommendations for this study are based on the results of the findings which are as follows:

1. The counsellors and lecturers should help the youths to be trained in the domains of emotional intelligence which include self-awareness, self-regulation, relationship management and social awareness.
2. Acquiring skills in emotional intelligence competencies will help sustain them and help them handle challenges competently, therefore stakeholders which includes parents, churches, non-governmental organizations should rise to the situation by providing ways for the youths to acquire these competencies. .

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# TECH-FREE ZONES ESTABLISHMENT AND DUMB-PHONE UTILIZATION AS DIGITAL DETOXIFICATION PREDICTORS OF STUDENTS' ACADEMIC IMPROVEMENTS IN UNIVERSITIES IN RIVERS STATE

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## ABSTRACT

*The study investigated the establishment of tech-free zones and dumb-phone utilization as digital detoxification predictors of students' academic improvements in universities in Rivers State, Nigeria. Two research questions and hypotheses guided the study. The study adopted the correlational research design. The population comprised 3680 students from the Department of Educational Management of the three public universities in Rivers State, Nigeria. A sample of 1,472 students, representing 40% of the total participants were drawn using the stratified random sampling technique. The instruments for data collection were: Tech-Free Zones and Dumb-Phone Utilization Scale (TFZDPUS) and Students Academic Improvement Scale (SAIS), designed by the researchers in a modified 4-point Likert scale model. The reliability coefficients of the instrument using Cronbach alpha methods were 0.73 and 0.89. Simple regression was used to answer research questions and in the test of hypotheses, t-test associated with simple regression was used. The findings of the study revealed that tech-free zones and dumb-phone utilization as digital detoxification variables predict students' academic improvements in areas of maintenance of work-life balance, fosters emotional intelligence, fosters academic breakthroughs, reduced smartphone addiction, restores natural rhythms, enhances academic relationships amongst others. The study concluded that tech-free zones and dumb-phone utilization as digital detoxification strategies are strong and viable predictors of students' academic improvements in universities in Rivers State, Nigeria. Hence, the study recommended amongst others, that school authorities and students should continue to utilize the different digital detoxification strategies in detoxifying students from digital technology devices in order to increase the tempo of their academic improvements.*

**KEYWORDS:** Tech-Free Zones, Dumb-Phones, Digital Detoxification, Academic Improvements

## INTRODUCTION

University education is critical to the socio-economic and political development of any nation. It has been proven that universities, as citadels of learning, supply the majority of skilled manpower for the economic growth and development of any society. Society depends on university education for tackling emerging societal problems and meeting new developmental aspirations. Thus, the main activities carried out in the universities, which are teaching, research, transfer of worthwhile knowledge and values, commercialization of research findings, community development, and generation of highly skilled personnel to serve the industries and society towards a better future, are geared towards finding a solution to the problems of the society.

Nations that record great outcome of graduates have greater advantage of welcoming creativity and innovative practices that will position it for better economic growth, greater innovation and labour market flexibility while creating avenues for

individuals to profit from high earnings, reduce unemployment and increase productivity. In Nigeria, university education, as emphasized by the Federal Republic of Nigeria (FRN, 2014), is referred to as the education a person gets after a successful completion of secondary education. It is the final level of education in the current 9-3-4 structure of education in Nigeria (Yahaya, 2019). The 9-3-4 consists of a 9-year Universal Basic Education (UBE), 3 year period of secondary education and at least 4 year time of higher education.

In a bid to ensure that university products (graduates) are equipped with appropriate knowledge and skills that are essential to meet with the economic and global expectations, it is paramount that university students be given every available opportunity to acquire the knowledge and skills necessary for results yielding competition globally. As the world embraces technological boom being infused by daily advances in technology, the cell phone technology also continues its rapid development, the device enhances students' learning and



improves academic performance due to its ability of high-tech connectivity (Scott, 2019). In every aspect of life's endeavour, manufacturing, business, engineering, transportation, hospitality, law, education and training, arts, entertainment, among others. The makers of mobile devices which were introduced in the last decade, have played tremendous role in introducing certain features and applications (apps) that were only possible on computers and desktops into mobile phone devices which can be carried about easily. Business men and women record outstanding profits through online sales and marketing. In several other fields of human endeavour, the mobile phones have played outstanding role in yielding positive results (Uche, 2006).

Conversely, researchers and leaders in the education industry have raised alarm over the misuse of mobile phone devices by students, especially, university students. This may be explained in the fact that students tend to spend more time fiddling with the phone which has adversely affected their academic performances. Jacobson and Forste (2011), in their research, suggest that students perceive the cell phone usage as a leisure device and most commonly, use mobile phones for social networking, surfing the internet for pleasure, watching videos, playing games, taking inappropriate photographs engaging in non-academic related activities among others. Again, Morgan (2017) posits that students are becoming dependent on their mobile phone devices usage as a 'quick fix' for issues and information and it can keep them from developing the ability to 'think on their feet' in work situations. Stakeholders and educators have raised concern over the increased use of mobile phone devices by students during lecture periods on non-academic related matters. Frequent use of cell phones by university students have also inspired destructive behaviours. Four out of five university students experience panic, isolation and stress when attempting to unplug from their phones or engage in digital detoxification for one day (Morgan, 2017).

Digital detoxification refers to a period of time when a person refrains from using technological devices. It is a process of temporarily taking time off one's mobile devices such as smartphones, tablets, computers, televisions and social sites. Digital detoxification which can also be called digital detox or detoxing is often seen as a way to focus on real-life situations without distractions. By temporarily foregoing digital devices, people can let go of stress that stems from constant connectivity and avoid getting addicted to their mobile devices. By welcoming and engaging in digital detox, university students can stay focused on their academic activities without getting distracted by their technological devices, especially their smart phones. While technology addiction is not formally recognized as a disorder, many experts believe that tech and devices overuse represents a very real behavioural addiction that can lead to physical, psychological, social and academic problems (Scott, 2019).

Little wonder did Dscout, as cited in Winnick (2016), indicates that, most people tap their smart phones on the average of 2,617 times per day. This is a serious distraction especially for students who are going through training and development process. Studies have shown that powerful computers made in the form of mobile devices most people hold and keep in their pockets can be distracting for even the most disciplined adults not to mention students. Research in the educational sphere demonstrates that using mobile devices and social media while learning new material reduces comprehension and impairs academic performance (Jacobson & Fortse, 2011). Studies have also found that even if cell phones are turned off, turned face down or put away, their mere presence reduces people's cognitive capacity (Ward, et al, 2017).

### **Establishment of Tech-Free Zones for Students Academic Improvement**

Smartphone devices gives students ample opportunity to browse and surf the internet for materials to assist their academic work; it provides students with immediate, portable access to many of the education – enhancing capabilities. But on the other hand, students have been found to have become too dependent on their mobile devices usage as a 'quick fix' for issues and information and it can keep them from developing the ability to 'think on their feet' in work situations (Morgan, 2017). Hence, the suggestion for the establishment of tech-free zones in universities and other academic institutions as a way of engaging in digital detoxification for academic improvement.

Tech-free zones are areas without internet connectivity or areas deliberately mapped out by school authorities or leaders, educators or students in the school environment, to be made tech-free zones where internet connectivity is limited or not seen at all. In her study, Selwyn (2006), notes that educators, students and school leaders can utilize tech-free areas in cases where the topic to be handled does not require plugging into the internet. School authorities and government can identify and map out areas in the school environment or establish lecture halls, conference halls and so on, to be made a tech-free zones in the school where internet access is limited or prohibited. This act according to the suggestion of Selwyn (2006), will enable participants curb screen addiction, improve the level of learning inflow, think on their feet, and achieve high academic breakthroughs.

Rampton (2020) indicates that an average adult interacts with their digital media up to 11 hours per day and hence finds it difficult to maintain a healthy work-life balance. Smartphone notifications and the internet are two of biggest distractions in the school environment and at the work place. Technology can make students lazy, score low on their academic work and negatively affect their eyesight; this is because they are paying more attention to tech than what is expected of them (Michaels, 2016). Therefore, the need to introduce tech-free zones in schools for students to utilize at scheduled times to enable them



disconnect from the internet world and adequately experience positive changes in their work-life balance, their social life and academic abilities which will also give way to fostering emotional intelligence and suppresses body melatonin. Tech-free zones can also be establish in homes: some rooms or areas around the house can be disconnected from internet accessibility. This is to enable anyone who wishes to engage in tasks that does not require constant interruptions from the internet world, to utilize these areas for desired concentration. Tech-free zones are vital to the emotional, intellectual and social health of university students, other kids and adults in general (Freitas, 2016).

There is also growing evidence that ‘tech-free’ classes and ‘tech-free’ courses lead to better learning for students, and that these benefits extends beyond a given institution (Glass & Kang, 2019). In the light of this, university students who understands and engages in digital detoxification through the use of tech-free zones are most likely to achieve more success and breakthroughs in their academic performances, due to the idea of letting go of their mobile and digital devices for the period of academic activities which does not require internet plug in (Freitas, 2016). While making use of these tech-free zones in the universities, the researcher observed that students who are involved in the tech-free zones exercise focus, understand, and participate fully during teaching and learning and hence indicates high level of understanding of the lecture and participates with maximum focus on the project at hand.

In the course of carrying out assignments, group projects and individual projects, students who are involved in embracing digital detoxification through the use of tech-free zones are more able to set targets, as regards their projects and assignments, and exhibit the perfect ability of achieving set targets at the stipulated time frame. Once students are able to utilize the option of tech-free zones, which allows for the disconnection of internet connectivity, which will invariably give them opportunity for maximum concentration, excelling in every set target becomes very easy. Fernandez (2018) agrees with the above assertion that multitasking during a lecture distracts students, hinders their learning and leads to poor academic performance.

Educators and instructors will be more at ease and relate effectively with the students during tech-free periods. These periods are periods digital gadgets are not to be used in lecture halls; it will be a big win for educators and instructors seeing that students are more engaged in the lecture, ask better questions and exhibit excellent performance. Researchers and scholars like Rampton (2020), Fernandez (2018), Morgan (2017), and Freitas (2016) have brought forward some notable pros of engaging in the establishment of tech-free zones for digital detoxification. These includes the ability of students to think on their feet, encourages the maintenance of work-life balance, fosters emotional intelligence, encourages healthy social life, reduces the suppression of body melatonin, allows

brain to relax and recharge, allows for academic breakthroughs and enables for high target achievement. This study seeks to collaborate with the above suggestions to discover the benefits of the establishment of tech-free zones as a predictor of students’ academic improvements in universities in Rivers State, Nigeria.

### **Dumb-Phone Utilization for Students Academic Improvement**

For millions of people all over the world, smartphones have become a universal part of everyday life. They are used to find directions, browse the web, watch moves, play music, reply emails, and make long and short distant calls and so on. It is not an overstatement to say that smartphones have been seen as overwhelming in recent times: a negative on mental wellbeing that is eternally demanding full and undivided attention (Andersen, et al 2016). Just as these smartphones can be a liberating force in modern society, putting millions of people in touch with one another, they can oppress their owners, enslaving them in constant, unbreakable cycle of fixed attention while the real world passes on unnoticed.

University students are not left out in this era of smartphone and internet connectivity; the constant use and addictive behaviour of university students in the use of smartphone in lecture halls have become a thing of concern (Freitas, 2016). Irrespective of all the benefits technological progress has brought, there is also a dark side to these innovations. Students have been seen to spend most times on smartphone applications such as Facebook, WhatsApp, Instagram, Youtube and other social networking sites; this has created a deep vacuum in their academic achievements. In view of this, this study looks at the suggestion of the dumb-phone utilization by university students to enable them engage in digital detoxification which will invariably allow them pay more attention to their academic activities and consequently improve their academic performance.

Dumb-phones are mobile phones with little or no internet connecting capacity. The device typically enables calling, texting and does not require a full keyboard as it contains T9 keys and are mostly used for calling (Wigmore, 2016). They do not require data plans and are typically much cheaper to operate than smartphones. Unlike smartphones, the dumb phones causes little distraction as it has been recently widely sought out for to enable one step away from the numerous distracting features the smartphone attracts. The use of dumb-phones by university students will yield positive outcome in the sense that there will not be constant interruptions of lessons caused by the frequent notifications that is applicable to the use of smartphones.

The contribution made by Glass and Kang (2019), has the following points to back up the benefits of use of dumb phones thus:

The use of dumb-phones by university students gives them adequate opportunity to pay maximum attention to the lecture at hand. When dumb-phone is used for digital detoxification, it





shoves away frequent notifications that floods into mobile gadgets like that of smartphones. The smartphones can really be a distracting tool in the classroom; distracting fellow students from paying full attention to the lecture and equally distracting the educator due to the constant beeping encountered due to the inflow of continuous messages or apps notifications. Disconnecting from these smartphones and embracing the use of dumb-phone will in no small measure, enable students pay attention to the lecture at hand. Secondly, it will also allow students carry out their research and classwork and assignments effectively without the constant interruptions being experienced with the use of the smartphone.

Aside using dumb-phones for digital detoxification in the university, these basic phones cost less and also attracts less expenses while in use: Dumb-phones are less expensive to purchase, it enables one save reasonable amount of money that one could have used to purchase smartphones; in data usage, dumb-phones has a high level of feature that makes it easy for it not to burn data as much as the smartphone, thereby guaranteeing high level economic benefit; in battery life, most dumb-phones have life of over 500 hours, the battery life of dumb-phones cannot be beaten, many users report being able to go over a week without a single recharge.

Hundreds of social media apps, whatsapp messaging, Facebooking, twitting amongst others, that have ways of calling for students attention even when they have no intention of going online pops up most often on the smartphones thereby leading to social media addiction, it keeps students connected and busy with their phones at all times. But, with the use of dumb-phones, these apps do not have access to creep their ways into these basic phones and hence, offers a good benefit of reducing or eliminating social media addiction or mobile phone addictions. Cell phone addiction creates a bad impact in the overall living structure of an individual (Morgan, 2017). Therefore, the use of dumb-phones will go a long way in curbing the addictive behaviours of students towards their cell phones and consequently give them ample time to focus better on the task ahead and invariably present good outcome and good results in their academic activities.

Pertinent to this, scholars and researchers have come up with some indicators suggesting several benefits of utilizing the dumb-phone for effective digital detoxification exercise. These includes suggestions from Syversten (2020), Ifeanyi and Chukwuere (2018), Wilcockson et al (2019) and Wigmore (2016). They analysed and gave the indications that the ways of earning benefits in the utilization of dumb-phone for effective digital detoxification exercise can be accrued to: reduced smartphone addiction, ease in teaching process, restores natural rhythms, enhances academic relationships, effective project actualization, ease in assignment completion, enables the mind to be present, guarantees high economic benefits and allows for empathy. The current study seeks to investigate, discover and collaborate with the opinion that utilization of dumb-phone in

the application of digital detoxification will aid success and thus guarantees the prediction of students' academic improvements in universities in Rivers State, Nigeria.

### Statement of the Problem

Universities, as citadels of learning, exist to execute the functions of teaching, research, transfer of worthwhile knowledge and values, community development and the generation of highly skilled manpower to industries and societies at large. As societies keep evolving, and nations keep embracing technological advancements to enhance efficiency and productivity, convenience and communication, university institutions, as part of the society, have witnessed and equally accepted different innovative practices and embraced most technological advancement that have seen the exercise of teaching and learning, more interesting and productive. In all these evolutions and advances in technological developments, digital technology distractions have been identified as major source of distractors on students' academic effectiveness. Hence, the introduction of tech-free zones establishment and dumb-phone utilization as digital detoxification strategies. Digital detoxification is therefore, seen as a period of time when a person refrains from the use of technological gadgets.

Consequently, with the advances in technological developments in industries, institutions and the world of work, it has become imperative for educational institutions to welcome and embrace the use of technological devices, which have come to stay, into their academic activities, and comply with the new ways of doing things. However, the researchers and other stakeholders are worried that university students in general and Rivers State in particular, appear to be performing at a very low level in academics due to the increasing use of mobile devices which majority use for social networking, video watching, skyping, playing games, amongst others; while in school and lecture halls. This worry gave rise to this study which sought to investigate the extent to which tech-free zones and dumb-phone utilization as digital detoxification strategies, predict students' academic improvements in universities in Rivers State.

### Aim and Objectives of the Study

The study investigated the establishment of tech-free zones and dumb-phone utilization of digital detoxification, as predictors of students' academic improvements in universities in Rivers State, Nigeria. In specific terms, the study sought to:

1. Ascertain the extent to which tech-free zones predicts students' academic improvements in Universities in Rivers State, Nigeria.
2. Determine the extent to which dumb-phone utilization predicts students' academic improvements in Universities in Rivers State, Nigeria.

### Research Questions

The following research questions were answered in the study:





1. To what extent does tech-free zones predict students' academic improvements in Universities in Rivers State, Nigeria?
2. To what extent does dumb-phone utilization predict students' academic improvements in Universities in Rivers State, Nigeria?

### Hypotheses

The following hypotheses were tested in the study at 0.05 level of significance.

1. There is no significant prediction of tech-free zones on students' academic improvements in Universities in Rivers State, Nigeria.
2. There is no significant prediction of dumb-phone utilization on students' academic improvements in Universities in Rivers State, Nigeria.

### METHODOLOGY

This study adopted a correlational survey design as it made to determine the extent to which tech-free zones establishment and dumb-phone utilization as digital detoxification variables, predict students' academic improvements in Universities in Rivers State. The population of the study comprised 3680 students from the Department of Educational Management of the three public universities in Rivers State, which are: University of Port Harcourt (1630 students), Rivers State

University (1050 students), and Ignatius Ajuru University of Education (1000 students). These population acted as total participants for the study, from which 1472 students, representing 40% of the total participants in the population, were drawn as sample size, using the stratified random sampling technique. There were two instruments for the study, titled Tech-Free Zones and Dumb-Phone Utilization Scale (TFZDPUS) and Students' Academic Improvement Scale (SAIS), designed by the researchers in the modified 4-point Likert model of Very High Extent (4), High Extent (3), Low Extent (2) and Very Low Extent (1) respectively. The reliability coefficients of Tech-Free Zones and Dumb-Phone Utilization Scale and Students' Academic Improvements Scale, using Cronbach Alpha reliability statistics are 0.73 and 0.89. The various reliability coefficients were high and justified the use of the instrument for the study. Simple regression was used to answer the research questions while t-test associated with simple regression was used to test the hypotheses at 0.05 level of significance.

### RESULTS

The results of the study came from the answers to the research questions and results to test of hypotheses. Thus:

**Research Question 1:** To what extent does tech-free zones predict students' academic improvements in Universities in Rivers State, Nigeria?

**Table 1: Simple Regression on the Extent Tech-Free Zones Predicts Students' Academic Improvements in Universities in Rivers State, Nigeria.**

Model	R	R Square	Adjusted R Square	Decision
1	.823 <sup>a</sup>	.677	.610	Tech-free zones predict students' academic improvements to a high extent

**Scale:** Very high extent (100% - 76%); High extent (75% - 51%); Low extent (50 - 26); Very low extent (25% - 0%)

Data on Table 1 revealed that the regression (r) and regression square (r<sup>2</sup>) coefficients are .823 and .677 respectively, while the adjusted r square is .610. The extent of prediction (coefficient of determinism) is 68% (.677×100) showing a high extent from the scale of measurement above, which falls in between 75% and 51%. By implication, the result therefore confirms that tech free

zones predicts students' academic improvements in Universities in Rivers State, Nigeria to a high extent.

**Research Question 2:** To what extent does dumb-phone utilization predict students' academic improvements in Universities in Rivers State, Nigeria?

**Table 2: Simple Regression on the Extent Dumb-Phone Utilization Predicts Students' Academic Improvements in Universities in Rivers State, Nigeria.**

Model	R	R Square	Adjusted R Square	Decision
1	.713 <sup>a</sup>	.508	.503	Dumb-phone utilization predicts students' academic improvements to a high extent

- Scale on Table 1 applies.

Data on table 2 showed that the regression (r) and regression square (r<sup>2</sup>) coefficients are .713 and .508 respectively, while the adjusted r square is .503. The extent of prediction (coefficient of

determinism) is 51% (.508×100) showing a high extent from the scale of measurement above, which falls in between 75% and 51%. By implication, the result therefore confirms that dumb-



phone utilization predicts students' academic improvements to a high extent.

**Hypothesis 1:** There is no significant prediction of tech-free on students' academic improvements in Universities in Rivers State, Nigeria.

**Table 3: t-test associated with Simple Regression on the extent Tech-Free zones predicts Students Academic Improvements**

Model	Unstandardized coefficients		Unstandardized coefficients	t	Probability val.	Alpha Value	Decision
	B	Std. Error					
1	(constant)	33.964	.930	36.531	.000		
	Tech-Free Zones	.820	.823	.023	2.871	.004	Significant

Table 3 showed that the t-test associated with simple regression is 2.87. The result revealed that the hypothesis is rejected because the probability value of .00 is less than the alpha value of .05. Therefore, there is a significant prediction of tech-free mode on students' academic improvements in Universities in Rivers State, Nigeria.

**Hypothesis 2:** There is no significant prediction of dumb-phone utilization on students' academic improvements in Universities in Rivers State, Nigeria.

**Table 4: t-test associated with Simple Regression on the extent Dumb-phone Utilization predicts Students Academic Improvements**

Model	Unstandardized Coefficients		Unstandardized coefficients	T	Probability val.	Alpha Value	Decision
	B	Std. Error					
1	(constant)	17.944	.756	23.743	.000		
	Dumb-phone Utilization	.667	.021	.713	22.361	.000	Significant

Table 4 showed that the t-test associated with simple regression is 22.36. The result revealed that the hypothesis is rejected because the probability value of .00 is less than the alpha value of .05. Therefore, there is a significant prediction of dumb-phone utilization on students' academic improvements in Universities in Rivers State, Nigeria.

tech-free-zones in schools. Though those is rampant in our locale, when it is practice, student feel academic better. This implies that tech-free zone is needed in schools for improved academic base.

## DISCUSSION OF FINDINGS/IMPLICATIONS

### Establishment of Tech-Free Zones as a Predictor of Students' Academic Improvements in Universities in Rivers State, Nigeria

The first finding of the study is that the establishment of tech-free zones predicts students' academic improvements in universities in Rivers State, Nigeria to a high extent. Also a corresponding finding from test of hypotheses, which establishes that there is a significant prediction of establishment of tech-free zones on students' academic improvements in Universities in Rivers State, Nigeria. These findings are confirmatory of Freitas (2016), Glass and Karz (2019), Fernandez (2018), Rampton (2020), who in their work see the need for the establishment of

### Dumb-Phone Utilization as a Predictor of students' Academic Improvements in Universities in Rivers State, Nigeria

The second finding of the study is that dumb-phone utilization predicts students' academic improvements to a high extent. Also, a corresponding finding from hypothesis testing found out that there is a significant prediction of dumb-phone utilization in students' academic improvements in universities in Rivers State, Nigeria. These findings are in tandem with Glass and Kang (2019), Syverston (2020), Ifeanyi and Chukere (2018), Wilcockson et al (2019), Wigmore (2016) whose studies and scholarly contribution give premium to dumb phone utilization as a strategy for improving academic progress. The utilization of dumb-phones practically cuts the user from the internet and user know that hence, the direction of the finding. This finding



implies that, individuals who use dumb phones, have more time to concentrate and therefore are improved academically.

## Conclusion

Based on the findings of the study, it is concluded that digital detoxification strategies such as establishment of tech-free zones and dumb-phone utilization, are viable and strong predictors of students' academic improvements in public Universities in Rivers State, Nigeria.

## Recommendations

In the light of the findings and conclusion of the study, the following were recommended:

1. Government and schools should ensure that there is proper establishment and maintenance of tech-free zones in the universities, as these would help in reducing students' addiction to the internet and therefore enable them concentrate on their academic endeavours for more academic improvements.
2. Students should continue to ensure that they engage in dumb-phone utilization practices at certain times of the day, as this will increase their attention to academics and as a result, improve their academic statuses.

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# ATTITUDE OF GRADE VI PUPILS IN THE IMPLEMENTATION OF ONLINE DISTANCE LEARNING

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Article DOI: <https://doi.org/10.36713/epra12419>

DOI No: 10.36713/epra12419

## ABSTRACT

*This study sought to determine the attitude among Grade VI pupils in the implementation of online distance learning of Borongan City Division in school year 2020-2021. Specifically, it aimed to identify their reading abilities and their association with their attitude toward online distance learning. To address the objectives, this study used a correlational design. A total of 217 Grade 6 pupils from the five districts of Borongan City Division served as respondents of this study. A survey questionnaire was adapted to gather necessary data on the reading levels of learners and their attitudes toward the online distance learning modality. Meanwhile, inferential statistics such as Pearson r Coefficient were used to identify the association between the reading levels of pupils and their attitude toward online learning which was found to have a significant relationship.*

**KEYWORD:** *attitude, online distance learning, correlation*

## INTRODUCTION

K-12 pupils in the Philippines are currently missing face-to-face instruction due to COVID-19. Many parents and educators thus share a common worry: When the pandemic subsides, pupils will return to school with lower achievement. There are also concerns that the gap between high- and low-achieving students will become larger.

In addition, extended interrupted education that disengages students from the learning process has the potential cost of reversing gains in learning results. An even higher cost comes from the disengagement of students with learning challenges (academic, socio-economic, students with special/diverse educational needs or persons with disabilities) who may not effectively cope with remote learning strategies or cannot access the information. School closings also impact labor supply as they increase the burden on parents, who need to stay home or find new arrangements if children have to stay at home.

Though health precautions are, without a doubt, a paramount consideration in these challenging times, Filipinos' education cannot be left behind, even during this crisis. With this severe problem, the Department of Education decided that it was time for the Philippines to fully adopt distance learning. This initiative would utilize the power of current technologies to provide education even with significant limitations such as community quarantines and social distancing policies. DepEd's online learning platform is specially crafted to deal with the current limitations that both teachers and students face during

the crisis. Their platform is a convenient place where interactive provides practical solutions to the problems that the education sector is facing right now.

Without a doubt, this initiative from the Department of Education-Central Office is laudable, but the DepEd is still faced with another hurdle that will surely limit the full realization of distance learning in the Philippines. According to Huawei's Global Connectivity Index, which annually ranks 79 nations based on various factors, including digital economic performance, ICT investment, and ICT maturity, the Philippines ranked 59th and is categorized as a "Starter." Also, the Department of Education (DepEd) cannot deny that the necessary equipment for their distance learning initiative cannot be afforded by most public school students.

However, at the regional office upon recommendation by the Schools Division Offices, after consultation with the schools under their respective jurisdictions, authorities have decided on the learning delivery modalities deemed appropriate in the context of the local conditions and consistent with the COVID-19 guidelines and regulations of different schools. It urges all thirteen (13) Schools Division Offices (SDOs) across the region to adopt blended learning as a modality in the implementation of BE-LCP. Blended learning utilizes the modular approach (either online or offline) coupled with other distance learning modalities such as online distance learning (either synchronous or asynchronous), or TV/Radio-based Instruction suited to the context of every SDO.





DepEd-Borongan City Division in its quest to continue providing basic education to its pupils has reached out to 11,453 pupils (from non-graded to Senior High School) to come up with the Basic Education-Learning Continuity Plan (BE-LCP) that may determine the kind of learning modality that the institution would best fit into. According to the survey, the Key Stage 1 (Non-Graded) has the lowest percentage in terms of internet connectivity/mobile data where of all the forty (40) pupils, no one or 0% has a laptop/desktop at home while there were five (5) pupils having smartphone or tablet at home but no one has the internet connectivity/mobile data. However, Key Stage 5 (Senior High School), got the highest percentage in terms of internet connectivity/mobile data from among the 5 key stages which comprise 36% or 649 pupils out of the 1,819 who were enrolled (data source from the Basic Education-Learning Continuity Plan (BE-LCP) of the division.

## OBJECTIVES

This study primarily aimed to determine the attitude of Grade VI pupils of Borongan City Division for school year 2020-2021 in the implementation of online distance learning modality.

Specifically, it addressed the following objectives:

1. Determine the Grade VI pupils' classification in terms of the following reading abilities:
  - 1.1 non-reader;
  - 1.2 frustration;
  - 1.3 instructional; and
  - 1.4 independent
2. Determine the attitude of Grade VI pupils towards the implementation of online distance learning; and
3. Determine the association between reading abilities of pupils and their attitude to online distance learning?

## METHODS

### Population and Sample

The population for this study consisted of Grade VI pupils from the five (5) central schools of Borongan City Division during the school year 2020-2021. Using Krejcie and Morgan (1970, cited by Khorrami, Farhadian & Abbasi, 2018), random sample of 217 pupils was selected.

### Instrumentation

The first instrument looked into the pupils' reading levels in terms of: (a) non-reader, (b) frustration, (c) instructional, and (d) independent. The data gathered was based on the Phil-IRI GST which was conducted during the school year 2020-2021 and had been obtained by the researcher from the teacher-adviser of the respondents. From it, they were the one who ticked the appropriate reading level of the identified respondent in the questionnaire.

The instrument focused on determining the attitude of pupils towards implementation of online distance learning modality.

Questionnaire was adapted from the research entitled "Readiness for Blended Learning: Understanding Attitude of University Students" by Chun Meng Tang. This part made use of a five-point scale coded using the following scale: Strongly Agree (4.51-5.00), Agree (3.51-4.50), Neither Agree Nor Disagree (2.51-3.50), Disagree (1.61-2.50), Strongly Disagree (1.0-1.50).

### Data Collection

In gathering the pertinent data, the following procedures were made. A preliminary survey or inquiry was conducted at the Borongan City Division Office particularly to the Division Planning Officer to determine the feasible number of respondents to be obtained. Then, a permit for the conduct of the study had been taken from the Office of the Schools Division Superintendent, Districts In-Charge, Principals and Teacher-Advisers/District Nurses. On the other hand, letters of request and consent to respondents together with the questionnaire checklist were hand-carried by the researcher and given to the identified pupil-respondents. The questionnaires had been retrieved as soon as the respondents have finished answering the tool. Data were gathered, encoded and classified according to variables described in Chapter 1 and were tabulated and analyzed according to appropriate statistical tools described in this chapter.

Moreover, the data gathering procedure made by the researcher has followed strictly the minimum health protocols set by competent authorities to ensure the safety and well-being of all concerned.

### Statistical Analysis

Frequency, percentage and rank were used to summarize the reading levels and health conditions of the pupils. On the other hand, mean was used to summarize the data on the attitude of pupils to the implementation of online distance learning.

Pearson r correlation had been employed in determining the significant relationship between the reading levels and attitude to online distance learning. The null hypothesis was tested at 0.05 level of significance.

## RESULTS AND DISCUSSION

### Reading Levels of Learners

The reading level of the pupils towards the implementation of online distance learning is indicated in Table 1.

It can be deduced in the table that with regards to the respondents' reading levels, instructional with 112 out of 217 respondents or about 51.61 percent got the highest percentage; followed by independent with 86 out of 217 or 39.63 percent; frustration with 19 out of 217 or 8.76 percent got the lowest percentage.

This result can be associated with the study of Atwell (2015) wherein the results from major assessments of reading ability indicate a direct correlation between proficient student readers





and habitual independent readers. “When an independent reading component is added, test scores go up”. Independent reading is not just an act we perform to improve test scores, though, independent reading serves as a catalyst for improving reader identity: “During independent reading time our students discover who they are as readers”. Independent reading offers

students the opportunity to get into the “zone”. While in the zone, frequent, voluminous reading happens without distraction, allowing students to become immersed in the plot of the story and in the lives of their book’s characters.

**Table 1. Reading levels of learners**

Reading Levels	Frequency	Percentage	Rank
Independent	86	39.63	2
Instructional	112	51.61	1
Frustration	19	8.76	3
<b>Total</b>	<b>217</b>	<b>100</b>	

### Attitude of Learners towards the Implementation of Online Distance Learning

The attitude of pupils towards the implementation of online distance learning is indicated in Table 2.

It can be gathered from the table that in terms of the seventeen (17) item indicators of attitudes for online distance learning, the respondents rated it with neither agree nor disagree as indicated by the general weighted mean of 3.45.

A closer scrutiny of the data showed that indicators of attitude for online distance learning were ranked as follows: (1) indicator no. 1, I believe face-to-face learning is more effective than online learning; (2) indicator no. 17, I respect opinions and information provided by others in online communities; (3) indicator no. 18, I provide an interesting and motivating learning environment; (4) indicator no. 19, I am motivated to develop independent learning skills; (5) indicator no. 8, I believe the Web is a useful platform for learning; (6) indicator no. 7, I find it very difficult to study online; (7) indicator no. 6, I get bored when studying online; (8) indicator no. 15, I would like to interact with other students outside of the classroom; (9) indicator no. 13, I am comfortable using Web technologies to

exchange information with others; (10) indicator no. 9, I am comfortable using Web technologies; (11) indicator no. 2, I am comfortable with self-directed learning; (12) indicator no. 20, I am motivated to prepare well for my studies in online learning; (13) indicator no. 16, I appreciate easy online access to my lecturer; (14) indicator no. 4, I would like lecture time in the classroom to be reduced; (15) indicator no. 14, I would like to interact with my teacher online; (16) indicator no. 3, I like online learning as it provides richer instructional content; and (17) indicator no. 5, I would like to have my classes online rather than in the classroom.

This result can be associated with what Wadmany et al. (2011) mentioned that the combination of interaction and asynchronism encourages students to reflect on their own learning and that of their peers. Because asynchronous forums give participants time, space, and the freedom to express themselves whenever they wish, participants are more likely to express in-depth an individual, even if it challenges others’ views. Major advantages for online teacher learning include the greater flexibility it offers, and the opportunities it provides to utilize resources and reflection.

**Table 2. Attitude of learners towards the implementation of online distance learning**

Attitude towards Online Distance Learning	Weighted Mean	Interpretation	Rank
1. I believe face-to-face learning is more effective than online learning	4.84	Strongly Agree	1
2. I am comfortable with self-directed learning	3.31	Neither Agree nor Disagree	11
3. I like online learning as it provides richer instructional content	2.91	Neither Agree nor Disagree	16
4. I would like lecture time in the classroom to be reduced	3.12	Neither Agree nor Disagree	14
5. I would like to have my classes online rather than in the classroom	2.20	Disagree	17
6. I get bored when studying online	3.42	Neither Agree nor Disagree	7
7. I find it very difficult to study online	3.48	Neither Agree nor Disagree	6
8. I believe the Web is a useful platform for learning	3.77	Agree	5
9. I am comfortable using Web technologies	3.34	Neither Agree nor Disagree	10
10. I am comfortable using Web technologies to exchange information with others	3.37	Neither Agree nor Disagree	9
11. I would like to interact with my teacher online	3.02	Neither Agree nor Disagree	15
12. I would like to interact with other students outside of the	3.41	Neither Agree nor Disagree	8



classroom			
13. I appreciate easy online access to my lecturer	3.18	Neither Agree nor Disagree	13
14. I respect opinions and information provided by others in online communities	4.10	Agree Agree nor Disagree	2
15. I provide an interesting and motivating learning environment	4.08	Agree Agree nor Disagree	3
16. I am motivated to develop independent learning skills	3.96	Agree	4
17. I am motivated to prepare well for my studies in online learning	3.20	Neither Agree nor Disagree	12
<b>General Weighted Mean</b>	<b>3.45</b>	<b>Neither Agree nor Disagree</b>	

### Relationship between Reading Abilities of Learners and their Attitude to Online Distance Learning

The significant relationship between reading levels of pupils and their attitude to online distance learning is reflected in Table 3.

It can be gleaned from the table that the reading abilities of pupils was found to have significant relationship to their attitude to online distance learning.

This is proven with the obtained correlation coefficient value of 0.28 established at 0.032 level of probability which signifies a direct relationship between the reading abilities of pupils having

a corresponding increase in their attitude towards implementation of online distance learning.

This result is in consonance with what Graff (2010) pointed out that people who are considered more proficient readers are provided more opportunities to increase the volume of and expertise in reading; however, those who struggle with reading are afforded fewer and less varied opportunities, resulting in a perceptual and vicious cycle of deficiency for struggling readers. Such cycles substantially increase the probability of reader disengagement.

**Table 3. Significant relationship between reading abilities of learners and their attitude to online distance learning**

Variables		R	p-value	Interpretation
Independent	Dependent			
Reading Levels	Attitude	0.28	0.032	Significant

### CONCLUSION

On the basis of the foregoing findings and the hypotheses posited in this study, the conclusions was drawn that the reading levels of pupils were found to have relationship to attitude to online distance learning, thus the null hypothesis that there is no significant relationship between reading levels of pupils and attitude to online distance learning was rejected.

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# ASSESSING THE INFLUENCE OF COMMUNITY PARTNERSHIP IN MONITORING AND EVALUATING COMMUNITY SAFETY IN LAMU WEST SUB-COUNTY

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Article DOI: <https://doi.org/10.36713/epra12171>

DOI No: 10.36713/epra12171

## ABSTRACT

*Though community policing elements such as community partnership have been mentioned as possible CP elements that can influence monitoring and evaluation of community safety, there is limited research to ascertain this in Lamu West Sub County. The purpose of this study was to establish the effect of community partnership in monitoring and evaluating community safety in Lamu West Sub-County. The study adopted quantitative design where data was collected from a sample of 405 respondents drawn from 32,873 of Lamu West Sub-County residents with the aid of a questionnaire. Correlation and regression analyses were adopted in data analysis to help in establishing the relationship between the dependent and independent variables. The findings of this study demonstrated that there was statistically positive relationship between community partnership and in monitoring and evaluating community safety in Lamu West Sub-County at ( $\beta=0.619$ ;  $p<0.05$ ). The study found that community has been in the forefront of collaborating with the police. The study also shows that there was need for a partnership between police and the community for a sustained peace and harmony in the society. Majority of respondents agreed that partnering with the police has enabled easy identification of criminal activities. The study concludes that community partnership significantly influences monitoring and evaluating community safety. The study recommends that effective collaborations between law enforcement and community stakeholders are critical to public safety, and it's critical that government agencies, community organizations, nonprofits, companies, and private citizens all see public safety as a shared duty. There is need for more involvement of all key stakeholders in maintaining security.*

**KEY WORDS:** Community Partnership, Monitoring and Evaluating, Community Safety

## INTRODUCTION

Community safety is a global necessity. Community safety is about feeling safe, whether at home, in the street or at work. It relates to quality of life and being able to pursue and obtain the fullest benefits from your domestic, social and economic lives without fear or hindrance from crime and disorder (US Department of Justice, 2021). A safe and healthy workplace not only protects workers from injury and illness, it can also lower injury/illness costs, reduce absenteeism and turnover, increase productivity and quality, and raise employee. Across the globe, policing and community safety partnerships (PCSPs) or community policing programs set up to help make communities safer.

One of the fundamental objectives of police reforms globally is to (re)establish confidence in the state police and create

relationship of trust between police officers and citizens (Zikhali, 2019; Biwott, 2017). The delivery of community safety requires the integration and collaboration of services and partnership working to ensure a wrap around, holistic approach.

Researchers in the field of community policing found that police do not have adequate resources to address the underlying challenges and causes of societal problems and challenges hence they need support for other state agencies such as civil society (Diphorn & Van Stapele, 2021). Equally, police need public support to obtain timely information for preventing and addressing crime problems. For instance, Diphorn and Van Stapele (2021) observed that through social control, police have the opportunity to directly solve social environment. The police can serve as a catalyst, challenging people to accept their share



of responsibility for overall quality of life in their respective communities.

Denney and Jenkins (2013) opined that particularly segment of the society has become particularly victims of growing insecurity and social disorder. This resulted into increased call among scholars, policy makers and academics for a shift in the philosophy of police work from an exclusive law enforcement approach to one that also focuses on partnerships, problem-solving and leadership (Denney & Jenkins, 2013). Partnerships in policing appears to be an alternative method of combating insecurity since the traditional policing approach has not provided answers to crime problems in the area. Globally, community partnerships in policing have been effectively implemented in countries such as the United Kingdom, Australia, and Holland (Dempsey & Forst, 2009; Khamisi & Mange, 2020).

Lawrence and McCarthy (2013) added that community partnership is more than just frequently sharing information and contacting each other but rather involves an ongoing effort to work together in meaningful ways for the purpose of addressing security problems facing the neighbourhood. Partnering requires that community is continually involved in decisions regarding security operations and measures within the community. The community tends to feel part of the team in the event that they are fully engaged and equal partners (Azemi, 2017). Biwott (2017) opined that for community partnership to be effective, there is need for some degree of mutual respect and trust between the community and the police department. Thus, the first step to effective community partnership is ensuring that there is trust between the police and the communities.

Across the continent implementation of the community policing strategy and specifically the role of monitoring community safety is still a daunting task. For instance, in Nigeria, Arisukwu, Igbolekwu, Oye, Oyeyibo et al, (2020) observe that the absence of social infrastructure, inadequate police presence and government support to unemployed youths made the crime situations worse in rural areas. There was low level of community interactions with the police in crime prevention and control in rural Nigeria. In Rwanda, Bizimana and Umutooni (2019) discuss how community night patrols commonly referred to as *irondo ry'umwuga* have been effective in crime prevention.

The Kenyan state has used community policing as a vehicle to transform state police towards people-centered policing and numerous projects have been undertaken in the past decades (Andrew, 2007; Chumba, 2012). The traditional style of policing, which primarily focused on the exclusive enforcement of law, the efficiency of rapid response as a mean to addressing crime and the bureaucratization of the police has however proven to be no longer appropriate for tackling the emerging

crime problems and safety concerns of the contemporary society (Chumba, 2012).

In a study in Kenya, Kiptoo (2017) opined that problem-oriented community policing is mainly concerned with encouraging creative problem solving among community members and police officers in identifying the root causes of the problem and figuring out how the problem can be best addressed. Kiptoo (2017) observed that police departments grounded on community policing tend to train and assign their officers to duties which are focused on creative and active problem solving and prevention instead of just reacting to criminal activities and disorderliness.

The Kenyan Constitution provides a strong foundation for the country's monitoring and evaluation (M&E) practices by strongly advocating for responsive, accountable and effective institutions (Republic of Kenya, 2012). Given the clarity of the transformation agenda in Kenya's State, provided by the new Constitution and Vision 2030 there is a unique opportunity for planning, budgeting, monitoring and evaluation to be placed at the heart of new institutional arrangements (Republic of Kenya, 2007). Notwithstanding CP elements implementation in Kenya has faced many challenges and these include poor public image of the police force; poor customer service procedures within the police force, which discourage the residents from reporting crime; belief by the residents that crime is a source of livelihood for some people, pressure to demonstrate that COP reduces crime, and lack of support from local government (Amuya, 2017). These are likely to also compromise the capacity and/or efficacy of the CP elements in monitoring and evaluating community safety.

Personal Safety and the right to live devoid of fear is fundamental for people in Kenya, particularly among the poor and underprivileged individuals. Social and economic development can be improved, hence benefiting the Kenyan economy and quality of life of the general population through reduction in criminal activities. There are still numerous cases reported, which depict deplorable community safety in some parts of the country. One such area is Lamu Lamu West Sub-County. An example includes the killing of six people in Witho and another in Bobo –Sunkia villages in Hindi, in Lamu West, and which resulted in mass exodus of residents. This raises questions as to the strength of monitoring and evaluation of community safety in the area.

Though community policing elements such as community partnership have been mentioned as possible CP elements that can influence monitoring and evaluation of community safety, there is limited research to ascertain this in Lamu West Sub County. This study has been prompted by the paucity of past studies on the significance of community partnership on monitoring and evaluation of community safety in Lamu West





Sub County. Nevertheless, existing studies conducted in different counties in Kenya appear to ignore these three elements with respect to monitoring of community safety. It is against this background that this study is conducted to access the community policing indicators elements on monitoring and evaluating community safety in Lamu West Sub-County

### **Community Partnership and Monitoring and Evaluating of Community Safety**

Oliver (2004) cited that police-community partnership is a complete scale attempt that tries to acquaint community and the police with each other's challenges and stimulate actions aimed at fixing those problems. Each parties have to be concerned in identifying and fixing all kinds of issues. Lab (2004) posits the significance of police-network with family members and the community on policing implementation as follows: community policing calls for co-operation among police and the opposite individuals of the community. Police-network relations try to clear up the abhorrence or anathema among regulation enforcement and residents by beginning lines of communication. Both Oliver (2004) and Lab (2004) relate to developed countries context which may not be similar to that in developing countries.

Research conducted by Reuland et al. (2006) found that community partnership was important in handling domestic violence incidents and victims. According to Reuland et al. (2006), partnership members were in the planning committees, teams, task force and coalitions mandated at addressing domestic violence. Another study conducted by Headley (2018) found that community partnership was the determining factor on whether a survivor reports violence and receive adequate treatment and whether violence perpetrators is apprehended, investigated and prosecuted. Denney and Jenkins (2013) found that adoption of community partnership was fundamental in increasing trust and effectiveness of police in preventing and responding to violence against women.

Biwott (2017) also concluded that community policing is premised on the argument that solving of criminal activities and promoting safety within the community requires partnership and collaboration between the police and the communities. Important partners in community policing include community members who include formal and informal community leaders, activists, volunteers and other government agencies like probation and parole officers. However, regression analysis conducted by Njiri et al. (2014) found that community policing had insignificant positive relationship with safety and crime level. Thus, Njiri et al. (2014) concluded that there was no adequate information on community policing to public officers and this might affect their partnership and interactions with stakeholders. However, to the best of the knowledge of the researcher, limited studies have been conducted to this end in

Lamu County, Kenya. Moreover, the studies conducted seemed to ignore the aspect of monitoring and evaluation of community safety. As such, the focus of the researcher will be to investigate the influence of community partnership on monitoring and evaluation community safety.

### **Study Area**

The study assessed the community policy indicators on monitoring and evaluating community safety in Lamu West Sub-County. The area is also one of the electoral constituencies of Lamu County, Kenya. It is one of two constituencies in Lamu County. The constituency has eleven wards, all electing MCAs for the Lamu County Assembly. Over the last decade, the area has been marred with insecurity stemming from terrorist activities.

### **RESEARCH METHODOLOGY**

The study utilized a descriptive survey research to effectively assess the community policing elements on monitoring and evaluating community safety in Lamu West Sub-County. Mugenda and Mugenda (2012), highlights that a descriptive survey configuration reveals existing associations among factors under examination. The exploration approach doesn't at any rate endeavor to transform anything in that course of action.

Target population is defined as a universal set of the study of all members of real or hypothetical set of people, events or objects to which an investigator wishes to generalize the result. Mugenda and Mugenda (2003) define the target population as a complete set of individuals, case or objects with the same common observable characteristics. The study targeted 32,873 households 15 Community policing committee members, 15 chiefs, 5 police officers, 4 ACCS and 1DCC. Table 1 shows the target population.

A sample is a smaller group or sub-group obtained from the accessible population (Mugenda and Mugenda, 1999). This sub-group is carefully selected so as to be representative of the whole population with the relevant characteristics. The researcher adopted the 30% of the total population. According to Mugenda and Mugenda (2003), a sample can comprise of 10-30% of the population provided it is sufficient.

Using Krejcie and Morgan (1970) table of sample size determination a population of 9,862 gives 370 as the sample size. Moreover, using proportionate sampling technique, each stratum was apportioned the random samples. Finally, simple random sampling technique was used to obtain the required samples in each stratum.

The study adopted multistage sampling procedure. Purposive sampling technique was employed to select community policing committee members, chiefs, ACCS and DCC. This is justified





by the fact the there is only one chief ACCS and DCC in a given location. Furthermore, household heads were selected using proportionate sampling technique to apportion the samples in each category. Finally, simple random sampling technique was used to obtain the required samples for the households.

Data was collected using questionnaires. The study utilized a 5 Likert scale guided the responses, which is represented as follows (SA) = Strongly Agree; (D) = Agree; (N) = Neutral; (2) = Disagree; and (1) = Strongly Disagree. Data was analysed for descriptive statistics and inferential statistics using SPSS.

## RESULTS AND DISCUSSIONS

### Community Partnership and Community Safety

Descriptive statistics for Community Partnership and Community Safety were as provided in Table 1. The results are presented in Table 10. The surveyed respondents indicated that they would want to have community partnership with police for improving on community safety. It was observed that 16% of respondents agreed that there should be good cooperation between the community and the police. There was consensus among the study participants that community partnership is fundamental for promoting peace and stability. However, 43.3% of respondents disagreed that there was a good cooperation between the community and the police. This view was upheld by 35% of those who disagreed that police community partnership has brought peace and stability Lamu West Constituency. It is imperative that there exists a partnership between police and the community for a sustained peace and harmony in the society. These findings concur with that of Headley (2018) who asserts that maintaining public safety and successful policing requires strong relationships of mutual trust between police agencies and the communities they serve. Community members are relied upon to offer information about crime in their communities and to collaborate with the police in devising solutions to crime and disorder issues. Equally, community members' willingness to trust the police is also reliant on whether they believe police activities reflect community values and include procedural fairness and legitimacy principles.

On a positive perspective, it was established that up to 27.9% of the respondents agreed that their community has been in the forefront of collaborating with the police. Similarly, 24.5% agreed that partnering with the police has enabled easy identification of criminal activities. This implies that when there is good partnership between police agencies and community members, a feasible peace in the community will be realized. This finding agrees with that of Jannetta and Lachman (2011) who asserts that the police can assist with monitoring probationers and parolees to enhance their accountability far beyond what any supervision officer can do alone, but only if police have access to information on the supervisees and the conditions of supervision for which they are accountable. Police encountering supervisees also gain valuable real-time intelligence regarding how they are doing, but this can be shared only if the police can readily identify the supervision officer.

The significance of community partnership has also been demonstrated by Denney and Jenkins (2013) where they observed that community partnership is fundamental in increasing trust and effectiveness of police in responding to violence. Consistent with the present study, Njiri et al. (2014) observed that there is still no adequate information regarding community policing to public officers and this might affect their partnership and interaction with the local community. Poor public image was found to be the deterrent to effective implementation of community policing in Kajiado South Sub-County (Mwaura, 2014). These findings imply that most people in Lamu West sub-county believe that community partnership is fundamental for enhancing community safety. These surveyed individuals believe that aspects such as consultation, participation and engagement are fundamental for enhancing community safety. Nevertheless, most of the participants agreed that the level of community partnership is not sufficient in Lamu West subcounty hence the need for community leaders and police departments to engage in a continuous consultations, participation and engagements.

**Table 1: Community Partnership**

Statement	SD	D	U	A	SA	Mean	Std. Dev.
Would you want to have a good cooperation between your community and the police for safety	13.8%	43.3%	13.7%	16.0%	13.2%	2.71	1.26
Police community partnership has brought peace and stability Lamu west constituency	15.6%	35.0%	15.3%	26.1%	8.0%	2.75	1.22
My community has been in the forefront of collaborating with the police.	13.5%	39.0%	9.8%	27.9%	9.8%	2.81	1.25
Partnering with the police has enabled easy identification of criminal activities	15.6%	30.1%	12.6%	24.5%	17.2%	2.97	1.36
Overall mean Index						<b>2.81</b>	<b>1.06</b>
Valid N (listwise)						<b>326</b>	



### Monitoring and Evaluating Community Safety

Monitoring and evaluating community safety is critical in documenting safety concerns in a community. The findings indicate that 30.7% of the respondents disagreed that there was adequate sensitization on monitoring and evaluating community safety. Moreover, 29.4% also disagreed that monitoring and evaluation of community partnership has result to increase in community safety. This could hamper efforts of evaluating safety and security issues in a community. These findings agree with those of Sherman (2001) indicates that the effectiveness of community policing is heavily reliant on information from members of the public, who provide information with authorities on a regular basis, resulting in enhanced societal security.

Community challenges should take the shortest time to be resolved for a sustainable peace to be realized. From the study findings, it was established that up to 33.7% of the respondents agreed that the timelines allocated for the community problem solving has greatly reduced through monitoring and evaluation.

Moreover, 26.4% of respondents similarly agreed that monitoring and evaluating has assisted in documenting the security progress of the community. It is no surprise the majority of respondents agreed that Monitoring and Evaluation of Community Leadership has greatly Improved community safety. This could be a factor that leads to accountability and responsiveness of community leaders to the needs of the community pertaining security safety in Lamu West Sub-County. Thatcher (2001) reports that community policing encounters a number of roadblocks, one of which is a clash of values and priorities followed by social institutions.

Inferential statistics allows researchers to describe data and draw inferences and conclusions from it. By using inferential statistics, an individual can deduce what a population believes or how it has been affected based on sample data. This section begins with the diagnostic tests followed by ANOVA tests. Moreover, Pearson Correlation as well as regression analysis was run.

**Table 2: Monitoring and Evaluating Community Safety**

Statement	SD	D	U	A	SA	Mean	Std. Dev
There is adequate sensitization on monitoring and evaluating community safety	15.6%	30.7%	16.6%	23.9%	13.2%	2.88	1.3
Monitoring and evaluation of community partnership has result to increase in community safety	18.4%	29.4%	16.3%	23.9%	12.0%	2.81	1.31
The timelines allocated for the community problem solving has greatly reduced through monitoring and evaluation	12.6%	22.7%	16.9%	33.7%	14.1%	3.14	1.27
Monitoring and Evaluation of Community Leadership has greatly Improved community safety	9.8%	26.7%	16.6%	30.1%	16.9%	3.17	1.26
Monitoring and evaluating has assisted in documenting the security progress of the community	11.0%	28.5%	15.6%	26.4%	18.4%	3.12	1.31
Overall mean Index						<b>3.02</b>	<b>0.89</b>
Valid N (listwise)						<b>326</b>	

### Correlation Analysis of Community Partnership, and Monitoring and Evaluating Community Safety

The results in Table 3 revealed that there exists a positive and statistically significant relationship between community partnership and monitoring and evaluating community safety ( $r=0.733^{**}$ ;  $p<0.01$ ). This implies that when aspects such as

community consultation, participation, training, and capacity building is enhanced, monitoring, and evaluating community safety will be improved. Conversely, when these features are lacking evaluating community safety will become impossible. In order to promote community safety, community partnership should be one of the areas of strategic focus. Community



partnership can be encouraged through consultations and engagement between the community members and police

departments to identify and mitigate criminal activities in the community.

**Table 3: Correlations Matrix**

		Monitoring and Evaluating Community Safety
Community Partnership	Pearson Correlation	.733**
	Sig. (2-tailed)	.000
	N	326

### Regression Analysis

#### Model Summary

The influence of community partnership on the dependent variable is analyzed using multiple linear regression analytic framework. The finding is presented subsequently. The results

shows that the adjusted R Square value of 0.538 indicates that up to 53.8% in monitoring and evaluating community safety is explained by other contributors / variables. This leaves 46.2% as unexplained variation that can be elucidated by other factors outside the model.

**Table 4: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.733a	.538	.537	.610

a. Predictors: (Constant), Community Partnership.

#### Model Robustness

The strength of the model was tested at 0.05 test significance level by using the three independent variables. The results are presented in Table 5. The results indicates that the model was

statistically significant in predicting monitoring and evaluating community safety using these variables: community leadership, community partnership, community problem solving at 0.05 alpha levels,  $r^2 = 0.538$ ,  $F(1,324) = 377.297$ ;  $p < 0.05$ .

**Table 5: ANOVA<sup>a</sup>**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	140.558	1	140.558	377.297	.000 <sup>b</sup>
Residual	120.703	324	.373		
Total	261.260	325			

a. Dependent Variable: Monitoring and Evaluation of Community Safety

b. Predictors: (Constant), Community Partnership

#### The Beta coefficients

The strength and significance of community partnership was analyzed and presented in Table 6. It was observed from the results that community partnership significantly influences monitoring and evaluating community safety ( $\beta = 0.619$ ;  $p < 0.05$ ). This implies that a unit increase in community partnership increases monitoring and evaluating community safety by 0.615

positive units. This means that community partnership was a strong predictor in monitoring and evaluating community safety. The overall model of the research:

$$Y = \beta_0 + \beta_3 X_3 + \varepsilon$$

$$Y = 1.285 + 0.619(\text{community partnership}) + 0.096$$

**Table 6: Beta Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.285	.096		13.391	.000
Community Partnership	.619	.032	.733	19.424	.000

a. Dependent Variable: Monitoring and Evaluation of Community Safety



## CONCLUSION

The study concludes that community partnership significantly influences monitoring and evaluating community safety ( $\beta=0.619$ ;  $p<0.05$ ). This implies that when aspects such as community consultation, participation, training, and capacity building is enhanced, monitoring, and evaluating community safety will be improved. Conversely, when these features are lacking evaluating community safety will become impossible.

## RECOMMENDATIONS

First the study recommends that effective collaborations between law enforcement and community stakeholders are critical to public safety, and it's critical that government agencies, community organizations, nonprofits, companies, and private citizens all see public safety as a shared duty.

The study found that there were cases where community stakeholders are not actively involved in monitoring and evaluation of community safety. There is need for more involvement of all key stakeholders in maintaining security.

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# THE IMPORTANCE OF SUGAMMADEX AT POSTOPERATIVE RESIDUAL NEUROMUSCULAR BLOCK

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**Article DOI:** <https://doi.org/10.36713/epra12417>  
**DOI No:** 10.36713/epra12417

## ABSTRACT

**Introduction:** postoperative residual neuromuscular blockade is the postoperative muscle paralysis caused by incomplete or null antagonism of neuromuscular blocking agents. Post-surgical residual paralysis (PORP) has a high incidence and may cause adverse effects, increasing postoperative morbidity and mortality. The gold standard for complete reversal of neuromuscular blockade is a T4/T1 ratio of 0.9. Small degrees of paralysis are associated with an increased risk of postoperative pulmonary complications. Recent research indicates that residual neuromuscular blockade is a significant risk factor for patient safety.

**Objective:** to detail the current information related to postoperative residual paralysis, in addition to explaining the use and characteristics of sugammadex in its reversal.

**Methodology:** a total of 45 articles were analyzed in this review, including review and original articles, as well as clinical cases, of which 35 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: postoperative residual neuromuscular block, postoperative muscle weakness, sugammadex, anticholinesterase inhibitors.

**Results:** Neuromuscular block occurs due to muscle fragility in the postoperative period due to antagonism, which produces a decrease in the musculature of the upper and lower airways. When this phase is properly managed, extubation delays are reduced, and postoperative pulmonary complications are reduced. Sugammadex is a relaxant that decreases the possibility of persistent neuromuscular paralysis; as neuromuscular blockade increases, contraction decreases. Therefore, when this drug is used, the risk of adverse effects, mostly respiratory, is avoided. This drug inactivates rocuronium, and the adverse effects it presents (although very infrequent) are dysgeusia, cough, grimacing or increased secretion through the endotracheal tube.

**Conclusions:** sugammadex is suggested to be used before neostigmine, although it should be used in patients with high risk of postoperative complications, such as patients over 80 years of age or with post cardiothoracic surgery. However, sugammadex reverses neuromuscular blockade more rapidly, with a decrease in the frequency of residual neuromuscular blockade and postoperative pulmonary complications such as pneumonias. A point to consider is that sugammadex is more expensive and is usually accompanied by higher presentations of adverse effects.

**KEY WORDS:** sugammadex, paralysis, residual, postoperative, antagonism, neuromuscular.



## INTRODUCTION

Postoperative muscle paralysis or frailty resulting from incomplete or no antagonism of adespolarizing neuromuscular blocking agents (NMBs) is called postoperative residual neuromuscular blockade, also known as postoperative residual paralysis (PORP). The gold standard for complete reversal of neuromuscular blockade is a T4/T1 ratio of 0.9 across the four-stimulus sequence (SQE) (1,2).

PORP shows a high incidence and may cause adverse effects, increasing postoperative morbimortality. In some clinical studies, monitoring of neuromuscular blockade through quantitative tests such as acceleromyography is recommended. The use of anticholinesterase agents for pharmacological reversal of neuromuscular blockade is not free of side effects(1).

Some authors have presented studies in which small degrees of residual paralysis (train-of-four ratio of 0.7 to 0.9) have been shown to be associated with altered pharyngeal function and increased risk of aspiration, upper airway muscle weakness and airway block, change in hypoxic ventilatory response, and bothersome symptoms of muscle weakness. Both observational studies and randomized clinical trials have shown that lack of neuromuscular recovery in the early postoperative period can lead to unpleasant symptoms of muscle weakness, prolonged stays in the postanesthesia care unit, delays in tracheal extubation, and an increased risk of postoperative pulmonary complications. These complications include hypoxemia and airway obstruction. Recent research indicates that neuromuscular management has an impact on postoperative outcomes and that residual neuromuscular blockade is a significant risk factor for patient safety(2).

## METHODOLOGY

A total of 40 articles were analyzed in this review, including review and original articles, as well as cases and clinical trials, of which 35 bibliographies were used because the information collected was not important enough 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: postoperative residual neuromuscular block, postoperative muscle weakness, sugammadex, anticholinesterase inhibitors. The choice of the bibliography exposes elements related to postoperative residual

paralysis; in addition to this factor, the use and characteristics of sugammadex in its reversion are presented.

## DEVELOPMENT

The possibility of postoperative residual neuromuscular blockade has long been recognized and still is today. When neuromuscular blockade is severe and profound, traditional pharmacological antagonists (anticholinesterases) are unable to reverse it; however, at the other end of the recovery curve, when recovery is nearly complete, anticholinesterases can cause paradoxical muscle weakness. Sugammadex, a novel selective relaxant-binding agent, can reverse any degree of blockade caused by aminosteroid relaxants (but not benzyloisoquinolinium); however, the appropriate dose must be determined based on an objective assessment of the degree of neuromuscular blockade(3).

The non-depolarizing steroid neuromuscular blockers rocuronium and vecuronium are reversed using a modified gamma-cyclodextrin called sugammadex. After surgery, residual neuromuscular blockade is typical; an estimated 30 to 60 percent of patients experience it in the recovery area. Hypoxia, weakness of the supralaryngeal muscles that increases the risk of upper airway obstruction, difficulty swallowing and an elevated risk of aspiration have been associated with low-level neuromuscular blockade, which is less than what can be seen with the naked eye. Sugammadex significantly reduces the likelihood of developing persistent neuromuscular paralysis and accelerates the rate at which neuromuscular blockade reverses.

It does not inhibit conventional acetylcholinesterase-like reversal drugs such as neostigmine, so there is no need to use an antimuscarinic drug such as glycopyrrolate(4).

Assessment of neuromuscular function with a peripheral nerve stimulator is necessary to direct appropriate postoperative care. Despite the fact that subjective (visual and tactile) assessment of muscle responses is used in many settings, this assessment has had only modest success in preventing persistent paralysis. Like respiratory parameters (tidal volume and vital capacity), clinical assessments of muscle force return (head lift and grip strength) are insensitive for detecting neuromuscular weakness. Only objective measurement (a train-of-four ratio greater than 0.90) can establish adequate tracheal extubation time, ensure normal muscle function and ensure patient safety(3).



**Table 1.Suggested Definitions of Depth of Neuromuscular Block Based on Subjective and Measured (Objective) Criteria.**

Depth of Block	Posttetanic Count	Train-of-Four Count	Subjective Train-of-Four Ratio	Measured Train-of-Four Ratio
Intense (profound) block	0	0	0	0
Deep block	≥ 1	0	0	0
Moderate block	NA	1-3	0	0
Light (shallow) block	NA	4	Fade present	0.1-0.4
Minimal block (near recovery)	NA	4	No fade	> 0.4 but < 0.90
Full recovery (normal function)	NA	4	No fade	≥ 0.90-1.0

NA = not applicable

Source: Murphy GS, Szokol JW, Franklin M, Marymont JH, Avram MJ, Vender JS. Postanesthesia Care Unit Recovery Times and Neuromuscular Blocking Drugs(5).

According to several studies, the incidence of PORP (postoperative residual paralysis) after the end of anesthesia ranges from 5% to 88.0%. PORP is defined as the T4/T1 ratio 0.9(6-8).

The train-of-four (TOF) method is most commonly used to monitor neuromuscular function during anesthesia. The distal forearm is generally used to stimulate the ulnar nerve with TOF peripheral nerve monitors (such as the TOF-Watch TM monitor). The adductor pollicis muscle of the thumb will contract (spasm) in response to four successive supramaximal electrical stimuli, or TOF. The amplitudes of the four motor responses will be equal under normal circumstances. Fading is the process by which the amplitude of subsequent contractions decreases relative to previous contractions as the degree of BNM (neuromuscular blockade) caused by non-depolarizing NMBA (neuromuscular blocking agents) increases.

All contractions will eventually stop as the NMBA increases. The intensity of BNM is determined by the amount of perceptible thumb movements and the level of fading. The amount of fading can also be expressed as a ratio by dividing the motor response at the fourth and first movement (T4 and T1), which is known as the train-of-four (TOF) ratio. According to currently available evidence, the BNM must recover to a TOF

ratio of 0.9 or greater before the patient can be safely extubated(9-12).

BNM measurement of the ulnar nerve will not show thumb spasm when high doses of NMBA are administered (TOF = 0). A 50 Hz tetanic stimulus is applied to the ulnar nerve for five seconds to assess the level of BNM in this situation. Acetylcholine is released in large amounts at the neuromuscular junction in response to the tetanic stimulation. Then 15 individual electrical stimuli are delivered at one-second intervals after this tetanic facilitation. The post-tetanic count (PTC) is the total number of thumb movements recorded. For example, PTC equals six when six thumb movements are observed after tetanic facilitation. TOF and PTC measurements can be used to classify the depth of BNM into the following categories: (a) moderate BNM: TOF 1 to 3 of 4 spasms; (b) deep BNM: TOF zero contractions and PTC more than zero contractions; and (c) intense BNM: zero TOF and zero PTC contractions. In reality, the presence of intense BNM is limited to the time immediately following the induction dose of BNM when anesthesia is felt. Depending on the type of surgery, BNM is allowed to recover to deep or moderate BNM, which can be maintained to preserve adequate surgical working conditions(9,13).

**Table 2. Quantitative Monitoring Technologies Used in Research and Clinical Care.**

Modality	Principle	Advantages	Disadvantages	Monitoring Site	Clinical Availability
Mechanomyography	Directly measures isometric muscle contraction force.	<ul style="list-style-type: none"> <li>- Measures muscle force directly.</li> <li>- The "reference" modality.</li> </ul>	<ul style="list-style-type: none"> <li>- Cumbersome and time-consuming setup.</li> <li>- Not suitable for clinical practice.</li> </ul>	<ul style="list-style-type: none"> <li>- Ulnar nerve - adductor pollicis muscle;</li> <li>- posterior tibial nerve - flexor hallucis brevis muscle</li> </ul>	Commercially not available
EMG	Measures compound muscle action potentials evoked by neurostimulation.	<ul style="list-style-type: none"> <li>- Many different muscles can be examined.</li> <li>- Does not require freely moving limbs.</li> <li>- Easy and fast set up and short calibration.</li> </ul>	<ul style="list-style-type: none"> <li>- Possible interference from other electrical equipment (electrocautery).</li> </ul>	<ul style="list-style-type: none"> <li>- Ulnar nerve - adductor pollicis, abductor digiti minimi and first dorsal interosseous muscles;</li> <li>- posterior tibial nerve - flexor hallucis brevis muscle;</li> <li>- phrenic nerve - diaphragm</li> </ul>	<ul style="list-style-type: none"> <li>- E-NMT (GE DATEX-Ohmeda NMT; USA); <a href="https://www.gehealthcare.com">https://www.gehealthcare.com</a></li> <li>- TetraGraph (Senzime Inc.; USA); <a href="https://www.senzime.com">https://www.senzime.com</a></li> <li>- TwitchView (Blink Device Company; USA); <a href="https://www.blinkdc.com">https://www.blinkdc.com</a></li> <li>- StimPod (Xavant Technology; South Africa; awaiting Food and Drug Administration clearance as of September 1, 2021); <a href="https://www.xavant.com">https://www.xavant.com</a></li> <li>- Infinity Trident NMT SmartPod (Dräger; Germany); <a href="https://www.draeger.com">https://www.draeger.com</a></li> <li>- IntelliVue NMT (Philips; The Netherlands); <a href="https://www.usa.philips.com">https://www.usa.philips.com</a></li> <li>- TOF-Scan (IDMed; France); <a href="https://www.idmed.fr">https://www.idmed.fr</a></li> <li>- StimPod (Xavant Technology; South Africa); <a href="https://www.xavant.com">https://www.xavant.com</a></li> <li>- M-NMT (GE DATEX-Ohmeda NMT; USA); <a href="https://www.gehealthcare.com">https://www.gehealthcare.com</a></li> </ul>
Acceleromyography	Measures the acceleration of the thumb or any freely moving muscle. The acceleration is directly proportional to the force according to Newton's second law.	<ul style="list-style-type: none"> <li>- Current neuromuscular blockade management guidelines are based on acceleromyography measurements.</li> <li>- Most widely used technique.</li> <li>- Easy to apply.</li> </ul>	<ul style="list-style-type: none"> <li>- Requires use of hand adapter (increases precision), fixation of arm and fingers, free movement of thumb, normalization of recovery train-of-four ratios.</li> </ul>	<ul style="list-style-type: none"> <li>- Ulnar nerve - adductor pollicis muscle;</li> <li>- facial nerve - orbicularis oculi, corrugator supercilii muscles;</li> <li>- posterior tibial nerve - flexor hallucis brevis muscle</li> <li>- Ulnar nerve - adductor pollicis muscle</li> </ul>	<ul style="list-style-type: none"> <li>- Infinity Trident NMT SmartPod (Dräger; Germany); <a href="https://www.draeger.com">https://www.draeger.com</a></li> <li>- IntelliVue NMT (Philips; The Netherlands); <a href="https://www.usa.philips.com">https://www.usa.philips.com</a></li> <li>- TOF-Scan (IDMed; France); <a href="https://www.idmed.fr">https://www.idmed.fr</a></li> <li>- StimPod (Xavant Technology; South Africa); <a href="https://www.xavant.com">https://www.xavant.com</a></li> <li>- M-NMT (GE DATEX-Ohmeda NMT; USA); <a href="https://www.gehealthcare.com">https://www.gehealthcare.com</a></li> </ul>
Kinemyography	Measures the distortion of a piezoelectric film sensor. The level of distortion is proportional to the force of thumb contraction.	<ul style="list-style-type: none"> <li>- Easy to apply.</li> </ul>	<ul style="list-style-type: none"> <li>- Available only in modular form.</li> <li>- Validation vs. mechanomyography and electromyography questionable.</li> </ul>	<ul style="list-style-type: none"> <li>- Ulnar nerve - adductor pollicis muscle</li> </ul>	<ul style="list-style-type: none"> <li>- M-NMT (GE DATEX-Ohmeda NMT; USA); <a href="https://www.gehealthcare.com">https://www.gehealthcare.com</a></li> </ul>
Cuff pressure modality	Measures the pressure change in a modified non-invasive blood pressure cuff due to upper arm muscles' contraction in response to brachial plexus neurostimulation.	<ul style="list-style-type: none"> <li>- Easy to apply.</li> </ul>	<ul style="list-style-type: none"> <li>- Needs further validation, overestimates the train-of-four ratio at the adductor pollicis by mechanomyography and acceleromyography.</li> </ul>	<ul style="list-style-type: none"> <li>- Brachial plexus - muscles of upper arm</li> </ul>	<ul style="list-style-type: none"> <li>- TOF-Cuff (RGB Medical Devices; Spain); <a href="https://www.rgb-medical.com">https://www.rgb-medical.com</a></li> </ul>

EMG, electromyography.

Source: Murphy GS, Szokol JW, Franklin M, Marymont JH, Avram MJ, Vender JS. Postanesthesia Care Unit Recovery Times and Neuromuscular Blocking Drugs(5).

The return of adequate breathing and upper airway muscle function depends on full recovery of BNM after anesthesia. By definition, PORP is present when BNM (TOF ratio 0.9) persists at some level after extubation since most NMBA have much slower recovery times than the hypnotics and opioids that are frequently used during general anesthesia, this is a situation that is readily possible. Furthermore, because of the wide interindividual variability in recovery times, it is impossible to predict NMBA recovery by pharmacologic reasoning (PKPD) (9,14). The upper respiratory tract and the ability of pulmonary muscles to function are adversely affected by postoperative residual paralysis (PORP). The upper airway collapses and ventilation is compromised. This is important because dysfunction in the upper esophageal and pharyngeal sphincter muscle; and increased upper airway collapsibility are associated with even a mild degree of residual paralysis (e.g., a TOF ratio between 0.6 and 0.9). As a result of blockade of nicotinic acetylcholine receptors in the carotid bodies, NMBA also directly reduce the hypoxic ventilatory response. The risk of

hypoxia in patients increases when the hypoxic ventilatory response is inhibited. PORP has a strong correlation with postoperative respiratory complications as a result of these effects. Unfortunately, there is a significant incidence of PORP among patients in the postanesthesia care unit (PACU), with rates ranging from 20 to 60 percent. The use of a neuromuscular monitor and appropriate BNM reversal are crucial tactics to reduce the prevalence of PORP(2,9,15-19).

Sugammadex was found to have a lower incidence of respiratory events and residual paralysis in several meta-analyses performed for multiple randomized controlled studies comparing neostigmine and sugammadex(20-23).

Sugammadex has a linear, dose-dependent pharmacokinetic profile after administration at doses ranging from 2 mg/kg to 16 mg/kg, with renal clearance close to 100% and an elimination half-life of 100 to 150 minutes. Sugammadex acts in a 1:1 ratio; therefore, a higher dose of the drug is needed to disarm a deeper





level of neuromuscular blockade, requiring 2 mg/kg to disarm mild neuromuscular blockade (two spasms in response to stimulation), 4 mg/kg for deep blockade (one or two post-tetanus counts after a 5-second 50-hertz tetany), and 16 mg/kg for immediate reversal after an intubating dose of rocuronium (1. 2 mg/kg) are all acceptable doses. A train-of-four ratio > 0.9 can be achieved within an average of 3 minutes after a sugammadex dose of 2 or 4 mg/kg because there is significantly less antagonism than with neostigmine(4,24,25).

Sugammadex is a modified  $\gamma$ -cyclodextrin and relatively free of adverse effects and well tolerated. As for its mechanism of action it inactivates rocuronium by encapsulating (chelating) the free molecule to develop a stable complex. In terms of chemical architecture it presents a hydrophobic cavity and a hydrophilic exterior due to the arrangement of polar hydroxyl groups. Hydrophobic interactions envelop the drug in the cyclodextrin cavity, forming a water-soluble host-guest complex(10,26).

Among the adverse reactions reported in some of the clinical studies are dysgeusia (metallic or bitter taste) usually observed after doses of 32 mg/kg or more, limb or body movement or coughing during anesthesia, coughing, grimacing or suctioning of the endotracheal tube, recurrent block and hypotension during surgery(26,27). A variable amount of residual BNM often remains after taking neostigmine and other acetylcholinesterase inhibitors. Therefore, it is not surprising that the impact of BNM reversal with neostigmine on postoperative respiratory complications and outcome is, at best, ambiguous. Reversal with neostigmine (without the use of a TOF watch) of BNM does not appear to increase postoperative respiratory safety and may even increase the risk of atelectasis, hypoxemia and subsequent reintubation.(9,28,29). The anticholinesterase drug neostigmine has a ceiling effect and is associated with adverse effects such as autonomic disturbances, including bradycardia, which tentatively leads to a number of problems during extubation in cardiothoracic surgery patients, nausea and vomiting; these adverse effects are not noted with sugammadex(26,30).

Table 3. Sugammadex vs neostigmine.

TIEMPO DE RECUPERACIÓN			
Sugammadex 2 mg/kg	Neostigmina 0,05 mg/kg	Sugammadex 4 mg/kg	Neostigmina 0,07 mg/kg
1.96 minutos	12.87 minutos	2.9 minutos	48.8 minutos
6.6 VECES MAS RAPIDO		16.8 VECES MAS RAPIDO	

Source: Hristovska AM, Duch P, Allingstrup M, Afshari A. Efficacy and safety of sugammadex versus neostigmine in reversing neuromuscular blockade in adults(31).

Table 4. Adverse events: Sugammadex vs neostigmine at any dose

EFECTOS ADVERSOS (CUALQUIER DOSIS)		
	Sugammadex	Neostigmina
BRADICARDIA	13/1000	84/1000
NAUSEA Y VOMITO	68/1000	131/1000
SIGNOS GENERALES PRPO	52/1000	131/1000
RIESGO DE EFECTOS ADVERSOS GRAVES	6/1000	10/1000

Source: Hristovska AM, Duch P, Allingstrup M, Afshari A. Efficacy and safety of sugammadex versus neostigmine in reversing neuromuscular blockade in adults(31)

These findings can be explained in several ways. Successful reversal of moderate BNM depends on timely management and exclusive reversal. Clearly, this requires adequate neuromuscular monitoring. In addition, the duration of complete reversal after neostigmine therapy varies greatly among patients and is unpredictably long. Sugammadex may perform better in both respects, allowing for rapid, complete and predictable reversal of moderate and profound BNM. According to recently available data, sugammadex is more effective than neostigmine in reversing BNM because it reduces the rate of postoperative

residual curarization. According to a recent study, patients who received sugammadex for reversal experienced a 0% PORP rate, compared with 46% of those who received neostigmine. These results are encouraging, but in an unmonitored setting, PORP after sugammadex reversal still occurred in 4% of patients. This emphasizes the importance of complete neuromuscular control in any situation involving the use of NMBA, regardless of the type of reversal agent(9,32-35).





## CONCLUSIONS

Sugammadex is a gamma cyclodextrin characterized by encapsulating neuromuscular blockers, with higher affinity for rocuronium. Its antagonistic effect restores normal transmission and neuromuscular function, with a faster effect than neostigmine. The dose varies according to the degree of blockade, since if it is a profound blockade, the dose is 4 mg/kg; if it is a moderate blockade, the dose is 2 mg/kg. When intubation and ventilation are very difficult, the dose of sugammadex is 16 mg/kg, which reverses the blockade in 3 minutes. Elimination is renal, so it is not suitable for patients with renal insufficiency; contraceptive inhibition occurs if used concomitantly with sugammadex. Unfortunately, this drug has been associated with perioperative anaphylaxis reactions, which usually occur within minutes; bradycardia and asystole may also occur, although present in 1%.

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### Conflict of Interest Statement

The authors report no conflicts of interest.

### Funding

The authors report no funding by any organization or company.



# OBESITY AND LUNG CANCER (INVESTIGATING THE RELATIONSHIP)

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Article DOI: <https://doi.org/10.36713/epra12422>

DOI No: 10.36713/epra12422

## ABSTRACT

*Obesity is a global issue, and it leads to various health comorbidities like cardiovascular disease, diabetes type II and certain cancers. The relationship between obesity and cancer, specifically the lung cancer has been studied by many researchers, and they have revealed a positive association of lung cancer with obese individuals, but the mechanism is still not completely understood. Higher BMI which usually falls between 25 to 34.9 kg/m<sup>2</sup> is found to reduce the rate of mortality in lung cancer patients. It has been found that in obese individual the p53 tumor suppressor gene is highly upregulated which play a critical role in decreasing the risk of lung cancer. Different studies have suggested that lung cancer has different progression rates depending on smokers and nonsmokers, and the size of the waist including the waist circumference (WC), waist-to-hip ratio (WHR), and the measures of overall obesity in the body, is associated with increased in risk of lung cancer regardless of BMI. This review unveils the major relation between obesity with lung cancer.*

## INTRODUCTION

Numerous malignancies, including those of the breast (in post-menopausal women), endometrial, esophagus, gallbladder, kidney, colon, and pancreas, are associated with obesity. Obesity had long been known to have harmful consequences on health, and efforts to combat this global epidemic and lower the risk of many diseases have received considerable attention [1]. Lung cancer has a low survival rate despite the development in medical sciences such as surgery and other chemotherapeutical approaches [2]. Cancer is among the leading cause of mortalities across the globe. According to a survey conducted by WHO in 2012, men have a high prevalence of lung cancer as compared to women which is approximately 16.8% of overall cancer that occur across the world. In accordance with this data, breast cancer in women is secondly ranked which comprises a 12% prevalence rate and a major cause of mortality among women globally [3]. With the increasing ratio of obesity among individuals suffering from lung cancer, there are new challenges arising with time that is hard to tackle for healthcare practitioners. It has been observed that obese individuals having body mass index (BMI) ranging from 25 to 34.9 kg/m<sup>2</sup> which is a large BMI are protecting the lung cancer and have reduced the rate of mortality in patients with lung cancer after surgery or chemotherapy[4]. From different epidemiological studies, it is evident that obesity is associated with low survival in various types of cancer. The development of cancer is different with varying obesity it has been noted that general obesity, and body

fat distribution—particularly abdominal obesity plays a vital role in the prognosis of lung cancer. Cohort studies have revealed a positive link between obesity with the incidence of lung cancer in the population [5]. In fact, to date researchers have not fully understood the mechanism by which obesity influences cancer, and not enough evidence is present to show the specific association of obesity in the development of lung cancer [6]. However, this review focuses on the deep insight relationship between obesity which is a global health issue, and lung cancer.

## THE PARADOXICAL BENEFIT OF OBESITY

Paradoxically, individuals with a high body mass index (BMI) are being found to be at low risk of developing lung cancer and significantly better outcomes for lung cancer patients. The "obesity paradox"—a benefit of obesity that has been repeatedly seen in numerous cohort studies—has no known cause [7]. Although they have been recognized as possible reasons, the hypotheses of a confounding influence from smoking or reverse causation due to cancer-associated weight loss have not been able to completely define the lung cancer obesity paradox [8].

## ROLE OF DIHYDROPYRIMIDINASE LIKE 4 (DPYSL4) IN LUNG CANCER CELLS SUPPRESSION

DPYSL4 is a target of tumor repressor gene p53 which controls energy metabolism in the case of cancer cells and adipocytes. In



lung cancer cells and preadipocytes, the researchers used RNA-seq and ChIP sequencing to find a group of p53-inducible genes that are associated with energy metabolism across both biological contexts [9]. The researchers demonstrated that DPYSL4 directly influences OXPHOS and ATP synthesis in mitochondria relying on the hypothesis that cancer cells are predominantly dependent on glycolysis to generate energy instead of oxidative phosphorylation (OXPHOS). The ability of lung cancer cells to invade Matrigel matrices in vitro was decreased when p53 or DPYSL4 was overexpressed in obese persons. DPYSL4 expression considerably slows down lung metastasis and tumor growth, according to in vivo studies employing mice xenograft and lung metastasis models. The mRNA levels of DPYSL4, CDKN1A, MCP1, and IFN $\gamma$  were also greater in the adipose tissues of obese individuals suffering from lung cancer compared to non-obese patients, and p53 was considerably up-regulated in the adipocytes of obese individuals [10, 11].

Extracellular carriers could be another means by which p53-induced compounds with anticancer capabilities are transported from adipocytes to the target tissue (lung cancer cells) (EVs). Secreted EVs have the ability to transmit metabolic changes from distant receiving cells to adipocytes. As a novel type of adipokines, EVs can modify the molecular characteristics of recipient cells by acquiring new proteins (receptors, enzymes), or even genetic material (mRNAs, miRNAs regulating gene expression), from the adipocyte cells of origin. In fact, the greater quantity of exosomes released and the stronger effects of each individual exosome in obesity strengthen this horizontal transfer. It should be emphasized that past attempts to explain the positive correlations between BMI and EV have relied on both inflammation- and EV-related ideas [12].

## POOLED ANALYSIS

Obesity is a significant causative factor for many types of commonly occurring cancers [13]. However, a high body mass index (BMI) has been identified as a lower risk factor for causing lung cancer, particularly among those individuals that are smokers [14]. The two primary reasons have been identified as smoking-related confounding and preclinical weight loss-related reverse causation. Some studies, however, detected similar inverse BMI-lung cancer connections among never smokers or after removing the first few years of follow-up, indicating that additional processes might be at play [5]. The majority of reported analyses, specifically those including individuals that never smoked, had somewhat small sample sizes. Large collaborative analyses incorporating several cohort studies are being required to be conducted in order to adequately identify the implications of confounding and reverse causation because lung cancer is less likely among people who have never smoked. Contrarily, measures of central obesity, such as waist circumference (WC) and waist-to-hip ratio (WHR), have been related to an elevated risk of lung cancer independent of BMI, however, the evidence is still less than that for overall obesity [15]. It has also been reported in many studies by different

researchers that the relationship between obesity and lung cancer may vary depending on the tumor's histology and the patient's race or ethnicity, but most earlier studies lacked the necessary statistical power to investigate these connections, especially for the purpose of different histological specimens and among non-white individuals [16, 17]. In a large, pooled analysis performed by Vanderbilt et. al., 2018, it has been found that there is a general adverse relationship between BMI and positive associations of WC and WHR with lung cancer. The relationship between obesity and lung cancer may differ depending on race/ethnicity, tumor histology, or other factors. It may not entirely be caused by smoking or reverse causation. A "low BMI-high WC/WHR" phenotype may assist recognize high-risk groups that are linked to lung cancer along with considering the smoking history and other recognized risk factors. Our findings also point to the necessity of further investigation into the functions of body composition patterns, fat distribution, and metabolic problems associated with obesity in the emergence of lung cancer [18].

The research on obesity and cancer has made significant progress in the last ten years, and there is mounting proof that obesity has a negative impact on cancer risk. Additionally, there is growing knowledge of the biology underlying the linkage between obesity and cancer, as well as interest in taking action to break this relationship in order to reduce cancer risk and enhance cancer outcomes. According to current literature, the facts that currently link obesity to the development of lung cancer risk and its associated outcomes are still observational, and the small associations that are frequently observed may be due to bias and/or confounding; there is a lack of strong evidence that any detrimental effects of obesity on cancer can be avoided by a reduction in the weight of patients or by focusing on significantly potential biological or physiological mechanisms [19]. This is still unclear whether the reduction in weight or overweight individuals will be able to mitigate the potential impacts of obesity on the causative risk of lung cancer or other implications associated with lung cancer, even though avoiding overweight and obesity will ultimately eradicate obesity related cancer risk [20]. Weight reduction methods often result in minor weight loss (rather than attaining a normal weight), hence it is yet to be proven that weight loss can reduce risk and/or improve results since obesity may create non-curable cancer precursors or more aggressive, harder-to-treat malignancies [21].

## CONCLUSION

This review focused on the evidence, that is related to obesity and lung cancer. The general body fat distribution and overall obesity play a significant role in lung cancer development. BMI is one of the key factors that cause several types of severe commodities. Different cohort studies conducted by researchers have revealed a positive relationship between obesity and lung cancer indicating that lung cancer decreases in obese individuals however the underlying mechanism is not known. DPYSL4 gene which is a tumor suppressor gene also plays a main role in





suppressing the p53 gene and decreasing malignancies. It has also been noted that obesity is not the sole factor responsible for lung cancer, but it is also accompanied by other factors like smoking. Future research is required to reveal the facts that are involved in the mechanism by which obesity is linked with lung cancer.

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# OBESITY AND BREAST CANCER: THE ROLE OF ADIPOSE TISSUES AND HORMONES

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Article DOI: <https://doi.org/10.36713/epra12420>

DOI No: 10.36713/epra12420

## ABSTRACT

*Obesity is a growing public health concern that has been linked to several chronic diseases, including breast cancer. Adipose tissues and hormones play a crucial role in the development of both obesity and breast cancer. The relationship between these two conditions is complex and involves the interaction of various biological and environmental factors. This paper aims to review the current literature on the role of adipose tissues and hormones in the development of obesity and breast cancer. The focus is on the mechanisms by which excess fat accumulation in the body affects the production of hormones and other signaling pathways, leading to the development of cancer.*

## INTRODUCTION

Obesity is of public health concern globally. The prevalence of obesity is on a constant increase. The effects of this non-communicable disease on the overall health of an affected individual are devastating. Obesity worsens the symptoms of several diseases such as osteoarthritis, cancer, type 2 diabetes mellitus (T2DM), cardiovascular disease, and psychological disturbances, and, as a result, significantly contributes to the economic burden worldwide (Anyanwu, Kolb, & Bermano, 2020; Dixon & endocrinology, 2010). Factors responsible for obesity include biological (genetic makeup, gut-brain axis, parental detriments, physical disability, pregnancy, menopause, and gut microbiome), behavioral (eating habits, sedentary lifestyle, and insufficient sleep), and environmental factors (obesogenic environment, socioeconomic conditions, and environmental chemicals). Obesity has been associated with cancer and diabetes.

## THE PREVALENCE OF BREAST CANCER

Having replaced lung cancer as the most commonly diagnosed cancer globally, breast cancer today accounts for 1 in 8 cancer diagnoses and a total of 2.3 million new cases in both sexes combined. Representing a quarter of all cancer cases in females, it was by far the most commonly diagnosed cancer in women in 2020, and its burden has been growing in many parts of the world, particularly in transitioning countries (Arnold et al., 2022). An estimated 685,000 women died from breast cancer in 2020, corresponding to 16% or 1 in every 6 cancer deaths in women. Previously insufficient public health response to this

development has led to the recent launch of the Global Breast Cancer Initiative by the World Health Organization (WHO) (Anderson et al., 2021). Epidemiological studies conducted by CDC reported that obesity is on elevation in the US, as the percentage is increased from 30.5% to 41.9% in the last decades (N. Tzenios, M. Tazanios, & M. Chahine, 2022).

## OBESITY AS AN ETIOLOGICAL AGENT OF THE BREAST CANCER

The underlying pathophysiology of the obesity-breast cancer link is complex and still under investigation. The importance of local and systemic effects of obesity is supported by many studies and involves the following potential mechanisms: altered levels of adipokines, circulating steroid hormones and local estrogen signaling, metabolic syndrome and insulin resistance, and adipose inflammation (Argolo, Hudis, & Iyengar, 2018).

## ADIPOKINES AND ADIPOSE TISSUES

Adipokines are bioactive hormones produced and secreted by adipose tissue. These compounds have a variety of functions including regulating metabolism and caloric intake, as well as angiogenesis and cell proliferation (Hursting et al., 2012). The production and secretion of various adipokines are modulated by several stimuli, including insulin, estrogens, and inflammatory mediators (Goodwin & Stambolic, 2015; N. Tzenios, M. E. Tazanios, & M. Chahine, 2022). In the context of obesity, adipokines levels are commonly disrupted and this dysregulation has been implicated in cancer development and metastasis (Tilg & Moschen, 2006).



Adiponectin represents the most abundant adipokine and its levels are inversely correlated with BMI. Adiponectin is a polypeptide composed of 244 amino acids belonging to the C1q/TNF family of proteins (Dalamaga, Diakopoulos, & Mantzoros, 2012). Adiponectin is secreted into the circulation mainly by adipocytes and, to a lesser extent, by the skeletal muscle, heart, liver, bone marrow, and central nervous system (Lee et al., 2015). Adiponectin affects its target tissues through its receptors: AdipoR1 (specific for skeletal muscle and endothelial cells), AdipoR2 (specific for liver), and T-cadherin

Adiponectin receptors are ubiquitously expressed in healthy as well as in cancerous tissue. Several studies have suggested that adiponectin has pleiotropic effects that are protective against cancer including anti-inflammatory, insulin sensitization, anti-proliferative, and pro-apoptotic effects (Macis, Guerrieri-Gonzaga, & Gandini, 2014). The circulating levels of adiponectin exhibit an inverse association with adipose tissue mass and have been shown to exert protective roles against the development of obesity-related disorders, such as metabolic syndrome, diabetes, cardiovascular diseases, and malignancies.

Besides its other properties, adiponectin exhibits anti-proliferative, anti-migratory, and pro-apoptotic actions. A large but heterogeneous body of data has shown that adiponectin negatively influences carcinogenesis. The principal pathway that is activated by adiponectin is the AMPK/LKB1, a pathway involved in the regulation of cell proliferation, apoptosis, angiogenesis, and cellular metabolism. When adiponectin binds to its receptor, it facilitates the translocation of LKB1/STE20-related adaptor protein (STRAD)/scaffolding mouse 25 protein (MO25) from the cell nucleus to the cytoplasm and promotes the phosphorylation of LKB1. Simultaneously, it activates AMPK that, in turn, inhibits MAPK, PI3K/Akt, WNT- $\beta$ -catenin, NF- $\kappa$ B, and JAK2/STAT3 pathways (Andò et al., 2019; Boudeau et al., 2003; Dalamaga et al., 2012).

Although the effects of adiponectin on carcinogenesis have been extensively studied, the exact mechanism of its action has not been fully elucidated in the context of BC.

Leptin, a 16-kDa polypeptide produced mainly from the adipose tissue, was discovered by Friedman and colleagues in 1994 (Mantzoros et al., 2011). Leptin is an important adipokine involved in appetite regulation and energy balance. Leptin levels rise with increasing BMI and leptin is known to activate the JAK/STAT, MAPK/ERK, and PI3K/AKT signaling pathways, leading to increased cell migration, invasion, and cell survival (Dieudonne et al., 2002). However, observations regarding the association between leptin and breast cancer risk are mixed with some studies reporting a positive correlation and others reporting no association (Hursting et al., 2012). Additionally, increased expression of the leptin receptor in patients diagnosed with breast cancer has been associated with the development of distant metastases.

## OBESITY AND BREAST CANCER; THE ROLE ESTROGEN

For postmenopausal women significant increases in estrone, estradiol, and free estradiol are associated with increasing BMI. This relationship may be modified by physical activity resulting in lower serum levels of estrogens from higher levels of activity (Cleary & Grossmann, 2009).

The biosynthesis of estrogens differs between premenopausal and postmenopausal women (53). Premenopausal women mainly synthesize estrogens in the ovary. However, in postmenopausal women ovarian biosynthesis is replaced by peripheral site synthesis, and in obese postmenopausal women, adipose tissue is the main source of estrogen biosynthesis (Lorincz & Sukumar, 2006). The primary mediator of postmenopausal estrogen biosynthesis is aromatase, which is actually a complex of enzymes that is found in adipose tissue in the breast as well as tumor tissue itself (Miller, 2006). Androgens produced by the adrenal cortex and the postmenopausal ovary are converted into estrogens by aromatase (Judd, Judd, Lucas, Yen, & Metabolism, 1974). This mechanism of estrogen production can lead to local estrogen levels in breast tumors that are as much as 10-fold higher compared with the circulation, although this is something that cannot routinely be measured (Van Landeghem, Poortman, Nabuurs, & Thijssen, 1985). In addition, TNF $\alpha$  and IL-6 are both secreted by adipocytes and can act in either autocrine or paracrine manners to increase production of aromatase, which is directly related to increased synthesis of estrogen (Purohit, Newman, & Reed, 2002).

## SUMMARY

In conclusion, obesity has a significant impact on the development of breast cancer. Adipose tissues and hormones play a crucial role in the relationship between obesity and breast cancer. Adipose tissues can produce hormones that can alter cell growth and increase the risk of breast cancer. Moreover, obesity can lead to an increase in levels of estrogen and insulin, which have been linked to breast cancer. Therefore, maintaining a healthy weight through physical activity and a balanced diet can help reduce the risk of developing breast cancer. It is essential to continue exploring the relationship between obesity, adipose tissues, and hormones to further understand their role in the development of breast cancer and develop effective strategies for prevention and treatment.

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# COMMUNITY PARTICIPATION IN THE TREATMENT AND PREVENTION OF ENTEROHELMINTHIASIS OR INTESTINAL WORM INFECTIONS IN CHILDREN BELOW FIFTEEN YEARS IN THE NDOP PLAIN OF THE NORTH WEST REGION OF CAMEROON

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Article DOI: <https://doi.org/10.36713/epra12408>

DOI No: 10.36713/epra12408

## ABSTRACT

*This paper seeks to investigate the effectiveness of community participation in the promotion, treatment and prevention of enterohelminthiasis in children from zero to fifteen years in the Ndop plain community. Community participation is premedical in the implementation of PHC system as requested in Alma Ata and the Bamako initiative respectively. To gain knowledge of the phenomenon we conducted a study where we used both the qualitative and quantitative methods of research. The data was collected using a questionnaire, observation and in-depth interview techniques. From the facts gathered and analyzed, we noticed that community participation through community representatives in co-management, public participation in health financing, services of community health workers doesn't correspond to the realities of rural or community life. This explains why enterohelminthiasis in children especially between the ages of 2-15 years is difficultly controlled.*

**KEY WORDS:** Community, Community participation, Enterohelminthiasis, Children below fifteen years

## INTRODUCTION

Enterohelminthiasis or soil transmitted helminths or intestinal worms is one of the Neglected Tropical Diseases (NTDs) and a major public health challenge in rural communities. WHO (2022) affirms that soil transmitted helminthes are among the most common infections worldwide and affect the most poorest and deprived communities given that more than 1.5 billion people or 24% of the world's population are infected. These infections are said to be distributed mostly in tropical and subtropical areas with the greatest number in sub-Saharan Africa. It has been noted that over 267 million preschool children and 568 million school children live in areas where these parasites are intensely transmitted. According to the Cameroon Health Sector Strategy (2016- 2017) more than 10 million Cameroonians are infected. Just like Schistosomiasis, roundworms and whipworms infect more than 6 million persons, and hookworms about 2 million. School-age children (6-15 years) are the most vulnerable group (50% for schistosomiasis and 38% to 47% for intestinal helminthiasis) (Moh, 2016). These parasites are transmitted by the ingestion of the egg passed through the excrement of the infected person. The eggs are ingested through contaminated water sources, unwashed or not well cooked vegetables, unwashed contaminated fruits and raw tubers. Children who play in contaminated soil and later put their hands in the mouth without washing will obviously ingest

the larva. The adult worm live in the human intestines where they feed on the tissues of the host including blood which might lead to loss of blood, iron, protein, increases malabsorption of nutrients, compete for vitamin A in the intestines, and loss of appetite which will lead to less nutritional intake. If not treated, the presence of these worms in humans and more especially children will lead to anemia, body weakness, dysentery, diarrhea and abdominal pain, impaired growth and physical development while heavy infections can cause intestinal obstruction which might lead to death (WHO, 2022).

As per its treatment delegates at the world health assembly in 2001 unanimously resolved that endemic countries starts seriously to tackle worms especially schistosomiasis and soil transmitted helminths by controlling morbidity through periodic treatment of people at risk living in endemic areas. Promotiom, treatment and control measures will include health and hygiene education which will reduce infection and reinfection, and adequate sanitation which might not be effective in poor resource areas. According to WHO (2022) this periodic treatment and preventive procedures will reduce and maintain the intensity of infection and protect risk populations from morbidity. In this effort, WHO recommends albendazole (400 mg) and mebendazole (500 mg) for a deworming process which can be easily integrated with child health or school health programs, coupled in the generic ivermectin for the control of S.





stercoralis. The albendazole and mebendazole is donated to National Ministries of Health while ivermectin is available at affordable prices. The control of schistosomiasis and soil transmitted helminthes in Cameroon should be focused on regular and systematic deworming of the populations at risk, relying on community participation, partnership and multi-sectoriality (Moh, 2016).

As per effective healthcare, community participation can be implemented in a locality community where people live in a geographically constrained area and share common values, norms, beliefs and social amenities such as water source, primary health care service, and living and farming space. Community participation on its part has been conceptualised as a process focused on sustained active involvement of communities in service development (McEvoy, 2019). The PHC system adopted in Alma Ata advocates that community members be involve in defining their health issues of concern, making decisions, formulating and implementing policies in planning and implementation. In other words, community members are to be part of the processes of needs assessment, planning, mobilizing, training, implementing, monitoring and evaluation.

The research was conducted in the Ndog area of the North West Region of Cameroon given that it is not only a plain but also a wetland area. This area is characterized by swamps owing to the overflow banks of the Noun River especially during the months of July – September which are the wettest months of the raining seasons. The area is also surrounded by hills which favours deposits like cattle droppings washed down into the plain during the rains. Added to this the creation of the Bamendjin dam with the Ndog Plain hosting its reservoir has enable constants floods in the areas (WIRMVEM et al; 2013). During floods pit toilet drainage get mixed with water that floods into homes or living quarters (Fonge; 2012). All of these has made the area a health risk zone especially for children as the environment is favourable for the breeding of helminthes.

Human activity in the area is closed to nature as the main economic activities is farming both food cropping and livestock rearing especially pigs, cows and goats. Fishing too is a source of income thanks to the reservoir of the Bamendjin Dam and Noun River. Human activity therefore gets the people closer to where the micorganisms responsible for enteroheminthiasis breeds such as the soil.

## METHODOLOGY OF STUDY

This study made use of the case study design even as a unique case was chosen. This was done because from casual observation, it was noticed that there is a relation between physical, socio economic and cultural environment and disease type and rate of infection (Dziedom et al; 2012). Our sample was chosen using the purposeful and simple random techniques. Out of the 13 different communities know as villages of the Ndog Plain Area, we chose Bamunka, Bamali, Mighang, Balikumbat, Baba 1, Bamessing, Bambalang, Bamukumbit, and Babungo . All with both semi- urban and rural characteristic that helped in the comparison of the data collected according to living

conditions. Our key informants were chiefs of health care centers since community participation was to be evaluated with respect to the health care services available in the area. As per the qualitative aspect of the study we used non participant observation and semi structured interview to collect part of the data, this helped to describe the phenomenon in its natural form and context. Quantitatively, we designed a multi answer questionnaire which was used to collect data from care givers or parents. The questionnaire was administered to an average of 40 informants per community with a total of 525 informants both male and female with all age groups inclusive. All these techniques that were employed helped us acquire complementary data important for the analysis of the fact. The points of view of all our primary informants were used in the analysis of the data used in this article.

This research was inserted into structuralist constructivist approach of Bourdieu Pierre, the health belief model of Becker, the community participation approach and the theory of Multiculturalism by Lupton. Bourdieu prone that practices are not objectively determined nor a product of freewill and so people internalize the structures of the social world. But all of these is done through the network of relationships which can be cultural, economic, social, political and/or symbolic with political power endorsed with a lot of authority which is able to influence the other fields. With this he went further to postulate that variation in taste can bring differences or unifies while class on the other hand governs the capacity to participate. Community participation in the treatment of enterohelminthiasis in the Ndog Plain community is determined by people's access, perceptions and knowledge of the services available. Apart from that, personal relationship with personnel and personnel's attitudes also counts. Lupton (2003) emphasis on the culture of the people in the implementation of health care procedures which was noticed during this study as community members are faced with both the traditional and personal herbal medicine and modern Becker health facilities. Becker (1974) in the health belief model says that the chances of person to adopt a healthy behavior depends on the outcome of the assessment of the threat of the health problem and the pros and cons of taking action. So community member's perception of the severity of the illness, those who are reminded of the problem, knowledge, and benefits of participation, will determine the likelihood of getting involve in preventive measures. Patricio and Morgan (2020) cites that the wildly used approach for the community participation is the continuum participation which emphasis the way communities participate in health action. Here, communities participate through mobilisation, collaboration, and empowerment which are levels related to the scope of influence. The health practitioners mobilises the community to follow their recommendations in the presence or absence of disease. Collaboration on its part is within the health services where community members makes donations, time, and services for needs and actions defined by the health professionals. Meanwhile empowerment is community development where human condition is primordial. The community plans and





execute health activities using health professionals. This aims at promoting community development to change the living conditions of the population through power-sharing between health systems and the population.

The delivery of healthcare services in the Ndop Plain health district as in other health districts in Cameroon depends on a dialogue structure based on co-financing, co-management and community participation. In this perspective, community participation is to be expressed in public participation in health care financing, participation of representatives of communities in co-management, advocacy, communication and social mobilization of civil society organizations, services of community health workers, and community initiatives for the promotion of health. In this respect, community participation will entirely depend on the abilities of the community representatives and the community health workers who acts as the link between the health facility and community members. They carry the task of identify community health needs, mobilizing and training community members in participating in community health projects such as immunization campaigns and environmental upkeep projects. But community participation is not entirely new to African communities for it is a great aspect of African communal life expressed through solidarity development. Generally community action is needed depending on the importance placed on issue at stake meaning that not all ailments might need community action for promotion and prevention. In any case, the effectiveness of any approach is tested by its outcome especially as it is difficult to isolate the levels community participation as per participation continuum in the Ndop Plain Health District.

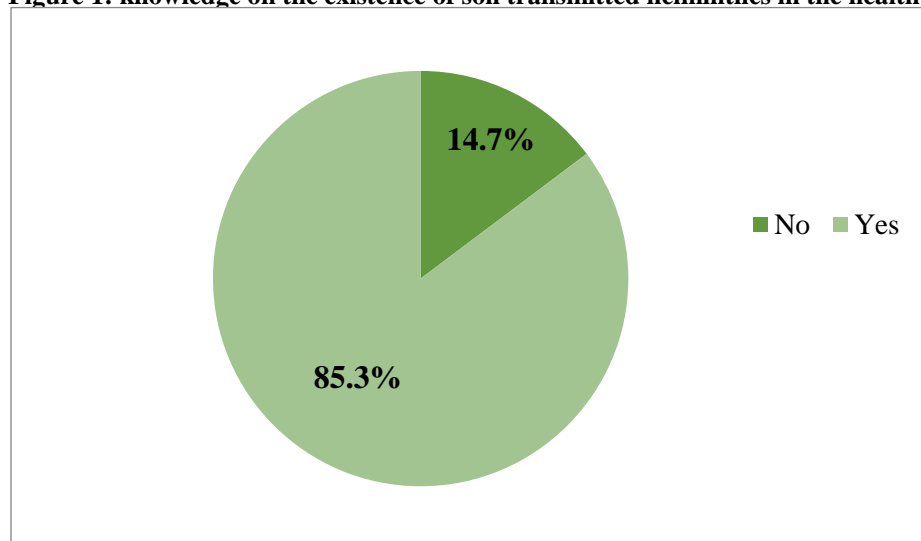
### Community Knowledge on soil transmitted helminthiasis

As per our study, the community member's knowledge of helminthiasis was measured in terms of knowledge of the existence of the organisms in the environment, its physical signs and symptoms and measures put in place by medical system to control the infections. The Ndop Health District is situated in the

Ndop Plain of the North West region of Cameroon and is comprises 13 different cluster settlements of different villages. The health areas in the health district are carved out following the population size and the distance from one health area to another. Each health area has a modern public health facility known as an integrated health center which is the first point of contact with the population according to PHC system. Administratively, the area is a division with a divisional headquarters in Bamunka also known as Ndop urban in health terminology. In this area a greater part of life is concentrated with both urban and rural features. It is here that the district hospital is situated coupled with abundant social amenities such as pipe borne water, electricity supply and educational facilities. The Ndop plain region is an endemic zone for soil transmitted helminthes because it has favourable weather conditions for the breeding of the microorganisms and most importantly with the creation of the Bameindjin Dam in 1975. This dam brought about environmental conditions and human problems of the region due to lack of flood control measures during the rainy seasons. This led to unclean water sources and environmental health issues (Mbih et al; 2014). Despite these, areas such as Mighang and Bambalang were noted with about 40% and 30% infection rate respectively according to the chiefs of personnel of their various integrated health centers. Notwithstanding, 14% community members still showed a lot of ignorance and unawareness of these infections in the area especially in the rural areas.

Figure 1 below shows that among the 529 respondents, 78 respondents had never seen or heard about intestinal worms with 61 respondents coming from the rural areas. This gave us a total of 14.7% of community members who had never heard about or seen intestinal worms. This means that a greater number of the people have either seen and/or heard of organisms but it was observed that there is an epidemiological transition as lifestyle changes.

**Figure 1: knowledge on the existence of soil transmitted helminthes in the health district**



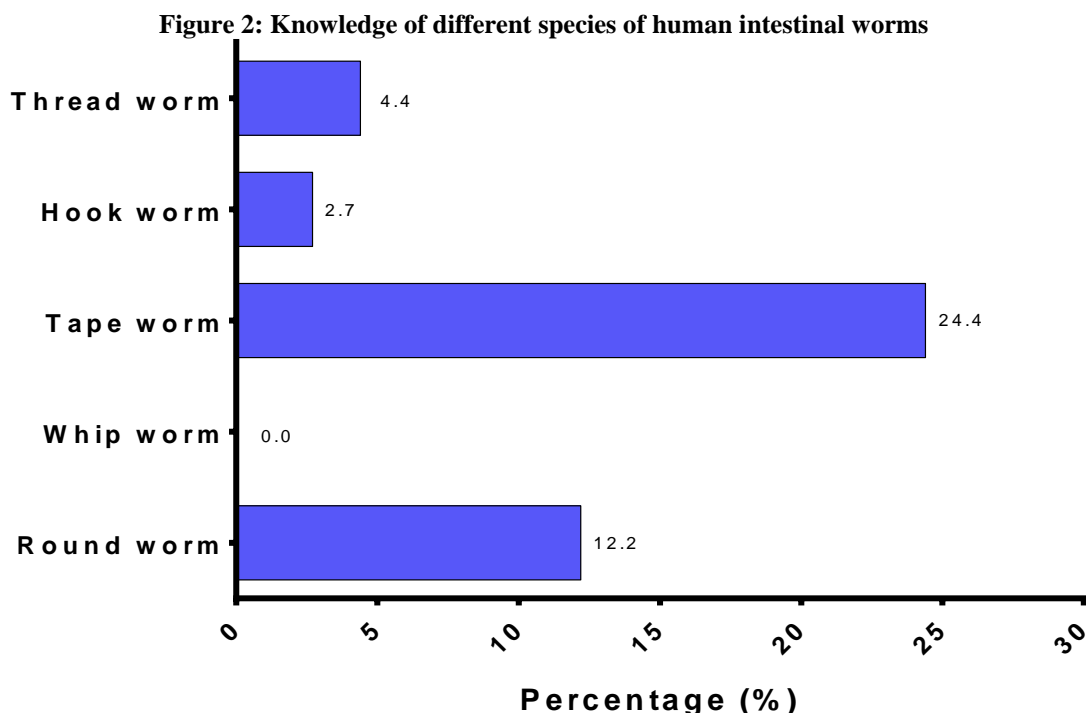


In the Ndop Plain especially in the rural areas, it was noted that most community members did not know the various species as per its common names talk less of its scientific names. They could only describe the worm by its structure or morphology for those who have seen the worms physically. They gave the following descriptions; *long worm big like snake*, *red and white worm*, *ring worm*, *short and open head worm*, *small worm*, *white and yellow worm*, *long and tinny*, and *thin and long worm*. Analyzing these, the research team noted that these worms were a physical description of the various type of intestinal worms they have seen physically. The *long worm big like snake* is the description of the *ascaris lumbricoides* which is a large round worm that can grow to 35cm for the male and the female up to 40cm (Owen: 1989). The *red and white worm* is not actually the color of the whip worm specie but the research team saw it to be the whip worm because to a lay and illiterate person who cannot differentiate colours, there is no great difference between red and pink. The color of the whip worm specie is pinkish-white. On the other hand, the *thin/or long and thin worm* is the description of the thread worm which can be used to refer either to be of the family of the *strongyloides stercoralis* or nematodes of the genus *enterobius* also known as the pin worm. The *white yellowish and small worm* are the hook

worm specie for they are grayish white for the *A. duodenal* while the *Nectar Americanas* are similar to the morphology of *A. duodenal* with the male usually 5-9mm long (cited up). The *A. duodenal* is long and stouter. The *small worm* can also be used to describe the pin worm species whose eggs are not invisible to naked eyes for its small size. From the help of these descriptions of the morphology of these human intestinal worms, we realized that these infections are common in the area but for the fact that the community members don't know or are not familiar with the scientific or common names. The fact that they are able to describe the morphology of these worms indicates they have seen the adult worms with their naked eyes. The possibility of seeing these worms with the naked eyes implies that they have seen infected persons pass it out either through the nostrils, mouth or stool. This only happens in very severe infections.

#### Community member's knowledge of the prevalent species

As per figure 2 below we will notice that the community members are more familiar with the tape worm specie as per their description and those who knew the name, mentioned it. This goes along with livestock rearing which is one of their main activities, the rearing of pigs and cattle grazing.



According to the community members, the prevalent intestinal worm is the tape worm with 24.4% prevalent rate as seen from the figure above, also described by its broad head and segmented body. But the medical team's point of view is contradictory to this fact. The in-depth interview with the personnel of the health centers shows that *Ascaris Lumbricoide* are the most prevalent. The chief of post of the Mbangsalle-Bamali health center (Benard), told the research team that the

*round worms among the various type of helminthes are the more prevalent here*. The chief of the Bamessing health center confirmed this when he said, *Always, it is these round worms that are prevalent*. The chief of post of the Bamukumbit health center equally acknowledged this when he said, *the ascaris is the more common type that we have here*. When the health team asked the assistant laboratory technician of the Mighang health center (Gladys) of the most common diseases in the health zone,



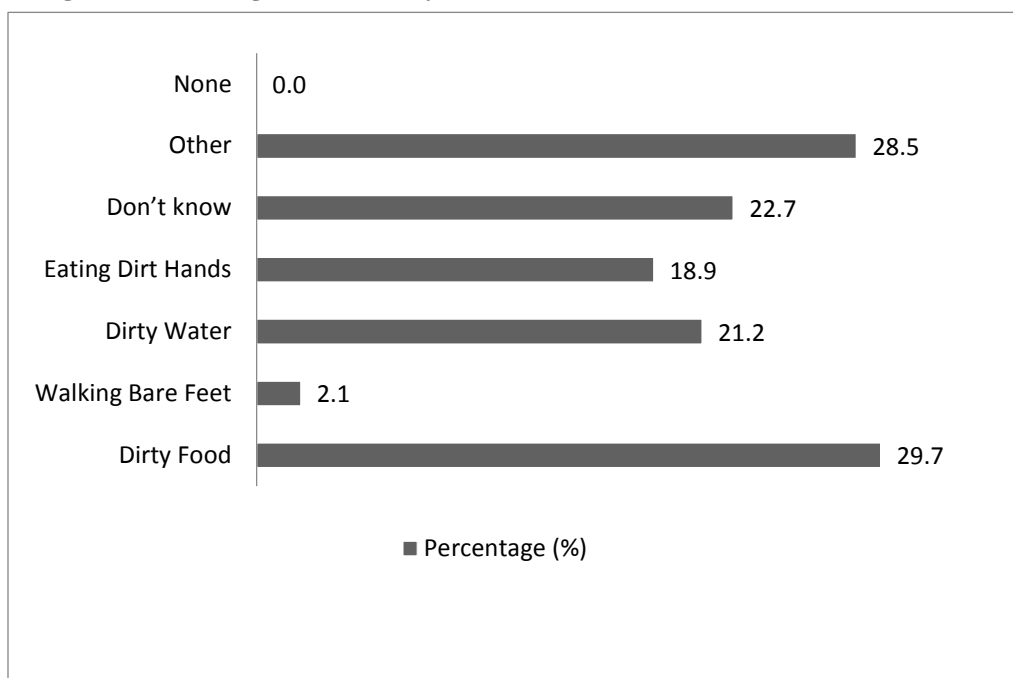
she said, *according to me, the most prevalent diseases in his health area are malaria and ascariasis*. On the part of the medical doctor of the Bambalang Medicalised health center (Dr. William) said, *I don't know if it is the level of our laboratory here but what we mostly find here are the ascariasis*. Equally, the nurse of the Babal health center (Joseph) when asked of the most common diseases in the health area, he said, *malaria, typhoid, ascaris and anemia are the common diseases here*. But when he was asked of the most common human intestinal worm infections in the area, he said, *ascaris, flat worms (tapeworms) and we can get these tapeworms from pigs and meat not well cooked...tapeworms have flat heads*. Lastly, the chief of center of the Babungo health center (Felicitas) told us that, *the hookworm is the most prevalent worm in the zone. It is under the*

*nematodes*. From all these responses, we realized that the most common human intestinal worm in the Ndop Plain region are the ascariasis, the tapeworm and the hook worm with the ascariasis being the most prevalent.

### Community Members Knowledge of causes of disease

The ability of the community members to know the ways through which these diseases are contracted and managed is already a step towards its control and eradication because it can help prevent its infection and reinfection. Some of them knew of its existence and even name specific species, but were not able to tell the research team specific ways through which the infections can be contracted

**Figure 3: Percentage of community awareness of causes of intestinal worm infections**



From figure 3 above 22.7% of community members stated that they do not actually know the causes of intestinal worm infections in children despite the existence the integrated health centers in the area coupled with the fact that enterohelminthiasis is a public health problem. 28.5% of community members believed in the causes mentioned in the table but mentioned other causes that cannot be medically proven such as, *worms are natural, bad fruits, bad mangoes, eating rotted fruits and sweet things, climate change, cold food, cold food in the morning, sweets, mangoes and quavers, forbidden food, inherited, long nails, pork, sweet things multiply worms, raw food, sugar, banana, sweet food, paw-paw, biscuits, raw sweet potatoes, bonbon, mixture of all types of food, too much sugar, and unripe fruits*. The respondents of the semi-urban community specified the following; *absence of medicine, bad fruits, banana and other sweet food, cold food, eating too much sugar, exposed food and fruits., no deworming, not well cooked food, over feeding, rotted fruits, sugar and sweet food,*

*sweet things, sweet things like banana and over ripe fruits, bonbon and biscuits, sweet things like groundnut sweet, sugar and sugar cane, too much sugar and lack of good feeding*. Fruits in itself are not a source of contraction of human intestinal worms unless eaten when there are already contaminated. The chief of post of the Babungo health center (felicitas) said, *one of the main cause is hygiene- the feeding habit related to hygiene. Most of them eat indiscriminately and some of them eat without washing hands. Some of them leave the toilet and eat without washing their hands*. This does not mean that the hands or food itself carries the eggs of the worms but if it gets in contact with eggs of the human intestinal worms, as it enters the mouth, which is one of the main routes of transmission, infection will be evident. The chief of post of the Bamessing health center (Ngwa) said, *we sometimes have serious cases of worm infections during the season of fruits because the children pick these dirty fruits and eat without washing. These fruits surely get in contact with the eggs as it falls off the tree onto the infected*



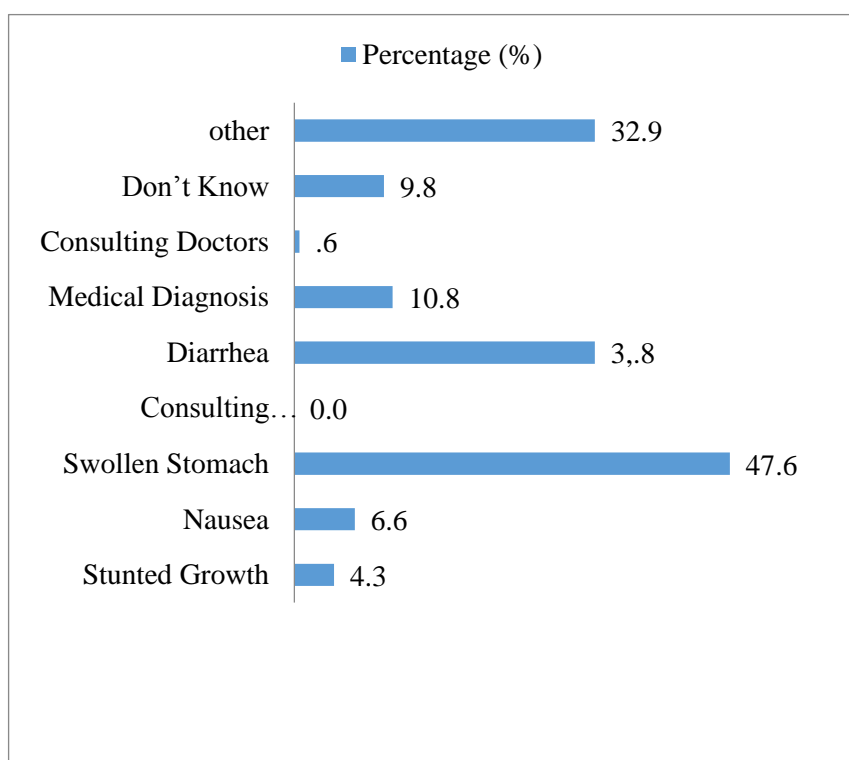
soil. There are some children like the toddlers especially who eat the soils as the creep. The laboratory technical of the Mighang (Gladys) health center told us that *as for the ascariasis, it is mostly with little babies who creep. So as they creep and eat the soil they get it through intra-oral route. Some other children defecate around and so when little babies are feeding on it, they can easily carry it.* So whatever enters the mouth is a source of contraction except taken under very good hygienic conditions.

#### Knowledge of signs and symptoms of enterohelminthiasis in children

Patients are likely to be taken to the hospital for treatment of ailment when the disease starts manifesting its signs and symptoms such as loss of appetite, nausea, abdominal pain, swollen stomach, weight loss, etc. though not peculiar to intestinal worm infections only. these infections in some cases are asymptomatic and that why deworming is advised every after

three months by the medical personnel. Proper knowledge on intestinal worm infections includes knowing its signs and symptoms. But the research team found out from community members of the study site to evaluate their level of understanding or knowledge of the signs especially in the case of children below five (15) of age which is our age limit. From the chart below, we would realize that most respondents indicated swollen stomach as a sign for the presence of human intestinal worms than any other. This can be seen as it comes first with 47.6%, followed by diarrhea with 32.9%, and other reasons not mentioned in the questionnaire with 32.9% , medical diagnosis with 10.8%, those who don't know any sign and symptom with 9.8%, nausea with 6.6%, stunted growth with 4.3%, and consulting doctors with 0.6%.

Figure 4: percentage of awareness of signs and symptoms of presence of worms



Apart from the signs and symptoms in the chart above, community members in the rural areas mentioned others such as *big navel, blood loss, child's colour changes, consistent stomach ache, crying, eating too much, feel the worms moving in the body, fever, fever and vomiting, grumbling of stomach, mucosa in stool, large appetite, large appetite but thin, loss of appetite, loss of appetite and stomach ache, loss of appetite and vomiting, physical vomiting of worms and large appetite, stomach ache and vomiting, swollen face, swollen jaws and legs, vomiting, when child's hair is red, white eyes, and finally white eyes and vomiting.* In the semi-urban community the respondents

specified; *constant stomach pain, cornea is light, grumbling stomach, eating too much but not looking healthy, fever, fever and vomiting, loss of appetite, loss of appetite and body weakness, loss of appetite and passing worms through stool, too much eating, vomiting and high temperature, vomiting and loss of appetite, vomiting and stomach pain, white eyes and stomach pain and finally white eyes.* Here we can find a wide variety of the signs and symptoms of the presence of human intestinal worm infection(s) in children of the Ndop plain region as presented by the community members in their common expressions. Their knowledge of these signs and symptoms can



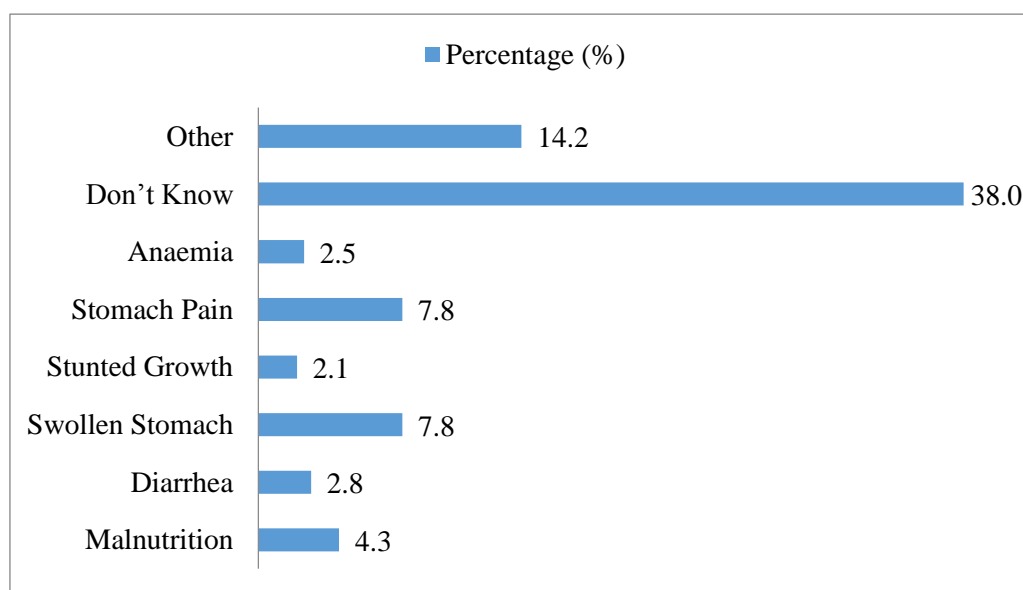
enlighten us on the prevalence of these infections and equally the various type of worms prevalent in the area. For instance, white eyes or white cornea means loss of blood. This is indicative of the hook worm that hocks itself on the walls of the gut and sucks the blood it uses as food. We also have signs like, the loss of appetite that comes more often both in the rural and semi urban communities which is the sign of the presence of cestodes especially the dwarf specie that lives on the digested nutrient from the patient. The swollen stomach and stomach pain commonly notable in the rural community is common with ascariasis.

### Knowledge of diseases related to enterohelminthiasis

Community members participation especially in the prevention of disease will depend if the peoples are aware of the

risk involve with the disease. But the research team noticed that enterohelminthiasis does not present a lot of risk to the people as it ought to be. The chat below shows that many people in the Ndop Plain region don't know much about intestinal worm related diseases. It shows that 38% of the total population of respondents does not know that intestinal worm infection causes other diseases. Those who expressed a certain degree of knowledge on this could rightly mention stomach pain and swollen stomach which are some of the immediate or short term disorders that comes as a result of the presence of human intestinal worm infections. But long term disorder such as malnutrition and stunted growth are not widely known by the people which is very detrimental to child physical growth and even mental development.

Figure 5: Percentage of awareness of related diseases



### Knowledge of treatment methods

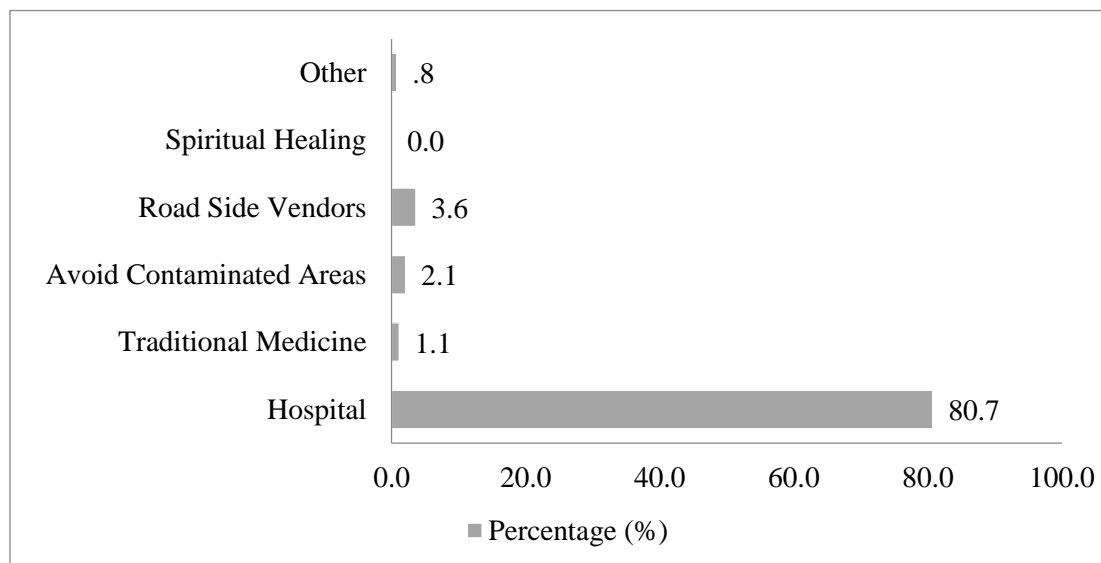
The responsibility of care taker is not just to know the type of ailment that a child is suffering of but also to be able to know how and where to get proper treatment. It's in this perspective that we found out from the Ndop Plain community members where they look for treatment when their children are infected by worms. Looking at the statistics presented in the chart below, we would realized that 80.7% of the total population of respondents would prefer to take their children to the hospital when they have worm infection. With the enormous display of ignorance in so far as knowledge on worms and its avenues of contraction, the few who are aware would prefer hospital than any other methods of treatment. That is why the

rates at which people would choice others method are quite insignificant. Notwithstanding roadside vending of drugs still attract a good number of persons especially in our rural communities because the drugs are relatively cheaper and available at all times owing to community solidarity and face to face relationships. This equally shows that the people if they are given the opportunity to be well educated on health issues and facilities that health centers are offering, there will be mass participation. However more and more people believe in modern medicine now as compare to may be four decades ago where more accent was placed on witch doctors and traditional medicine.





Figure 6: Percentage of choice of treatment for intestinal worm infections in children

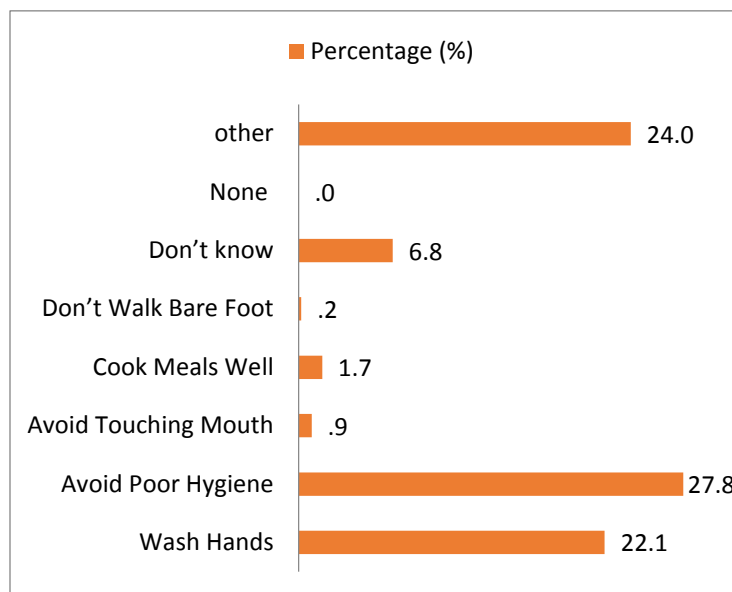


#### Knowledge on preventive methods

In order for disease control to be effective in a community, community members have to know and be well acquainted with the various control methods. Though they understand that it is possible for enterhelminthiasis to be prevented, they do not actually know the various ways of prevention. The figure belows shows that avoiding poor and washing of hands is highest with

27.8% and 22.1% respectively. Walking bare foot comes last with 0.2% [t is not rare to find children walking barefoot especially in rural communities. On the other hand 6.8% have no idea about preventive measures while 24% of respondents indicated that they are others preventive measure that were not mentioned in the figure below/

Figure 7: Percentage of awareness of preventive methods



These measures include *avoiding sleeping food and sweet things, avoiding cold food, deworming constantly, avoiding sweet things like bon-bon and biscuits, cannot stop children from eating dirty, drink clean water, education, hospital treatment, medicine and avoid sweet things, no sugar, well cooked meat and worms are natural. All of these were the*

*specifications coming from rural community members. Those of the urban community specified; avoid eating cold food, avoid giving sweet things to the children, avoid sleeping food and sweet things, constant deworming and avoid sweet things, medicine, prevent children from eating everywhere, deworm every six (6) months, confine pigs, proper preparation of pork,*



*stop sweet things and over ripe fruit, and taking vaccines.* Some people live in total deception when it is believed that worms are natural or that people cannot live without worms or it is impossible to stop children from eating dirt. The chief of post of the Mbangsalle- Bamali health center (Benard) said *a lady brought her child here and we did the diagnosis and told her the child had worm infection, she said it would not be a problem because at certain times children should have worms. so we told her it is not normal and that something has to be done.* When we asked the chief of post of the Babungo health center (Felicitas) why community members of her health area think worms are natural she said *“that is the notion that most of them have. That everybody must have worms. It is a common thing for them.* This idea alone is able to influence people actions and reaction towards the treatment and prevention of intestinal worm despite it deadly consequences.

Other preventives methods that came in are justifiable like drinking of clean water, constant check and deworming. The health personnel was preoccupation with drinking clean water because portable wwater is rare in the Ndop Plain especially in the rural areas. Amongst the villages visited by the research team, Bamessing only declared of having portable water. The chief of the post of the Mbangsalle health center said, *here in Bamali especially in Mbangsalle, we have a problem of water. We don't have water, even well water. In the whole of Mbangsallee health area, there is no well except here at the health center, and this health area has eight (8) quarters. But there are rivers and that is where both animals and human beings drink their water.* Mbangsalle- Bamali had a problem of availability of portable water but Bambalang had the problem of accessibility and maintenance of the sources of the portable water. One of the doctors of the medicalised health center in Bambalang said, *it is true we will find boreholes in some areas but accessibility to these boreholes is sometimes a problem. Malfunctioning of some of the boreholes is also a problem. Yet some of them don't see why they should go through the stress of boiling water before drinking. If you educate them by telling them that when you fetch water, boil before drinking, they will say yes but when you observe them, they don't do it. In as much as there is little or no access to portable water and they equally don't see the importance of boiling water before drinking, there will obviously be health problems if not helminthiasis.* In the case of deworming, many respondents especially in the semi-urban area opted for deworming (constant or regular), but some people thought deworming was to be after three (3) months and some thought it was after six (6) months. The Albendazole program in the area is after six (6) months meaning that the knowledge of the people depend on their experiences. The medical doctor of the Bambalang health center blamed the complications of serious infectious to the Albendazole program. He said, *this, I will blame the Albendazole program that is not consistent and not efficient. When there are even effective, the covering is not very high. I can bet there are people here who have never been dewormed in their entire life and if it's a household where children pass out worms, then there will think that it's natural.* Sometimes after the treatment, a patient can be

asked to repeat dosage after two (2) weeks and treatment after three (3) months regularly. But this depends on the discretion of the medical officer in question. But one of the major problems most health practitioners have especially in the study area is that most patients do not properly follow the doctor's prescription. The laboratory technician of the Mighang health center noted that; *sometimes the community members do express dissatisfaction of the services offered in the area though they are the real cause.* She said, *when drugs are prescribed, they do not follow the precise instruction on the time and quantity when administering.* This obviously will lead to ineffective treatment.

### **Mobilisation of community participation in the control of enterohelminthiasis**

Being a public health issue, the control of enterohelminthiasis needs effective and mass community participation. But in the Ndop Plain Area of the North West Region of Cameroon community members do not effectively participate in the promotion, prevention and treatment of intestinal worms. They are nonchalant about the disease, they do not have effective knowledge on the infections, its signs and symptoms and control measures as already presented above. The most dangerous part of it all is that they have less knowledge on the risk factors related to the disease given that they are not well informed. This has an adverse effect on their participation zeal. Apart from that, some of them believe intestinal worm infections is normal. The main human activities carried out in the region are agriculture (crop production, animal and birds rearing) tapping, fishing weaving, and smelting. The fertility of the wetland gets community members busy all year round with the production of grains and vegetables. This makes it difficult for people to do other activities except on customarily forbidden working days which is once a week. As such health issues are not prioritized or taken to the integrated health center or any modern health facility only when other homemade measures are unsuccessful.

During the study the team noticed that the health center personnel found it difficult reaching out to community member which made a lot of people not to be aware of the services that are offered by the health facilities. The first challenge was at the level of language. Most of the health personnel were not indigenes and so could not understand the language of the people. Dealing with a population where most people are illiterates especially in the rural communities, with a language barrier added to that will surely not produce optimum feedback to any communication or message pass through. Using the dialect would be a major source of break-through. But PHC service delivery system, provision has not been made to solve this problem adequately because only the community health worker is expected to be a member of the community.

In the health center working strategy, there is the management committee and health committee. The communities have two representatives from each health zone selected by the community member of each zone from their community. Meaning that these community representatives can express themselves well in the language in which the community



members can understand. Secondly, the community members know them and have no reason of keeping anything away from them. So this community representatives acts as relay between the community and the health center. The chief of the post of the Mbangsalle-Bamali health center told us; *here we have two committees, the health committee and the management committee. The community has their representatives. Each quarter select their representative and each time we have or they have problems they are channeled through these community representatives. These community representatives also participate in disseminating information and when there is mass distribution of drugs and vaccinations they also participate.* Moreover, the chief of post of the Babungo health center told the research team that *the community really participates because most at times we work with community representatives-zonal representative whom the people believe in them most. When they take information from the health center to the people, they really participate. They are like a link between the health center and the community. So when they come here, we train them by telling them exactly what to do and when they go back to their various zones, they will break it down in the language in which the people will understand. So we have relay agents with whom we work and it really facilitate the activities.*

Notwithstanding, challenges in communication still comes up during face to face consultation with the doctor or midwife. In any case, this is the strategy put in place but what we observe was that many people know the existence of the health center but do not know most of the services offered. In this respect we come to understand that there is a difference between taking information to a person and educating the person on what to do or where to go when the members might have been informed. Training on what to do or where to go when faced with a particular health challenge is what the community

members are not versed with. The doctor we interviewed in Bamalang medicalised health center (Dr. Kum) told us. *At the level of the community we have many problems. The first thing is education. We are trying to balance that up because here we just started the program known as community health workers. They are members of the community who came to the hospital, they have certain targets, and they are like an interface between the community and the hospital. They try to sensitize. Sensitization of the community members generally about health services and health tips on how to take care of themselves is another problem.*

Yes the dialogue structure places a responsibility of mobilising community community members to actively participate in health care development in communities which needs expertise from educationist, health workers, sociologists, anthropologists, communicators, and professional community development workers. Ottong (2010) defines mobilisation as the process of binging someone to do something while in normal circumstances the person would not do. This means convincing without cohesion. This is why community health intervention needs a multidisciplinary strategy which automatically makes community health worker not qualified to function in the caliber. This explains why the multidimensional channels used to trigger health information down to community members is of little effect. If many people do not like the idea of coming to the hospital, it means they do not master the importance of doing it. Information coming from the chief of center to community goes through the community health workers to the churches, quarter heads, community groups, community radios, town crier, and at times door to door. Yet not everybody gets the information because some community members admitted getting health information from their friends, family members, and neighbours.

Figure 8: Different means of getting health information on health issues

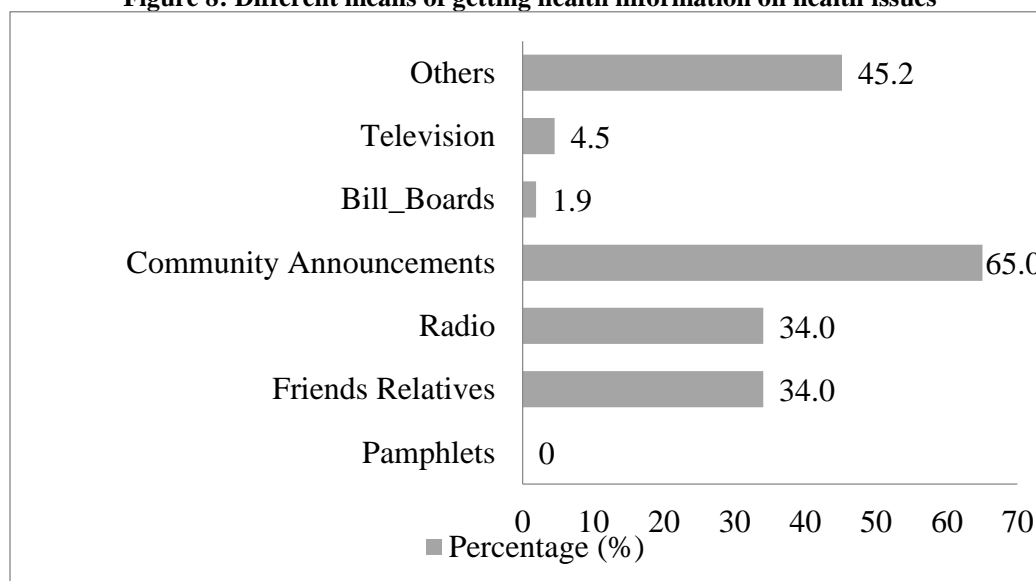


Figure 6 above, shows that majority of community members get health information through community announcement made by

the town crier and friends. Apart from that, there are other sources that were not mentioned in the question such as; hospital



during special appointment in the hospital, during antenatal and post national consultation, churches, meetings or Njangi group, door to door announcement, schools, markets, mosques, quarter meetings, bars, during appointment for vaccine from the health committee member, hospitals lecture and through messages on phones. This mean many community members are always well informed as per health issues in the health district or health area but they have not been educated and controlled enough for active participation.

Moreover, the culture of the people is refractory to innovation in the domain of health as we could find both traditional and modern health care facilities in the area. Dr. Kum said *for a long while most of the ideas on health or going to the hospital, depend on their culture. It is like if you tell them once I don't think they will get it. You need to tell them over and over again. It is like I heard it before, I did not go to the hospital and I am still fine, we need continuous education. If not nothing changes. We have even developed strategies where those community workers have to bring people to the hospital. In doing so, we register them under the World Bank project of poor and vulnerable. Sometimes we ourselves go to them once a month in their various quarters. We sit there and all the old fathers and mothers would come to us for consultation because we have discovered that if we are waiting for them here, they will not come though they need medical attention. They don't have the culture of going to the hospital, so we go to them. It is the same thing for vaccination. Some people here are resistance even to vaccination. A child less than one (1) year needs to come to the hospital five (5) times for vaccination. At birth it is easy because they are in the hospital but at one (1) month, two (2) months if the child is not sick, they will not come. Here it is a big problem. Why should I be going to the hospital? No matter what you tell them, they will not come. So sometimes we are forced to go to the home to give them the vaccines. Continuous sensitization here is really a problem, telling them once is not enough. They will receive you, welcome you and tell you they have understood but they will not come. It is a big challenge breaking through the community.*

## CONCLUSION

Community participation in the treatment and prevention of enterohelminthiasis in the Ndog Plain Region of the North West Region of Cameroon is not very evident since there is a kind of verticalisation of diseases in the area. Those diseases that are heavily financed such as malaria, HIV/Aids, and tuberculosis are well known by community members in terms of treatment and prevention. But emphasis is not laid on intestinal worms especially on the part of community members firstly because they have divergent perspectives opposite to the expectations of public health medicine. The community members are not conversant with causes, signs and symptoms, of the disease, related diseases, and methods of prevention. On the part of the medical facilities emphasis is not laid on the treatment of enterohelminthiasis as a major public health challenge especially in children as proper personal hygiene such as hand washing, cleaning fruits, edible raw tubers and

vegetables, discriminate defecation, avoiding soil consumption, and walking bare foot are not emphasized as unhealthy. Even when told community members find it difficult adopting the lifestyle because human activities in the area makes it challenging to care for their kids properly. Generally kids are left under the care of elder siblings who are equally children without fundamental knowledge on personal hygiene. In as much as personal hygiene is a major cause of reinfection after treatment, there is also the issue of social integration. Community solidarity manifested through constant short duration and long duration visitation expressed during births, deaths, cultural festival and marriages makes possible for infected persons to share either their homes or belongings with other family members, friends or neighbours thereby facilitating infection or reinfection. Even when infected some parents do not actually see the need for proper diagnosis since they have not been thought to identify the risk factors of the disease. In the Ndog Plain health district there are no special programs to get the community engage in the promotion, prevention, and treatment of intestinal worms such educational programs for care givers and occasional screening since the infections are mostly asymptomatic. But there is the Albendazole program which most at times is not effective as most isolated communities and the Borroro communities at the hill tops are not accessed. But it should be noted that the rate of prevalence has dropped comparative to three decades when urban lifestyle had not reached urban Ndog as an epidemiological transition (Trudy;1989) was noted within communities like Bamessing that are closer to Bamunka- the semi urban areas. Finally we noticed that community participation in the promotion, prevention and treatment of enterohelminthiasis in the Ndog Plain of the North West Region of Cameroon is more of mobilisation as the people are called upon to obey the recommendations of the health professionals. Communities are included as per the dialogue structure in the aspect of decision making but do not actively participate in implementation of health activities because of lack of appropriate knowledge and implementation timetable which always conflict with community members personal timetables.

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# TEACHERS' PROFILE AS PREDICTOR OF TEACHING COMPETENCE AND STUDENTS' ACADEMIC ACHIEVEMENT IN SCIENCE

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## ABSTRACT

*This study aimed to determine the relationship between the teachers' competence and students' academic achievement in science, as well as investigating the effect of teachers' demographic profile in both dependent variables. The respondents were the total population of science teachers in Davao City National High School with teaching positions I-III. A descriptive-comparative and correlation survey method was utilized. Independent samples t-test, Analysis of Variance (ANOVA), and Pearson-r Correlation were the statistical treatments used in the study. The teacher-respondents answered a combined adopted and teacher-made survey questionnaire in gathering the data. Findings of the study showed that most of the science teachers are female having teaching positions I, where teaching experience were mostly less than ten years and majority have more than one ancillary function. Additionally, it revealed that science teachers teaching competence was at integrating level whereas students' academic achievement was very satisfactory. Moreover, result showed that there was no significant difference among teaching competence in terms of their sex, teaching position, and teaching experience excluding the number of their ancillary function that is significantly different. Students' academic achievement was significantly different in terms of teachers' teaching position, teaching experience, and ancillary function excluding sex. Thereby, teaching competence was highly and positively associated with students' academic achievement in science. Findings of the study recommended to establish reasonable guidelines in the distribution of ancillary functions and make best use of school existing programs like School Learning Action Cell (SLAC) to ameliorate teaching competence and students' academic achievement.*

**KEYWORDS:** teachers' profile, competence, academic achievement, science teaching, ancillary functions.

## INTRODUCTION

Science education has become a priority across the globe due to it being a driving force of development and a fundamental key in solving issues in the global arena. Besides, the 21<sup>st</sup> century education demands for the practical use of science rather than collecting facts. In view of, most research in science education focus on the pedagogy in teaching, exploring a wide range of teaching methods and strategies that are mostly found to be effective, improving students' retention and their learning experience in science. However, the idea that there are a lot of interventions and teaching strategies that are renowned to be effective as an output of various research, but a persistent decline in students' academic achievement and poor assessment results are still be observed.

A significant finding of Sakiyo and Badau (2015) and Ugo and Akpoghol (2016) reveals that students' performances in Science, Technology, Engineering, and Mathematics (STEM) subjects were fluctuating. Accordingly, in progressive and competent countries like the USA and some countries in Europe challenges in science education were also evident, where Mullis, Martin, Foy, and Arora (2011) describe the performance of USA

learners as significantly below that of Singapore and Chinese Taipei. Subsequently, Programme for International Learner Assessment PISA (2012) reported that more than 20 percent of young Europeans were not attaining basic skills in science subjects.

In Asia, Turkey has taken place at the end of the list in the Program for International Student Assessment (PISA). In the past PISA held in 2012, Turkey was ranked 43 among 65 countries in the field of science achievement (PISA, 2012). Likewise, Jordan has participated in Trends in Mathematics and Science Survey (TIMSS), five rounds of these tests comprising science test for the eighth grade consists of basic sciences, results show a clear decline in the results of Jordanian students, the result is an indicator that should be taken into account to identify the reasons behind this drawback for the purpose of developing the educational process (Yahya & Ayasrah, 2018).

Philippines ranked in the low 70s in the 2018 Programme for International Student Assessment (PISA), a student assessment of 15-year-old learners across 79 countries done by the Organization for Economic Co-operation and Development (OECD), where Filipino students ranked low in



mathematics and science, with 353 points and 357 points respectively against a 489 OECD average for both categories (Dela Cruz, 2019). Additionally, DepEd's previous records showed a declining achievement level of elementary and high school students based on National Achievement Tests (NAT) results from 2005 to 2010 (Ronda 2011). Results show that the separate survey and tests are comparable, this indicates that Philippines performance in core subjects like science is reliably poor from 2010 to 2018. The survey recommends that interventions should be made to the students of countries, like the Philippines, where the relationship between a student's socio-economic status and academic achievement is strong.

In Davao City National High School, there was an encounter of students' difficulty and poor achievement in science. It was also observed that students' summative tests and quarterly exams are mostly skewed to the average and poor scores despite of the varied strategies given. Thus, the teachers in the school are equipped with enough training and seminars relating to various teaching strategies, amplifying their teaching competence and classroom interaction. This proves that even though training and seminars are given to teachers, the problem of students' academic achievement remains persistent. The breach between countless professional enhancements of teachers and enduring students' low achievement in science interest the researcher. Hereafter, the identified gap directed the researcher to investigate on teachers' demographic profile towards teaching competence, as teacher being a significant predictor of student academic achievement (Topçu, Erbilgin, & Serkan, 2016).

The researchers sought information regarding the following: (a) demographic profile in terms of sex, teaching position, teaching experience, and ancillary function; (b) level of teachers' competence in terms of subject mastery, classroom management, instructional delivery, and assessment; (c) level of students' academic achievement in science in first and second quarter and their average grade; (d) significant difference in teaching competence when analyzed according to their demographic profile; (e) significant difference in the students' academic achievement in science in the first and second quarters and their average grade when analyzed according to their demographic profile; and (f) significant relationship between teachers' competence and students' academic achievement in science.

The findings of the study will be useful to address the drawback of students' poor academic achievement in science, despite of having teachers that are trained to series of renowned effective teaching strategies. Accordingly, the findings of the study can guide the administration to review and improve school policy in promoting effective teachers. This will also be useful in informing teachers regarding the influence of their distinctive characteristics, duties, and concerns towards their teaching competence affecting their students' learning outcomes. Most importantly, students will have a holistic experience in learning, having teachers that are enthused to teach where teaching strategies and interventions will be faithfully implemented.

## METHOD

### Research Design

The researchers utilized descriptive-comparative and correlation survey given the nature of the research that is quantitative. This method was used in describing the demographic profile of science teachers and the level of their teaching competence, and students' academic achievement in science. Additionally, a comparative research design was used in comparing how science teachers' different demographics affect their teaching competence and their students' academic achievement. Furthermore, correlational study design tests the relationship between two variables without any of them being influenced by the researcher (McCombes, 2019). This method was employed to describe the relationship among the variables such as teaching competence and students' academic achievement in science.

### Respondents and Sampling

The respondents of the study were all secondary science teachers at the Davao City National High School in both Junior and Senior High School departments. Specifically, science teachers in the school with teaching positions I-III. The respondents of the study were selected using complete enumeration, where all science teachers both from Junior and Senior High School departments were recruited and measured in the study. Complete enumeration also known as the census is a study of every unit, every one or every thing, in a population, which means a complete count of a whole population (Australian Bureau of Statistics, 2018).

### Instruments

The researchers used a survey questionnaire as means of collecting secondary data from the respondents. The questionnaire consists of nine indicators adopted from the Philippine Professional Standards for Teachers (PPST) that have been developed and nationally validated. The indicators were from the DepEd widely used classroom observation tool (COT) developed by the Philippine National Research Center (RCTQ) for teacher quality that is signed into policy by Department of Education through DepEd Order No. 42, s. 2017. The nine indicators in the COT were inserted and used in the survey questionnaire to collect the classroom observation rating of teachers for the first and second quarters and to describe the level of their teaching competence that was rated by their mentors/heads. The nine indicators were group into four domains, indicators 1 and 7 were for subject mastery, indicators 4,5, and 6 were for classroom management, indicators 2, 3, and 8 were for instructional delivery, and indicator 9 for assessment.

The instrument also includes questions for teachers' demographic profile as selected by the researcher to explore and to describe the profiling of the respondents. Sex, teaching position, years of teaching experience, and frequency of ancillary function were the chosen distinct characteristics of teachers being included in the survey questionnaire. A question for consolidated General Scholastic Aptitude (GSA) of teachers



handled sections in science for the first and second quarters were also included in the survey questionnaire to measure the level of their students' academic achievement in both first and second quarters, and the average grade.

For teaching competence, an adopted rubric from DepEd was utilized. The rubric contains a performance continuum for each career stage. For Teacher I-III (with Levels 3-7) this was based on Philippine Professional Standards for Teachers (PPST) through DepEd Order No. 42, s. 2017. The PPST articulates what constitutes teacher quality through well-defined domains, strands, and indicators that provide measures of professional learning, competent practice, and effective engagement across teachers' career stages. The rubric level summary refers to both the name and description of each level, described according to performance and teaching competence of teachers in the classroom. For the academic achievement, the respondents' secondary data on the overall mean of students' general scholastic aptitude in science for the first and second quarters were used to measure the level of students' achievement in science.

#### Statistical Treatment of Data

The researchers used frequency and percentage distribution in getting the descriptive statistics of teachers' profile. Mean was used to determine the descriptive statistics

and central tendencies of the scores for the demographic profile of teachers in terms of their sex, teaching position, teaching experience, and ancillary function. The same statistical value was used to determine the level of teachers' teaching competence and students' academic achievement in science. Standard deviation was used to tell how measurements for a group are spread out from the mean or expected value. Independent Samples t-test was used to compare and determine whether there is any statistically significant difference in the means of the variables with two levels. Specifically, teaching competence and students' academic achievement, when respectively analyzed according to the teacher's demographic profile (sex, teaching experience, and ancillary function). One-way Analysis of Variance (ANOVA) was used to compare the means of the variables with more than two levels, specifically, in determining whether there is any statistically significant difference in the means of teaching competence and students' academic achievement when respectively compared according to the teacher's teaching position. Lastly, the researchers utilized Pearson-r correlation

to determine the association between teaching competence and students' academic achievement in science. The testing of a null hypothesis was based at the  $\alpha = 0.05$  level of significance using a two-tailed test.

## RESULTS AND DISCUSSION

### Teachers' Demographic Profile

Table 1  
*Demographic Profile of Science Teachers*

Profile	Frequency	Percentage
Sex		
Male	13	27.7
Female	34	72.3
Total	47	100.0
Teaching Position		
I	22	46.8
II	10	21.3
III	15	31.9
Total	47	100.0
Teaching Experience		
<10 Years	25	53.2
≥10 Years	22	46.8
Total	47	100.0
Ancillary Function		
≤1	21	44.7
>1	26	55.3
Total	47	100.0

Table 1 shows that 34 out of 47 science teachers are female. They constituted seventy-two and three tenths-percent (72.3%) of the total population. It also shows that the majority (22 or 46.8%) of the respondents' teaching position was teacher I, followed by teachers III (15 or 31.9%), and teachers II (10 or 21.3%) comprising the population of both junior and senior high

school science teachers. Further, a minor difference in the distribution of teaching experience was found when group into two, twenty-five (25 or 53.2%) were below ten years of experience; and twenty-two (22 or 46.8%) were above ten years. In the case of teachers' ancillary function, data had shown extreme frequency and were recoded into two groups. Thus, it



appears that the majority (26 or 55.3%) of the teachers have more than one task apart from teaching.

The level of teaching competence comprising the four domains (subject mastery, classroom management, instructional delivery, and assessment) and their discrete levels are all presented in Table 2.

### Level of Teachers' Competence in Teaching Science

Table 2  
*Level of Teachers' Competence in Science Teaching*

	N	Mean	SD	Qualitative Description
Subject Mastery	47	6.57	.382	Integrating
Classroom Management	47	6.49	.543	Integrating
Instructional Delivery	47	6.58	.362	Integrating
Assessment	47	6.68	.409	Integrating
<b>Average</b>	<b>47</b>	<b>6.58</b>	<b>.349</b>	<b>Integrating</b>

There were 41 junior high school science teachers and six (6) senior high school in the entire campus with teaching positions I-III as qualified respondents combined to an overall population of  $N=47$ . Further, the mean is used to determine the level of respondents teaching competence in science using their two classroom observation ratings. As a result, the overall level of teaching competence is Integrating ( $M=6.58$ ,  $SD=.349$ ) which is also equivalent to very high. Similarly, all four domains of teaching competence are integrating, and are respectively disclosed as follows: assessment ( $M=6.68$ ,  $SD=.409$ ) with the highest mean, followed by instructional delivery ( $M=6.58$ ,  $SD=.362$ ); subject mastery ( $M=6.57$ ,  $SD=.382$ ); and classroom management ( $M=6.49$ ,  $SD=.543$ ). The level of teaching competence reveals that science teachers use well-connected pedagogical aspects of the indicator to create an environment that addresses individual and group learning goals. This means that teachers' competence in teaching has been progressing. A study of Kahveci (2010) explains science education reform calls for a pedagogical shift from a teacher-centered, textbook-based instructional paradigm

to a student centered, inquiry-based model. Thus, integrating level of respondents teaching competence attests a shift in teaching practices from traditional to contemporary ways of teaching which accentuate the learning-centered approach that is present in the nine indicators. Above all, competent teachers are expected to have adequate knowledge and skills that can manage effective learning to happen. This is supported in the statement that competent teachers have the requisite knowledge and skills to produce desired student learning outcomes (Mulder et al., 2006), and are better able to facilitate an environment conducive to learning (Mulder et al., 2006; Roelofs & Sanders, 2007; Woolfolk Hoy, 2000). However, there are still ratings in the domains of classroom management that is applying (5.17) and consolidating (5.50) for both subject matter and instructional delivery in the minimum score. It reflects that peer coaching, mentorship, and further enhancing activities in pedagogical aspects are still needed and shall be done, enabling teachers to sustain teaching competence.

### Level of Students' Academic Achievement in Science

Table 3  
*Students' Academic Achievement in Science*

	N	Mean	SD	Qualitative Description
First	47	86.0574	5.359	Very Satisfactory
Second	47	86.4489	5.272	Very Satisfactory
<b>Average</b>	<b>47</b>	<b>86.2532</b>	<b>5.253</b>	<b>Very Satisfactory</b>

Figures in the table had revealed a very satisfactory level in all both quarters and average grade in science. It also shows that there is a minor difference among all given means. The order of students' academic achievement from the highest mean to the next are listed as follows: second quarter ( $M=86.4489$ ,  $SD=5.272$ ); average ( $M=86.2532$ ,  $SD=5.253$ ); and first quarter ( $M=86.0574$ ,  $SD=5.359$ ). In these conditions, it implies that students were able to develop fundamental knowledge and skills and core understanding. It also further entails that students can transfer these learning through authentic performance tasks. Even so, there are General Scholastic Aptitude (GSA) that are of fairly satisfactory that is near to

failing academic achievement in the minimum data. These means are 77.03, 77.95, and 77.52 for first, second, and average means, respectively. Thereby, despite of students having a very satisfactory level in science in the research locale, the minimum GSA must also be taken into consideration. These fairly satisfactory data can be an inhibiting constituent in greater improvements of National Achievement Test (NAT) for the past years and can also be one of the potential contributing factors making Philippines ranked low in the previously conducted assessment by Programme for International Student Assessment (PISA) Dela Cruz (2019). Additionally, DepEd's previous records showed a declining achievement level of elementary and





high school students based on NAT results from 2005 to 2010 (Ronda 2011). Furthermore, the school is providing remediation for students who have challenges with their academic achievements and encourages teachers to maximize the remediating modalities to have at least a minimum satisfactory GSA in the future.

### Teaching Competence Analyzed by Teachers' Profile

Reflected in Table 4 are the comparative results of teaching competence when analyzed according to sex, teaching

position, teaching experience, and ancillary function as constituents of science teachers' demographic profile. An independent-samples t-test was conducted to compare the teaching competence among 47 science teachers in terms of their sex, teaching experience, and ancillary function. Furthermore, a one-way analysis of variance (ANOVA) was used in comparing the teaching competence according to their teaching position.

Table 4  
*Teaching Competence Analyzed by Science Teachers' Profile*

		N	Mean	SD	t-value	F-value	p-value	Interpretation
Sex	Male	13	6.4850	.431	-1.026	.319		Not significant
	Female	34	6.6196	.312				
Teaching Position	I	22	6.4935	.35982	1.801	.177		Not significant
	II	10	6.5830	.40216				
	III	15	6.7122	.27170				
Teaching Experience	<10 Years	25	6.5109	.381	-1.513	.137		Not significant
	≥10 Years	22	6.6635	.297				
Ancillary Function	≤1	21	6.7380	.241	3.100	.003		Significant
	>1	26	6.4566	.376				

The overall comparative result had revealed that teachers' profile is significantly different in terms of their ancillary function whereas, sex, teaching position, and teaching experience had shown no statistically significant difference in the teaching competence of science teachers. Exploring the individual scores of each domain in the teachers' profile are as follows:

**Sex.** Analogous to the comparative result of the domains in teaching competence, the entire findings suggest that there was no statistically significant difference in the teaching competence of science teachers when compared according to sex for male ( $M=6.4850$ ,  $SD=.431$ ) and female ( $M=6.6196$ ,  $SD=.312$ ) conditions;  $t(45)=-1.026$ ,  $p=.319$ . It also further posits that sex does not affect the teaching competence of teachers in science classes. Thus, the result did not conform in the studies of Akhmetova, Mynbayeva, and Seitova (2017); Dee (2007); Mahanta (2012); and Winters, Haight, Swaim, and Pickering (2013); findings which asserts that male and female teachers differ significantly in professional competence. Meanwhile, findings corroborated in the studies of Akiri and Ugborugbo (2008); and Akpochafo (2015) who found that there is no significant difference between male and female teachers' competencies.

**Teaching position.** The statistical result of teaching competence of forty-seven (47) science teachers comprised of teachers I ( $N=22$ ), teachers II ( $N=10$ ), and teachers III ( $N=15$ ) had revealed no statistically significant difference in all domains of teaching competence of teachers when compared according to their teaching positions. Accordingly, the entire result of teaching competence was greater than the  $p>.05$  level for the three conditions [ $F(2,44) = 1.801$ ,  $p = .177$ ]. Taken together,

these results suggest that teaching competence will not significantly vary and be affected by teaching positions. Specifically, it implies that teachers' salary that is directly proportional to their teaching position can be poorly used as an indicator to predict teaching competence. Although pursuant to the R.A. 9155, the selection, promotion, and designation of school heads and teachers shall be based on merit, competence, fitness, and equality, which agrees with DepEd Order No. 66 s. 2007 "Revised Guidelines on the Appointment and Promotion. It further stipulates the ranking for vacancies of Teacher II and Teacher III positions should have at least a very satisfactory performance rating for the last three (3) rating periods prior to his/her application (Llego, 2019).

However, items for promotion are few in proportion to the entire number of teachers, including other sets of qualifications aside from teaching competence. These conditions provide an extrapolation that supports the finding that teaching position can be poorly used as an indicator to predict teaching competence. This has been supported by a study of Subruto (2013) which found that not all indicators of income affect the quality of education that is measured with the students' achievement.

**Teaching experience.** The overall comparative result among the domains of teaching competence had revealed no statistically significant difference among the teaching competence of science teachers when analyzed according to their teaching experience <10 years ( $M=6.511$ ,  $SD=.381$ ) and ≥ 10 years ( $M=6.664$ ,  $SD=.297$ ) conditions;  $t(45)=-1.513$ ,  $p=.137$ . These results suggest that years of teaching experience does not completely predict the teaching competence of science teachers. Indeed, teaching experience matters, but more is not



always, where similar contrasting results showed that the impact of the experience is strongest during the first few years of teaching; after that, marginal returns diminish. The study of Ladd (2008) findings shows that, on average, teachers with more than 20 years of experience are more effective than teachers with no experience but are not much more effective than those with 5 years of experience. The study has also documented some evidence that effectiveness declines after some point, particularly among high school teachers. Evidence suggests that the most experienced (greater than 25 years) high school teachers may be less effective than their less experienced (at least 5 years) counterparts (Ladd 2008) and even their inexperienced colleagues (Harris and Sass 2007). However, the domain classroom management of teaching competence underscores a significant difference among the four domains of teaching competence. It indicates that greater teaching experience improves teachers' classroom management practices. The result agreed in the study of Wolff, van den Bogert, Jarodzka, and Boshuizen (2014) which showed that expert teachers were significantly more effective at predicting classroom management events than novice teachers. This suggests that with years of experience, teachers develop a better understanding of classroom management, which enables them to anticipate issues and to adapt their classroom management.

**Ancillary function.** In general, the entire comparative result of teaching competence reveals that there was a statistically significant difference in the teaching competence for teachers with  $\leq 1$  ancillary function ( $M=6.738$ ,  $SD=.241$ ) than those with  $>1$  ancillary function ( $M=6.457$ ,  $SD=.376$ ) conditions;  $t(45)=3.100$ ,  $p=.003$ . This implies that teachers with fewer ancillary functions are more competent in teaching than those teachers having more than one ancillary. In the study of Orjiji (2000), it explains that work overload and underload of a job as factors can generate a feeling of hopelessness and may contribute towards lack of motivation, depression, and inefficiency. Moreover, related findings showed psychological strain can lead to negative organizational outcomes like poor performance, health-related problems, and absenteeism (Bakker, Demerouti, & Sanz-Vergel, 2014). Furthermore, findings also suggest considering teachers teaching loads as a basis in the distribution of ancillary functions to avoid work enervation and to enable competent teaching practices.

### Students' Academic Achievement in Science Analyzed by Teachers' Demographic Profile

There was no statistically significant difference among the academic achievement of students in science. All periodicals including the average grade was compared accordingly via teachers' sex for male ( $M=84.857$ ,  $SD= 5.316$ ) and female ( $M=86.787$ ,  $SD= 5.209$ ) conditions;  $t(45)=0.877$ ,  $p=0.265$ , using independent samples t-test. Specifically, it can be connoted in the results that students' learning and attainment of

science competencies will not be affected by teachers' sex. It further suggests that the academic achievement of students can be most likely to be affected by teachers' competence in teaching rather than having a male or a female teacher in class.

There was a statistical significant difference in both first and second quarters and average grade of students in science, the given conditions: [ $F(2,44) = 6.383$ ,  $p = 0.004$ ]; [ $F(2,44) = 6.510$ ,  $p = 0.003$ ]; [ $F(2,44) = 6.648$ ,  $p = 0.003$ ], respectively. Thereby, the researcher is certain that teachers' teaching position significantly influences students learning in science. However, the prior test reveals that teaching competence is not statistically significant with teaching position, but even so, it can be still highlighted that students' achievement can independently be affected by teaching position regardless of teachers' teaching competence.

A one-way ANOVA was employed to relatively assess students' academic achievement by teachers given teaching positions I-III. Consequently, post hoc comparison using the Tukey HSD test indicated a pattern that students handled by teachers I performed significantly lower than those students handled by teachers II and III. Thus, students' academic achievement in all periodicals were all statistically significantly different for teachers I, against teachers II and III which yielded a p-value lesser than the  $p<0.05$  level whereas teachers II and III have shown no statistically significant variation with a greater than  $p>0.05$  level in all periodicals.

Statistical results using independent samples t-test suggests that there was a significant difference among students' academic achievement when compared to teachers teaching experience. Also, it was further elucidated in Table 10 the distinctive inferential value for first quarter [ $<10$  years ( $M=84.517$ ,  $SD=5.414$ ) and  $\geq 10$  years ( $M=87.802$ ,  $SD= 4.835$ ) conditions;  $t(45)=-2.185$ ,  $p=.034$ ] and second quarter [ $<10$  years ( $M=84.816$ ,  $SD=5.704$ ) and  $\geq 10$  years ( $M=88.305$ ,  $SD= 4.114$ ) conditions;  $t(45)=-2.375$ ,  $p=.022$ ], including the average grade [ $<10$  years ( $M=84.666$ ,  $SD=5.499$ ) and  $\geq 10$  years ( $M=88.056$ ,  $SD= 4.414$ ) conditions;  $t(45)=- 2.309$ ,  $p=.026$ ] of both periodicals that are all lesser than the  $p>0.05$  level.

The relative test result using independent samples t-test reveals a statistically significant difference which yielded a p-value lesser than the  $p<0.05$  level in both quarters and average grade. The statistical values are significant in first quarter [ $\leq 1$  ( $M=89.453$ ,  $SD= 4.246$ ) and  $>1$  ( $M=83.315$ ,  $SD=4.574$ ) conditions;  $t(45)= 4.721$ ,  $p= 0.00$ ] and second quarter [ $\leq 1$  ( $M=90.196$ ,  $SD= 3.932$ ) and  $>1$  ( $M=83.423$ ,  $SD=4.179$ ) conditions;  $t(45)= 0.906$ ,  $p= 0.00$ ] including the average grade [ $\leq 1$  ( $M=89.824$ ,  $SD= 4.028$ ) and  $>1$  ( $M=83.369$ ,  $SD=4.293$ ) conditions;  $t(45)= 0.736$ ,  $p= 0.00$ ] of both periodicals in all conditions. Moreover, the result exemplifies that students having teachers with fewer ancillary task have greater academic achievement in science than those students having teachers with more than one ancillary.



## Teaching Competence and Students' Science Academic Achievement

Table 5

### *Relationship between Teaching Competence and Students' Academic Achievement*

		First	Second	Average	Interpretation
Subject Mastery	Pearson Correlation	.552**	.594**	.579**	
	Sig. (2-tailed)	.000	.000	.000	Significant
	N	47	47	47	
Classroom Management	Pearson Correlation	.591**	.658**	.632**	
	Sig. (2-tailed)	.000	.000	.000	Significant
	N	47	47	47	
Instructional Delivery	Pearson Correlation	.625**	.660**	.650**	
	Sig. (2-tailed)	.000	.000	.000	Significant
	N	47	47	47	
Assessment	Pearson Correlation	.406**	.365*	.390**	
	Sig. (2-tailed)	.005	.012	.007	Significant
	N	47	47	47	
Mean	Pearson Correlation	.661**	.696**	.686**	
	Sig. (2-tailed)	.000	.000	.000	Significant
	N	47	47	47	

In general, Table 5 summarizes the entire association of teaching competence and students' academic achievement in science. It reveals that there was a high positive correlation between the two variables in both first ( $r=.661$ ,  $n=47$ ,  $p=0.00$ ) and second ( $r=.696$ ,  $n=47$ ,  $p=0.00$ ) quarters and the average grade ( $r=.686$ ,  $n=47$ ,  $p=0.00$ ) conditions. It further emphasizes that teachers with higher teaching competence increase students' academic achievement in science. Hence, teaching competence is a significant factor behind the students' achievement, and thus highly competent teachers do better than those under low competent teachers. The findings corroborated in the subsequent studies of Banerjee, Das, and Mohanty (2014) found that students' achievement differs significantly in Life Science subjects due to teaching by high or low competent teachers. Consequently, similar studies of Shawi and Sultan (2014), Bilasa (2016), Naz (2016), and Nbina (2012) across different disciplines of education found consistent evidence that teacher competence influences student achievement.

## CONCLUSION

Based on the findings of the study, the following conclusions are drawn. First, the science teachers in the research locale were mostly female teachers having teaching positions I, where teaching experience was mostly less than ten years and the majority have more than one ancillary function. Second, the science teachers in the school uses well-connected pedagogical aspects that addresses individual and group learning goals in the classroom. Third, students' academic achievement in science was very satisfactory. Hence, students were able to develop fundamental knowledge and skills and core understanding. Fourth, science teachers with fewer ancillary functions are more competent in teaching than those teachers with more than one ancillary. However, other domains of teachers' demographic profile in terms of sex, teaching position, and teaching experience did not affect teaching competence. Fifth, science

teachers' demographic profile in terms of teaching position, teaching experience, and the number of ancillary functions significantly affect students' academic achievement in science. In contrast, teachers' sex does not affect students' academic achievement. Lastly, science teachers with higher teaching competence increase students' academic achievement in science. Hence, teaching competence is a significant factor behind the students' academic achievement, and thus highly competent teachers do better than those under low competent teachers.

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# ARDUINO BASED AUTOMATIC GAS LEAKAGE DETECTION SYSTEM

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## ABSTRACT

*The creation of Smart houses worldwide is a recent trend. Numerous individuals and businesses have begun automating regular tasks like turning on lights and fans and adjusting the thermostat. The main goal of the project is to construct a gas leakage detector using an LPG gas sensor. This device will continuously track the amount of LPG gas in the air and, for added safety and security, link to the Internet of Things using an ESP module. This device can be implemented in LPG gas storage spaces in hotels and residences. The primary controller is an Arduino. The project's end product is utilised to alert the user and identify gas leaks from cylinders. Accidental explosions can occur in the home frequently and may be brought on by gas leaks or the storage of explosives like propane. People have adapted to using the LPG (Liquid Petroleum Gas) delivery system for cooking in the modern world. Numerous events will occur nearby while the LPG system is in use that could result in human fatalities. Gas leakage hazards are hazardous and may become unmanageable if prompt action is not taken. This document provides the detection of LPG cylinder leaking in certain places, such as the kitchen, and alerts the user regarding leakage in an effort to stop this from happening, whether intentionally or accidentally.*

**KEYWORDS**-arduino, Gasleakage Detection, Gas sensor

## 1.INTRODUCTION

Due to its high temperature, low smoke, soot, and environmental impact, liquefied oil gas (LPG) is a flammable hydrocarbon mixture that is utilised for a wide range of purposes, including as fuel for homes, dormitories, industries, cars, and other vehicles. Even if it is far from the source of the leak, LPG might catch fire due to its high flame retardancy. Chemical molecules of propane and butane, which burn extremely efficiently, make up the majority of the energy source. The gases have a high flammability. LPG is primarily used in homes for cooking.

LPG leaks today are a problem for both manufacturing and residential use. If you do not recognise and make changes soon away, it is quite dangerous to your life. Our project's goal is to provide a solution by shutting off the gas supply as soon as a leak is noticed in addition to sounding the alarm. Additionally, a notification informing the authorised person of the leakage will be sent to him[1]. The work by Sanjay dos et al.,[2] primarily deals with the development of a basic gas spill locator at the initial stage and then transforming this easy device into a cutting-edge gas identification system. Propane (C<sub>3</sub>H<sub>8</sub>) and butane gas sensors have been specifically used because of their great affectivity (C<sub>4</sub>H<sub>10</sub>). The GSM (Worldwide System for Versatile Communication) module of the gas leak detection system sends an SMS as soon as a leak is discovered. Keywords: Arduino, LCD, LPG, MQ-6 Gas Sensor, Stepper. C.tukkoji et al.,[3] offered a novel method for discovering Arduino-based microcontrollers that allow LPG discharge. We must exercise some caution in order to find the discharge in order to warn on Liquefied Rock Oil Gas (LPG) leakage and avert any

unpleasant incident. If there is a gas leak, an Arduino-based LPG gas detection alert can be constructed. The LPG detector MQ 6 is an accurate LPG sensing tool that measures signal strength. The non-inheritable electrical signal is successfully quantized using a cost-effective Arduino-based signal processing technique. Based on square measure, the severity of the LPG leakage is divided into three categories: LOW, MEDIUM, and HIGH.

The main goal of the work by A.Munnaza et al.,[4] is to use gas sensors and the Spartan 6 FPGA process to detect gas leakage in any industry. To lower the cost of maintaining servers, prevent data loss, and facilitate access from various internet-connected devices (computer, tablet, and mobile phone) simultaneously and anywhere in the world, it is crucial to set up a cloud-based monitoring system. Any electronic device in a home can be controlled via the Internet of Things (IoT). The design of an industrial monitoring system using the Internet of Things is presented in this study (IoT). Information from the gas sensor (MQ-5) is uploaded to a data cloud. Under the majority of atmospheric circumstances, the sensor can identify gas leaks. An Arduino (UNO-1) that serves as the setup's main processor controls all of the components. The alert is triggered in the form of a buzzer as soon as the sensor detects a gas leak. An LCD that supports this alert shows the leak's location.[5].

The goal of the work[6] is to offer a design for an automatic warning system that can locate and stop liquefied petroleum gas leaks in a variety of locations. As soon as the gas leak exceeds setpoint1, this system calls the user and sounds a buzzer alarm to notify the neighbours. The gas pipe





valves are closed by the servo motor. This gadget guarantees safety and guards against explosions and suffocation brought on by gas leaks. Arduino Uno is used to implement this project, and Arduino IDE and proteus software are used to simulate it.

Massive explosions are being caused by gas leaks all across the world. The only user who can be alerted by conventional gas leakage detectors is the one who is physically present at the scene. In order to get over this restriction, this project creates a model that notifies the user via email if there is a leak. This model can identify benzene and liquid petroleum gas leaks. The IFTTT web service is used by the prototype of this approach to send an email to the concerned party. At the location of a leak, an LED is also utilised as a visual alarm[7].

The sensor is frequently used to find gas leaks for a variety of nearby applications. On an LCD display, the device also continuously shows the leaking amount. The gas sensor detects the concentration of gas in ppm and outputs analog value which can be converted to a digital signal using inbuilt Analog to Digital Convertor of Node MCU.

## II.PROPOSED SYSTEM

The suggested project is an Android application for LPG leak detection and alert, giving users a simple way to keep track of the gas's level in cylinders. to find gas leaks in houses, hotels, schools, and other household settings while sending out an alert to those around. Globally, gas sensors are now used in industries like instrumentation, safety, and health. This paper uses a gas sensor to do the same. Fig.1, shows block diagram of proposed system

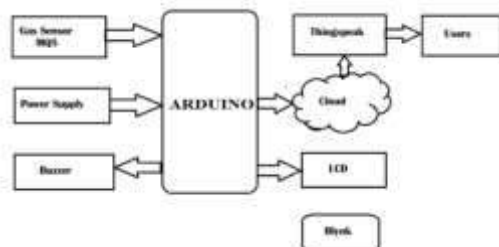


Fig.1.Block Diagram

## III.SYSTEM DESCRIPTION

*a. Arduino IDE:* Open source software called Arduino IDE is mostly used for authoring and compiling code into Arduino Modules. Because it is an official Arduino programme, code compilation is so simple that even the average individual with no prior technical expertise may get started learning. It is conveniently accessible for operating systems like MAC, Windows, and Linux and operates on the Java Platform, which has built-in functions and commands that are essential for debugging, modifying, and compiling the code in the environment.

*b. Thing Speak:* An IOT analytics platform is called ThingSpeak. It allowed us to watch realtime cloud data. Data can be sent to Thingspeak from our gadget. There are two different kinds of API keys. API Read and API Write. Write API Key –It is 16 digit code that allows an application to write data to a channel. Read API Key – It is 16-digit code that

allows an application to read the data stored in a channel. ThingSpeak provides instant visualizations of data posted by your devices to ThingSpeak. ThingSpeak is often used for prototyping and proof of concept IoT systems that require analytics.

*c. BLYNK Framework:* With the help of the new platform BLYNK, you can easily create user interfaces for managing and controlling your hardware projects from iOS and Android mobile devices. You can design a project dashboard after downloading the BLYNK app and placing buttons, sliders, graphs, and other widgets on the screen.

*d. Node MCU:* The open-source Node MCU development board and firmware are designed specifically for Internet of Things applications. The ESP8266 Wi-Fi module is a gadget that connects to the Arduino board and adds Wi-Fi functionality that functions similarly to a Wi-Fi shield. With AT command set, it functions. This module can be coupled with the sensor and other applications through its GPIOs thanks to its powerful on-board processing and storage capabilities. ESP8266 Wi-Fi module for cloud data archiving. The Micro USB port and VIN pin can be used to power the Node MCU (External Supply Pin). It supports the UART, SPI, and I2C interfaces. After processing it, the output signal is then provided. It has a Wi-Fi module built right into it.Fig2..., shows node MCU



Fig.3., NODE MCU

*e. MQ 5 Gas Sensor:* The Gas Sensor (MQ5) module is helpful for detecting gas leaks (in home and industry). It works well for finding H<sub>2</sub>, LPG, CH<sub>4</sub>, CO, and alcohol. Measurements may be made as soon as feasible thanks to its high sensitivity and quick reaction time. The potentiometer can be used to modify the sensor's sensitivity. The following describes how the MQ-5 gas sensor functions: The sensor has a SnO<sub>2</sub> sensitive filament. In the presence of clean air, this filament tends to have lower electrical conductivity. When a combustible gas such as LPG is introduced, the filament's conductivity rises, and the amount of change in its conductance/resistance can be used to indicate the equivalent gas concentration. Higher temperatures, if there is also a resistive heating element, tend to make this effect more noticeable. SnO<sub>2</sub> is sensitive to other flammable gases as well, but it is particularly susceptible to methane, butane, and propane. One of the most crucial tools for detecting poisonous gases, the gas sensor offers a crucial way to track the concentration and environmental data of gas in order to ensure the safety of production.



Fig.4.Gas Sensor

*f. LCD:* Liquid crystal display is referred to as LCD. It is a particular type of electronic display module used in a wide array of circuits and devices, including mobile phones, calculators, computers, TVs, and other electronics. These displays are mostly preferred for seven segments and multi-segment light-emitting diodes. The main advantages of adopting this module are its low cost, ease of programming, animations, and unlimited ability to display bespoke characters, unique animations, etc.



Fig.5.LCD Display

*g. Buzzer:* Buzzers are electric sound-producing instruments. They fall under the categories of Piezo buzzer and magnetic buzzer, and are often driven by DC voltage. They have various designs and functions, and as a result, they may produce a variety of sounds. A buzzer or beeper is a mechanical, electromechanical, or piezoelectric audio signalling device (piezo for short). Buzzers and beepers are frequently used as alarm clocks, timers, and to validate human input such as a mouse click or keyboard.



Fig.6.,Buzzer

### III.IMPLEMENTATON

The hardware prototype of the proposed system has been shown in Fig.7.

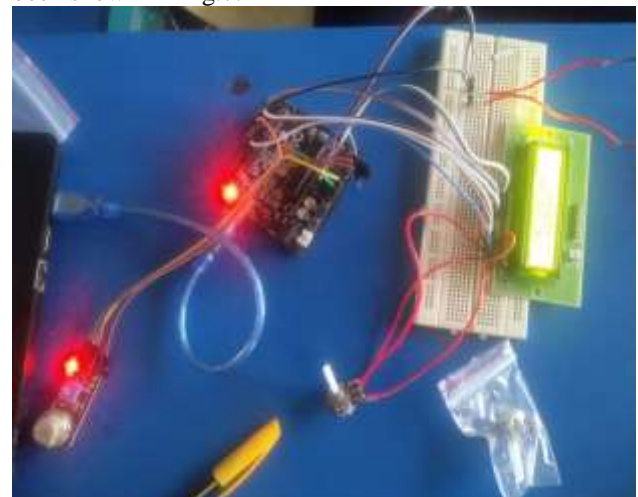


Fig.7.Hardware Prototype

### IV.RESULTS

The project's ultimate goal is to create a finished gas leakage detection system. With the development of internet usage in homes, the inclusion of the internet of things can further improve security. The Node MCU continuously monitors the gas leakage using the sensor utilised in this project. The mobile application sends the user a notification if there are any changes to the sensor values. The mobile application's data are updated from the Blynk server. Thingspeak, an IoT software platform, is interfaced with the node MCU. The software's primary function is to send consumers an online alert message. LPG gas in the atmosphere is measured using a MQ5 gas sensor.

When a leak is discovered, the apps' gas indicator level rises to a specific value. The system verifies the MQ5 sensor value if the value is higher than the threshold value. The alarm is ON if there is a gas leak. The Node MCU also interfaced with a buzzer and LCD. If there is a gas leak, the alarm system turns on and an LCD screen shows how much gas is leaking. So that everyone in the area is informed of any problems and may take rapid action when they arise,

numerous users, including the neighbourhood, can be interfaced.

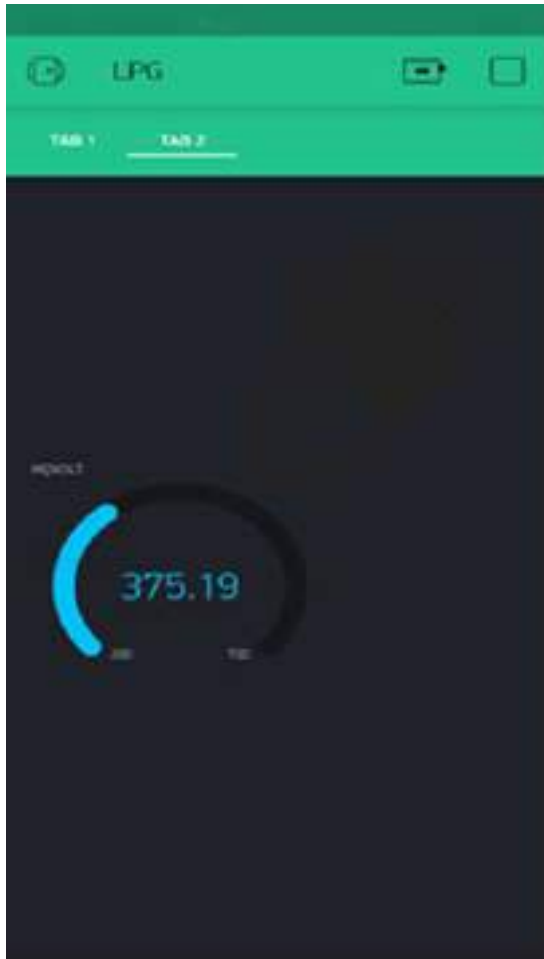


Fig.8.,Gas Leakage Indicator

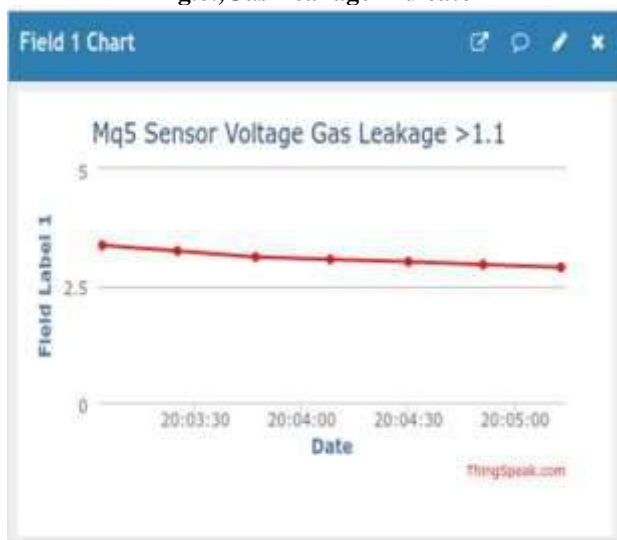


Fig.9.Gas Leakage detected by sensor

proposed technology is more affordable than the market's currently available detectors. It can assist us in preventing mishaps from all angles. In order to avoid accidents and preserve lives, it is crucial to identify LPG leaks. We talked about the techniques for finding leaks, which can help save many lives. With the help of this technology, the user has access to real-time data at all times.

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## V.CONCLUSION

Gas leaks cause serious mishaps that cause property damage and human injuries. Poor equipment maintenance and a lack of public awareness are the main causes of gas leaks. It is a cost-effective device that may be put in LPG gas storage rooms in hotels and apartments, among other places. The





# A NOVEL E-VEHICLE BATTERY MANAGEMENT SYSTEMS

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## ABSTRACT

*Electric vehicles employ battery management systems (BMS) to monitor and regulate the charging and draining of rechargeable batteries, which increases efficiency. Battery management technology keeps the battery secure, dependable, and senile without going into a destructive state. Different monitoring approaches are employed to maintain the battery's level of charge, including voltage, current, and ambient temperature. Different analog/digital sensors with microcontrollers are utilised for monitoring purposes. This work discusses a battery's maximum capacity as well as its state of charge, health, and longevity. Reviewing all of these approaches can help identify potential problems in the future and remedies.*

## I. INTRODUCTION

The significant difficulty of problems with electric car recharging is brought on by the widespread use of electric vehicles (EV). Given that actual EV field excursions are gaining an increasing amount of attention from researchers, we need to provide electrical energy as well as battery management and charging technology of electric vehicles. To reduce the power demand of the framework, battery management system structures must be developed. Sustainable power sources then appear as innovation continues to grow.

One of the most significant sectors of the global economy, the automobile industry also ranks highly in terms of development and research. Nowadays, a lot of technical components are being added to automobiles in order to increase the safety of both passengers and pedestrians. In addition, there are more cars on the road, which makes it possible for us to move pleasantly and quickly.

However, this could have caused air pollution levels, particularly in metropolitan areas, to rise dramatically. This includes pollutants like nitrogen oxides (NOX), carbon monoxide (CO), sulphur dioxide (SO<sub>2</sub>), and particulate matter (PM), among others. A total of 70% of the emissions from the transport sector are attributed to road transportation, which also accounts for about 28% of the sector's overall carbon dioxide (CO<sub>2</sub>) emissions. However, to avoid air pollutants, carbon dioxide CO<sub>2</sub>, and other greenhouse gases, the government of the majority of developed nations is supporting the use of electric vehicles (EVs). Therefore, an electronic vehicle is the greatest solution to these problems. However, battery management for electrical vehicle charging and use is still another novel task. In order to address the battery's charging and utilisation issues, we are implementing a battery management system in this project.

## II. LITERATURE REVIEW

**1. NURUL FITRIYAH ROSLAN** Ocean Informatics and Engineering Technology, university of Malaysia Terengganu, 21030 Kuala Terengganu at Malaysia.

This paper examines the development and implementation of the BMS (battery management system) using the Arduino Uno microcontroller. The voltage sensor, current sensor, and LCD in this circuit were created for monitoring purposes. In order to prevent excessive use or overcharging, it is successfully utilised to monitor the battery's state of charge (SOC).

**2. Anurag Busha, Vakeesh Kanna** Journal of a Emerging Technologies and Network Communications (JNCET) Volume 8, Issue.

This project aims to solve the issue of battery overheating while protecting the battery, device, and charger. As soon as the batteries in the devices are full, they emit a signal that is transmitted to the Arduino board. When the Arduino board gets the signal, the connection between the Arduino and the extension cable is interrupted, cutting off the power to the devices. This prevents additional damage and ensures that they are safe for usage.

**3. Dr. Viswanath & Dr. M. Rajaram Narayana** Department of EEE (Electrical and Electronics Engineering), Shadan College of Engineering and Technology HYDRABAD, TELANGA, INDIA.

The purpose of this work is to use a mobile application called MQTT to check or monitor a battery's temperature, over voltage protection, and general health state. The performance of an electric car will be greatly influenced by the battery, which essentially determines the driving range. The primary goal of this work is to describe how hardware modules like NODEMCU and overvoltage protection circuits are used.

**4. P.Dharani, T.Nandhini**Department of EEE,  
Sengunthar Engineering College (Autonomous),  
Tiruchengode .SurajPunj Journal for Multidisciplinary  
Research

The project's goal is to extend battery life and safeguard battery cells from harm. The electrical parameters of the battery in our suggested system are measured simultaneously with LCD display. any unusual battery condition. It means, parameter values are differ from the normal value sound notification should be ON condition, for alerts the personnel.

**5. VikasBhandare, DangePrachi, EEE Department, Sanjay Ghodawat Group of Institutions, Kolhapur** The International journal of analytical and experimental modal analysis

This work seeks to develop a model of a battery management system for lead acid batteries required in electrical cars, which continuously checks the operational characteristics of the battery and takes necessary measures, such as battery protection, information display, etc. This BMS model has several goals in mind. Numerous battery parameters, including voltage, current, and temperature, will be continuously monitored.

### III.BLOCK DIAGRAM

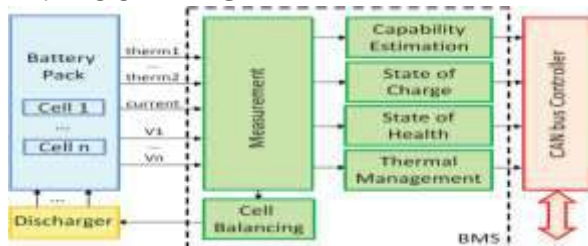


Figure 1 BMS block diagram

### IV.ESTIMATION OF STATE OF CHARGE

The quantity of battery that is readily available as a proportion of the battery's rated capacity is referred to as the state of charge. By controlling charging and discharging, the battery management system is able to assess the battery's state of charge and determine whether it is running within the safe operating range. The battery's lifespan is also extended by it. State of charge cannot be easily estimated. The equation is used to calculate it is given below:

$$SOC = 1 - \frac{\int i dt}{C_n}$$

I=current

Cn=maximum capacity of the battery

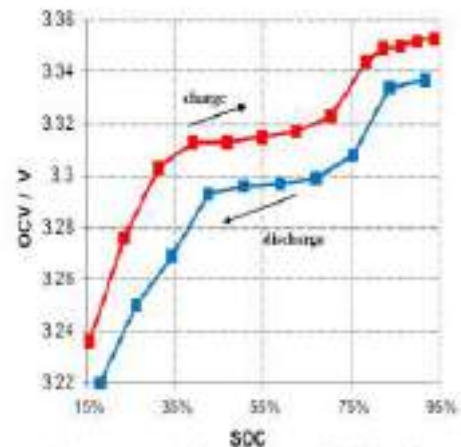


Figure 2 SOC during charging and discharging

The status of charge can be estimated using a variety of techniques. The methods for estimating the status of charge are listed below.

1. Coulomb counting SOC estimation method
2. Fuzzy logic SOC estimation method
3. Impedance spectroscopy SOC estimation method
4. Kalman filtering SOC estimation method
5. Open circuit voltage SOC estimation method

The Kalman filtering method, among all these other approaches, has been effective in estimating SOC for EV'S.

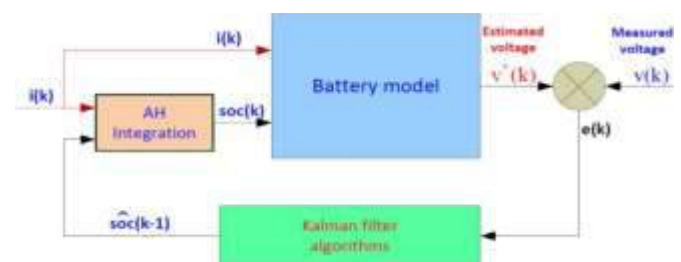


Figure 3 Kalman filtering SOC estimation model

### V.STATE OF HEALTH ESTIMATION

Estimated state of health describes the battery's condition in relation to a battery that has just been produced. It provides details on the quantity of available discharge capacity over the course of its lifetime. The term "ability to drive the specified distance" (SOH) is used in electric vehicles (EV).

Pattipati et al. classified capacity deterioration and power decline as health characteristics. With a fully charged battery, capacity fade refers to decreased driving range, and power fade refers to decreased acceleration capability. Power fading happens when a cell's resistance rises with ageing. Total impedance is as a result (RHF+Rtc=R). RHF and Rtc stand for frequency resistance and transfer resistance, respectively.

### VI.ESTIMATION OF MAXIMUM BATTERY CAPACITY

The battery's maximum capacity gives an idea of its capabilities and expected lifespan.

$$\text{Capacity} = \int I dt$$

can be used to calculate a battery's maximum available capacity.



#### Battery capacity estimation on Varying Loads:

The performance and remaining life of the battery are described by its maximum capacity. This formula can be used to determine a battery's maximum capacity.

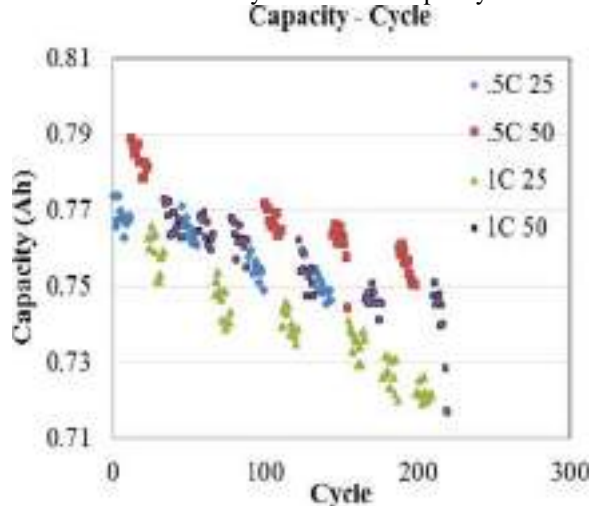


Figure4. Discharging capability alternating at different discharge rates and at different temp

#### VIII. LI-ION CELL BMS CHARGING AND DISCHARGING:

High energy density, low weight, and high reactivity are all characteristics of lithium-ion batteries. Lithium-ion batteries charge and discharge much more quickly than traditional batteries.

To prevent a chain reaction of numerous chemical reactions, a rise in temperature that causes cell venting, and the ignition of fire, lithium-ion batteries should not be operated within their safe operating voltage range. As a result, the battery can run within its safety zone thanks to the Battery Management System (BMS).

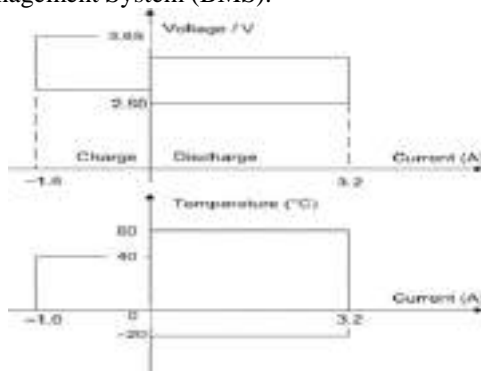


Figure 5 Safe operating area charging and discharging

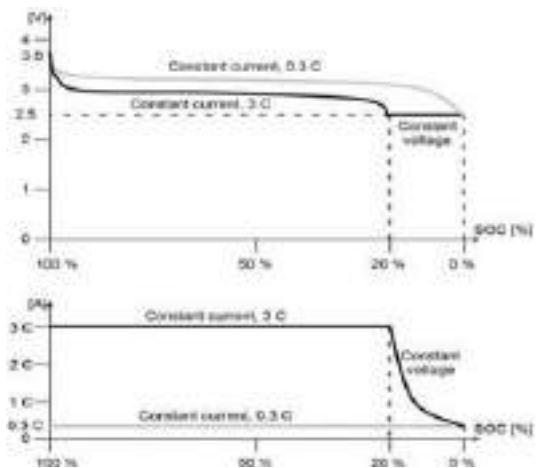


Figure6. Charging and discharging of lithium-ion batteries

#### VIII. CONCLUSION

By adjusting the vital characteristics such as voltage, current, status of charge, state of health, state of life, and temperature, we are able to construct the system model for battery management in electric vehicles. It is crucial that the BMS is kept up to date to ensure battery dependability and safety. This research optimises the power performances of electric vehicles while concentrating on the study of BMS.

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# REASONS, IMPACTS AND RETENTION TECHNIQUES FOR EMPLOYEE TURNOVER: A LITERATURE REVIEW

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## ABSTRACT

*The term "Employee turnover" is commonly used in corporate circles in today's complex business world. So much research has been conducted on employee turnover and most of them just focused on causes. However, few studies have been done on the sources of factors that work as an accelerator behind this employee turnover, classification of turnover, the impact of turnover, cost of turnover, and strategies to mitigate employee turnover. Employees are the most vital resource and organizations need to understand this. This study tries to explain the causes of employee turnover, the classification of turnover, the impact of turnover and some suggested strategies that can be followed by organizations to reduce employee turnover.*

**KEYWORDS:** *Employee turnover, job satisfaction, job factors, job enrichment, organizational factors, turnover classification*

## INTRODUCTION

Organizations make significant investments in their workers' onboarding, training, career development, employee maintenance, and retention. Therefore, managers must make every effort to reduce staff turnover. Numerous factors have been shown to be helpful in analyzing employee turnover, despite the fact that there is no universal framework for comprehending the process as a whole. Kevin and others (2004). Therefore, it is necessary to get a deeper understanding of employee turnover, including its causes, consequences, and preventative measures that managers may take. Organizations must continue to generate real products and offer services based on employee development strategies as globalization increases competition. These workers are vital to the company since their contributions and effort are virtually immeasurable and difficult to duplicate. Meaghan and others (2002). Therefore, managers must acknowledge that workers are key to effectively achieving the success of the firm. Abbasi and co. (2000). Employee turnover should be kept under control by managers for the good of the business. The literature on employee turnover is broken down into four categories: classification of turnover, factors that cause of turnover, consequences of turnover, and prevention tactics.

## EMPLOYEE TURNOVER DEFINITION

Employee turnover has received extensive research over the period of time Shaw et al (1998). However, there isn't a single cause why individuals quit or move to another organization. Employee turnover is the movement of workers within the labor market, between businesses, occupations, and states of employment and unemployment, according to Abassi et al (2000). According to Price (1977), "turnover" is the ratio of the

average number of persons in an organization for a certain period divided by the number of organizational members who have departed during that same period. When a position is abandoned, whether voluntarily or involuntarily, a new employee must be hired and trained. This entire process is referred to by management as turnover. This replacement cycle is called employee turnover Woods (1995). This phrase is frequently used in efforts to scale employee connections inside a business when they depart, regardless of the cause. The "Unfolding model" of voluntary turnover represents a divergence from traditional thinking (Hom and Griffeth, 1995) by focusing more on the decisional aspect of employee turnover, in other words, showing instances of voluntary turnover as decisions to quit. Indeed, the model is based on a theory of decision making, image theory Beach, (1990). The image theory explains the steps people take to analyze information before making decisions. The model's fundamental principle is that people quit jobs after carefully considering their reasons for doing so. Beach (1990) argues that individuals seldom have the cognitive resources to systematically evaluate all incoming information, so individuals instead of simply and quickly compare incoming information to more heuristic type decision making alternatives.

## CLASSIFICATION OF TURNOVER

### *Voluntary and involuntary turnover*

In the case of involuntary turnover, an organization terminates the services of a staff person and the staff member resigns unwillingly. The cause for the employee's dismissal might be poor performance, layoffs, or early retirement owing to the employer's restructuring or downsizing. Voluntary turnover, on the other hand, occurs when an employee decides to leave the



firm of his or her own will (e.g., to take a better career opportunity in another organization). Voluntary turnover encompasses any separations that are not formally imposed by employers (Lorquercio et al, 2006). This form of employee churn is viewed as a managerial difficulty requiring addressing. It is considered that employees quit when they are dissatisfied with their current position and there are better employment possibilities available. It has also been noticed that employees that quit are the most brilliant, as it is simpler for them to find new employment.

### ***Functional and dysfunctional turnover***

Functional turnover occurs when the employer benefits from the employee's leave, whereas dysfunctional turnover occurs when the employer has an interest in retaining the departing employee. This form of turnover typically impacts individuals who are difficult to replace and whom the business would want to keep. According to Asimah (2018), the top performers go on, but the bottom performers remain and continue to engage in other forms of withdrawal behavior. Olckers and du Plessis (2012) emphasize that in the present labor market, skilled employees may choose from a large pool of available positions.

### ***Avoidable and unavoidable turnover***

Some researchers (Buhler, 2002; Lashley, 2000) also differentiate between avoidable and unavoidable employee turnover. Unavoidable turnover is caused by circumstances beyond the control of the employee, such as relocating to be with a spouse, but avoidable turnover may be prevented by applying efficient human resource policies. It is also essential to determine if the type of voluntary turnover the organization is experiencing is preventable. This information will help the business choose the most effective strategy for retaining the impacted personnel.

## **FACTORS THAT CAUSE EMPLOYEE TURNOVER**

### ***Job Related Factors***

Most scholars (Bluedorn, 1982; Kalliath and Beck, 2001; Kramer et al., 1995; Peters et al., 1981; Saks, 1996) have investigated potential antecedents of employees' intentions to resign and put an effort to answer the question of what determines people's intention to quit. To yet, there has been minimal agreement in findings, which is partially attributable to the researchers' diverse methods and lack of consistency in their findings. Therefore, there are a variety of reasons why people leave one organization for another or why they leave an organization altogether. The experience of job-related stress (job stress), the variety of causes that lead to job-related stress (stressors), a lack of organizational commitment, and job dissatisfaction cause people to leave their jobs, according to Firth et al (2004). This obviously demonstrates that the decision to stop is a personal one. They are other factors like personal agency refers to concepts such as a sense of powerlessness, locus of control and personal control. Locus control refers to the extent to which individuals believe that external elements, such as chance and powerful persons, govern the events that impact

their lives Firth and co. (2004). According to Manu et al. (2004), employees leave organizations for economic reasons. Using an economic model, they demonstrated that people leave organizations for economic reasons and that this information may be utilized to forecast labor turnover on the market. Organizational stability is enhanced by favorable local labor market conditions. Schervish (1983). Large firms can foster organizational loyalty by providing employees with greater opportunities for promotion and higher compensation (Idson and Feaster 1990). According to Trevor (2001), local unemployment rates related with job satisfaction to predict market turnover. Role-related pressures also contribute to employee turnover. Role ambiguity refers to the gap between what others expect of us at work and what we believe we should do. This makes it unclear what our role should be. It might be due to a misunderstanding of what is anticipated, how to satisfy those expectations, or the employee believing the work should be performed differently Kahn et al. Muchinsky, 1990. Inadequate information on how to perform the job effectively, unclear expectations of peers and supervisors, ambiguity of performance evaluation methods, extensive job pressures, and lack of consensus on job functions or duties may cause employees to feel less involved and less satisfied with their jobs and careers, less committed to their organizations, and eventually exhibit a propensity to leave the organization (Tor et al., 1997). The rate at which employees quit their positions owing to a lack of role clarity which would be increased if management and or supervisors failed to properly define the roles of their employees.

### ***Organizational Factors***

It has been found that organizational instability is associated with a high degree of high turnover. There are indications that employees are more motivated to remain when the work environment is predictable, and vice versa (Zuber, 2001). In businesses with high levels of inefficiency, there was a high rate of employee turnover (Alexander et al. 1994). Therefore, in cases when organizations are not stable, employees tend to leave and hunt for stable organizations, since they would be able to forecast their career progression with stable businesses. The application of a quantitative approach to managing employees led to employee dissatisfaction and, thus, increased employee turnover. Therefore, management should not take a quantitative approach to personnel management. Adopting a cost-based approach to employment expenses promotes employee turnover. Simon et al (2007). All of these methods should be avoided if managers wish to reduce staff turnover and boost organizational competitiveness in today's globalized economy. Employees have a critical need for information. Organizations with effective communication systems had less workforce turnover (Labov, 1997). In positions where they participate in some aspect of the decision-making process, employees feel comfortable staying longer. That is, staffs should have a comprehensive understanding of issues that impact their working environment (Magner et al (1996). But in the lack of transparency in sharing knowledge and employee empowerment, the likelihood of



worker continuity is small. Costly et al. (1987) note that a high rate of employee turnover may indicate inadequate personnel policies, inadequate recruiting strategies, inadequate supervision methods, inadequate grievance processes, or a lack of motivation. All of these factors contribute to high employee turnover in the sense that there are no proper management practices and personnel policies, so employees are not recruited scientifically, promotions are not based on clearly defined policies, and there are no grievance procedures in place, so employees decide to leave. Griffeth et al. (2000) observed that compensation and pay-related factors have a moderate impact on employee turnover. Their research also included studies that explored the connection between compensation, an employee's performance, and employee turnover. They determined that when exceptional performers are not adequately compensated, they quit. If occupations offer sufficient financial incentives, people are more persuaded to remain with the organization, and vice versa. Additionally, bad recruiting methods, management style, a lack of recognition, the absence of a competitive remuneration structure in the firm, and a toxic workplace environment are other causes of employee turnover. Abassi et al (2000).

### **IMPACT OF EMPLOYEE TURNOVER**

Employee turnover is costly from an organization's perspective. Voluntary quits, which constitute an outflow of human capital investment from organizations Fair (1992), and the ensuing replacement process impose substantial costs on firms. These replacement costs include, for instance, the search of the external labor market for a potential replacement, the selection between competing replacements, the induction of the chosen replacement, and formal and informal training of the replacement until he or she attains performance levels equivalent to those of the departing employee John (2000). In addition to these replacement expenses, productivity would be diminished or maintained at the expense of overtime compensation. The reason turnover has gained so much attention is because it has a number of major consequences on businesses (DeMicco and Giridharan, 1987; Dyke and Strick, 1990; Cantrell and Saranakhsh, 1991; Denvir and McMahon, 1992). Many academics claim that, if not handled appropriately, high turnover rates might negatively impact the profitability of businesses (Hogan, 1992; Wasmuth and Davis, 1993; Barrows, 1990). Hogan 1992, nearly twenty years ago the direct and indirect cost of a single line employee quitting was between \$ 1400 and \$4000. There are several hidden or unseen costs associated with turnover Philips (1990) and these unseen costs are the consequence of new employees, coworkers strongly related with new employees, coworkers closely associated with leaving employees, and positions being replaced while vacant. And each of them impacts the organization's profitability. However, employee turnover impacts customer service and satisfaction Kemal et al (2002). Catherine (2002) argues that turnover includes other expenses, such as lost productivity, lost revenue, and management's time, and estimates that the turnover costs of an hourly employee range between \$3,000 and \$10,000. This

clearly illustrates that turnover influences the organization's profitability, and if it is not well handled, it will have a negative impact on profit. According to research estimates, hiring and training a replacement worker for a lost employee costs around fifty percent of the employee's yearly wage (Johnson et al., 2000). However, the expenditures do not end there. We assume that each time an individual leaves the company, production decreases due to the learning curve required to comprehend the job and the organization. Moreover, the loss of intellectual capital adds to this cost, as not only do firms lose the human capital and relational capital of the departing employee, but also their rivals may obtain these assets Meaghan et al. (2002). Therefore, improper management of employee turnover would have a negative impact on the organization's personnel costs and, in the long run, its liquidity situation. However, voluntary turnover incurs significant cost, both in terms of direct costs (replacement, recruitment and selection, temporary staff, management time), and also (and perhaps more significantly) in terms of indirect costs (morale, pressure on remaining staff, costs of learning, product/service quality, organizational memory) and the loss of social capital Dess et al. (2001).

### **APPROACHES TO REDUCE EMPLOYEE TURNOVER**

Strategies on how to minimize employee turnover, confronted with problems of employee turnover, management has several policy options viz. changing (or improving existing) policies towards recruitment, selection, induction, training, job design and wage payment. However, policy selection must be consistent with the specific diagnosis of the issue. Employee turnover due to ineffective selection methods, for example, is unlikely to decrease if the modified policy focuses solely on the induction phase. Equally, employee turnover attributable to wage rates which produce earnings that are not competitive with other firms in the local labor market is unlikely to decrease were the policy adjustment merely to enhance the organization's provision of on-the- job training opportunities. In light of the rising direct and indirect costs of employee turnover, management is usually urged to understand the reasons why employees leave their organizations so that they may take necessary action. Extensive research has demonstrated that the following categories of human capital management elements provide a basic set of measurements that senior management may use to improve the efficacy of their investment in people and the overall success of the organization as a whole. Employee engagement, the organization's ability to engage, retain, and maximize the value of its employees, depends on how well jobs are designed, how employees' time is utilized, and the commitment and support that is shown to employees by management. These factors would motivate employees to remain with the organization. Knowledge accessibility, the level of an organization's "collaborative" and its potential to make knowledge and ideas freely available to employees would encourage people to remain with the company. Information should be shared at every level of management. This accessibility to information would increase employee





performance and foster a strong business culture, according to Meaghan et al (2002). Therefore; information accessibility will help employees feel that they are valued for their labor and possibilities of quitting the firm are limited. Workforce optimization, the organization's success in maximizing the performance of its employees by developing essential processes for completing work, providing appropriate working conditions, establishing responsibility, and making effective recruiting decisions, would result in the retention of its personnel. Rising personnel expenses and high rates of employee turnover highlight the necessity of acquiring a deeper understanding of the elements associated with employee recruitment, motivation, and retention (Badawy, 1988; Basta and Johnson, 1989; Garden, 1989; Parden, 1981; Sherman, 1986). As a result of globalization's increased competitiveness, managers in many organizations are under greater pressure from upper management to improve recruitment, selection, training, and retention of good employees, which would, in the long run, encourage employees to remain with their organizations. Job participation reflects the amount to which an individual identifies psychologically with his or her occupation (Kanungo, 1982). Involvement in terms of internalizing values like the goodness or significance of work prevented individuals from quitting their employment, and these involvements are associated with task features. Those who have a broader diversity of responsibilities prefer to remain employed. It has been shown that task features are possible predictors of employee turnover (Couger, 1988; Couger and Kawasaki, 1980; Garden, 1989; Goldstein and Rockart, 1984). These include the five core job characteristics identified by Hackman and Oldham (1975, 1980): skill variety, which refers to the opportunity to utilize a variety of valued skills and talents on the job; task identity, or the extent to which a job requires completion of a whole and identifiable piece of work - that is, doing a job from beginning to end, with visible results; task significance, which reflects the extent to which the job has a substantial impact on the lives or work of other people, whether within or outside the organization; job autonomy, or the extent to which the job provides freedom, independence, and discretion in scheduling work and determining procedures that the job provides; and job feedback, which refers to the extent to which the job provides information about the effectiveness of one's performance (Tor et al., 1997). Employee work satisfaction and organizational commitment would be affected by involvement. Employees that are more engaged in their work are more devoted to their organization and happier with their careers (Blau and Boal, 1989; Brooke and Price, 1989; Brooke et al., 1988; Kanungo, 1982). Involvement in the workplace has also been found to be adversely associated with plans to leave the organization (Blat and Boal, 1989). Job satisfaction, career satisfaction, and organizational commitment demonstrate a good attitude about the organization, hence directly influencing employee turnover intentions. Job satisfaction, job participation, and organizational commitment are viewed as interconnected (Brooke and Price, 1989). Satisfaction means the pleasant or good emotional state coming from an evaluation of one's job or profession and

denotes an effective reaction to certain components of the job or career (Locke, 1976; Porter et al., 1974; Williams and Hazer, 1986). Organizational commitment is a response to the organization as a whole and the degree of connection or loyalty employees feel towards the company. Job engagement is the level to which employees are immersed or obsessed with their employment, as well as the degree to which an individual identifies with his or her job (Brooke et al., 1988). The level of dedication and commitment may be obtained if management enriches jobs, empowers individuals, and compensates them adequately. Staff empowerment might contribute to increased employee retention in firms. Managers oversee more subordinates than in a typical hierarchy and delegate greater authority to their subordinates (Malone, 1997). Managers function as coaches and assist employees in problem-solving. Superiors empowering subordinates by distributing duties which results job satisfaction in subordinates and are more content with their leaders, view them as fair, and perform to the superior's standards (Keller and Dansereau, 1995). All of these factors contribute to employees' commitment to the firm, reducing their intention of switching the organization.

## CONCLUSION

Consequently, if the aforementioned tactics are implemented, the firm will be able to thrive in a changing economy by considering its staff as one of its most important assets. Employees are the backbone of every successful business; hence, they must be motivated and retained at all costs in the organization in order to remain internationally competitive in terms of supplying high-quality goods and services to the community. Moreover, long-term gains on investments in employees would be realized. Recruitment and selection must be conducted scientifically with the goal of keeping people. Management should support the redesign of jobs in terms of task autonomy, task importance, and task identity, open-book management, and employee empowerment. Managers should investigate the causes of employee turnover and offer the most effective method for filling the gap of the source so that they can retain personnel in their firm and increase their global competitiveness. The ability of an organization to face the waves of globalization depends on its ability to treat its people as it is the most liquid assets. Managers must recognize that personnel must be regarded as the firm's most liquid assets. Unless this asset is monitored with proper care, their organizations will cease to exist. Work should be challenging for employees. Griffeth et al. (2000) observed that compensation and compensation-related factors had a significant impact on employee turnover. Management must reward employees properly. In addition to compensating employees based on their performance, they should offer incentives such as individual bonuses, lump sum bonuses, profit sharing, and other advantages. Therefore, these implementation would reduce staff turnover.





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# IMPORTANT ASPECTS OF THE DEVELOPMENT OF PROFESSIONAL COMPETENCE OF FUTURE TEACHERS BASED ON THE CONTEXTUAL-EMPIRICAL APPROACH

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## ABSTRACT

*This article highlights the importance of motivation in the development of professional knowledge, skills and competencies of future teachers in the field of social and humanitarian sciences, the importance of providing motivation that incorporates the main elements such as solving problems for the development of this competence on the basis of an empirical approach, the processes, motives, and scientific opinions of pedagogues, psychologists, and researchers influencing the development of professional competence were analyzed.*

**KEY WORDS:** *professional competence, contextual-empirical approach, mathematical education, motivation, mathematics, professional competence, activity, consciousness, thinking, motive, anatomical-physiological characteristics.*

One of the goals and main tasks of teaching a number of academic subjects in our country is to develop professional competence in the subjects of the educational process through innovative methods and advanced pedagogical technologies. One of the main tasks facing the teacher is to develop the motivation and abilities of future teachers at a high level in the pedagogical process. From this point of view, Ch. Abdurakhmonova's opinion is appropriate. "It is known from pedagogical experience that the work of a pedagogue is a unique complex process, which requires a teacher not only to have higher education, but also to have sufficient professional training, knowledge, skills and qualifications in the field of pedagogical and professional training, as well as requires some experience. The process of implementation of the most basic and important functions of teachers in the educational process is the implementation of several tasks, that is, the creation of necessary conditions for the subjects of the pedagogical process, the organization, coordination, control, analysis and evaluation of their activities, as well as the implementation of a number of tasks, such as arming with new pedagogical and information technologies"[1]. In fact, it is desirable for the teacher to create pedagogical knowledge along with the necessary conditions for his students studying at a higher educational institution, and to carry out

systematic work on the development of professional competence based on a contextual-empirical approach.

Professor N.A. Muslimov commented on the structure of the future teacher's preparation for professional activity, distinguishing this process as motivational, knowledge-oriented, operational-behavioral, emotional-volitional and evaluation components[4]. It is important to note that motivation is distinguished by its importance in the professional activity of a future teacher. At the same time, we consider the teaching process based on the context-empirical approach to be an organizational process that involves designing the subjective-activity of the educational process using the professional context and actively changing the subjective experience of the student into stable mental processes (internalization of the activity).

The context-empirical approach relies on the following system of requirements:

- Availability of educational information for use;
- Regularity and consistency of teaching;
- Activity and awareness of students;
- To increase interaction between teachers and students taking into account individual psychological characteristics;
- Generalization of educational material;



- Introduction of theoretical knowledge into the structure of professional activity.

*The goal defines the tasks of mathematical education of students studying in humanities:*

1. Formation of value attitude to science and scientific knowledge.
2. Formation of a system of knowledge and skills related to the presentation of information using mathematical tools.
3. Actualization of interdisciplinary knowledge that helps to understand the characteristics of information presentation and processing with the help of mathematics.
4. Getting to know the main mathematical models and the specific tasks of their use in the relevant field of science.
5. Formation of a system of mathematical knowledge and skills necessary for understanding the basics of the process of mathematical modeling and statistical processing of information in the professional field.
6. To activate the educational and cognitive activity of students and to provide conditions for the formation of mathematical activity experience in the process of solving practical tasks specific to the field of their professional activity.
7. Stimulate independent activity in mastering the content of science and forming the necessary competencies.
8. To develop the ability to find one's own way to study the available information-database.

Teaching general scientific methods of knowing the surrounding world. The analysis of the tasks listed above made it possible to distinguish the requirements for the preparation of a humanitarian specialist in mathematics in the form of micro-goals.

In psychology, motivation is considered as a means of regulating human behavior and activity. In general, a motive is a psychological component that motivates a person to perform certain actions and behaviors.

B.I. Dodonov studied the structure of motivation and distinguished its 4 components:

- 1) "enjoying the activity itself;
- 2) The importance of its direct result for a person;
- 3) "Stimulating" power of reward for activity;
- 4) Creating strategies that ensure self-management as a person" [2].

Motivation to study is a special form of motivation that is included in the learning process. When

analyzing the problems of formation of motivation for educational activities, it is necessary to take into account the overall structure of the student's motivational field and determine the main motivational tool. A.K. Markova, while studying the motivational field of a person, notes the gradual nature of its structure and distinguishes the following components: "the need for education, its meaning, motivation for education, purpose, emotions, attitude and interest" [3]. It includes goals and needs in the development of human motivational structure. It is important to note that intellectual-cognitive motivations are important for high-quality learning activities. They mean that they seek to acquire and assimilate systematic, in-depth knowledge and apply it in practice. As a result of the influence of such motives, future teachers perceive and learn educational information with interest and passion. On the basis of acquired information and information, initiative and competition increase to a certain extent.

"Formation of motivation", writes A.K. Markova, is not setting ready motives and goals in the minds of students, but the desired motives and goals are the conditions for starting the activity that is formed and develops in the context of the previous experience, individuality, inner aspirations of the teacher and it means setting up situations" [3]. Motivation appears at the heart of a certain goal, and it finds its expression in such experiences as encouraging, interesting, giving emotion to the future teacher.

Therefore, in the development of professional competence of future teachers, it is necessary to always take into account their interests and aspirations.

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# STRUCTURAL CLASSIFICATION OF LEGAL TERM ABBREVIATIONS IN ENGLISH AND UZBEK LANGUAGES

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## ABSTRACT

*This article studies the dynamics of the development of legal term abbreviations used in the discourse of modern English and Uzbek languages and their structural classification. In this work, the abbreviation is structurally described according to the universality of the model of formation of terms as well as in accordance with the universality of the formation model. The abbreviated lexical units of this speech are divided and analyzed as follows: initial (abbreviations consisting of letters and sounds); syllabic (apocopes, apheresis, synchronization, contractures); complex syllabic (original mixed syllable, additions); a mixed abbreviation.*

*Here is stated that the most commonly used abbreviations in English legal discourse are initials and acronyms, and the least used abbreviations are (cross-sections) hyphens and mixed types. Also, it is determined that abbreviations are mainly used in written speech and are not typical for oral speech.*

**KEY WORDS:** *abbreviation, term, lexical units, graphic abbreviations, lexical abbreviations, initial, apocope, apheresis, synchronization, contracture, complex syllable, mixed abbreviations.*

## INTRODUCTION

**The relevance of the research topic is determined based on the following factors:**

1) The continuous increase of information delivery while maintaining the reliability and accuracy of information in the process of communicative dialogue requires dynamic information exchange;

2) Modern scientific communication cannot be imagined without optimization of information flows, its effective tool is saving of linguistic tools, which is manifested at the level of increasingly intensive and branched term systems;

3) Abbreviations, along with fully structured terms, as a part of a special lexicon, require a detailed study like fully structured lexical term units due to their specific characteristics for journalistic and scientific speech types.

As the **object of research**, legal terms of modern English and Uzbek languages were chosen.

Scientific and journalistic texts on jurisprudence of the late 20th - early 21st centuries, terms taken from the encyclopedia served as **research material** based on the general selection method.

The **subject of the research** is the structural-semantic features of the system of legal terminology of the

modern English language, which are implemented using abbreviations in scientific and journalistic discourses.

The **purpose of the study** is to study the structural-semantic features of the classification of abbreviated legal terms of the modern English and Uzbek languages. Linguists are increasingly interested in the system of special lexical units. This can be explained by the constant growth of scientific knowledge, the transformation of old ones into new ones, the rejection or confirmation of new inventions, and the fact that some scientific theories and concepts are becoming relevant, while others are moving into the background. Language plays a key role in these processes, because any scientific knowledge must be transmitted, and it is impossible to recognize such scientific knowledge without its acceptance by the general scientific community.

## METHODS

The works of such linguists as D.I.Alekseev, H.H.Alekseeva, E.A.Dyuzhikova, A.I.Eldysheva, Sh.N.Kochimov, H.Marchand, L.Soudek are noteworthy in terms of the structural-semantic specificity of abbreviations and word formation in English.

We can learn general information about the creation of abbreviations from the source on the morphological





system of the Uzbek language [9]. In his research, the linguist Sh. Kochimov divides the lexicon of the legal language into three parts: 1. General lexicon. 2. Phraseological lexicon. 3. Terms. The lexicon of court speech, like the lexicon of the legal language, consists of common words, legal terms and phraseology [7]. Although the specific features of legal discourse have been studied in the context of public speaking, the structural-semantic aspects of legal system abbreviations have not been studied in comparison with English legal terminology.

Possibility of using different methods of abbreviations with an unusual structure in different combinations complicates the typological classification of abbreviations. It should be noted that the constant increase of information in the process of communicative dialogue creates many classifications of abbreviations based on different principles. This language phenomenon is divided into graphic units used only in written speech (kg/s - kilogram in second – килограмм секунд) and lexical units (for example, radar - радар, laser - лазер) that are used equally in both written and spoken speech. They are also divided into phonetic, morphological and syntactic types. Phonetic abbreviations are distinguished by the sounds in the word, for example, the English word buoy [boi] – the Russian term 'буйек' means a device adapted to indicate the location of a floating and submerged object on the surface of the water, its boundary on the water level.

Morphological abbreviations include contraction (the middle part of the word is left out), alphabetical (semantic abbreviation with only the form of a letter), acronym (the initial parts of the words in the phrase are taken), initialisms (the initial letter of the words in the phrase is taken). In these types of abbreviations, the root word and the derived word always have different lexical meanings. The root word belongs to the noun group, and the derived word belongs to the noun and adjective group. They are mainly formed by shortening the root word separated from the morpheme (for example, English metropolitan → metro; Uzb. «metro»). These abbreviations are more common in oral and colloquial speech. In some cases, a suffix is added to the root, especially in words that have been assimilated into Uzbek through Russian: (мульт-фильм → мульт-ик,

обще-житие → обща-га, теле-визор → тел-ик) mult-film → mult-ik, obshche-jitie → obshcha-ga, televizor → tel-ik, for example. This method of word formation represents a suffixation method combined with an abbreviation. Also, the method involved in the combined method of word formation creates complex abbreviations: Uzbektelekom - Uzbekistan teleradio company, zav-eduyushchiy hoz-yaystvom → zav-hoz (Ўзбектелеком – Ўзбекистон телерадио компанияси, зав-едующий хоз-яйством → зав-хоз.).

Syntactic abbreviations form the ellipsis of phrases and sentences: If I were you... – If I was in your place (Сизнинг ўрнигизда мен бўлганимда эди) ... Abbreviations by word group are nouns (for example, a. < association – association), adjectives (Abr. < Abridged – abbreviated), are divided into types such as developed (O.K. < okay – everything is fine). Abbreviations may be capitalized (with or without a period between the components) according to orthographic principles: ACLA < Alaska Compiled Laws – a collection of state interpretive laws. Alaska, A.B.C. < Australian Bankruptcy Cases - a collection of Australian bankruptcy cases. Abbreviations can also be written with lowercase letters and a slash, for example, a/s < account sales – report of a commission agent on the sale of goods [12].

## RESULTS

According to the structure of abbreviations, the corpus of lexical units can be divided into the following types [11]:

1. Initials, which in turn are divided into three groups:
  - a) Consists of the initial letters of the words in the phrase (OJSC - open joint-stock company, JPK – Жинойй процесуал кодекс);
  - b) The presence of a sound tone consisting of the sound of the first word, which ensures the usual reading of the initial word combination (HEE - Health Education England, OTM – Олий таълим муассасаси [12]);
  - v) Abbreviations consisting of the initial letter and initial syllables of the words included in the letter+sound structural word combination: CrPC [креписи] – Criminal Procedure Code, CCU ([si:] – [si:] – [ju:]) – Central control unit; FRG [eferze] – Federal Republic of Germany; RGF [ergéf] – Романо-герман факультети [12];





2. Gourmet [goor-mey, goor-mey] is a combination of the initial parts of words – 1. a connoisseur of fine food and drink; 2. of or characteristic of a gourmet; 3. elaborately equipped for the preparation of fancy, specialized, or exotic meals; mahallakom - neighborhood committee, gastronom – озиқ-овқат дўкони) [12].

3. Mixed type consists of the addition of the initial part of words and capital letters (name of sounds) (gorono – gorodskoy otdel narodnogo obrazovaniya).

4. With the first syllable of the initial word and the complete addition of the next word (zapchasti – zapasnye chasti).

5. The first syllable of the word + an instrumental word (head of the department - head of the department).

6. Word formation from the first syllable of the initial word and the last syllable of the second word or only the last syllable (moped = motorcycle + bicycle (мопед = мотоцикл + велосипед)).

Graphic abbreviations are abbreviations that have two graphic forms with one sound and invariable lexical content. Graphic abbreviations are not words, they do not have genus and number of grammatical category. Therefore, they do not have their own pronunciation and are used in oral speech in the same way as they are written. D.I.Alekseev emphasizes the need for a detailed study of graphic abbreviations within the framework of various terminological systems. [3]. In addition, he mentions that graphic abbreviations exist only for visual perception and are pronounced while reading. In modern English, graphic abbreviations are used in scientific, technical, artistic and any other style of writing. In the process of formation, graphic abbreviations can be represented by different letters, and the number of their combinations can be very different: B.B. < bail bond – kafolat, avg. < average – sea accident, C. < Chancellor-kansler [1]. Over time, graphic abbreviations, despite having a terminological character, can become a lexical type if they have an independent sound form and lexicogrammatical features of the language unit. But the transition of such a graphic form to a word form is not characteristic of all graphic abbreviations, only words that are regularly used in the process of communication and are understandable to the general public can enter the lexical unit.

Lexical abbreviations are abbreviations that have two graphic forms (full and short) and two sound forms.

Lexical abbreviations have their own sound characteristics and graphic form, which differ from the initial units. Lexical abbreviations, as vocabulary components of a language, have the basic characteristics of a single word and perform the same functions as a means of communication as other words.

A lexical abbreviation is a meaningful unit with a complex and integral content, having a sound form and a graphic image. Lexical abbreviations, which have all the features of a simple word, have grammatical categories specific to the corresponding parts of speech, perform various syntactic functions, and enter the language system and become the basis for the formation of new words in language-specific ways.

Specific features of lexical abbreviations include:

- 1) Their secondary nature, that is, abbreviations appear not simultaneously with the emergence of a language-related concept, but after they have their expression in the form of a complete word or phrase;
- 2) Is created according to certain models;
- 3) There is a possibility to switch to independent words;
- 4) Has productivity in the word formation system of the language;
- 5) The belonging of the language to word combinations is taken into account;
- 6) It has the ability to fill and enrich the vocabulary of the language [2].

The question of whether abbreviations belong to the vocabulary of a language or not is interpreted by linguists in different ways. D.I. Alekseev notes that letter abbreviations and compound words can serve as a basis for word formation, and confidently states that this belongs to the Russian language vocabulary [3]. According to N.N. Alekseeva, abbreviations are included in the vocabulary of the language [2].

## DEBATE

In our opinion, lexical abbreviations are included in the vocabulary of the language, because they are used in speech along with other words, and are included in explanatory dictionaries with the symbol "abbr.", they are given not in the dictionary appendix, but in the main text, along with other words in alphabetical order. It should be noted that not all abbreviations are included in the vocabulary of the language, only words that are generally recognized and widely used in written and spoken speech, in newspapers and magazines, on radio



and television serve as the basis for creating a new word in the language.

Graphic abbreviations included in the lexical category turn into fully meaningful words and are reflected in dictionaries. Conclusions about the possibility of including graphic abbreviations in the dictionary are confirmed by linguists [4]. The transition of graphic abbreviations to words is a continuous process that enriches the vocabulary of the language with new words in order to briefly record the linguistic units formed on the basis of the words existing in the written language.

Until now, scientists do not have a single opinion on the structure and types of abbreviations. Among the works of foreign scientists, the studies of N. Marchan [11] dedicated to the study of complex abbreviations are of particular importance. The author identifies five types of complex abbreviations: partial, syllabic, alphabetic, mixed type (full word + abbreviation), syllabic or letter abbreviations combined with a number. E.L. Dyuzhikova classifies abbreviations into four types: 1) based on letters (UNESCO < United Nations Educational Scientific and Cultural Organization); 2) syllable (Sovnarkom); 3) mixed (district); 4) consisting of several syllables, all these syllables are not shortened (internet - international network) S. Berlizon includes in this classification the type of shortened, cut words, (for example, gra < gratia (gratitude-миннатдорчилик) [4]).

According to the method of formation of abbreviations, we distinguish the following structural types of English legal terms under consideration: sharply shortened; combination with an initial letter; complex abbreviations.

Abbreviated terms are formed by shortening complex terms, as well as nominal phrases, to one letter, that is, the word is shortened to the last limit. We distinguish two types of these abbreviations: initial and initial letter abbreviations [6]. Initial abbreviations consist of initial capital letters (initial letters) of multicomponent full forms. They are formed according to the following basic models:

a) by including all components of the initial term or nominative phrase in the abbreviation of the first letter,

the letter in the abbreviation can be a vowel or a consonant, for example: FBI < Federal Bureau of Investigations –федерал Тергов Бюроси (ДХХ), DR < deposit receipt — *депозит квитанцияси*, BASF < Bar Association of San Francisco - *Сан-Францисконинг адвокатлар ассоциацияси*;

b) by including most parts of the initial complex term or phrase in the abbreviation of the first letter (vowel or consonant), as a result, some components are not reflected in the abbreviation, for example: Fed.B.J. < Federal Bar Association Journal — (журнал тури) (full phrase + abbreviation) abbreviation with syllables or numbers FL.& K. < Flanagan and Kelly Irish Rolls Court Reports – *Флонеген и Келли томонидан тузилган Ирландия суд ҳукмлари қарорлари*; Ex. < Exchequer — treasury (*ғазначилик*), ex. < exempt — released (*озод қилинган*) [12]).

English abbreviations formed according to this model are very common in legal literature, their share, according to our statistics, is about 27.8% of the total corpus of legal terms.

Initial letter abbreviations consist of uppercase (capital letter) and lowercase letters. They are formed according to the following models:

a) By combining the initial consonants from the two-component term; such abbreviations are common in contract law, for example: EXQ < ex quay — from the shore (*қирғоқдан*), EXS < ex ship — from the ship (*кемадан*), EXW < ex works — from the factory (*заводдан*) [12];

b) By adding consonants at the beginning, middle and end of one- and two-component terms in the abbreviation, for example: Ap < Archbishop (*архиепископ унвони*), title, gdn < guardian – (*васий*), GTD < guaranteed – (*кафолатланган*) [2].

In the reduction of multicomponent terms and nominative phrases, the considered models of abbreviations with initial letters together with various models of other component types form combined abbreviations [1].

Complex terms occupy an intermediate position between terms representing a combination of complete components and abbreviations. Complex terms include: syllabic contraction, letter contraction, incomplete contraction, contractures [6].



Syllable abbreviations are formed from the initial syllables, components of a complex term, while two main models of such abbreviations can be distinguished: syllabic abbreviations representing parts of all structural components of a complex term, for example: xtry < extraordinary – фавкуллода, ғайриоддий; syllabic abbreviations; it does not represent all the components of a complex term, for example: admx < administratrix - администратор-аёл [10].

During contraction, contraction occurs in such a way that only the beginning of the term remains: ack. < Acknowledgment (*масдиқлаш*), barr. < Barrister – barrister (*барристер*), comm. < Commentaries – comments (– *изоҳлар*), CN < consols – consolidated (turning short-term government debt into long-term) rent (*консолидацияланган (давлатнинг қисқа муддатли қарзини узоқ муддатга айлантириш) ижара*), ad. < Addenda – additions [12].

In contraction, the first consonants and the last syllable can be used: mtgee < mortgagee - гаров қарз берувчи, mtgor < mortgagor - гаров бўйича қарздор.

One of the features of modern acronomic word formation is the similarity of an abbreviation and a simple word, that is, an abbreviation to a word, creates homonyms [8], sr.: c.a.d. - rude person (*одобсиз, қўпол одам*); cash against documents – cash payment according to cargo documents (*юк ҳужжатлари бўйича нақд пул тўлаш*); C.A.R. – car, Commonwealth Arbitration Reports – collection of arbitration decisions (*арбитраж қарорлари тўплами*); S.O.I.D. - crack, leguminous plants, swelling (*ёриқ, дуққали ўсимликлар, шишириш*); cash on delivery - (a sum of money collected on behalf of the mail sender when delivering the mail and sent to the sender by mail or telegraphic transfer) (*Етказиб бериш бўйича нақд пул*); COLA is a carbonated soft drink produced by Coca-Cola (*Кока Кола томонидан ишлаб чиқарилган газланган алкохолсиз ичимлик*), cost-of-living allowance - wage premium for a high price (*юқори нарх учун иш ҳақи мукофоти*) [2].

Sometimes a shortened version of a legal term corresponds to the full form of a non-term word. This word can be any word group of speech, in most cases it can be a noun or a verb, for example: Append. – attach (*бириктирмоқ*), Appendix – program (*дастур*); Bar. -

barrier (*тўсқ*), barrister – *барристер*; Chap. - crack, Chapter - боб [12].

An important characteristic of the abbreviation of the English legal term is the multiplicity of meanings of these units. For example,

A.C.: 1) account current – *жорий ҳисоб* 2) administrative county – *маъмурий туман*; 3) Appellate Court – *апелляция суди*; 4) Case on Appeal – *иш апелляция бўйича кўриб чиқилмоқда*; 5) Appeal Cases – *апелляция ҳолатлари*; 6) authors corrections – *муаллифлик ҳуқуқи*;

B.C.: 1) Bankruptcy Cases – *bankruptcy cases банкротлик ҳолатлари*; 2) birth certificate – *birth certificate туғилганлик гувоҳномаси*; 3) Borough Council – *муниципалитет*; 4) British Columbia Law Reports – *Британия Колумбиясининг ҳукмлари тўплами* Collection of judgments of British Columbia [2].

In our opinion, multiplicity of the meanings does not deprive legal abbreviations of terminological status, since uniformity is not the only defining feature of a terminological unit.

The model of structural analysis based on N – A (N – noun (*ом*), A – adjective (*сифат*)) of the abbreviation of legal terms is the most common. In addition, a group of terms is defined according to the N – N, A – A – N model. Of these 8, the least are prepositions and nouns.

Let's look at another classification of abbreviations in English. G. Marchan distinguishes the following three main types of abbreviations: clipping - simple clippings (*қисқартма*); compound clippings and blends (mixed conversion – *аралашма конверсия*) [11].

In our opinion, the best classification of abbreviations proposed by A.I. Eldysheva [6] on the structure of the English language found its logical continuation in the works of E. A. Dyuzhikovoy. We list the principles that make up the conceptual basis of this classification: 1) uniqueness of the structure (simplicity and complexity of the abbreviation- *қисқартманинг соддалиги ва мураккаблиги*); 2) high degree of variability; 3) possibility of interaction of lexical abbreviation with other methods of word formation; 4) linear level of abbreviations component [5].



In accordance with the recommended stratification (the level of use of the lexical unit in speech), we use syllabic abbreviations (consisting of at least one syllable of only one word); abbreviations with complex syllables (consisting of shortened and full forms of words); initial (represented by the initial letters or sounds of the phrase) into abbreviations.

E.A. Dyuzhikova stated that the advantage of abbreviations is evident when comparing them with word combinations, which completely replace names and fill the resulting lexical lacunae [5].

In English legal literature, a large number of abbreviations are used mainly in written speech and only in some cases enter the spoken language. These types of abbreviations have a terminological nature and are mainly used by specialists. But today, some abbreviations that are included in the legal vocabulary that are often used by the media are becoming common.

Thus, abbreviations are one of the unique ways of word formation. According to the structure, abbreviations consist of special types of complex terms - initial, initial - letter, compound or abbreviations with the root word cut off.

As noted above, the presence of a large group of abbreviations in legal literature indicates that the legal term is aimed at increasing the number of abbreviations. In our opinion, the structure of abbreviations is relatively simple. Abbreviations of English legal terms are divided into the following structural types: syllabic abbreviations (apocopes, apheresis, syncope, contractures (contractions)), complex abbreviations (complex syllabic additions) and initial abbreviations (alphabet, phonetic (acronyms)). We also consider it necessary to separate mixed abbreviations (combinations of syllabic cuts, abbreviations with capital letters and words with full meaning) into a separate group. We have expressed the classification of these units by structural types of English legal terms in the following table:

## CLASSIFICATION OF ENGLISH LEGAL TERMS BY STRUCTURAL TYPES

Table 1

Syllabic abbreviations	Abbreviations with compound syllables	Initial Abbreviations	Mixed abbreviations
Apocopes	The original is complex abbreviations	Letter abbreviations	Combined syllables (compound syllables), initials
Apheresis			
Syncope	A word formed by joining two independent words	Sound Abbreviations	
Contractures (contractions)		(Acronyms)	Abbreviations and full meaning words

## SYLLABLE ABBREVIATIONS IN THE ENGLISH LEGAL TERM SYSTEM

Compound abbreviations are formed by cutting the stem of the base word. After they are shortened, they take the form of a word or a sequence of syllables. In foreign linguistics, syllabic abbreviations are called *truncations and contractions* [11]. In Russian linguistics, the following terms are found: morpheme cuts [2, 4], articulatory abbreviations [1, 6], simple cuts, cut units, cut words, morphemic cuts [10], in Uzbek the term complex abbreviations [10] is found. Abbreviations are also given in a simplified way when reading music notes, and abbreviations with complex symbols are used

when the melody is given high or low with conditional symbols. In general, abbreviations are more common in concepts that have been adopted into the Uzbek language through the Russian language. The term "syllabic abbreviation" (structurally equivalent to a syllable) was used as a basis in our research due to the clear difference between simple syllabic abbreviations and complex syllabic structure from compound syllables that combine the syllables of different words.

There are four types of syllabic abbreviations:

1. Apocops are syllabic abbreviations taken from the initial part of the word, for example: *acad* < *academy*,





*jur* < *jurisprudence*, *fax* < *facsimile*, *stat* < *statute(s)*, *fed* (*Fed*) < *federal* (*Federal*), *Med* < *Medicare*, *supp* < *supplement*.

2. Apheresis - syllabic abbreviations representing the final part of the word, for example, *burger* < *hamburger*; the fact that at the moment in the field of legal terminology, the terms are almost not expressed, with the exception of rarely used terms: *lations* < *regulations*, *vestment* < *investment* and *munitions* < *ammunition(s)* [13].

3. Syncope is syllabic abbreviations representing the middle part of a word, for example: *scrip* < *prescription*; *tox* < *intoxicate(d)*, *fit* < *ammosity*.

4. Conjugation - syllabic abbreviations representing the initial and final syllable of a word, for example: *atty* < *attorney*, *anor* < *another*, *Cxi* < *constitutional*, *er* (*ER*) < *employer*, *ee* (*EE*) < *employee* [List of Legal Abbreviations: *en.wikipedia.org/wiki/List\_of\_legal\_abbreviations*] [5, 6].

Apocopes are syllabic abbreviations denoting the initial part of the main word (6.7%) [1] According to G. Marchand, apocope is considered the most productive method of cuts [11]. In A. Superanskaya's dictionary of linguistic terms, the term apokop is explained as follows: these are abbreviations formed as a result of dropping the final sound or sounds as a result of phonetic processes [8].

The encyclopedic dictionary of the English language gave the following definition: Apocope — loss or omission of the last letter, syllable, or part of a word [Webster's Encyclopedic Unabridged Dictionary..., 1989].

The main feature of the phenomenon under consideration is that nouns are often shortened only in a certain group of lexical and grammatical words. Examples of abbreviated adjectives and adverbs are rare, and abbreviated (i.e. neuter, inflectional) verbs are rare. The main reasons for this are not in the specificity of the morphological features of English noun-terms, but in the nature of nouns as a special lexico-grammatical class of words expressing objectivity.

Some words formed in this way belong to the general language field and are used without any stylistic coloring, but most of the shortened words are limited to a certain field of use and are generally not used outside

of it. A comparative analysis of shortened legal terms and their initial forms from the point of view of morphology and semantics showed that due to the similarity of the shortened part of the initial word with lexical meaning to the formal prototypes of the initial form, semantic and associative relations are preserved between them, for example: *reg* < *register* – *реестр*, *civ* < *civil* – *фукаролик*, *crim* < *criminal* – *жиноий*, *advert* < *advertisement* — *жиноий*. Abbreviations are usually used in the process of communication, but they are characterized by their small size. A distinctive feature of syllabic abbreviations is that they are actually phonetic variants of initial words in the language system for a long time. If the prototype of the abbreviation is not used, one or another abbreviation can be completely isolated, for example: *retro* < *retrograde* – *тескари*, *прецедент* (юр.); *fix* < *fixation* – *мустахамлаш*, *фиксация*, *қонунийлаштириш* (see шт: [Akopyants, 2009]).

When shortening words in this way, the morphological principle underlying this process is clearly expressed: cutting always corresponds to the morphological boundary of the word, and in two-stem compound words, the second stem is dropped, and the connecting vowel "o" is added to the first stem, for example: *photo* < *photography*, *radio* < *radiometry* (*radiometry*, one of the methods of criminological examination - (*радиометрия*, *криминологик экспертиза ўтказиш усуллари*дан бири)). In cases where the compound word does not contain the vowel "o", the clipped word naturally ends not with "o", but with another vowel: *tele* < *television* – *теле* < *телевидение*; *toxi* < *toximeter* – *токси* < *токсиметр*.

As can be seen from the given examples, this type of cut-off words, as a rule, consists of two syllables: *photo*, *toxi* - *photo*, *taxi*, *photo*, *taxi*; regardless of the number of syllables of the whole word: it can consist of three (*microphone* - *microphone*), four (*automobile* - *car*) and five syllables (*metropolitan* - *metropoliten*).

There are cases where the cutting edge occurs between root words. The following legal terms can be an example of our opinion: *exposition* > *exro* – *қўргазма*, *laboratory* > *lab* – *лаборатория*, *case* > *са* – *criminal case* - *жиноий иш*. Abbreviated English legal terms form a





small group of words. In modern English, apocopes are used in the scientific style of legal literature.

Graphic abbreviations can be represented by different letters. Sometimes one letter remains from the term, that is, almost the entire word is cut. For example: O. 1) offer — *таклиф, офферта*; 2) opponent - *қарши томон, эътироз (ариза берувчи), қаршилик*; 3) Order – *бўлим (Англия Олий судининг процедура қоидалари)*; 4) owner — *хўжайин, а) кемани қонуний асосда шахсий мулки бўлмасада, қонуний асосда бошқарувчи кема эгаси, кемани ижарага олиш (товарларни ҳақ эвазига (юк) ташиш учун транспорт воситасини тақдим этиш шартномаси (фрахт))*. Often single-letter abbreviations are multi-valued terms. Abbreviated terms consisting of three or four letters usually have the same meaning, for example: jus. < justice — *адолат*, leg. < Legislative — *қонунчилик*, prem. < premium – *солиқ идораси юқори сифатли, премия*. Thus, the polysemic degree of abbreviated legal terms in English is inversely proportional to the external form of the terms. It is interesting that almost half of such units correspond to proper nouns, for example: Cam. – Cameron's Supreme Court Reports – a collection of decisions of the Supreme Court of Canada compiled by Cameron (1877-1905) (*Кемерон томонидан тузилган Канада Олий судининг қарорлари тўплами*); Dan. – Daniell's Exchequer Reports – A collection of Exchequer Court decisions compiled by Daniell (1817-1820) (*Даниэл томонидан тузилган Ҳазначилик судининг қарорлари тўплами*). There are abbreviations (apocopes) containing two or more anthroponyms: for example, Mad.&Gel. Maddock & Geldart's Chancery Reports – a collection of Chancery Court decisions compiled by Maddock & Geldart (*Маддок ва Гелдарт томонидан тузилган Канцлерия судининг қарорлари тўплами*); EL.BL. & EL. - Ellis, Blackburn and Ellis ' Queen's Bench Reports - Collection of decisions of the Court of King's Bench, compiled by T. Ellis, Blackburn and F. Ellis (1858) (*Қирол скамейкаси судининг қарорлари тўплами, тузувчилар Т. Эллис, Блэкберн и Ф. Эллис (1858)*). There are cases where the final form of an abbreviation consists of two stems rather than one stem, for example: Del. Chen. – Delaware Chancery Reports – A collection of decisions of the Delaware clergy courts (*Делавер штатининг руҳоний судларининг қарорлари тўплами*). Abbreviated

English phrases and compound words consist of two or three independent words, each of which is missing the last syllable (or syllables). In both cases, one syllable is usually preserved in each word, and thus the abbreviations turn out to consist of two or three more syllables, for example: Lud. El. Cas. – Luder's Election Cases – a collection of decisions on election cases compiled by Lourdes (*Лурдес томонидан тузилган сайлов ишлари бўйича қарорлар тўплами*); Cas. Arg. & Dec. - Cases Argued and Decided in Chancery - cases allowed in chancery court (*канцлерия судида рухсат этилган ишлар*); Eq. Rep. – Equity Reports – Collection of Court Decisions of the Law of Justice (*Адлия қонунининг суд қарорлари тўплами*)[12].

### APHERESIS

There is the most type of abbreviations according to the second syllable, in which the last part of the word is preserved and the initial part is shortened. Compare: *Apheresis the loss or omission of one or more letters or sounds at the beginning of a word*, e.g. count > account [12]. This process is very ancient and can be seen in anthroponyms: Drew < Andrew, Bell < Isabelle [12].

Apheresis is very common in military jargon in terms of order and command. For this, it is enough to remember that some long words and speech phrases typical of the pronunciation of officers, gendarmes or police agents are shortened by the authors of humorous works. In the jargon of military schools, it is common to use apheresis to make syllabic cuts - for example, words such as commandant (commandant), chief, commandant, denoting military titles, can be used as examples.

A.M. Akopyants said that when comparing the semantic content of apheresis with its prototype, in some cases it is observed that their content does not fully correspond and is not similar. Thus, apheresis tentiary < penitentiary (lit. "prison") differs from the original word in its low level of stylistic coloring and usage, usually in colloquial use. Often, some apheresis develop their semantic structure and functions in language completely independently or in parallel with the prototype [1].

For modern English, apocopes are the most characteristic contractions used by dropping the last part



of a word. Abbreviations are less common than apocopes and are often used in slang.

**Syncope** is a type of abbreviations in which the middle part of the word is preserved, which form the third largest group of syllabic abbreviations, for example: tec < detective (*изкувар*). The analysis of the studied issues showed that in the informal register of speech communication, only isolated examples of such syllabic abbreviations used by native speakers can be found.

Contracture (shortening) - a type of abbreviation with a shortened middle of the word, for example, metrication < metrification - transfer to the metric system (criminological examination results) (*метрик тизимга ўтказиш (криминологик экспертиза натижалари)*); bd - bond - облигация, ипотека. Contractures are contractions of some letters, especially vowels. Consonants have more information than vowels, so consonants almost always remain in the process of contraction (shortening). The same trend can be observed in English legal terminology: sld. (sealed) – sealed, sold (*муҳрланган, сотилган*); trs (trustees) - guardians, owners of guardians, (*васийлар, васийлар эгалари, васийлар*); Avg. (average) – an accident at sea (*денгизда содир бўлган бахтсиз ҳодиса*) ўрталама. When writing contractures, there is usually no dot between the components, for example: noun (overtime) – extra work; additional work ( *қўшимча иш*); retnr (retainer) – contract with a lawyer, initial payment to a lawyer (*адвокат билан шартнома, адвокатга дастлабки тўлов*); frt. ppd. (freight prepaid) – freight paid before shipment, freight price paid before shipment (*юк ташишдан олдин тўланган юк, юк жўнатишдан олдин тўланган юк нархи*) [12].

Contractures are graphic abbreviations, while in spoken speech the full form of the word is used. Abbreviations with these syllables are the least common in language and legal literature. For example, the following abbreviation can be an example of this type: *defy and redely* (delivery and redelivery) - the interval between the delivery and return of cargo (*юкни етказиб бериш ва қайтиш оралиғи*). Writing an abbreviation is used to save space and time, because it is relatively easy to restore the fully unabbreviated form from the remaining consonants during reduction: retnr – retainer, frt – freight. In some cases, as a result of such shortening, the

word moves from one word family to another, for example: *prepreg* < preimpregnated – a synthetic material soaked in resin (resin) to ensure its strength (*мустаҳкамлигини таъминлаш учун қатрон (смола)га бўктирилган синтетик материал*) [12].

Speaking about the place and role of syllabic abbreviations in the lexical system of the English language, it can be said with confidence that their formation methods undoubtedly contribute to the enrichment of the English vocabulary. The following complex abbreviation was lexically formed from the shortening of the legal terminological word Justice (honesty, justice, judge) (*ҳалоллик, адолат, судья*): justiceship - the position of a judge (*sudyaning lavozimi yoki qadr-qimmat*); justification - *оқлаш*; from the shortened form of the term jury meaning "jury" "*ҳакамлар ҳайъати*" jurisconsult - lawyer on civil and international law (*фуқаролик ва халқаро ҳуқуқ бўйича адвокат*), jurisdiction - administration of justice (*одил судловни амалга ошириш, юрисдикция*) (procedural activities of courts aimed at resolving disputes about real or alleged violations of legal norms in the order of civil, administrative, criminal proceedings) ; jurisprudence — *юриспруденция, ҳуқуқшунослик*.

The difference between the full and abbreviated form of a word is that both of them are used in different discourses in different areas of the language, while the full form of the word differs in the breadth of usage.

Thus, it can be concluded that the abbreviated form often exists as a variant of the full term. So, such abbreviated forms of legal terms: sub - subsection - small section (*кичик бўлим, мақола параграф*), article paragraph; reg - registered mark - *рўйхатдан ўтган савдо белгиси*; par - paragraph – *бўлим*; sec - secretary (*секретарь*) serve to enrich the vocabulary of the language to a certain extent.

## SUMMARY

The appearance of a large number of abbreviations in modern English is directly related to the rapid development of science and technology and the increase in the volume of information exchange at the national and international level, the need to save time and



linguistic means of expression. The main linguistic factor for the emergence of abbreviated terminological units is the principle of relevance of information, according to which some structural parts expressed by terms with a full content are redundant and therefore subject to reduction. As for word formation, the source of enrichment of the English vocabulary at present is often due to the process of abbreviation, as a result of combining morphemes and their parts. Lexical units with a complete structure are large in size, and their frequent repetition causes inconvenience in discursive speech, so they are simplified, cut or shortened. Lexical abbreviations are considered secondary units because they are included in the vocabulary of the language, complement and enrich the language. Such abbreviations are formed as independent words with semantic content according to separate word formation models. An abbreviation and a term with a full structure as its variant exist in parallel in the language. The formation of shortened terminological units is generally explained by the influence of interlinguistic and extralinguistic factors.

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# PERCEPTION OF STUDENTS ON THE USE OF COMPUTER SIMULATION AND COLLABORATIVE LEARNING IN BIOLOGY IN OBIO/AKPOR, RIVERS STATE

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## ABSTRACT

*This study investigated the effect of computer simulation and collaborative learning strategies on senior secondary school students' perception in Biology. A descriptive design was adopted for the study. The population of the study comprised all the public secondary schools in Obio-Akpor Local Government Area of Rivers State. A sample size of one hundred and eighty-two (182) students was selected using the purposive sampling technique. Two research questions and corresponding hypotheses were formulated to guide the study at 0.05 level of significance. The instrument for data collection was a Biology Perception Questionnaire Scale (BPQS) designed by the researcher and Cronbach Alpha Analysis test was used to test the instruments. A reliability coefficient of 0.88 was derived for the questionnaire. Research Questions were answered using mean and standard deviation while Analysis of covariance was used to test the hypotheses. The study established among others that the use of computer simulation and collaborative learning strategies enhanced students' perception towards the learning of Biology in secondary school. It was recommended among others that government, through the state ministry of Education should commission Biology textbooks writers to integrate the computer simulation strategy as a recommended teaching strategy for teaching abstract concepts in Biology.*

**KEYWORDS:** Technology, computer simulation, collaborative strategy, perception, secondary education.

## INTRODUCTION

Education is crucial to the growth of a united and modern Nigeria. In every nation, it is an essential tool for national development and a natural force for change. The Merriam-Webster dictionary defines education as "the knowledge and development that result from learning." Education is a process that takes a long time and has a positive impact on people's lives and actions. According to FRN (2014), the general goal of secondary education is to prepare students for successful social lives and higher education. As a result, senior secondary schools ought to be comprehensive and provide a core curriculum designed to broaden students' perspectives and knowledge. As a result, education has seen advancements in learning and teaching in the digital age.

The development of technology has an impact on how we live, work, play, and learns. It can be found almost everywhere in our culture (Serhat, 2015). It has become increasingly important for education to incorporate this technology into the teaching-learning process because of the proliferation of mobile and wireless devices and global technological advancement. Students' performance can be enhanced and learning made simpler for them by teachers who use digital tools appropriately (William, 2016).

In simulation environments, teachers can manipulate system components. Students are able to alter and track variables over time through the use of simulation, which imitates the

operation of a real-world process or system. Students are able to use simulations to understand concepts that would be difficult or impossible to notice in real life as a result of this. In the meantime, the procedure encourages active participation.

Biology is a separate field of natural science that focuses on the study of living things. It involves investigating both inanimate and living things. Biologists investigate the structure, growth, origin, functions, evolution, and distribution of living things. The goals of the senior secondary biology curriculum, as stated by the Federal Ministry of Education (F.M.E., 2019), are to assist students in acquiring the following skills:

- i. Essential and significant biology knowledge; daily apply scientific knowledge to problems affecting personal, agricultural, and community health.
- ii. Adequate laboratory biology skills and a rational and practical scientific mindset Biology has been made an essential science in senior secondary school to produce competent and creative individuals who can keep up with the system's technological advancements. As a result, biology students should improve their interest, problem-solving abilities, and critical and logical thinking skills. If these objectives are to be achieved, biology instruction needs to be goal-oriented and student-centered, particularly in secondary





schools. Teachers who are dedicated to creating an innovative and engaging learning environment that fosters maximum biology achievement, such as the collaborative learning strategy, can accomplish this.

### STATEMENT OF THE PROBLEM

In order to produce competent and creative individuals who are capable of keeping up with the system's technological advancements, biology has been designated as an essential science subject in senior secondary school. Students' academic performance has recently been linked to some abstract concepts in biology, such as cell division, genetics, chromosomes, the matter cycle, and respiration, to name just a few. It's hard to get people excited about answering questions about such abstract concepts or topics. This could possibly be because of the conventional teaching methods that teachers use to teach biology. On the other hand, teachers communicate these abstract ideas without properly assessing students' perceptions which is essential for successful biology education. Consequently, parents of these students expressed dissatisfaction with their children's observed learning outcomes. These became a problem because teachers can gain insight into how to teach by knowing how students perceive learning a concept, and teachers can also gain insight into how to design lessons or learning experiences that are appropriate for each student's zone of proximal development by knowing how students prepare. as well as their perceptions of important topics, can be enhanced by implementing these strategies. So, the question is whether meaningful learning through computer simulation and discussion learning methods can improve students' perception. Based on students' perceptions, the researcher seeks to investigate the efficacy of computer simulation and collaborative learning strategies.

### AIM AND OBJECTIVES OF THE STUDY

This study investigated the effects of computer simulation and collaborative learning strategy on biology students' perceptions. In particular, the study has two objectives which were:

1. Examined the impact of computer simulation and collaborative learning strategies on biology students' perception levels.
2. Determine how male and female biology students' perceptions of computer simulation and collaborative learning strategies differ.

### RESEARCH QUESTIONS

1. How do computer simulations and collaborative learning affect biology students' perception levels?
2. How do male and female biology students' perceptions of computer simulations and collaborative learning strategies differ?

### HYPOTHESES

**H01:** There is no significant difference in the effect of computer simulation and collaborative learning strategies on the perception level of biology students.

**H02:** There is no significant difference in the effect of computer simulation and collaborative learning strategies on the perception levels of male and female.

### SIGNIFICANCE OF THE STUDY

The results of the study will help educators better understand how to teach biology through computer simulations and how well students are prepared to use them. Consequently, they will encourage them to purchase biology curriculum. Biology teachers will benefit from this study's findings because they will provide them with information about their students' readiness, enable them to group students according to their level of readiness, and educate them about the necessity of utilizing simulation systems and collaborative learning methods to enhance their instructional dexterity. Students will benefit greatly from the study's findings because they will be able to collaborate, which will allow them to share scientific ideas and actively participate in their own education. As a result, their academic performance on both internal and external assessments will improve as biology instruction becomes more concrete as opposed to abstract. The results of this study will also be used by the next researcher as an empirical review, exposing them to variables and interactive instructional strategies.

### METHODOLOGY

This study adopted the use of descriptive design. The design is appropriate as it provided techniques that helped the researcher to investigate students' perceptions of the treatments used. The reason for using the design is that it will determine the quality of the research. Rick (2014) asserts that the information gathered will allow the researcher to measure the significance of results from the overall population understudy, as well as the challenges of your respondents' opinions, thus, it is an efficient way of gathering data to help address students' perceptions. This study included 28,062 students from 24 public secondary schools, two of which were located in the Obio/Akpor local government area. 12,065 male and 15,997 female students made up the population (Source: The board of Rivers State Senior Secondary Schools: 2021 and 2022 (Office of the Director of Planning Research and Statistics). The study's data were gathered with the help of the Biology Perception Questionnaire Scale (BPQS). Students who were not part of the study were given the Biology Perception Questionnaire (BPQ), for a pilot test to see how reliable they were. Cronbach Alpha Analysis was used to determine the internal consistency of the Biology Perception Questionnaire (BPQ). The result of the instrument reliability coefficient was 0.86. Because this reliability index was thought to be high enough, the instrument was thought to be reliable. Mean and standard deviation were used to answer the research questions. The t-test and Analysis of Covariance (ANCOVA) were used to test the hypothesis. Statistical Package for the Social Sciences (SPSS) was used for all of the statistical analyses.

### RESULTS

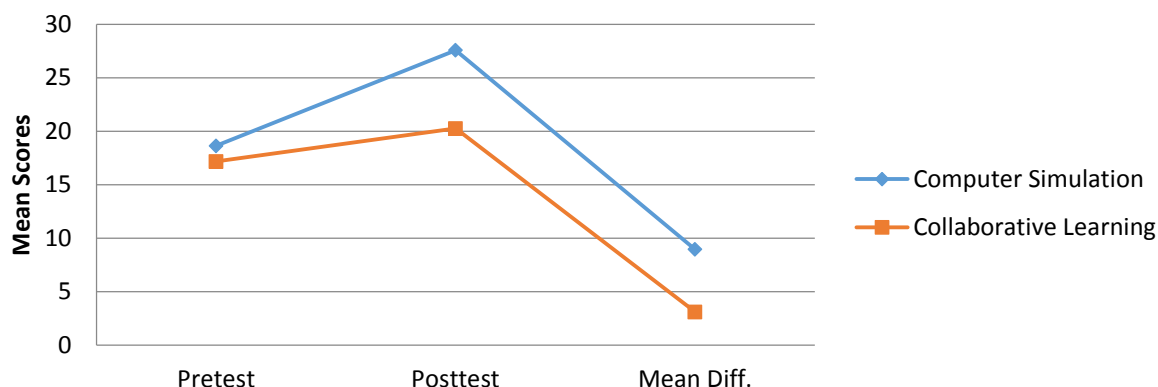
**Research Question One:** What is the effect of computer simulation and collaborative learning strategies on the perception level of biology students?





**Table 1: Mean score and standard deviation of the effect of computer simulation and collaborative learning strategies on the perception level of biology students**

Group	n	Pretest		Posttest		Mean Diff.
		$\bar{x}$	SD	$\bar{x}$	SD	
Computer Simulation	56	18.63	3.56	27.57	4.21	8.94
Collaborative Learning	61	17.16	3.73	20.25	3.67	3.09



**Figure 1: Chart showing the difference towards the use of computer simulation and collaborative learning strategies on Biology students' perception level.**

Source: Researcher's Field Work, 2022.

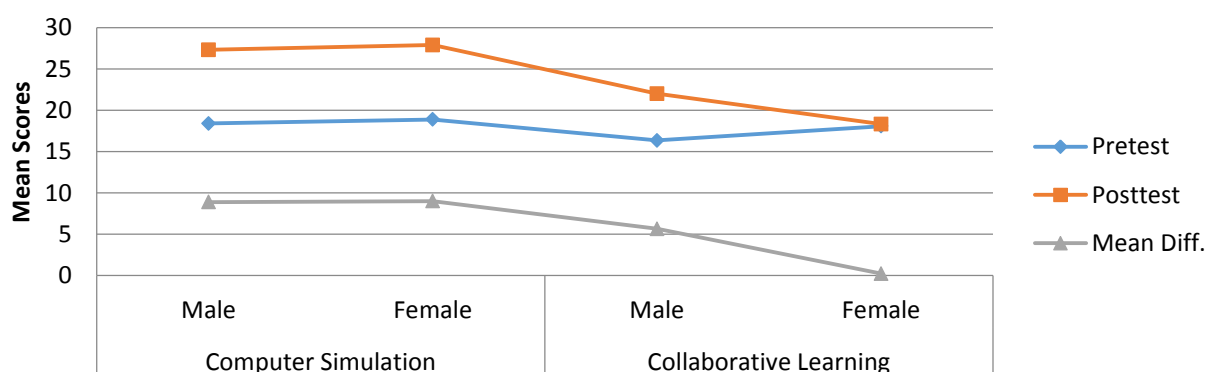
Table 1 and figure 1 showed the difference towards the use of computer simulation and collaborative learning strategies on Biology students' perception level. The result indicated that before exposure to the computer simulation strategy students had pretest mean score = 18.63, and standard deviation = 3.56. After being taught Biology using the computer simulation strategy students' perception increased; as indicated in the posttest mean score = 27.57, and standard deviation = 4.21. Also, before exposure to the collaborative learning strategy students had pretest mean score = 17.16, and standard deviation = 3.73. After being taught Biology using the collaborative learning strategy students' perception increased;

as indicated in the posttest mean score = 20.25, and standard deviation = 3.67. Consequent of the foregoing, the mean difference in the pretest and posttest perception of students towards the use of computer simulation and collaborative learning strategies differed. Students taught Biology using the computer simulation had high mean score ( $\bar{x}$  = 8.94) as compared to the mean score of students taught with collaborative learning strategy ( $\bar{x}$  = 3.09).

**Research Question Two:** What is the effect of computer simulation and collaborative learning strategies on the perception levels of male and female biology students?

**Table 2: Mean score and standard deviation of the effect of computer simulation and collaborative learning strategies on the perception levels of male and female biology students**

Group	Gender	n	Pretest		Posttest		Mean Diff.
			$\bar{x}$	SD	$\bar{x}$	SD	
Computer Simulation	Male	30	18.40	3.34	27.30	4.51	8.90
	Female	26	18.88	3.84	27.88	3.89	9.00
Collaborative Learning	Male	32	16.34	3.51	22.00	3.34	5.66
	Female	29	18.07	3.83	18.31	3.01	0.24



**Figure 2: Chart showing the difference towards the use of computer simulation and collaborative learning strategies on male and female Biology students' perception level.**

Source: Researcher's Field Work, 2022.



Table 2 and Figure 2 showed the difference towards the use of computer simulation and collaborative learning strategies on male and female Biology students' perception level. The result indicated that before exposure to the computer simulation strategy male students had pretest mean score = 18.40, and standard deviation = 3.34. After being taught Biology using the computer simulation strategy students' perception increased; as indicated in the posttest mean score = 27.30, and standard deviation = 4.51. Furthermore, before exposure to the computer simulation strategy, female students had pretest mean score = 18.88, and standard deviation = 3.84. After being taught Biology using the computer simulation strategy female students' perception increased; as indicated in the posttest mean score = 27.88, and standard deviation = 3.89.

Also, before exposure to the collaborative learning strategy male students had pretest mean score = 16.34, and standard deviation = 3.51. After being taught Biology using the collaborative learning strategy male students' perception increased; as indicated in the posttest mean score = 22.00, and

standard deviation = 3.34. Furthermore, before exposure to the collaborative learning strategy female students had pretest mean score = 18.07, and standard deviation = 3.83. After being taught Biology using the collaborative learning strategy female students' perception increased; as indicated in the posttest mean score = 18.31, and standard deviation = 3.01.

Consequent of the foregoing, the mean difference in the pretest and posttest perception of male and female students towards the use of computer simulation and collaborative learning strategies differed. Male ( $\bar{x} = 8.90$ ) and female ( $\bar{x} = 9.00$ ) students taught Biology using the computer simulation had high mean scores as compared to the mean scores of male ( $\bar{x} = 5.66$ ) and female ( $\bar{x} = 0.24$ ) students taught with collaborative learning strategy.

**Hypothesis One:** There is no significant difference in the effect of computer simulation and collaborative learning strategies on the perception level of biology students.

**Table 3: Summary of Analysis of covariance (ANCOVA) on the difference in the effect of computer simulation and collaborative learning strategies on the perception level of biology students**

Dependent Variable: Posttest					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1577.74 <sup>a</sup>	2	788.87	50.81	0.00
Intercept	2304.35	1	2304.35	148.41	0.00
Pretest	10.96	1	10.96	0.71	0.40
<b>Group</b>	<b>1455.15</b>	<b>1</b>	<b>1455.15</b>	<b>93.72</b>	<b>0.00</b>
Error	1770.07	114	15.53		
Total	69355.00	117			
Corrected Total	3347.81	116			

a. R Squared = .471 (Adjusted R Squared = .462)

Table 3 shows that there is significant difference in the effect of computer simulation and collaborative learning strategies on the perception level of biology students ( $F_{1,} = 93.72$ ,  $df = 114$ ,  $P = 0.00 < 0.05$ ). Thus, null hypothesis one is rejected at 0.05 alpha level.

**Hypothesis Two:** There is no significant difference in the effect of computer simulation and collaborative learning strategies on the perception levels of male and female biology students.

**Table 4: Summary of ANCOVA on the difference in the effect of computer simulation and collaborative learning strategies on the perception levels of male and female biology students**

Dependent Variable: Posttest					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1812.02 <sup>a</sup>	4	453.00	33.04	0.00
Intercept	1992.52	1	1992.52	145.31	0.00
Pretest	33.36	1	33.36	2.43	0.12
Group	1457.93	1	1457.93	106.32	0.00
Gender	83.86	1	83.86	6.12	0.02
<b>Group * Gender</b>	<b>143.58</b>	<b>1</b>	<b>143.58</b>	<b>10.47</b>	<b>0.00</b>
Error	1535.80	112	13.71		
Total	69355.00	117			
Corrected Total	3347.81	116			

a. R Squared = .541 (Adjusted R Squared = .525)

Table 4 shows that there is significant difference in the effect of computer simulation and collaborative learning strategies on the perception levels of male and female biology students ( $F_{1,} = 10.47$ ,  $df = 112$ ,  $P = 0.00 < 0.05$ ). Thus, null hypothesis two is rejected at 0.05 alpha level.

## SUMMARY OF FINDINGS

This study examined perception of students on the use of computer simulation in biology in Obio/Akpor. The findings include, among other things, that male and female students'



pre- test and post-test perceptions of the use of collaborative learning strategies and computer simulations differed.

The following is a summary of the other findings that the researcher discovered:

1. Students' perception levels of biology differ significantly between collaborative learning strategies and computer simulations.

2. Male and female biology students' perception levels are significantly different when it comes to computer simulations and collaborative learning methods.

## DISCUSSION OF FINDINGS

The study investigated the effect of computer simulation and collaborative learning strategies on perception of biology students in senior secondary schools in Obio/Akpor Local Government Area of Rivers State. From the data gathered, and analysis carried out, the findings of research question one showed that the mean difference in the pretest and posttest perception of students towards the use of computer simulation and collaborative learning strategies differed. . Students taught Biology using the computer simulation had high mean score as compared to the mean score of students taught with collaborative learning strategy. Furthermore, the result hypothesis one showed that there is significant difference in the effect of computer simulation and collaborative learning strategies on the perception level of biology students. These findings are corroborated by Mhamed Ben Ouahi, Abdesselam, Taoufik, and El Mehdi (2021), they found that students taught using Computer Simulation Strategy performed better than those taught using the conventional teaching methods

The findings of research question two showed that the mean difference in the pretest and posttest perception of male and female students towards the use of computer simulation and collaborative learning strategies differed, Male and female students taught Biology using the computer simulation had high mean scores as compared to the mean scores of Male and female students taught with collaborative learning strategy. Furthermore, the result hypothesis two showed that there is significant difference in the effect of computer simulation and collaborative learning strategies on the perception levels of male and female biology students. These findings are corroborated by Mhamed Ben Ouahi, Abdesselam, Taoufik, and El Mehdi (2021). They found that students taught using Computer Simulation Strategy performed better than those taught using the conventional teaching methods. Furthermore, the finding of this study was supported by the findings of Okolo and Oluwasegun, (2020), which revealed that computer simulation strategy was found to be better than the conventional method in teaching and learning of cell division, and gender was not a determinant factor in Biology students' interest ratings in teaching cell division.

## CONCLUSIONS

.This study's discoveries lead us to the end that understudies' enthusiasm to play makes it simple for them to draw in with educational techniques like programmatic experiences that include game-like exercises. Students have a positive learning experience as a result. Therefore, in this day and age of

computers, the use of games-like activities has a positive effect on students' perceptions levels, dispelling the notion that learning is monotonous. As a consequence of this, it is hoped that the findings of this study will compel additional research into the ways in which educational computer simulations influence students' perceptions towards learning.

## RECOMMENDATIONS

Based on the findings and conclusion of this study, the following recommendations are made;

1. Curriculum planners ought to incorporate computer simulation as instructional resources that ought to be integrated into the teaching and learning of biology because the computer simulation-based approach to learning biology has been found to be effective in enhancing student perception.

2. It should be taught to teachers that students should take ownership of their education. Teachers should learn to actively involve students in the lessons rather than making them passive observers alone because computer simulation has been shown to increase male and female students' perceptions of biology and readiness to learn it.

## CONTRIBUTIONS TO KNOWLEDGE

The findings of the study contributed to knowledge thus;

1. Senior secondary school teachers and school administrators now recognize the positive impact of computer simulation strategy on students' perception towards Biology.
2. This study provides evidence of the efficacy of computer simulation strategy over collaborative learning strategies in enhancing the perception of Biology students.

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## DEGENERATIVE ARTICULAR CARTILAGE DISEASE, OSTEOARTHRISIS

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**Article DOI:** <https://doi.org/10.36713/epra12476>

**DOI No:** 10.36713/epra12476

### ABSTRACT

**Introduction:** Osteoarthritis (OA), degenerative articular cartilage disease is a chronic inflammatory arthropathy involving joint elements (subchondral bone, synovial membrane, hyaline cartilage and others). It is due to a disorder in the regulation between degradation and synthesis of the extracellular matrix of cartilage, involving bone and synovial membrane in a biochemical process mediated by growth factors and cytokines which, in turn, intervene in the course of bone remodeling and joint destruction.

**Objective:** to detail the current information related to osteoarthritis, description, etiology, classification, imaging classification, management and current treatments.

**Methodology:** a total of 52 articles were analyzed in this review, including review and original articles, as well as clinical cases, of which 38 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: arthrosis, osteoartrose, bones, osteoarthritis, articular cartilage.

**Results:** The prevalence of osteoarthritis increases directly with age 25-35 years 0.1 % 35-65 years 30 % and over 80 years 80-100 %. An improvement of pain and sensitivity is observed with local treatment with capsaicin. Paracetamol can be considered as the basic analgesic in the treatment of most chronic osteoarticular pain in doses of 1 gram four times/day. Opioids have an analgesic effect that almost completely eliminates all kinds of pain regardless of its intensity or site of affection. Short-term and long-term parenteral corticosteroid use is effective in controlling pain and stiffness. Systemic use of corticosteroids in OA is not warranted and only intra-articular injections are advised. Diacerein decreases IL 1 $\beta$  production in cartilage as well as nitric oxide levels by antagonizing the catabolic process and stimulates the anabolic process of cartilage. Chondroitin sulfate does not present a clinically relevant effect on joint pain or joint space reduction.

**Conclusions:** osteoarthritis should be considered as a chronic, irreversible and progressive lesion. There are factors that aggravate its prognosis. Many measures are recommended to the patient and his family, especially if it is an elderly patient, in order to avoid the progression of joint damage. Surgical treatment is reserved for patients with severe pain or marked deformity, which occurs in advanced OA. Among the most frequently used procedures are: valgus osteotomy of the proximal tibia, arthroplasty, arthrodesis and amniotic membrane implantation. Bone tissue regenerative currents using tetracyclines that prevent the activation of metalloproteases, autologous chondrocyte implants, hypoxia inducible factor (HIF-1/2 $\alpha$ ), parathyroid hormone that stimulates chondrocyte multiplication and the use of in situ stem cells, cartilage regeneration and a better understanding of the developmental protein ancestor of osteogenesis, will be part of the medical management protocol, being a promising therapy for future therapy.

**KEY WORDS:** Osteoarthritis, osteoartrose, bones, osteoarthritis, articular cartilage.





## INTRODUCTION

With the increase in life expectancy, the incidence of degenerative bone and joint diseases has increased proportionally. Osteoarthritis can be conceptualized as a heterogeneous group of conditions leading to joint symptoms and signs that are associated with alterations in the integrity of articular cartilage, as well as changes related to the subchondral bone and joint margins. This disease usually presents with joint stiffness, pain and often shows joint effusion with varying degrees of localized inflammation(1).

Osteoarthrosis (OA), also called degenerative articular cartilage disease, is a chronic inflammatory arthropathy involving the joint elements (subchondral bone, synovial membrane, hyaline cartilage and others). It affects almost all vertebrate animals, and it is suggested that it was formed in evolution when the bony skeleton appeared. In 1909 Nichols and Richardson established two major groups of rheumatic diseases, degenerative or osteoarthrosis and the second proliferative or inflammatory rheumatism at the level of the synovial membrane whose basis is rheumatoid arthritis. The most recent evidence suggests that there are several clinical phenotypes of OA that represent different disease mechanisms(1,2).

OA is due to a disorder in the regulation between degradation and synthesis of the extracellular matrix of cartilage, which involves bone and synovial membrane in a biochemical process mediated by growth factors and cytokines that, in turn, intervene in the course of bone remodeling and joint destruction. Ancestrally it was considered as an ailment only of the cartilage, however nowadays it is known that it affects the articular organ in all its extension. It presents with progressive loss of cartilage, in addition to a new formation of subchondral trabecular bone and cartilage at the articular borders(1).

## METHODOLOGY

A total of 52 articles were analyzed in this review, including review and original articles, as well as cases and clinical trials, of which 38 bibliographies were used because the information collected was not important enough 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: arthrosis, osteoartrose, bones, osteoarthrosis, articular cartilage.

The choice of bibliography exposes elements related to osteoarthrosis; etiology, presentation, evaluation, diagnosis, classification and management of the disease.

## DEVELOPMENT

In the past, the World Health Organization (WHO) defined it as a disease resulting from mechanical and biological phenomena that destabilize the balance between the synthesis and degradation of cartilage and subchondral bone. In industrialized countries, this disease covers almost 80% of the population over 65 years of age and is the most prevalent rheumatic disease in

the world and the most frequent among the adult population. It is also the most important cause of locomotor system disability in people over 60 years of age. Its prevalence increases directly with age 25-35 years 0.1% 35-65 years 30% and over 80 years 80-100%(1,3).

Usually this disease has a higher prevalence in knees, hips, cervical and lumbosacral spine and ankle respectively; however the distal interphalangeal, proximal and carpometacarpal joints are also affected. Among the most representative symptoms are pain of gradual evolution that aggravates or is triggered by activity, stiffness upon awakening and after inactivity, and inflammation of the joints. Although the etiology is not fully clarified, it is considered multifactorial with genetic, constitutional and environmental elements. Standard radiographs of symptomatic joints are used to diagnose OA and generally show marginal osteophytes, decreased joint space, increased subchondral bone density, as well as subchondral cyst formation, bone remodeling and effusion. OA is generally classified as primary or idiopathic and secondary to trauma, processes that alter the structure, endocrine and neuropathic alterations, congenital and metabolic defects, normal articular cartilage function and intense or incongruent work or sports activities and infections. Among the risk factors most implicated in the development of the disease are genetic predisposition, age, sex, obesity, previous joint injuries and mechanical factors(4-8).

In order to be clear on the subject of osteoarthritis, it is important to know the structure and function of articular cartilage, which cushions the pressure overload on the articular surfaces, in addition to preventing bone friction when joint displacement occurs.

Cartilage is formed by highly differentiated cells called chondrocytes that have low metabolic activity and survive in hypoxic conditions ( $<5\% pO_2$ ), surrounded by an extracellular matrix (ECM) which is responsible for the mechanical characteristics of cartilage, allowing cartilage deformation according to stress. Water, collagens, large aggregates of proteoglycans (mostly aggrecan) and other non-collagenous proteins such as binding proteins, fibronectin and cartilage oligomeric matrix protein (COMP) are the predominant components of the ECM(1,4,9,10).

Collagen accounts for 10-20%, the largest being type II, 90-95%, which provides strong tensile strength and is an indispensable component of the extracellular matrix of cartilage and is of great importance in the formation, growth and normal joint function of the endochondral bone. There is also a smaller amount of collagen types I, V, VI, IX, X and XI(1,11).

Proteoglycans (PGs) represent between 10 to 15% of the total, these are structurally complex macromolecules responsible for the compressive strength of cartilage. Proteoglycans consist of a core protein and one or more glycosaminoglycan chains linked



by covalent bonds. Almost all mammalian cells generate proteoglycans and release them into the ECM, place them on the plasma membrane or store them in secretory granules(1,12).

Extracellular glycoproteins: such as ancorin CII, fibronectin, laminin and integrin. They have different responsibilities between the junction of the ECM and chondrocytes. Integrin interacts with cell receptors and regulates migration, proliferation and differentiation of chondrocytes(1).

In the initial stages of OA, the attempt to repair itself generates a hypertrophic reaction with increased synthesis of the cartilaginous matrix by the chondrocytes. Subsequently, there is a rapid replacement of matrix elements and a clear depletion of proteoglycans, and then a loss of the structure of the collagen network. It also causes the activation of fibroblasts, synovial membrane and macrophages producing large amounts of IL-1 $\beta$  (Interleukin 1 beta) and, to a lesser extent TNF- $\alpha$  (interferon alpha). In late stages synovial inflammation usually persists because of articular cartilage fragments, calcium pyrophosphate crystals, hydroxyapatite crystals and monosodium urate crystals

released from the damaged cartilage. The subchondral bone is responsible for up to 30 percent of the shock forces, it is subjected to abnormal pressures, due to the loss of articular cartilage which causes a progressive development in the ossification or sclerosis as protection, leading to the affirmation of osteophytes in the articular margins. In the synovial membrane there is development of sinviocytes, activated B and T cells and secretion of pro-inflammatory cytokines IL 1, TNF alpha, IL 6 and 8 and proteases that increase due to chondrocyte lesion, which leads to a vicious circle maintaining degeneration in OA. Another point is that the facts originated by the increase in the production of interleukin 1-beta, amplifies the elaboration of prostaglandins E2 and nitric oxide, substances directly related to pain and inflammation. Indeed, the intensity of synovitis is related to the severity of pain in patients with OA, which is usually relieved by intra-articular corticosteroid treatment(1).

Effusion synovitis may be the consequence of another joint injury or appreciable stress on a joint or contribute to additional abnormal structural alterations(13-15).

**Table 1. Biological phases, mediators responsible for joint tissue destruction in osteoarthritis and therapeutic potentials.**

Biological phases	Mediators responsible	Therapeutic potentials
Matrix degradation	MMP-1,-3,-9,-13, ADAMTs-4, -5, cathepsin K, serine proteases (Htra1) driven by cytokines (IL-1,-6,-7,-8,-17,-18 , OSM), chemokines (IL-8, GRO- $\alpha$ ,- $\gamma$ , RANTES, MCP-1) and others (S100 proteins, TGF $\alpha$ , matrix fragments, leukotrienes and prostaglandins).	Protease inhibitors, TIMPs, anti-cytokine therapy, TLR inhibition, MAP kinase inhibition, NF $\kappa$ B inhibition, lipoxigenase and cyclooxygenase inhibitors
Reduced matrix repair	$\downarrow$ IGF-1, TGF- $\beta$ , BMP-7 (OP-1), FGF-18 activity.	Growth factors (IA or by gene therapy)
Cell death	$\downarrow$ HMGB2, $\downarrow$ autophagy, reactive oxygen and nitrogen species.	Caspase inhibitors, antioxidants, iNOS inhibitors
chondrocyte hypertrophy	RUNX2, HIF2 $\alpha$ , WNT/ $\beta$ -catenin, IL-8	PTH, calcitonin
Calcification and crystals	Transglutaminase, inorganic pyrophosphate, TLR, NLRP3	Phosphocitrate, TLR and NLRP3 inhibition
Subchondral bone sclerosis	WNT/ $\beta$ -catenin, $\downarrow$ sclerostin (SOST), BMP, IGF-1	Wnt or BMP antagonists, retarding bone remodeling with bisphosphonates or anti-RANKL
Osteophyte formation	TGF- $\beta$ , BMP-2	Since these can stabilize the joint, they probably should not be aimed directly at the joint.
Focal bone remodeling (bone marrow lesions)	RANGO, VEGF	Bisphosphonates, anti-RANKL
Synovitis	IL-1 $\beta$ , TNF $\alpha$ , IL-17, IL-15, IL-7, CCL19, MCP-1, MIP-1 $\beta$ , S100 proteins/alarmins.	Anti-cytokine therapy, TLR antagonism, complement inhibition



MMP=Matrix Metalloproteinase; ADAMTS=Disintegrin A and Metalloproteinase with Thrombospondin Motifs; IL=Interleukin; OSM=Oncostatin M; GRO=Growth-Related Oncogene; RANTES=Regulated on activation, normal T cells expressed and secreted; MCP-1=monocyte chemotactic protein-1; TGF=transforming growth factor; TIMP=tissue inhibitor of metalloproteinase; TLR=Toll-like receptor; MAP=mitogen-activated protein; IGF=insulin-like growth factor; BMP=Bone Morphogenetic Protein; FGF=fibroblast growth factor; IA=Intra-articular; HMGB=High Mobility Group Box Protein; iNOS=inducible nitric oxide synthase; RUNX=Runt-related transcription factor; HIF=Hypoxia Induced Factor; PTH=parathyroid hormone; NLRP3=NOD-like receptor family, pyrin domain containing 3; RANKL=Receptor Activating Ligand for Nuclear Factor Kappa-B; VEGF=vascular endothelial growth factor; TNF=Tumor Necrosis Factor; CCL=chemokine ligand (CC motif); MIP=Macrophage Inflammatory Protein.

**Source:** Loeser RF, Goldring SR, Scanzello CR, Goldring MB. Osteoarthritis: A disease of the joint as an organ(7).

A pathologic feature that helps differentiate OA is the loss of articular cartilage, which is usually seen on plain radiographs as

joint space narrowing. Joint breakdown and cartilage breakdown correlate with attempts at repair with new bone synthesis and the development of subchondral sclerosis and osteophytes. OA is recognized as a disease that affects the entire joint, including ligaments, menisci, synovium and joint capsule, thanks to imaging studies, especially magnetic resonance imaging (MRI). MRI may show evidence of abnormal bone structure at the subchondral border with cysts and bone marrow lesions; represented as hyperintense areas in proton density or T2 with fat suppression(3,7).

The American College of Rheumatism in 1984 divided OA into: primary (without apparent cause) and secondary, however this classification is under discussion. A better system of classification could help to go deeper into the discernment of bone and cartilage interrelationships in order to enrich therapeutics by being more specific, so Herrero-Beaumont has proposed a subclassification of patients with primary osteoarthritis depending on the main mechanism(1):

- a. Genetically induced osteoarthritis.
- b. Arthritic disease related to estrogenic deficit.
- c. Arthrosis essentially associated with aging.

**Figure 1. Lateral radiograph of the knee, showing structural joint damage.**



**Source:** The Authors.

As for imaging studies, nuclear magnetic resonance is the technique of choice in the evaluation of the disease, such as T2 mapping, gadolinium enhancement technique, short time projection/reconstruction and cartilage spectroscopy. Another useful study is the ultrasound which evaluates with great precision the bony erosions in the joints in the initial stages, this presents benefits such as its ease of access, speed, efficiency, innocuousness, besides being a dynamic study, in real time and comparative, being considered a primordial annex in the

examination of the pathology. It is used to verify the presence of osteoarthritis and to know if there is a joint effusion, which is responsible for the pain, and its presence reveals a torpid evolution of the disease(1,16).

Regarding X-rays, the Kellgren and Lawrence classification is used, which is divided into grades as follows:

Grade 0: normal.

Grade 1: doubtful (possible osteophytes, doubtful joint narrowing).

Grade 2: mild (confirmed osteophytes, possible space narrowing).

Grade 3: moderate (multiple moderate osteophytosis, evident space narrowing, slight sclerosis, possible extreme bone deformity).

Grade 4: severe (abundant osteophytes, marked space narrowing, severe sclerosis, bone end deformity)(1,16-19).

Arthroscopy is currently a reliable procedure which, in addition to diagnosis, also examines the seriousness of the lesions for their treatment(1).

**Figure 2. Anteroposterior radiographs of right and left knees with load showing evidence of joint structural alteration.**



**Source:** The Authors.

Osteoarthrosis should be considered as a chronic pathology, by now irreversible and progressive. Its prognosis will depend on several factors such as(1):

Age: the younger, the worse the prognosis.

Genetics.

Location and extension of the lesions.

Work activity that favors its progression.

Evolution, according to the speed of progression.

Obesity.

Aggregate diseases.

Existence of non-remediable determinant diseases.

Some recommended measures with the purpose of delaying or avoiding the evolution of the articular damage are(1):

The use of contralateral cane.

Avoid constant squatting.

The use of appropriate footwear.

Avoid frequent use of stairs.

Avoiding low chairs and beds.

Use long tongs to pick up objects from the floor.

Sitting work if it is of long duration.

The purinergic system is an essential modulator in metainflammation and its involvement in the pathogenesis of OA opens more scope for future treatment of the disease. The importance of the purinergic system in osteoarthritic cartilage is recognized, as well as how the components of the metabolic syndrome related to OA impact this system. Adenosine-mediated A2AR action is involved in the maintenance of articular cartilage balance and is an essential modulator in OA. Stimulation of the previously mentioned receptor developed by obesity could lead to cartilage depletion and OA formation in obese patients. Further study on the contribution of nucleotide receptors in OA and metabolic syndrome is needed to better understand the underlying processes that turn on purinergic signaling in the pathogenesis of OA and to clarify the confounding results(20-24).

Diabetes mellitus (DM2) presents a pathogenic effect on osteoarthrosis via 2 primary pathways comprising oxidative stress and chronic mild inflammation as a consequence of chronic hyperglycemia and insulin resistance. DM2 is presented as one of the risk factors for the progression of OA, as well as





having a negative impact on the success of arthroplasty. There are increasing findings and concerns about the safety of various medications in diabetics with OA including acetaminophen, non-steroidal anti-inflammatory drugs and corticosteroid injections. However, other medications can be safely prescribed in patients with OA and DM2, such as glucosamine and intra-articular hyaluronic acid. However, more research is needed to clearly understand whether diabetes control and prevention can modulate the onset and progression of OA(25-28).

In the absence of a definitive cure, the treatment of OA usually relied on symptom relief focused on reducing pain and increasing mobility. Some ointments such as the one containing a chemical compound called capsaicin act on substance P, which is linked to the origin of the transmission of the pain stimulus, thus influencing the relief and improvement of pain, sensitivity and functionality of the patient with OA according to some studies, however, it frequently presents a local burning sensation as a side effect(1).

Paracetamol is the drug of first choice recommended by most international guidelines in the treatment of OA. The American College of Rheumatology (ACR) Good Clinical Practice Guidelines (GBPC) suggest starting with paracetamol up to 1 g four times per day in situations where pain is mild to moderate in intensity. NSAIDs have more analgesic effect but also more toxicity compared to paracetamol(1,29).

Opioids have an analgesic effect that almost completely eliminates all kinds of pain regardless of its intensity or site of affection. They are non-ceiling drugs, which means that the higher the dose, the greater the effect; however, it should be clear that the higher the dose, the greater the risk of presenting side effects such as respiratory depression, physical dependence, tolerance and other symptoms that lead to drug dependence. Within this group is popular the use of tramadol, which is an effective drug compared to placebo in several studies, generally used when pain therapy does not respond adequately to NSAIDs.

Short-term and long-term parenteral corticosteroid use is effective in controlling pain and stiffness. However, the benefits are usually seen in high doses, which entails some undesirable effects, therefore, corticosteroids are recommended in very specific cases. Most authors agree that the use of corticosteroids in OA systemically is not justified and is only recommended in intra-articular injections. Intra-articular injection of a preparation of betamethasone acetate and phosphate provides a notable improvement in the WOMAC score when compared to the values seen with hyaluronic acid. Some bibliographies show that there is a significant decrease in short-term pain in knee osteoarthritis (7-30 days) after intra-articular corticosteroid injection(1,30).

NSAIDs inhibit the cyclooxygenase enzyme (COX), thus stopping the synthesis of prostaglandins which are responsible

for hyperalgesia due to sensitization of the nociceptive nerve endings. They generally have an important adverse effect on the gastrointestinal mucosa, which may perforate or bleed, increasing morbimortality. Chronic use of NSAIDs increases the risk of complications(1,30).

There are two COX isoforms, COX-1 and COX-2; the first is constitutional and maintains homeostasis of the internal environment, renal and gastric integrity and the second is found at the site of inflammation. Nowadays, attempts are being made to synthesize NSAIDs that selectively deprive the latter isoenzyme, without altering the production of prostaglandins in the kidney and stomach. The possibility of causing gastrointestinal complications varies greatly from group to group. Ibuprofen is one of the least harmful to the gastric mucosa; among the most gastrodamaging are piroxicam and ketoprofen, with a medium lesion of the gastric epithelium we have acetylsalicylic acid, naproxen, sulindac and indomethacin. Within this group of drugs, the concept of specific COX-2 inhibitors was proposed, which initially included Rofecoxib (Vioxx) and Celecoxib (Celebrex), which showed greater inhibition of COX-2 than of COX-1(1,30,31).

Chondroitin sulfate (CS) is a natural biomacromolecule widely distributed in almost all vertebrates and invertebrates. Leeb et al (2008) in their meta-analysis shows that it decreases the need for analgesics or NSAIDs, on the other hand the team of Prof. Jean-Pierre Pelletier (March 2011), presents a study which confirms the structure modifying effect of chondroitin sulfate through a quantitative MRI, which has determined the result of therapy with CS on the decrease in cartilage volume, subchondral bone lesions and synovitis in people with osteoarthritis of the knee. However, a study by the Cochrane Controlled Trials Register, Medline, Embase and CINAHL Group (June 2010) concludes that it does not produce a clinically relevant impact on joint pain or joint space narrowing(1,32,33).

Glucosamine sulfate (GS) is a component that is part of the fundamental substance of articular cartilage, the proteoglycans. In many studies, SG at a dose of 1500 mg/day has been shown to be effective in the control of knee and hip osteoarthritis symptoms. Trials comparing SG with NSAIDs suggest that SG causes symptomatic benefits similar to NSAIDs, but with a lower possibility of adverse reactions. Both SG and CS do not appear to adequately eliminate subchondral bone modifications, synovial inflammation or osteophyte formation. More studies focused on the assessment of their potential disease-modifying effects and long-term therapy are needed(1,32).

Intra-articular hyaluronic acid (HA) is an expensive treatment that has been used in large numbers since its approval by the Food and Drug Administration (FDA). Regarding the efficacy of HA, several meta-analyses concluded that it is an effective drug for the treatment of pain and symptom control in OA, especially in gonarthrosis(1,29).





Diacerein at 50 mg decreases IL 1Beta production in cartilage and also nitric oxide levels. By selectively inhibiting IL-1 it antagonizes the catabolic process and stimulates the anabolic process of cartilage, preventing the degradation of articular cartilage.

Silver/soy isaponifiables (IPS) increase collagen synthesis by the chondrocyte without modifying collagen proportions. They stimulate the expression of transforming growth factor and activated plasminogen inhibitor, stimulating and intervening in the repair of the cartilage matrix. Bone tissue regenerative currents using tetracyclines that prevent the activation of metalloproteases, autologous chondrocyte implants, hypoxia-inducible factor (HIF-1/2a), parathyroid hormone that stimulates chondrocyte multiplication and the use of stem cells 'in situ', cartilage regeneration and the better understanding of the developmental osteogenesis progenitor protein, will be part of the medical management protocol, being a promising therapy for future therapy(1,34).

Physiotherapeutic treatment in osteoarthritis plays a fundamental role in the improvement of pain, muscle dysfunction and functional impotence secondary to pain. The physical technique with the most evidence of effectiveness is exercise. It has been shown that strengthening and toning

exercises, performed under aerobic conditions, have better results on pain and fatigue than stretching exercises. In addition to this, massage, currents, ultrasound, thermotherapy, kinesitherapy and hydrotherapy are often used. Pain frequently favors voluntary immobilization, which leads to an impairment of mobility and consequently of function, in addition to leading to muscular complications(1).

The use of orthoses should be prescribed in a correct and timely manner to avoid pain, joint complications and soft tissue retractions. There are studies showing that isometric quadriceps exercise increases the amount of hyaluronic acid in the knee in patients with gonarthrosis, as well as clinical trials showing that an exercise program in people at risk of suffering knee osteoarthritis increases the content of glycosaminoglycans in the articular cartilage. Muscle weakness and reduced joint proprioception are risk factors for the formation of osteoarthritis. The exercise plan should be individualized and individually adapted. An exercise plan with a minimum of three sessions per week is recommended, without exceeding two sessions per day. Strengthening of the quadriceps in the prevention of the progression and frequency of painful crises in this disease is the gold standard(1,32,35).

**Figure 3. Knee surgery for gonarthrosis.**



**Source:** The Authors.



Surgical treatment is reserved for patients with severe pain or marked deformity, which occurs in advanced OA. There is a wide range of procedural therapies to be performed in these cases, among them we have:

Arthroplasty.

Valgus osteotomy of the proximal part of the tibia.

Arthrodesis.

Amniotic membrane implant.

There are also several techniques to repair the cartilage, these are used according to the phase in which the lesion is presented. An example of this is the injection of proteoglycans supported by oxygen-ozone therapy with the capacity to revitalize the chondrocytes and the infiltration of autologous plasma rich in platelets used for the inhibitory capacity of the transforming growth factor beta (TGFβ), contained in the platelets, on the origin of the inflammatory cascade(36-38).

## CONCLUSIONS

Osteoarthritis should be considered as a chronic, irreversible and progressive lesion. There are factors that aggravate its prognosis. Many measures are recommended to the patient and his family, especially if it is an elderly patient, in order to prevent the progression of joint damage. Surgical treatment is reserved for patients with severe pain or marked deformity, which occurs in advanced OA. Among the most frequently used procedures are: valgus osteotomy of the proximal tibia, arthroplasty, arthrodesis and amniotic membrane implantation. Bone tissue regenerative currents using tetracyclines that prevent metalloproteinase activation, autologous chondrocyte implants, hypoxia inducible factor (HIF-1/2α), parathyroid hormone that stimulates chondrocyte multiplication and the use of in situ stem cells, cartilage regeneration and a better understanding of the developmental protein ancestor of osteogenesis, will be part of the medical management protocol, being a promising therapy for future therapy.

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**Conflict of Interest Statement**

The authors report no conflicts of interest.

**Funding**

The authors report no funding by any organization or company.



# FEMINISM, EDUCATION AND GENDER EQUALITY-A REVIEW

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Article DOI: <https://doi.org/10.36713/epra12444>

DOI No: 10.36713/epra12444

## ABSTRACT

*Feminism is a manifestation of equality of rights between both the sexes. According to Oxford English dictionary, feminism is an advocacy of the rights of women based on the theory of equality of the sexes. It can also be defined as the struggle for equal rights, and as a political and social movement. It asks for equality at all levels right from household to workplace. Women being different than men have different requirements, not superior but different. In this condition, feminism asserts the rights of women. Feminism, one of the most recent ideologies to emerge, attempts to analyse the social position of women, explain their apparent subsidiary role in history and offer the basis for reform and the advancement of women in all areas of society. Feminists believe that there is a fundamental power struggle between men and women (Harrison and Boyd, 2018). It began as a movement to achieve equality for women in various aspects.*

*This paper seeks to highlight the role of education in bringing gender equality based on manifestation of various waves of feminism.*

**KEYWORDS:** *Feminism, patriarchy, gender disparity, advocacy, equality, power struggle.*

## INTRODUCTION

Modern feminism began with Mary Wollstonecraft who, inspired by the ideals of French Revolution and Liberalism, argued in her book "A Vindication for the Rights of Women (1798)" for the need to make women rationally educated ([https://shodhganga.inflibnet.ac.in/bitstream/10603/38612/5/06\\_chapter2.pdf](https://shodhganga.inflibnet.ac.in/bitstream/10603/38612/5/06_chapter2.pdf)). Feminism is used for a dual purpose. One is to get the privileges which women don't have due to gender disparity and the next is to settle scores against 'foot soldiers of patriarchy'. In the movement towards attaining the dual purposes, sometimes they promote one, holding the other back and vice versa (Ranjan, 2019). Some writers use the term "feminism" to refer to a historically specific political movement in the United States and Europe; other writers use it to refer to the belief that there are injustice against women, though there is no consensus on the exact list of these injustices (<https://plato.stanford.edu/entries/feminist-philosophy/>). In the mid-1800s, the term "feminism" was used to refer to "the qualities of females", and it was not until after the First International Women's Conference in Paris in 1892 that the term, following the French term *féministe*, was used regularly in English for a belief in and advocacy of equal rights for women based on the idea of the equality of the sexes (<https://plato.stanford.edu/entries/feminist-philosophy/>).

Although the term "feminism" in English is rooted in the mobilization for woman suffrage in Europe and the United States during the late nineteenth and early twentieth century, of course efforts to obtain justice for women did not begin or end with this period of activism (<https://plato.stanford.edu/entries/feminist-philosophy/>).

Feminism seems to involve at least two groups of claims, one normative and the other descriptive. The normative claims concern how women ought (or ought not) to be viewed and treated and draw on a background conception of justice or broad moral position; the descriptive claims concern how women are, as a matter of fact, viewed and treated, alleging that they are not being treated in accordance with the standards of justice or morality invoked in the normative claims

(<https://plato.stanford.edu/entries/feminist-philosophy/>).

Feminism is grounded on the belief that women are oppressed or disadvantaged by comparison with men, and that their oppression is in some way illegitimate or unjustified. Under the umbrella of this general characterization there are, however, many interpretations of women and their oppression, so that it is a mistake to think of feminism as a single philosophical doctrine, or as implying an agreed political program (<https://plato.stanford.edu/entries/feminist-philosophy/>).

Feminists are those who believe that women are entitled to equal





rights, or equal respect, and one is not required to believe that women are currently being treated unjustly. Feminism, as liberation struggle, must exist apart from and as a part of the larger struggle to eradicate domination in all its forms. It is an umbrella term for various ranges of views about injustice perpetrated against women. It is committed to bringing about social change to end injustice against women, in particular, injustice against women as women (<https://plato.stanford.edu/entries/feminist-philosophy/>).

Feminism must not be merged with women's movements that encompass a broader designation. Not all women's associations are necessarily feminist. Those who are active within feminism must not also be mistaken for all women ([https://repositorio.ul.pt/bitstream/10451/23703/1/ICS\\_ACova\\_Feminism\\_EDI.pdf](https://repositorio.ul.pt/bitstream/10451/23703/1/ICS_ACova_Feminism_EDI.pdf)).

## VARIOUS WAVES OF FEMINISM

Feminism is a concept often misunderstood as signifying a genealogy solely of women's rights and social, political, and economic advancement. Like all other ideologies and movement, the history of feminism is most often structured and analyzed as a linear progress narrative; in the white western context, twentieth-century white feminist history has been organized as a series of generations, defined as "waves" (Wright, 2018).

First wave feminism refers to a period of feminist activity during the 19<sup>th</sup> and early 20<sup>th</sup> century throughout the world particularly in the U.K, Canada and the U.S. It focused on *de jure* inequalities primarily on gaining women's suffrage (the right to vote). The first wave of feminism in the United States was characterized by diverse forms of intervention that have continued to inspire later feminist movements. One of the earliest manifestations of liberal first-wave feminism in Europe, Mary Wollstonecraft's *A Vindication of the Rights of Woman* (1792), was written in the wake of the French Revolution and is still read as a seminal text (Kroløkke and Sørensen, 2006). Woolf introduced the notion of female bisexuality and a unique woman's voice and writing, Beauvoir the notion of women's radical otherness or, rather, the cognitive and social process of "othering" women as the second sex in patriarchal societies. In the early stages, the first wave of feminism in the United States was interwoven with other reform movements, such as abolition and temperance, and initially closely involved women of the working classes (Kroløkke and Sørensen, 2006). However, it was also supported by Black women abolitionists, such as Maria Stewart (1803–1879), Sojourner Truth (1797–1883), and Frances E.W. Harper (1825–1911), who agitated for the rights of women of color. Elizabeth Cady Stanton and several others from the more radical parts of the women's rights movement appeared as delegates to the National Labor Union Convention as early as 1868, before any successful attempts to organize female labor (Kroløkke and Sørensen, 2006). The first wave of feminism consisted largely of White, middle-class, well-educated women (Campbell, 1989). This tendency was only

reinforced by the counterstrikes of both the abolitionist movement and the working unions to also keep women involved in these movements (Kroløkke and Sørensen, 2006). Suffragists confronted stereotypes of women and, in particular, claims of proper female behavior and talk. First, they engaged in public persuasion, which in those days was considered most unwomanly (Kroløkke and Sørensen, 2006).

Some first-wave feminists pursued the argument of women's innate moral superiority, thus embracing what might be called "difference first-wave feminism." This argument was part of a sophisticated rhetoric of equity, developed simultaneously in Europe and in the United States, which shared the modern, Western political framework of enlightenment and liberalism, anchored in universalism (Kroløkke and Sørensen, 2006). The concept of equal opportunity framed a particular type of equity research, which arose outside the academy in the first half of the 20th century, and gradually provided the basis for a growing field of research in "the women issue".

Second wave feminism refers mostly to the radical feminism of the women's liberation movement of the late 1960s and early 1970s. Inspired by the tactics of the more activist parts of liberal feminism, radical second-wave feminists also used performance to shed light on what was now termed "women's oppression" (Kroløkke and Sørensen, 2006). These movements criticized "capitalism" and "imperialism" and focused on the notion and interests of "oppressed" groups: the working classes, Blacks, and in principle, also women and homosexuals. The second-wave feminism was theoretically based on a combination of neo-Marxism and psychoanalysis, outlined by feminist scholars such as Juliet Mitchell in *The Subjection of Women* (1970) and Shulamith Firestone in *The Dialectic of Sex: The Case for Feminist Revolution* (1970). They claimed that patriarchy is inherent to bourgeois society and that sexual difference is more fundamental than class and race differences (Kroløkke and Sørensen, 2006). They even claimed that women—due to their primary social attachment to the family and reproduction—constitute a class and economy of their own, based on the unpaid work in the home, the productivity of motherhood, and their function as a workforce reserve (Kroløkke and Sørensen, 2006). Radical second-wave feminism was characterized by a claim for sisterhood and solidarity, despite differences among women and a simultaneous investment in the slogans "Woman's struggle is class struggle" and "The personal is political," directing the feminist agenda to attempt to combine social, sexual, and personal struggles and to see them as inextricably linked (Kroløkke and Sørensen, 2006). In addressing what they saw as "the woman question," they concluded that the emancipation of women would occur only with the destruction of capitalism and the rise of socialism, when women would be freed from dependency on men and the family and be involved in "productive" labor.





Second-wave feminism was marked by a growing criticism from Black, working-class, and lesbian feminists, outlined by, among others, bell hooks in *Ain't I A Woman? Black Woman and Feminism* (1981) and Trinh T. Minh-ha in *Woman, Native, Other: Writing Postcoloniality and Feminism* (1989). The distinction between sex and gender, emphasized by second-wave feminists, provides a sociological or cultural explanation, which at first seems to solve the dilemma between sameness and difference but does not entirely answer questions related to the sexed body, as well as differences among women (Kroløkke and Sørensen, 2006). Starting in the 1970s, Second-wave feminism has generated an explosion of research and teaching on women's issues, which has now grown into a diverse disciplinary field of women's, gender, or feminist studies.

Third wave feminism is buoyed by the confidence of having more opportunities and less sexism. Young feminists now reclaim the term "girl" in a bid to attract another generation, while engaging in a new, more self-assertive even aggressive but also more playful and less pompous kind of feminism. Karen McNaughton is only one of many who have been empowered by the new grrl rhetoric, which originated among girls-only punk bands such as Bikini Kill and Brat Mobile in the United States in the early 1990s (Kroløkke and Sørensen, 2006). The movement has simultaneously criticized sexist language, appropriated derogatory terms for girls and women, and invented new self-celebrating words and forms of communication. Third-wave feminists are motivated by the need to develop a feminist theory and politics that honor contradictory experiences and deconstruct categorical thinking (Kroløkke and Sørensen, 2006). They embrace ambiguity rather than certainty, engage in multiple positions, and practice a strategy of inclusion and exploration. Third-wave feminism is also inspired by and bound to a generation of the new global world order characterized by the fall of communism, new threats of religious and ethnic fundamentalism, and the dual risks and promises of new info and biotechnologies (Kroløkke and Sørensen, 2006). A common American term for third-wave feminism is "grrl feminism," and in Europe it is known as "new feminism." While concerned with new threats to women's rights in the wake of the new global world order, it criticizes earlier feminist waves for presenting universal answers or definitions of womanhood and for developing their particular interests into somewhat static identity politics (Kroløkke and Sørensen, 2006).

## EDUCATION AND GENDER EQUALITY

Education is very much aligned with gender equality. Educationists have tried to engage with local contexts to bring girls into the education system. The view of education as a basic need and the implication that gender equality in education entailed an opportunity for all to have such basic needs emerged in the 1970s when some development economists critiqued the assumptions of modernisation that poverty would be eradicated by economic growth, the expansion of employment, higher incomes and the trickle-down effects of successful capitalism

(Fennell and Arnot, 2008). Gender equality in education associated with 'practical gender needs' might entail paying particular attention to provision of education, taking account of the social relations that prevent access to learning, participation and achievement (Fennell and Arnot, 2008). In less developed economies, without strong empirical educational research traditions and a strong public teacher voice, gender education reform is also expressed through an ideologically diverse group of NGO grassroot activists, projects and initiatives or through government policy statements developed in response to international pressure but with relatively little impact on educational provision (Fennell and Arnot, 2008). Western feminisms have developed their own agenda that has engaged with gender relations within advanced capitalist structures and liberal democratic states. This trajectory has focused particularly on the ways in which gender dualisms, the historic separations of the public and the private, and the formation of multiple gender identities, performances and relational worlds are created (Fennell and Arnot, 2008). The role of education as a possible catalyst to catapult women out of the domestic sphere and into the labour market therefore provides a very different trajectory from the relationship between gender and education that was introduced by human capital theory (Fennell and Arnot, 2008). The capabilities approach replaces this focus on the 'instrumental value' of education, i.e. the consequences of women's education solely in terms of their contribution to economic development, with a direct emphasis on the importance of the socially transformative and catalytic aspects of education (Fennell and Arnot, 2008). The role of education as a possible catalyst to catapult women out of the domestic sphere and into the labour market therefore provides a very different trajectory from the relationship between gender and education that was introduced by human capital theory (Fennell and Arnot, 2008). Contemporary education research is using the theory of capabilities and entitlements with its new emphasis on the power of education through the enhancement of the individual's negotiatory skills and set of choices within a contested site. The capabilities approach replaces this focus on the 'instrumental value' of education, i.e. the consequences of women's education solely in terms of their contribution to economic development, with a direct emphasis on the importance of the socially transformative and catalytic aspects of education, i.e. the 'intrinsic value' of the educational process, which are not so readily translatable into monetary values (Fennell and Arnot, 2008). The likelihood of education releasing women from the triple burden of work is dependent on their ability to make individual choices to access education, whether this is for themselves or on behalf of their daughters (Fennell and Arnot, 2008). Education gives a generalised commitment to the promotion of equality. Social and market imperfections that created women's exclusion needed to be addressed. Education enables girls and boys, women and men to participate in social, economic and political life and is a base for development of a democratic society. Education is one of the prioritised issues within the thematic area of gender equality. It is often argued



that quality education is crucial for gender equality. Education was referred to as essential and critical for advancing gender equality in any society. However, educating girls produces many additional socio-economic gains that benefit entire societies. These benefits include increased economic productivity, higher family incomes, delayed marriages, reduced fertility rates, and improved health and survival rates for infants and children. It also produces significant improvements in health, nutrition, and life expectancy, and countries with an educated citizenry are more likely to be democratic and politically stable (USAID, 2008). Equity strategies such as these are needed to eventually attain gender equality over the long term and must be reflected in policies and practices directed toward learners, teachers, and the community (USAID, 2008). To ensure fair chances for achievement, the length of school careers, academic qualifications and diplomas should not differ based on a person's sex. Mechanisms for evaluating individual achievement should also be free of any gender bias. Parity in enrollment and greater gender equality in schooling can, and often do, co-exist with inequalities outside of education. Gender equality is "equality between men and women and entails the concept that all human beings, both men and women, are free to develop their personal abilities and make choices without the limitations set by stereotypes, rigid gender roles and prejudices. Gender equality means that the different behaviour, aspirations and needs of women and men are considered, valued, and favoured equally (Sharma and Bala, 2015).

The gendered aspects of various school practices and routines have also been highlighted. They can also serve as role models and supports for marginalized students. This perception of gender equality began the challenge of breaking down traditional gendered binaries through legal reforms. These gave women access to male-dominated spheres of society and demonstrated that women are more than capable of performing tasks usually allotted to men. In this respect, equality exists among and within different groups so that difference creates a safe space for respect and affirmation of each other in all our differences. It requires the removal of deeply embedded obstacles and structures of power and exclusion, such as discriminatory laws, customs, practices and institutional processes, all of which undermine opportunities and outcomes (Simmonds, 2017). Gender equity becomes the interrelatedness of gender parity and gender equality as it seeks to characterize institutional and social processes that work towards parity and equality. Gender equality is achieved through the assimilation of subordinated groups (women, gay men) into the values, institutions and lifestyles of the dominant groups. Among women and men over age 25 and already in the workforce, the educational gender gap with regard to level of qualifications held is larger. Global gender gaps in primary, secondary and tertiary educational attainment stand at 11%, 17% and 14% respectively, in the age 25+ cohort. Education gains have not always translated into economic gains for women. Even though there is near gender parity in employment for professional and

technical workers, reflecting in part the equal education and skills levels among women and men with tertiary education, women hold less than a third of senior roles. Education is often considered to be one of the key institutions that should be addressed in order to promote equal opportunities and mainstream gender equality (Magi, et al, no date). On the one hand, education and schools as institutions do not operate in a vacuum and are informed by the general tendencies, values and attitudes that are prevalent in the society. At the same time, education is a powerful tool for changing the societal attitudes and empowering the next generation (Magi, et al, no date). Successful mainstreaming of gender equality, therefore, cannot be achieved without giving (future) teachers the necessary knowledge, tools and teaching methods to understand and tackle gender stereotypes and mainstream gender equality (Magi, et al, no date). At the same time, education is a powerful tool for changing the societal attitudes and empowering the next generation.

A woman's life is greatly improved when she has an education by increasing her status in society and at home and also by increasing the opportunity of financial self-sufficiency. She also suggests that to improve women's lives, it is essential to understand why this gender discrimination prevails and why it substantiates the urgent need for policy makers to take education and literacy initiatives, especially for women. It can also promote gender equality in the labor market if these two benefits of education accrue to women equally to men. Achieving gender equality in and through education requires system-wide institutional change in the way policies and plans are developed to ensure no one is left behind (Unterhalter, 2019). These processes require attention to the structures, norms and relationships that shape education disadvantage for the people in the system. Gender equality also refers to the outcome of equal rights and equal power between women and men in line with the human rights agenda, which requires transformational political commitment to bring about (Unterhalter, 2019). Gender equality means that the interests, needs and priorities of females and males are taken into consideration; as such, it has the potential to benefit everyone—women and men, girls and boys (Unterhalter, 2019). Gender inequalities in access, progression and attainment in education intersect with other inequalities that hold girls and boys back. Mainstreaming gender equality throughout an education system and tracking these changes will take significant investments of time, money, skill, research and reflection linked to evaluation. Many economic and sociological theories predict that education increases women's participation in the labor force. This prediction is premised on the notion that education favorably affects women's willingness and ability to enter the wage labor market (Benavot, 1995). Greater educational attainments among women will also lower the relative value of educational credentials attained by older men. Manufacturing firms and transnational corporations, in their constant search for cheaper, more 'stable' sources of labor, will have new justifications to replace men, especially older men,



with younger women (Benavot, 1995). Education has been given an important role in the struggle for equality between women and men as well as between different social groups. In the first nationwide Curriculum for the Comprehensive School (1962), it was assumed that boys and girls would show traditional differences with respect to behavior, interest and abilities (Benavot, 1995). Feminist researchers have pointed out the gender-blindness of traditional educational research. However, male-female relations in education are also neglected in more upto-date sociology of education (Jonsson, 1995).

In the field of education, socialist feminists have concentrated on the historical development of the provision of women's education and on its relations to women's dual situation in the family and on the labor market. The middle and working-class young women in the sample differed most visibly in their levels of post-secondary educational attainment. Good education has considerable power to increase equality between women and men. It can help tackle gender disparities in wages, poverty, reproductive autonomy and political power (Qasim and Singh, 2014). Education and training for women is one of the major goals of empowerment of women which need to be universally made applicable to all parts of the world. Education also brings a reduction in inequalities and functions as a means of improving their status within the family (Qasim and Singh, 2014). It is indispensable that education enables women not only to gain more knowledge about the world outside of her hearth and home but helps her to get status, positive self-esteem, and self-confidence, necessary courage and inner strength to face challenges in life (Qasim and Singh, 2014). Education, especially of women has a major impact on health and nutrition as an instrument of developing a sustainable strategy for population control. Education plays a catalytic role in a country's socio-economic development and is one of the principal means available for a deeper and harmonious form of human development reducing poverty, ignorance and exclusion (Qasim and Singh, 2014). Education is an end in itself as well as a means of realizing other desirable ends. In our world of unpredictable social and technological changes, education has taken on a particular significance as a means of understanding and coping with such complexities (Qasim and Singh, 2014). It plays a positive interventionist role in the empowerment of women. Through education, women are developing self-confidence, self-esteem and a sense of financial security by way of skill cultivation to be entrepreneurs. Women's instinctive approach, which encompasses humane concerns, finds its reflection in their ability to combine justice with compassion, concern with rationality. Education of women plays a crucial role in releasing their energy and creativity and enabling them to meet the complex challenges of the present world. Women's instinctive approach, which encompasses humane concerns, finds its reflection in their ability to combine justice with compassion, concern with rationality (Qasim and Singh, 2014).

## CONCLUSION

Feminism is a relatively new ideology, dating, for all practical purposes, from the late eighteenth century. Three 'waves' of feminism can be detected. The first, of about 1830–1930, was concerned chiefly with legal and political rights. The second, in the 1960s and 1970s, focused on much more fundamental, personal and relationship issues. The 'third wave' in the last decade or so has been essentially a reflection on and reappraisal of what has been achieved (Harrison and Boyd, 2018). The key target of feminism is 'patriarchy' – male domination in all its myriad forms (Harrison and Boyd, 2018). Feminism is referred to be equalizer of opportunities between men and women. It asks for equality in the workplace, school, hospital and many other places. Women different from men have different requirements for work and livelihood. They became so used to having just men around that they think one set of requirements, necessities and rules are how it's supposed to be. In India, inequality exists in almost every family, some discriminate between son and daughter while other show disparity towards their daughter-in-law (Pallavi, no date). Gender equality is regarded to be one of the core factors of any democratic society and the facilitator of economic growth and societal well-being (Magi et al, no date). Education is often considered to be one of the key institutions that should be addressed in order to promote equal opportunities and mainstream gender equality. On the one hand, education and schools as institutions do not operate in a vacuum and are informed by the general tendencies, values and attitudes that are prevalent in the society. At the same time, education is a powerful tool for changing the societal attitudes and empowering the next generation (Magi et al, no date). Women's lives cannot be seen just in terms of 'oppression', or inequalities addressed by politics. Women have new forms of power in work, politics and the media available to them to redress gender inequalities. Feminists boldly asserted that there was no such public–private distinction and that the most intimate dimensions of such relationships had profound political consequences (Harrison and Boyd, 2018). If women were to be truly equal with men then there would need to be female emancipation within both the private sphere and the public sphere (Harrison and Boyd, 2018). Women's movements therefore seek liberation from patriarchy by various means ranging from specific political campaigns, such as demand for liberal abortion laws, to 'consciousness-raising' by debate, discussion and publications, or simply 'living the future' – adopting a 'liberated' lifestyle and related values and sharing these with the 'sisterhood' (Harrison and Boyd, 2018).

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# A GRAMMAR OF MĒRANAW LANGUAGE

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Article DOI: <https://doi.org/10.36713/epra12479>

DOI No: 10.36713/epra12479

## ABSTRACT

*This paper describes the grammar of Mĕranaw (ISO 639-3: mrw). Mĕranaw, or more commonly known as Maranao, is a Philippine language prevalently spoken in almost all parts of Lanao del Sur province and in some areas in Lanao del Norte, Maguindanao, and North Cotabato. The primary goal of this study is to provide a grammar of the Mĕranaw language that entails linguistic features of the language covering its morphological features. The participants of this study were the three identified professional and native speakers living in Marawi City. The elicited materials consist of the 615-word list and 775-sentence list from UP Department of Linguistics were transcribed and analyzed using the Basic Linguistic Theory. It was found that morphologically speaking, Mĕranaw language has a rich culture of affixation as prefixes, suffixes, infixes, and circumfixes are all present to create new words. These affixations include the prefix p-, mak-, and tomi- and the suffix -an. Moreover, the infix ka- -an and circumfix p- -n, miaka- -e. This is to form another lexical category of a given Mĕranaw word that most likely entails to tells the time certain Mĕranaw verbs take place. Furthermore, this grammar sketch aims to provide a concrete reference for Mother Tongue-Based Multilingual Education (MTB-MLE) as the Mĕranaw language is one of the languages being taught. It further implies language description and documentation as the basis for language revitalization and at the same time culture preservation.*

**KEYWORDS:** applied linguistics, Maranao, Mĕranaw, language documentation, grammar sketch, Philippines

## INTRODUCTION

There are 187 distinct living languages in the Philippines, including Filipino Sign Language (FSL) which accounts for its diverse and multilingual landscape (Lewis, 2009). Governing this multilingual landscape, Mĕranaw is considered to be the largest of the Muslim cultural-linguistic groups of the Philippines with a population of more than 840,000 in the late 20th century. They are one of the 13 Muslim Filipino ethnolinguistic groups living on the Philippine island. They live around Lake Lanao on the southern island of Mindanao wherein rice farming is their main livelihood, along with metalworking and woodworking handicrafts. However, it was found that it was underdocumented in terms of its language description and language documentation.

Lobel and Riwarung (2011) stretch that Mĕranaw has one of the richest morphologies of any Philippine language (McKaughan 1971), richer even than Tagalog, Bikol, or Waray-Waray. Complex morphophonemics and recalcitrant phonology further complicate the system, hindering its proper analysis for the first 95 years of foreign inquiry into the language.

Moreover, they are known for the richness of their culture that until now is still evident and has continued to live up in the hearts of every Mĕranaw. This culture has been maintained and remained strong even to the test of time making it very much alive up to these years. Like any other cultural group, in the country, the Mĕranaw are also known for their

literary involvement, which until now some are not yet recorded and appreciated to the fullest (Ulla, 2014).

On the other hand, studies dealing with orthographies used by linguists, dictionary compilers, and Bible translators likewise failed to represent the heavy consonants, and sometimes added an extra vowel phoneme in an attempt to compensate (Lobel and Riwarung, 2011). The orthography used in this sketch was developed four decades ago by three of the most celebrated Mĕranaw writers—Aleem Abdulmajeed Ansano of Taraka (1943-2008), Senator Ahmad Domocao “Domie” Alonto of Ramain (1914- 2002), and Shaiekh Abdul Azis Guroalim Saromantang of Tugaya (1923-2003)—without any known outside help.

Notably, no primary studies of Mĕranaw phonology have previously been published. There has been extensive documentation of Mĕranaw from Elliot (1913) to McKaughan and Macaraya (1996), yet without exception, these works were based on incomplete phonological analyses which overlooked the language’s four heavy consonants, sometimes resulting in the misanalysis of the vowel system (Lobel & Riwarung 2009).

Since the Mĕranaw language has been developed to the point that it is used and sustained by institutions beyond the home and community, the primary focus of this study is to update its most salient points of grammar in terms of phonological, morphological, and syntactical features. However, this language remains to be documented as the available studies





could imply. The only dedicated phonological description is a brief, unpublished sketch by Ward probably written in the late 1960s, which is highly problematic, based on insufficient data available in analyzing the language's complicated phonology (Lobel & Riwarung, 2009).

Similarly, not much literature on the linguistic aspects of Mëranaw is available which further denote a larger pace to study. Furthermore, the results of the study can be used to promote knowledge of this Philippine language, and also offers benefits for language pedagogy as one of the languages being used in Mother Tongue-Based Multilingual Education (MTB-MLE).

### Research Questions

To realize the aims of giving a comprehensive description of the linguistic features of the Mëranaw language and to revitalize the language through documentation, this paper will seek to answer the following questions:

1. What is the language to be grammatically described? Who are the speakers and their speech community?
2. What is the morphological feature of the language as to its inflectional, derivational, and free morphemes?
3. What is the language's morphological process that includes affixation? What are the present lexical categories of the language?

## LITERATURE REVIEW

### The Mëranaw

The Philippines is a culturally diverse nation with over 7,000 islands and incorporating more than 150 languages (Reid, 2005). Filipinos are living in diaspora throughout the country. Most Filipinos identify themselves by their ethnic identity or by the language that they speak (Clariza, 2019) and Mëranaw is one of these languages.

In fact, Sohayle M. Hadji Abdul Racman's Ph.D. dissertation, *The Political Legitimacy of Lanao Sultanate in the 17th Century with Special Reference to the Political Theory of al-Mward* (2020), hypothesizes that the term Maranao originated from the combination of the phrases Mai and Ranao. The old name for Mindoro Island in the Philippines was Mai, while the Maranao word for lake is Ranao. Migrant Chinese-Arab Muslim traders from China lived in Mai. When the Mai people moved to Ranao, which is now Lake Lanao, they were known as Mairanao; as time went on, Mairanao changed its name to Maranao.

Moreover, it might be assumed that some of the Maranao people living in Lanao now are decedents of the aforementioned Muslim Chinese-Arab traders. Many Maranaos today display phenotypes that are similar to those of mixed Arab and Chinese or either Arab or Chinese individuals. Hadji Abdul Racman (2020) did not go into detail in his thesis regarding how the Arabic language and Arabs have influenced the Maranao language, although the majority of Maranaos are of Malay ethnicity.

### The Mëranaw Language

Just over a million people in the provinces of Lanao del Norte and Lanao del Sur on the southern island of Mindanao in the Republic of the Philippines speak Mranaw, the language of the ethnolinguistic group of the same name. It shares a strong relationship with the Iranun language of Sabah, as well as the Maguindanaon and Iranun languages spoken further south in Mindanao (called Ilanun in Malay). Mranaw is a member of the Danao subgroup of Greater Central Philippine languages together with Iranun and Maguindanaon (Alonto, 2009).

Additionally, Raymond G. Gordon Jr. (2205) speculates that the Mranaw language descended from the Austronesian, Malayo-Polynesian, Southern Philippines, Danao, Mranaw, and Iranon language families of his book, *Ethnologue: Languages of the World*, 15th edition. Gordon Jr. did not look into how the Maranao language had been influenced by Arabic or other languages, though. The Maranao language has some influences from Sanskrit, Arabic, English, Spanish, and regional languages, according to *The Influences of the National Question and the Revival of Tradition on Gender Issues Among Maranaos in Southern Philippines*.

### Mëranaw Spelling and Phonology

The Maranaos themselves and the different publications that have been written in the Mranaw language utilize a variety of spelling schemes. The Maranao dictionaries and literacy resources that are now available use the same spelling scheme (Alonto et al., 2009). It has 20 letters, not including those used to spell unassimilated words of English and Arabic origins (15 consonants and 5 vowels, excluding the glottal stop, which is not written) not including letters used for spelling unassimilated words of English and Arabic origin.

The vowel "e" denotes the schwa, as in English "but," "what," or "shut," and these vowels are raised after a voiced stop (b, d, g) or a semivowel. The vowels "a," "i," "o," and "u" generally correspond to their equivalents in Tagalog or Spanish (w, y). The consonants b, d, g, h, k, l, m, n, ng, p, r, s, t, w, and y all have the same values as their Tagalog equivalents.

On the other hand, the Maranao translation of the Qur'an, Maranao-language Islamic books and pamphlets, and Maranao music videos, on the other hand, utilize a somewhat distinct spelling system that is used by native Maranao sources (i.e., not of Christian or foreign origin) (Alonto, 2009). Only four vowels (a, i, o, and the schwa, spelled either as "e" or "u") are recognized, together with the previously listed 15 consonants and four aspirated consonants: "t" (spelled "th"), "k" (spelled "kh"), "p" (spelled "ph"), and "s" (spelled "z" or "sh"). As the other vowels (a high i, a high u, and a high center vowel) are allophones that exclusively follow the voiced stops, the aspirated stops, and the semivowels, it more closely resembles the actual phonological system of Maranao (Lobel, p. 288). The fact that no dictionaries, grammar, or instruction books have ever been written in this writing system makes it particularly challenging for non-native speakers to learn.



As a result, the simpler spelling system will make it easier to learn the language and use the available print resources without obstructing comprehension. The Maranao language varies extremely little from place to place, unlike its sister language Maguindanaon. Geographically speaking, the Maranao that were able to communicate by boat from wherever they were on the lake is partially a result of the terrain (Alonto et al., 2009).

### *The Mëranaw Culture and its Cultural Implications*

The Maranaos have high esteem and reverence for their things because they provide them the certainty that they are protected and that they may provide solutions to the issues they face in life, as evidenced by the findings of the study on their folk songs (Velasco, 2017). Additionally, Maranaos have more respect for people who live in higher social classes than they do for people who live in lower classes. This is clear from the presence of a unique malong species known as a landap. This is so that only Maranaos from the higher class are permitted to acquire landaps. This type of malong is shared by the sultans and datus in society, and it essentially guarantees that they will be respected by others.

On the other hand, Maranaos are renowned for their pride and rido culture (Alaya-ay et al. 2013), which relates to conflict, vengeance, and retaliatory behavior on the one extreme and self-worth, personal dignity, honor, and pride on the other. As a result, they are very sensitive individuals, especially when their "amor propio" is at risk. In relation to this attribute, inter-family conflict, or rido as it is known in the local dialect, happens whenever a family member is physically or verbally offended. The Maranaos refer to the conduct as retributive justice, however, the Philippine legal system classifies it as murder or homicide when it is committed in retaliation.

Moreover, they are also renowned for the depth of their cultural heritage which is still obvious now, and have continued to uphold the Maranao people's hearts. This tradition has persisted and has stood the test of time well, making it a very valuable asset living in these days. similar to any other ethnic or cultural. The Maranao are renowned throughout the nation for their literary involvement, of which some have not yet been recorded, and for utmost appreciation (Ulla, p.58).

Additionally, even as more modern and culturally diverse society has emerged, arranged marriages among Muslims, particularly in Mindanao, have remained one of the most preserved practices that represent the Islamic cultural norm. This is because it is a social necessity that comes about as a result of their extended family and community (Morada et. al., 2014).

Indeed, the richness of the Meranaw culture and tradition can be found in images, symbols, and practices that made them the source by which themes such as love for kin, family, marriage, good manners, social life, and other attitudes and values about life are extracted. Thus, making the Maranao culture distinctively unique.

### **Language Description**

Any language can be described efficiently by its components. It is considered that a given language, has its Phonology, Morphology, Syntax, and overlaps of these components such as Morpho-phonemics, and Morphosyntax (Yule, 2020). Semantics and Phonetics are also the other components that are included under phonology. The detailed investigation of the phonology, morphology, and syntax of any language entailed its in-depth description which is the main content of any grammar sketch.

**Morphology.** This is the analysis of word formation concerning the smallest unit of language that bears meaning or the morphemes (Dobrovolsky, O'Grady, & Katamba, 2016).

Consequently, language word development and perception are greatly influenced by morphology. Morphemes are the smallest components of words that can communicate meaning. They include roots, stems, prefixes, and suffixes significance. The ability to employ this intermediate degree of dialect is essential for expanding one's vocabulary and comprehending English-language material. The term "morphology" refers to the use of or the study of morphemes, the meaning-giving components of words. Every dialect has a different morphology, depending on the word arrangement types that are used in all dialects. In any event, there is no guarantee that a single, all-encompassing aspect of morphology applies to every dialect (Libben & Jarema, 2004).

Moreover, in English, morphemes provide the basic building blocks for morphemes' skill in creating new words contributing to some of the dialect's generative power. Many new words are immediately understandable since they are constructed from well-known morphemes. According to Kuo and Anderson (2006), phonological awareness, syntactic mindfulness, and vocabulary knowledge should all be integrated with various aspects of metalinguistic mindfulness and etymological competence. Additionally, they mentioned how morphological understanding in English becomes a more significant indicator of reading ability. Readers can participate in morphological analysis to dissect new words into their component morphemes and therefore expand their vocabulary, according to Anglin (1993).

Moreover, the primary goal of this study is to provide a grammar of the Mëranaw language into a broader scope of documentation that specifically entails its language description of the linguistic features of the language covering its morphological features.

### **RESEARCH METHODOLOGY**

This study will deal with qualitative descriptive research that looks at actual issues and offers a more in-depth understanding (Korstiens, 1995). Moreover, it mainly deals with participants' experiences, viewpoints, and actions gathered. Instead of addressing how many or how much, it addresses hows and whys. It might be set up as an independent study that just



uses qualitative data, or it might be a component of mixed-methods research that uses both qualitative and quantitative data. The reader is introduced to some fundamental terms, definitions, and applications of qualitative research in this overview.

In addition, qualitative research will utilize the direct experience of the informants in dealing with the language. In the first place, Vanderstoep & Johnston, & Creswell, 2009 stress that qualitative research is descriptive that gathers data through interviewing, making an observation, analyzing documents, and visual performing analysis. Coupled with this, it will be done through detailed collection and in-depth exploration of the documents (Polkinghorne, 2005) that are essential for types of studies that cannot be undertaken quantitatively.

In addition, data collection strategies typically involve individual and/or focus group interviews with minimal to semi-structured interview guides (Neergaard et al., 2009).

Also, Creswell (2007) emphasized that the researcher's role in qualitative research is critical, as he or she collects data and implements analysis; therefore, my specific role in this study will be that of an observer-as-participant, as I will be the primary instrument of data collection and analysis what will be collected, coded, and analyzed from interviews, participant journals, and questionnaire to uncover the emerging concepts and patterns.

As a matter of fact, greater importance to the researcher itself will be the main mechanism for obtaining knowledge in dealing with the study. As a researcher, I am confident that I am instrumental in the comprehension and learning of the complexity of the Maranao language.

### Participants/Respondents

For the inclusion criteria for the participants of the study, Emmel (2013), notes that sampling in qualitative research is less direct as it involves a sequence of decisions to be made, throughout the research journey. Having this in mind, this study will have three (3) native and educated Maranao speakers as Morse (2000) posits that the more useable data are collected from each person, the fewer participants are needed.

Moreover, the participants must be native speakers of the language and must be more than 20 years old. He/She is also educated to translate from the Maranao language to Bisaya and then to Tagalog. However, any physiological defects specifically in speech among the participants should be excluded. Participants who are non-bachelor's degree holders (did not finish college) and too old native speakers who cannot communicate anymore will not be considered.

On the other hand, participants in this study can withdraw at any time without any explanation or reason. The participants can withdraw from being one at any time of his/her own volition.

In order to choose the language consultants, principal criteria will be set up as follows; a.) The informants must be native speaker who was born and raised in Lanao del Sur Province; b.) The informants must speak Maranao as their native

tongues and also use them to communicate in their daily lives; c.) The informants must be clearly and correctly articulate; d.) The informants must be 20-60 years old; e.) The informants should have enough free time and willingness to work and coordinate long hours with the researcher.

Equally, the selection of informants includes two following steps. The first step will be when any volunteers contacted the researcher and they will be asked the following questions: a.) Are you a native speaker of Maranao?; b.) Do you have normal hearing and don't have any speech disabilities? and c.) Can you read Maranao writings?

In the same way, the volunteers who will pass all three preliminary questions will be asked to attend the second interview where they will be asked the following questions: a.) How old are you?; b.) Were you born in the province of Lanao del Sur? C.) Have you ever moved or lived at any other location? And d.) Do you understand Maranao or English?

### Instruments of the Study

If all the raised questions will be answered yes, the informants will then proceed in translating the 615-word list and 775-sentence list to delve into the linguistic features of the Maranao language. These word and sentence lists coming from UP Department of Linguistics were transcribed and analyzed using the Basic Linguistic Theory. The use of mentioned materials already had their consent and was approved to be used by the University of the Philippines.

### Procedure

Moreover, the following procedures were performed in collecting the data. Foremost, *Permission to Conduct the Study* - the researcher submitted a letter, seeking permission to conduct the study to the target participants. These letters were addressed to the informants as language consultants of the study.

**Conduct Interviews and Translation.** Upon approval, the researcher validated the interview guide questions and checklists for translation by the panel of experts. When the validity of the questions and checklists was established, it was then administered to the informants.

**Collection and Analysis of Data.** The researcher will collect the translated data which will be tabulated and analyzed. Lastly, the *Analysis and Interpretation* – a descriptive approach will be used to gather the data. The phonological analysis of this dissertation will be based on 600 item word list and 700 sentence list. The data will be prepared and used in interviewing the informants. The list will be divided into different sections based on the semantic domain. The mediating languages between the informants and the researcher were Maranao, Cebuano, and English.

Identically, the general word elicitation for both informants includes the following: a.) A list of 600 general words in English with Filipino translation and 700 sentence lists will be given to the informants; b.) Video and voice recording



will be used to record speech from the informants; c.) The word list will be read for the informants in English-Filipino translation; and d.) Informants will give the translation of each word after hearing a word read in English with Tagalog translation and it will be transcribed immediately in phonetic symbols. However, the immediately written transcription will be only for the segmental phonemes: consonants and vowels. In presenting tones of the language, the video files will be analyzed later.

**Consultation of Results with Experts.** After the collection and analysis of the data, it was then consulted with the experts to further validate the obtained data. The experts are native speakers and are well-versed in the language to further verify its results. Corrections were made after the consultation to improve this study.

Gearing on the data analysis of this study, further utilized Dixon's Basic Linguistic Theory which entails having a thorough journal for language description and analysis, as well as a brand-new and basic characterization of the nature of human language as he gives a thorough explanation of grammar that is well-articulated and coherent. He goes into great detail on each major and numerous minor grammatical structure that can be found in the languages of the globe (Genetti, 2011).

As a typologically-informed framework, BLT allows one to describe a language in own terms and "furnishes an array of grammatical categories and construction types—together with varieties of interrelations between them—from which appropriate choices are made" (Dixon, 2010).

During the data collection, the journal was used to write down preliminary analyses in recording the responses of the participants of the study. Assessment and reflection were done right after each set of interviews were conducted.

Moreover, Dixon's Basic Linguistic Theory was used as an approach that further understands the elements comprising the morphological, syntactic, and morphosyntactic analysis of the language.

### Ethical Considerations

This study is conducted with a strong adherence to the ethical protocols and guidelines set forth by the University of Mindanao Ethics committee. It was presented before a panel of experts in language studies in the Professional Schools of the University of Mindanao. After the approval of the study, the questionnaires were presented, reviewed, and validated by experts in qualitative research. Also, it merits the approval of the committee with protocol no. UMERC -2022-152. Furthermore, the researcher started to conduct her research using these instruments to gather the pertinent data for her study only after the approval of the Ethics Review Committee. The researcher secured the voluntary participation of the respondents. Before their approval, all the necessary information was laid to them followed by the signing of the informed consent form. The researcher emphasized the full protection of their anonymity and well-being. They were not

involved in risky situations that could affect their physical, psychological, or socio-economic well-being.

Moreover, the respondents understood that documenting their language would preserve their cultural and historical identity. This study can also provide teaching materials for Mother Tongue-Based Multilingual Education (MTB-MLE) as part of the K-12 Curriculum of the Department of Education.

### RESULTS

This chapter will present the results of the conducted study. This will further answer the research questions raised in the area of study. I also provided a legend of the abbreviation commonly used in the interpretation of the data particularly its codes and glosses in the appendices (please see appendix D). Using Dixon's Basic Linguistic Theory, the following are the results of the study as the main purpose of this study:

#### *The Mëranaw Language and Its People*

Our country, the Philippines is a place with an incredibly diverse linguistic landscape with over 170 spoken languages and 12 indigenous languages with at least 1 million speakers. Among these languages, the Maranao language "Meranaw" /məranaw/ in the language itself, or the orthography currently used in Department of Education MTB-MLE teaching materials is spoken by under a million native speakers Muslim population in one of the few remaining culturally homogenous areas of the large southern Philippine island of Mindanao.

Additionally, Mëranaw is the spelling recommended by the Commission on the Filipino Language the official regulating body of the Filipino language, and the official government institution tasked with developing, preserving, and promoting the various local Philippine languages.

Furthermore, Mëranaw is a Philippine language prevalently spoken by an ethnic population of 1,325,000 (2010 NSO) in four provinces in Mindanao, namely—Lanao del Norte, Lanao del Sur, Maguindanao, and North Cotabato (Eberhard, Simons, & Fennig, "Ethnologue: Languages of the World"). As previously mentioned, in terms of subgrouping, it is more genetically related to Maguindanao (ISO 639-3: mdh) and Iranun (ISO 639-3: ilp), and together, they form a legitimate subgroup called Danaw, one of the microgroups that constitute a higher-order proto-language called Greater Central Philippine (GCP) (Blust, 2013). Mëranaw and its two other sister languages, Maguindanao and Iranun, all share the same root—i.e., *danaw* or lake—which reflects these ethnolinguistic groups' being generally referred to as people of the lake.

#### **Morphological Processes in Mëranaw Language**

The morphological process is the process by which a word is adjusted to conform to a certain context. To put it simply, it is the process of changing the form and function of a word to fit a context, sometimes to the extent of changing the meaning and/or grammatical function. These processes involve production, creating or deriving, and inflecting new words.





However, the case for the Mëranaw language only constitutes to have affixation to create new words. This morphological process is described below.

### Affixation in Mëranaw Language

Affixation in Mëranaw Language merely done that consists of adding an affix (or more than one affix) to a morphological base. This can be done by adding the prefixes *p-*, *mak-*, and *tomi-* and the suffix *-an*. Moreover, the infix *ka-* *-an* and circumfix *p- -n*, *miaka-* *-e*.

Table 1. The Affixation in Mëranaw Language

PREFIX			
Word (ROOT)	Meaning	With Affix	Meaning
kan	eat	<i>p'kan</i>	to eat now
imbitiyara-e	to talk	<i>makimbitiyara-e</i>	talking
tind'g	stand	<i>tomitind'g</i>	standing
SUFFIX			
Word (ROOT)	Meaning	Affix	Meaning
pamasa	buy	<i>pamasaan</i>	planning to buy
gitagita	toy	<i>gitagitaan</i>	to play
INFIX			
Word (ROOT)	Meaning	Affix	Meaning
sadya	joyous	<i>kasadyahan</i>	enjoyment, celebration
utod	sibling	<i>kauturan</i>	siblings
tuon	learn	<i>katuludan</i>	learnings
CIRCUMFIX			
Word (ROOT)	Meaning	Affix	Meaning
kukura	grate	<i>pkukuran</i>	grater
imbitiyara	to talk	<i>miaka'imbitiyaarae</i>	have talked

The prefix, suffix, infix, and circumfix are all present affixations in the Mëranaw language. This is to form another lexical category of a given Mëranaw word that most likely entails to tells the time certain Mëranaw verbs take place.

### Lexical Category

In grammar, a lexical category can be categorized as a noun, verb, adjective, adverb, and preposition. These categories carry meaning, and often words with a similar (synonym) or opposite meaning (antonym) can be found.

Evidently, these identified categories were also found to be present in the Mëranaw language.

### Mëranaw Nouns

Nouns names things, persons, objects, and places. It denotes naming everything that surrounds us. Below are the frequent Mëranaw nouns from our elicitation materials:

The above-mentioned nouns were used in the elicitation materials and translated into the Filipino language as follows:

1. Adn a taw sa *walay*.  
May tao sa bahay.
2. Bigan ako niyan sa *margas*.  
Binigyan niya ako ng bigas.
3. Adn a *tohan*.

May Diyos.

4. Sa walay so *raga*.  
Nasa bahay ang dalaga.
5. Miyanik sa palaw so *mangoda*.  
Umakyat ng bundok ang binata.

In the Mëranaw language, specifically to nouns we have the term *walay* which means a house, *margas* for rice, *tohan* for Lord, *raga* for maiden, and *magoda* for a young man.

### Mëranaw Adjectives

Adjectives are words that describe the qualities or states of being of nouns. In the field of linguistics, it is a word that generally modifies a noun or noun phrase or describes its referent. Its semantic role is to change the information given by the noun.

1. *Mataid* so raga.  
Maganda ang dalaga.
2. *Mapasang* so raga.  
Masipag ang dalaga.
3. *Mabagr* si Juan.  
Malakas si Juan.
4. *Mapasang* e kandadak'p sa s'da a lok's oto.  
Magaling manghuli ng isda ang matandang iyon.
5. *Magaan* so palalagoy o wata.



Mabilis ang takbo ng bata.

The sentences above can be configured to have Mëranaw adjectives such as *mataid* for English gloss for beautiful, *mapasang* for responsible, *mabagr* for strong, *mapasang* for great, and *magaan* for fast.

## Mëranaw Verbs

Almost every sentence requires a verb because verbs are words that show an action, occurrence, or state of being. Verbs are inflected and occur as the grammatical center of sentences in Mëranaw with the following tenses.

Table 2. Mëranaw Verbs

Perfective	Imperfective	Contemplative
<b>Verb: tind'g (stand)</b>		
<i>Timinind'g</i> so wata. Tumayo ang bata.	<i>P'tind'g</i> so wata. Tumatayo ang bata.	<i>Tind'g</i> so wata. Tatayo ang bata.
<b>Verb: khan (eat)</b>		
<i>Komiyen</i> so wata sa mangga. Kumain ang bata ng mangga.	<i>P'khan</i> so wata sa mangga. Kumakain ang bata ng mangga.	<i>Khan</i> so wata sa mangga. Kakain ang bata ng mangga.
<b>Verb: phamola (plant)</b>		
<i>Miyamola</i> so taribasok sa banggala. Nagtanim ang magsasaka ng kamote.	<i>Dimamola</i> so taribasok sa banggala. Nagtatanim ang magsasaka ng kamote.	<i>Phamola</i> so taribasok sa banggala. Magtanim ang magsasaka ng kamote.
<b>Verb: phamasa (buy)</b>		
<i>Inipamasa</i> o wata so raga sa dolse. Ibinili ng bata ang dalaga ng kendi.	<i>Iphamasa</i> o wata so raga sa dolse. Ibinibili ng bata ang dalaga ng kendi.	<i>Iphamasa</i> o wata so raga sa dolse. Ibibili ng bata ang dalaga ng kendi.
<b>Verb: phanik (climb)</b>		
<i>Miyanik</i> sa palaw so mangoda. Umakyat ng bundok ang binata.	<i>P'phanik</i> sa palaw so mangoda. Umaakyat ng bundok ang binata.	<i>Phanik</i> sa palaw so mangoda. Aakyat ng bundok ang binata.

The results above can be configured that Mëranaw verbs in perfective cases can be formed by adding prefixes “*ini*” as *inipamasa* and infix “*imin*” as *timinind'g* and “*omiy*” as *komiyen*. The change in segmental symbols such as “*miyamola*” from *phamola* and “*miyanik*” from *phanik* can also be observed. On the other hand, in imperfective tense, the prefix “*p*” is the added feature to denote the current situation of the verbs, such as “*p'tind'g*” “*p'khan*” and “*p'phanik*”. For the contemplative tense of the verbs, the latter usually retains its form to denote that the action will be done in the future such as “*phanik*”, “*phamola*”, “*khan*”, “*tind'g*”.

## DISCUSSION

Mëranaw (ISO code mrw) is one of the Austronesian languages of the Greater Central Philippine subgroup which was primarily spoken on the southern Philippine island of Mindanao. The area that covers mainly comprises the provinces of Lanao del Sur and Lanao del Norte. Maranao people are considered to be merchants in the archipelago and they are closely related to Iranun (spoken in both Mindanao and Sabah, Malaysia) and Maguindanaon.

Moreover, dealing with its sociolinguistics and language attitudes, the Maranao language (and culture) is likely one of the least endangered in the Philippines. They are one of the few Philippine ethnolinguistic groups who in the twenty-first century faithfully maintain the use of their language and wear traditional clothing in any parts of the Philippine archipelago. One of its unwavering senses of cultural identity is based largely on the Maranaos' Islamic faith and a centuries-old history of

resistance to the historical regime from the Spanish to the American Era who attempted to take control of their homeland.

Dealing with its linguistic features, morphologically speaking, Mëranaw language has a rich culture of affixation as prefixes, suffixes, infixes, and circumfixes are all present to create new words. These affixations include the prefix *p-*, *mak-*, and *tomi-* and the suffix *-an*. Moreover, the infix *ka-* *-an* and circumfix *p- -n, miaka- -e*. This is to form another lexical category of a given Mëranaw word that most likely entails to tell the time certain Mëranaw verbs take place. Furthermore, this grammar sketch aims to provide a concrete reference for Mother Tongue-Based Multilingual Education (MTB-MLE) as the Mëranaw language is one of the languages being taught. It further implies language description and documentation as the basis for language revitalization and at the same time culture preservation.

## CONCLUSION

In order to maintain its historical perspective and sense of cultural identity especially its impact in the realm of education, this grammar sketch will aim to provide a concrete reference for Mother Tongue-Based Multilingual Education (MTB-MLE) as Mëranaw language is one of the languages being taught. It further implies language description and documentation as the basis for language revitalization and at the same time culture preservation.

Furthermore, it can cater to teachers learning the mëranaw language who certainly don't know or have less knowledge about the language. Also, this grammar sketch will



contribute to the latest and holistic language description and documentation that offers the entire parts of linguistics. With this, it will further denote to share of pieces of information in the body of linguistics in terms of language description and language preservation.

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# CRIME VICTIMIZATION OF NEUST CRIMINOLOGY STUDENTS LIVING IN BOARDING HOUSES AT SUMACAB ESTE, CABANATUAN CITY

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Article DOI: <https://doi.org/10.36713/epra12482>  
DOI No: 10.36713/epra12482

## INTRODUCTION

Being a victim of crime is a phenomenon which may not be common to everyone, but is of great probability of happening anytime in our lives. This is because no one can actually predict and control the actions of other people especially those who intend to commit them. It is therefore important, that for us not be victimized, we have to create a certain kind of security within us, that is, we police ourselves. It is not enough that we depend on our police force for our security, but more importantly, we have to be responsible enough to keep ourselves secure and not put ourselves in a compromising situation that could lead to victimization. In the Philippines, the Philippine National Police (PNP) (2006) stated that they are committed in ensuring public safety and reducing the fear and the incidence of crime in the community. However, they acknowledge that there are many things that each and every community member can do to reduce their chances of becoming a victim or prevent the incidence of crime from happening.

However, it can also be admitted that no matter how much we try to go out our way to avoid being a victim, it somehow happens and most of the time, we are caught off guard, helpless and vulnerable. It has an impact which is certain but varies depends on the extent of victimization which also entices corresponding reaction.

According to Morton & Sangrey (1986), victims will react differently depending upon the level of personal violation they experience and their state of equilibrium at the time of victimization. Victims of non-violent crimes -- such as theft -- may experience less of a personal violation than victims of violent crimes, however, that is not always the case. Homicide is the ultimate violation for a crime victim, and leaves behind the victim's survivors to experience the personal violation.

Further, Canadian Resource Centre for Victims of Crime stated that victims may be confused, fearful, frustrated and angry. They want to know why this happened, and why it happened to them. Victims often have no knowledge of who or where to turn in the aftermath of crime. They feel insecure and do not know who to trust or rely on for support, understanding, and help.

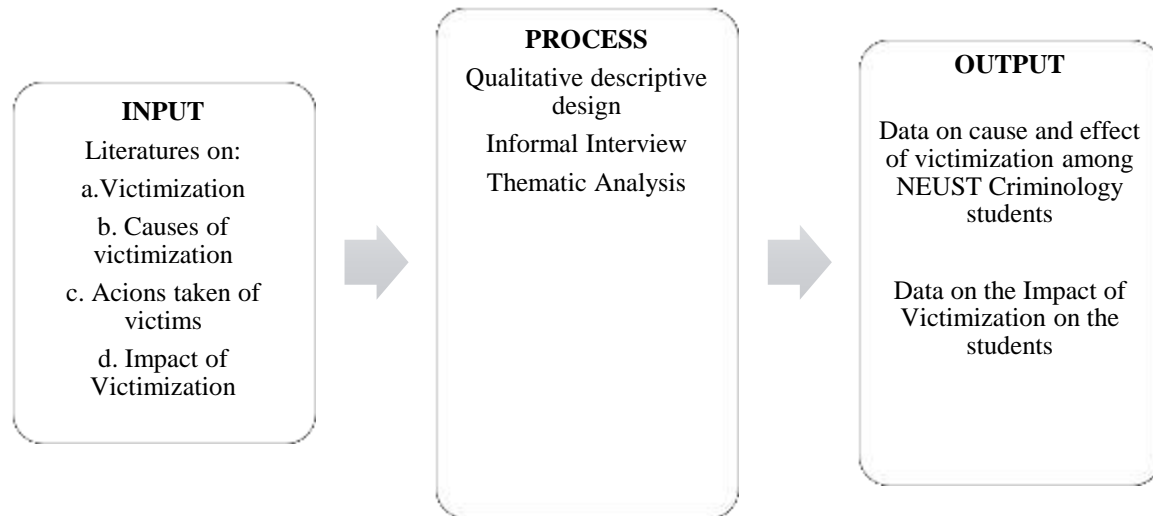
Moreover, the impact of crime is perhaps best thought of as a product of the perceived seriousness or intensity of these effects plus their duration from the victim's own standpoint. The 'impact' of a crime has a crucial bearing on the way the victim interprets and responds to it during the second phase of the victimization process, as distinct from whatever tangible or intangible 'effects' may be associated with the primary phase. Unfortunately, most researchers have tended to conflate these two terms and to treat them as interchangeable, which has added to the methodological problems mentioned above, though it might help to account for the seemingly confused nature of many of the findings (Shah, A., n.d.)

As stated in the study of Shah, A. (n.d.) victimization is a highly complex process encompassing a number of possible elements. The first element (often referred to as 'primary victimization') comprises whatever interaction may have taken place between offender and 'victim' during the commission of the offence, plus any after effects arising from this interaction or from the offence itself. The second element encompasses 'the victim's' reaction to the offence, including any change in self-perception that may result from it, plus any formal response that s/he may choose to make to it. The third element consists of any further interactions that may take place between 'the victim' and others, including the various criminal justice agencies with whom s/he may come into contact as a result of this response. Where this interaction has a further negative impact on the victim, it is often referred to as 'secondary victimization'.





## Paradigm of the Study



## THEORETICAL AND CONCEPTUAL FRAMEWORK

### The Victim Precipitation Theory

The first of these, the victim precipitation theory, views victimology from the standpoint that the victims themselves may actually initiate, either passively or actively, the criminal act that ultimately leads to injury or death. During passive precipitation, the victim unconsciously exhibits behaviors or characteristics that instigate or encourage the attack. Siegel (2006) lists job promotions, job status, successes, love interests, and the like as examples of these unconscious behaviors and characteristics.

### The Lifestyle Theory

This theory purports that individuals are targeted based on their lifestyle choices, and that these lifestyle choices expose them to criminal offenders, and situations in which crimes may be committed.

### Statement of the Problem

The objective of this Study is to present a Qualitative analysis on the crime victimization of NEUST Criminology students living in boarding houses at Sumacab Este, Cabanatuan City. It specifically answers the following problems:

1. What type of victimization was commonly experienced by the respondents?
2. What were the cause/s of victimization?
3. What was the initial reaction of the respondent after the incident?
4. What is the impact of the victimization towards the victim?

## METHODOLOGY

### Research Method

Researcher used Qualitative Descriptive research method. It is used in order to discover and identify who, what, and where of experiences and gaining insights into the informant phenomenon is. The researcher used purposive sampling in identifying the respondents.

### Locale of the Study

This study will be conducted at Sumacab Este, Cabanatuan City and Nueva Ecija University of Science and Technology (NEUST)-Sumacab Campus.

### Data Gathering Tool

The researcher will make use of a self-made interview guide as the main data gathering tool.

The questionnaire will be used to gather basic information regarding the experiences and recollections of the NEUST Criminology students who were victims of crime during their stay in their boarding houses at Sumacab Este, Cabanatuan City.

### Data Gathering Procedure

A letter of request approved by the University Research Director and VP for Research, Extension and Training. Afterwards, the date, time, and place was set for the one-on-one interviews among the key informants. Mobile phone was used as recorder during the conversation with all the key informants. Also, the criminologist-researchers made use of their criminological and behavioral learnings to observe the key informants before and during the conduct of the interviews.



## Treatment of Data

Transcription will be accomplished after the researcher interviewed the participants. The interview will be conducted using an audio recording device and note taking while also maintaining the anonymity of the participants. After transcription, responses will be analyzed using thematic analysis. The researcher will conduct the first-round pass, then organize the codes into sub-code categories and then turn the codes and categories into the final narrative. After all, themes will be generated and finalized. The researcher will include an initial write-up from the supporting statements from other published research and observation from the researcher.

## Ethical Consideration

In this study, the researcher ensured the quality and integrity of the research administering an informed consent and assent which will be filled out prior to interview by volunteer key informants. The researchers will set an appointment with the key informants based on their convenient time. The researcher made sure that the questionnaires were showed to the informants to ascertain its acceptability. After the key informants agreed to be part of the study, the researcher will make them sign the interview consent. Rest assured that all data that was gathered were treated with utmost confidentiality and will be used for research purposes only.

## RESULTS AND FINDINGS

### 1. TYPE OF VICTIMIZATION USUALLY EXPERIENCED BY THE RESPONDENTS

#### 1.1 THEFT/STEALING

Based on the result of the study through the responses of the respondents, it was found out that the most common type of victimization that they had experienced is theft or stealing. When asked what type of crime was committed against them, the following were the responses:

R1: "Theft"

R2: "*Nanakawan po ako sa boarding pero dikopo nasaksihan*" (something was stolen from me but I wasn't able to witness how it happened).

R3: "*pag nanakaw ng mga gamit na nakasampay katulad ng mga damit at uniform*" (Stealing of hanged laundry like clothes and uniform)

R4: "*Ang nangyare po na krimen sa akin habang nasa boarding house po ako ay ninakawan po ako ng cellphone sa aming harapan ng room*" (A crime that was committed to me while I was in our boarding house is that my cellphone was stolen in front of our room).

Theft as a crime is generally common not only in boarding houses but in all crime statistics all over the world. In an article on What are the Most Common Crimes in the United States as published by CiminalJusticeDegreeHub.com, statistics obtained from the FBI, shows that a property crime was reported about every three seconds in the U.S., and a violent crime was reported about every 22 seconds. Those are sobering statistics. Contrary to what most people think, property crimes are by far

the most reported crimes in the United States, and Larceny / Theft hits the top of the crime list, far outweighing any other crime

In the Philippines, Region 5 Regional Police Office Crime Statistics Analysis for C.Y. 2019 shows that 43.42% of the Total Index Crimes are Crimes against Persons and 56.58% are Crimes Against Property and theft has the highest percentage of incidence.

People tend to commit theft for so many diverse reasons. Others do so maybe because it is very simple and easy to commit. It doesn't need too much of planning or organization. Sometimes, all the person need is an opportunity. Other may even commit it just for the thrill of doing it. According to Dr. Peter B. Wood et al. ("Motivations For Violent Crime Among Incarcerated Adults"), for some who engage in any criminal activity, whether it be property or violent crime, they do so because they get a rush or a thrill out of engaging in risky behavior (i.e. the risk of getting caught).

Some people do so because they need it. They have no other means to acquire what they want or what they need so they resort to stealing. This can be supported by the idea of conflict theory which holds that crime results from the conflicts in society among the different social classes, and that laws actually arise from necessity as a result of conflict, rather than a general consensus. The fundamental causes of crime are the social and economic forces operating within society.

## CAUSES OF VICTIMIZATION

### 1.2 CARELESSNESS/UNORGANIZED

When respondents were asked what could be the reason why they were victimized, they have these to say:

R1: "*Masyadong burara sa gamit*" ( very unorganized when it comes to my things).

R2: "*Wala naman po akong alam na rason kung bakit ako naging biktima siguro po burara pero nakatago naman po sa ilalim ng kama yon*" (I cannot find a reason why is was victimized, maybe because I was unorganized, however, I was sure left it hidden under my bed)

R4: "*Naging biktima po ako dahil sa aking kapabayaang subalit Hindi kopo inaasahan na ganun Lang kabilis mawawala Ang aking cellphone*" (I became a victim because of my carelessness but I didn't expect that my phone will get lost in an instant).

Undeniably, being unorganized and/or careless can be another factor of victimization. When people fail to secure their belongings and forget to put them in a place where it should be kept safe, could result to such loss. In as much as we do not want to resort to victim-blaming, but we can safely say that due to one's carelessness or unorganized ways, it creates an opportunity for criminals to commit their acts. When we leave our belongings unattended, this is the opportunity that one motivated offender needs to easily perpetuate their crimes. And if we do not change these ways of ours, we will remain to be a



suitable target for any criminals who are just waiting around the bend waiting for opportunity.

This was explained by the Routine Activities Theory by Cohen and Felson (1979) which posits that the convergence in time and space of a motivated offender, a suitable target, and the absence of a capable guardian provide an opportunity for crimes to occur. It does not attempt to explain participation in crime but instead focuses on how opportunities for crimes are related to the nature of patterns of routine social interaction, including one's work, family, and leisure activities.

### 1.3 LACK OF SECURITY

R3: "Sa aking tingin ay dahil bukas lamang ang aming gate pataas at walang ilaw sa tapat ng aming tinutuluyan maging ang mga tao ay kokonti lamang ang dumadaan at ilan lang kami nakatita dito" (I think it is because our gate is open going up and there is no light in front of the room where we are staying. There are also few people who are walking there and staying here).

The lack of security installed in boarding houses can be a very significant reason why they are being targeted because thieves are well aware that the security of boarding houses are not that strict. Some owners of boarding houses usually fail to install needed security equipment and that has become a common knowledge among criminals that is why they are most likely to target boarding houses.

Further, boarding houses tend to be very accommodating of different group of individuals and with the number of boarders renting per building, it easily creates security breach. People going in and out of the building is not strictly being monitored since visitors are usually allowed to enter. In an article of Sunstar Philippines, it stated that boarding house is the most accessible place for young people to meet. There's no checking of ID's at the gates or doors. No frisking. The security personnel are out of the house or watching TV at the adjacent house. They will speak to the boarders only when it's time to collect rent. Curfew applies only to some. Strangers are not welcome only to few (Fernando, 2018).

Another study conducted in Davao City wherein an observable statistics of university students from neighboring provinces and the city's outskirts live in temporary residences. However, reports reveal that these housing facilities, most of the time, fail to consider students safety and welfare (Brilliantes, R. et. Al, 2012).

Thus, with the issue on the lack of security in boarding houses, we can say that these students are being victimized because they are in "bad areas" as the deviance theory mentioned earlier explained that greater exposure to dangerous places makes an individual more likely to become the victim of a crime (Seigel, 2006).

## 2. INITIAL REACTION OF RESPONDENTS UPON VICTIMIZATION

After an incident took place, every person has their own way of responding to a certain incident. Basically, we cannot teach one how to react, but we could only hope for the best that one should respond in the most logical manner to avoid further damage. When asked on what was their initial reaction after they found out about the incident, the respondents had these to say:

### 2.1 REPORT TO AUTHORITIES

R1: "Pumunta po sa brgy. Hall nang sumacab kasama ang landlady nang boarding house namin para ipa-blotter ang insidente sapagkat nandon po ang ilan sa aking mahalagang gamit tulad nang ID" (I went to the Barangay hall of Sumacab Este along with the landlady of the boarding house where I am staying to report the incident (Blotter) because some important belongings of mine is inside that bag like my ID).

This is indeed one of the most logical moves. Reporting the incident to the nearest authorities especially if we wanted to report that something important is missing. A missing ID is a big deal, and reporting it could save someone from further issues when such is used in committing illegal acts. Also, reporting such incident may be helpful for possible recovery of stolen items.

In an article entitled After the Worst Has Happened: The actions taken when a theft is discovered can help aid in a successful cargo recovery (Gruke, 2014), stated that when the theft is first discovered, what Marino calls the "a-ha moment" there is one step that needs to be taken right away: calling 9-1-1. Using the emergency number as soon as possible gets the ball rolling on the investigation immediately. Waiting to call the police, or calling them after calling head office, puts an unnecessary impediment in the recovery efforts.

Moreover, reporting crime is necessary because it can help not only the victim but the community in general. Merely reporting a certain incident can alert not only the authorities but also the people within the area to be more careful and to be on guard.

Australian Police (2020) made an appeal stating that when reporting a crime people should do it straight away, to give the police at least a fighting chance to apprehend the offender (s).

### 2.2 SEARCH FOR LOSS BELONGINGS

R2: "Hinalukay kopo yung Wallet na malaki baka tumaob o nabuksan lang yung wallet pero wala padin po akong Makita" (I searched my wallet hoping that my jewelry just fell off but still, I can't see it).

R4: "Ang ginawa kolang po ay nakitawag ako SA kaibigan para ma trace Yung cp ko pero wala po hindi kona po nahanap maaaring pinatay na niya po ang cp ko kaya hindi Kona matawagan. Nung matapos po Ang pagkawala



ng cp ko ako po ay nalungkot dahil andun po Yung mga files ko na need sa pag aaral” (what I did is I called my phone using my friend’s phone hoping that we can trace it but I can no longer find it, I think they turned off my phone already that’s why we can no longer call it. After my phone got lost, I became sad because I have files on my phone which I need in my studies).

From the moment that one learned that something is missing from their belongings, initial reaction actually is to look for it. And while looking for it, a lot of thoughts will be going through one’s mind. Whether they may have misplaced it and forgot where they have placed it. And while they’re at that, as the search continues without success, it slowly sinks in. Eventually, one will reach the realization that they indeed lost it somewhere, or someone took it.

Mc Entire (2020) in her article wrote that it is easy to panic if you’ve lost something (or worse, it’s stolen from you). The good news is it’s possible to recover stolen items. You just need to know how to start searching. Just like when your phone is missing, you might feel lost too.

Clearly, searching for lost item is the first step before actually getting the police involved. This is to make sure that it is indeed stolen and not just misplaced or lost.

## 2.3 OVERTHINKING

R3: “Ako ay nag oobserba at nag iisip kung sino ang maaring gumawa ng krimen” (I end up observing and thinking who could be the one who is committing these crimes).

On the other hand, other people respond to such incident in a different way. Others don’t intend to report or deliberately look for whatever was stolen from them, but they work their minds out. Overthinking on the possibilities on who, how and why such thing was committed against them.

However, on a more serious note, one article stated that following the initial shock of being victimized, the psychological impact may cause a victim to go through a period of disorganized activity. They may have distressing thoughts about the event, trouble sleeping. They may use substance abuse as a coping mechanism and withdraw socially. They may suffer from post-traumatic stress disorder (PTSD) (Victimization Consequences: Emotional, Psychological & Social, 2018).

## 3. IMPACT OF VICTIMIZATION

The trauma of victimization can have a profound and devastating impact on crime victims and their loved ones. It can alter the victim’s view of the world as a just place and leave victims with new and difficult feelings and reactions that they may not understand. It is important for victim assistance professionals to understand the different ways that crime can affect victims—psychologically, financially, physically and spiritually. Any discussion of the impact of crime on victims is necessarily general in scope (Wasserman and Ellis, 2010).

## 3.1 BECAME SECURITY CONSCIOUS

R1: “Natuto po akong maging masinop sa lahat nang bagay” (I learned to better organize and secure all of my things).

R1: “Palagian na po akong nagchecheck nang mga gamit ko at nilalagay na sa locker para maiwasan maulit ang insidente (I always check all my belongings and put them inside my locker to avoid the incident from happening again).

R2: “Naging masinop po ako at hindi na burara” (I learned to be more secured and organized).

R3: “Naging mas maingat at natakot ako na baka hnd lang yon ang gawin sa akin dahil alam na nya pumasok sa aming tinitirhan” (I became more careful and fearful that they may do other things because they already know how to enter our place).

R3: “Ginagawan ko ng harang ang papasok at binibisita tuwing may naririnig akong ingay sa taas” (I make sure that I put a barricade for incoming visitors everytime I hear some noise from upstairs).

R4: “Ang naging action po na ginawa ko ay nag ingat na po ako SA aking mga gamit at Hindi Napo ako kagad kagad nagtiwala sa mga nakakasama ko” (what I did is I became more careful when it comes to my belongings and I no longer trust the people around me too easily).

Being a victim of a crime, almost always leave a person with the realization that somehow, they may have contributed to their victimization, like being careless for instance. With this realization, one will learn their lesson and eventually settle to change their ways so as to prevent further or future victimization.

Guilt or self-blame is common. Many victims believe they were “in the wrong place at the wrong time.” If the victim does not have someone to blame, they will often blame themselves. Guilt is also common when no offender is found. Later on, when reflecting upon the crime, victims might feel guilty for not doing more to prevent what happened (Canadian Resource Centre for Victims of Crime, 2005).

Being security conscious if one had been careless, could be an example. Changing their careless ways and adopting a more security conscious lifestyle can go a long way in protecting oneself and eliminating opportunities for criminals to perpetuate their criminal ways.

On a study conducted by Fuller, G. (2015) one psychological impact of victimization is hypervigilance. Hypervigilance is a condition where the individual remains in a consistently aroused state in response to real or perceived threats. For one victim who was attacked in his home by a gang, the fear of being attacked again was paramount. His primary hypervigilant behaviors included becoming hyperaware and constantly scanning for the offenders when out in public(PA1194).





### 3.2 BECAME NERVOUS/FEARFUL

R2: “Kinabahan lang po ako kase magagalet mama ko. Wala naman pong masamang naging epekto” (I just got nervous because my mother will get mad. No bad effect at all)

R3: “Naging mas maingat at natakot ako na baka hnd lang yon ang gawin sa akin dahil alam na nya pumasok sa aming tinitirhan” (I became more careful and fearful that they may do other things because they already know how to enter our place).

On the other hand, one respondent admitted that there is really no bad effect on her at all except that she is afraid that she may get scolded by her mother. According to Morton & Sangrey (1986), victims will react differently depending upon the level of personal violation they experience and their state of equilibrium at the time of victimization.

To feel terror or fear following a crime that involved a threat to one's safety or life, or to someone else a victim cares about. It can last for quite some time following the commission of a crime and under certain circumstances, it can become debilitating. Fear or terror that becomes overwhelming is unhealthy and victims should consult their family physician about it as soon as possible (Canadian Resource Centre for Victims of Crime, 2005).

### 3.3 BECAME SAD

R4: “Ang naging epekto po sa akin ng pangyayari nayun ay nalungkot po ako dahil nawalan po ako ng cp at andun din po lahat ng mga files na need ko sa ibat ibang subject (the effect of the incident is that I felt sad because I lost my phone and that all my files which I need for my different subject are there).

For some reasons, being sad is one normal reaction after one experienced an untoward incident. In most instances when we lose something that is very important to us and we become aware that we have no means of getting it back, we become sad. It usually occurs to a person after fear. Being sad can be considered as another psychological and or emotional impact, although in this particular case, it is not as serious as having trauma or post-traumatic disorder. However, the idea of being impacted psychologically and emotionally is not something that can be disregarded because if not addressed properly, it definitely can accelerate to a more serious disorder.

Dinisman, T and Moroz, A (2017) in their book Understanding Victims of Crime exemplified this when they stated that a mere handbag snatching can produce not only financial but also emotional, long-term effect on victims.

### 3.2 DEVELOPED TRUST ISSUES

R4: “Ang naging action po na ginawa ko ay nag ingat na po ako sa aking mga gamit at Hindi Napo ako kagad kagad nagtiwala sa mga nakakasama ko” (what I did is I became more careful when it comes to my belongings and I no longer trust the people around me too easily).

Finally, it can also be believed that when a person becomes a victim of a crime, they have the tendency to develop

trust issues towards other people. Part of them, being security conscious may tend to lean on having a very suspicious behavior towards others. Somehow, there is a thin line between being secured and being too suspicious. This can lead to anti-social behavior if it becomes persistent to a certain degree that the person can no longer maintain a healthy relationship with others because they choose not to trust anyone instead.

In addition, social withdrawal is another common behavioral change. Criminal victimization may cause individuals to have feelings of shame, guilt and self-hate (Barton & Bartol, 2011). Moreover, the victims develop mistrust against the society and even friends and family. This is very common among victims of rape and violent robbery (Roy et al., 2014). This will eventually lead to social withdrawal, where victims prefer to lock themselves in solace and stay away from the rest of the society.

### CONCLUSIONS

1. Theft is basically a common crime being perpetrated among boarding houses because of lack of security.
2. Security consciousness, is not among the priority of most students, despite them being Criminology students.
3. Crime victimization impact on NESUT Criminology students were not too serious, but raised self-awareness on security consciousness.

### RECOMMENDATIONS

1. There should be a review on the implementation of boarding house owners on the security guidelines prescribed by the City government to monitor and determine those who are not compliant and demand them to comply immediately or if not give sanctions as prescribed by the ordinance.
2. Continuous reminder among students regarding their role on their victimization, such as to consider everyday precautions and security measures whenever they are in their boarding houses.
3. Result of the study can be furnished to the barangay for them to enhance their in-policing efforts in order to maintain the safety and security, not only of the students but of all residents within the said barangay.
4. Periodic monitoring and counselling of students impacted by victimization should be enhanced through the College's Guidance counsellor to prevent issues which may be present from escalating into a more serious problem for the student.

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# FACTORS INFLUENCING CUSTOMER SATISFACTION OF BANGLADESHI LEATHER PRODUCTS MANUFACTURING INDUSTRY

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Article DOI: <https://doi.org/10.36713/epra12486>

DOI No: 10.36713/epra12486

## ABSTRACT

*This research has been undertaken to find if product, service and information qualities influence customers' satisfaction with Bangladeshi leather products in Bangladesh. Bangladesh's leather product industries are the second largest contributor to the national GDP. The country itself has a large consumer. Customer satisfaction has increasingly become in concern of the business conglomerates in Bangladesh. Previous research has empirical evidence that product, service and information quality influence customer satisfaction. This research is a benchmark to understand how these factors together impact customer satisfaction. Research shows that all these exogenous latent constructs have a significant positive impact on customer satisfaction. The article theoretically contributes to the existing literature by testing a hypothetic deductive model among 384 customers in Dhaka City. Variance-based statistical tools (particle least squared equation model) were used to test the hypotheses. The result of the study arises a convincing case for the entrepreneurs of Bangladeshi leather products manufacturing industries regarding taking due attention to improving the product, service and information quality.*

**KEYWORDS:** Customer satisfaction, Leather industries, Product quality, Information quality, Service quality, Bangladesh.

## INTRODUCTION

The extensive application of commercial digital technologies in today's information age has displaced the old method of public contact. Entrepreneurs are expanding their reach; there is a greater need for increased operational efficiency, product quality, and service quality (Uddin and Cheng, 2014). The proliferation in technology usage is observed in organisations; while entrepreneurs face a tremendous challenge while providing the best service with good quality product/s and keeping the consumer informed. The significance of customer satisfaction is recognised in a commercial enterprise (Raja Irfan *et al.*, 2014). Customers are sources of revenue that make steady companies. Companies which know how to keep their customers happy can experience excellent financial stability; Customer satisfaction is an essential component of future business. Satisfaction is a satisfactory explanation. It is a judgment about the nature and quality of the product itself that provides a pleasurable experience that contributes to overall fulfilment. Regular research on consumer satisfaction helps business organisations change their business strategy (Uddin and Cheng, 2014).

Customer satisfaction is usually associated with the product quality and service quality provided by the entrepreneurs and if the consumers are informed about the product. These factors together can represent consumer satisfaction. The business owner utilises various strategies to survive keeping the customers satisfied (Tuan and Rajagopal, 2018). A key strategy to building a prosperous economy is to

satisfy customers which ensures long-term growth. Businesses nowadays recognize the value of customer retention and work to understand how a "black box" of consumers influences brand choice (Hanif, Hafeez and Riaz, 2010).

Research on consumer satisfaction is a continuous process and never-ending primarily when multi-national and multi-dimensional companies operate in the same market. An experimental study is necessary to understand the factors affecting user satisfaction with any organisation's consumer products and services.

## OBJECTIVES

The core concept of this research is to identify the factors influencing customers' satisfaction with Bangladeshi Leather Products Industries keeping in mind the following objectives:

- To evaluate the influence of product quality on customer satisfaction with Bangladeshi leather products.
- To determine if service quality influences the customer satisfaction of Bangladeshi leather product consumers.
- To find out how information quality influences the customer satisfaction of Bangladeshi leather product consumers.

## LITERATURE REVIEW

Today's consumer product manufacturing industries are faced with multi-dimensional challenges. The



manufacturers need to emphasise more on the department's ability to support the product. Evaluate suppliers' ability to meet deadlines and process efficiencies. Suppliers' service is provided to their customers. Complaint management system, weight, durability, price and performance of the product as well keeping the product within the budget. The supplier's mannerisms and interactions with the customers also play a vital role (Raja Irfan *et al.*, 2014).

It is improbable that the manufacturer would be able to provide all the necessary features demanded by their customers. It is good and bad products and services, such as those that delight customers or ones that irritate them. The final opinion is the result of a lot of customer feedback over time. The greater the good aspects, the more a customer is satisfied with the purchase. The service provider's intended outcome should always be to enhance the positive feelings of all its customers to increase customer satisfaction. Leather goods manufacturers should provide a means of augmenting its positive aspects by evaluating customer information using experimental research. Bangladeshi leather wears manufacturers often open outlets for reaching the desired customers. The service of these outlets is important for maximizing revenue. Therefore, it is essential to focus on customers' requirements and their financial capability (Tojib, Sugianto and Sendjaya, 2008).

Service quality generally focuses on what customers expect regarding performance, and how well they meet these expectations. A business with high service quality can adapt to changing customer demands while at the same time maintaining quality. Service quality, customer satisfaction, and a firm's business strategy should be priorities for its overall strategy. In addition to measuring and reviewing customer-related strategies, regular monitoring and evaluation of customer needs can help managers implement the products/services that customers value the most, while also retaining existing customers. Second, managers should view their organisation as a complex system comprised of many components and, more importantly, managers should put their efforts into bringing all these different components together to serve a common objective (Islam, Juhi and Raju, 2020). The significant contribution of previous research in customer satisfaction-related study is to test various constructs in relationship marketing literature such as service quality, customer satisfaction, and customer loyalty to test their interrelationships in a different context. Satisfaction is determined by how much a customer likes the product of the manufacturer. Therefore, a hypothesis can be developed that customer satisfaction is significantly influenced by the service

quality provided by the manufacturer or the distributor/supplier ( $H_1$ ).

Product quality involves incorporating attributes committed to meeting needs (wants) and providing customers with loyalty by improving goods and services (products) and making them free from any defects or abnormalities. A pictorial view of the attributes of product quality can be seen in Figure 1. Most businesses will not succeed if they cannot build confidence with prospective customers; countless opportunities are lost when manufacturers fail to meet customer choice and demand. However, by having the confidence and loyalty of consumers, the business has the freedom to raise prices without losing the same level of consumer loyalty. Maintaining and delivering high-quality products and services is an effective way to encourage consumers to appreciate and build trust in the products they purchase. Kaniganat and Chaipooipirutana (2014) have concluded that customer satisfaction is directly influenced by product quality while indirectly through the perception of price fairness.

They are generally able to offer the lowest service cost and can be used to offer premium services. They act as brand ambassadors for the supplier, encouraging others to purchase the product. Hence the Bangladeshi leather goods industries need to ensure good quality products in the market and nurture their customers to create a strong bonding with them in the short-run and then focus on higher profits in the long run over the whole life cycle of customers. Therefore, it can be hypothesised that product quality significantly affects consumer satisfaction ( $H_2$ ).

Information quality refers to the value of the information and the usefulness or utility of the given information. Good information is that which is applied and adapted to solve problems. Recent studies show that useful information contains numerous qualities and characteristics. Useful information is relevant to the problem and sufficiently accurate for its purpose, complete in terms of substance, reliable and targeted to the right audience (DeLone and McLean, 2003). Business profit depends on selling products. Unlike other factors, information quality also matters most when today's consumer has easy access to the information system. It is the supplier or manufacturer's prime responsibility to provide timely and necessary information to the consumers. One best way to keep customers informed is through mass media advertisements and online platforms (Alshikhi and Abdullah, 2018).



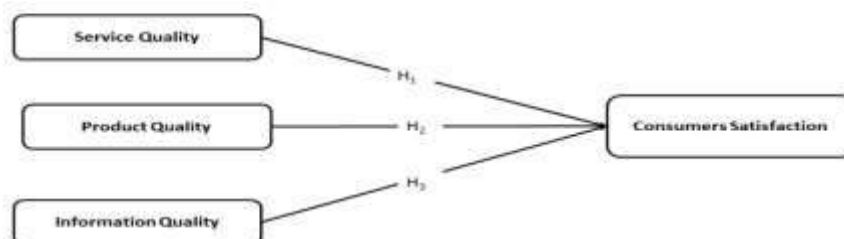
Figure 1: Various attributes of product quality, adapted from Caramela (2020)



Information quality can be ensured in terms of accuracy, timeliness, completeness, relevance, and consistency. The more quickly and precisely, entrepreneurs can provide the consumer's information, the best marketing they can achieve. Easy access to information technology, such as the internet, makes consumers' lives more comfortable to find the right quality products from the market. Even a consumer who

wishes to purchase spices from the local market nowadays googles search to find the best quality products. Therefore, it can be hypothesised that entrepreneurs' ability to produce information quality might significantly influence customer satisfaction ( $H_3$ ). A pictorial view of the conceptual framework is shown in Figure 2.

Figure 2: Hypothesised relationship of latent constructs



## METHODOLOGY

This research aims to study the influence of service, product, and information quality on leather products customer satisfaction. The retrospective-perspective study is based on a hypothetic deductive model. A survey questionnaire was developed to get a response from the target population. This research is confined to the leather goods products such as shoes, bags, belts, ladies' and gents' wear and other leather show pieces usually sold in the local market.

Apart from the demographic variable such as age, gender, marital status, and average monthly purchase, the researchers used four sub-scale to measure the latent constructs. The subscales are adapted from existing literature. For example, the researcher has adapted the scale developed by Kaniganat and Chaipoopirutana (2014) for measuring the endogenous latent construct "Customer Satisfaction". The Sub-scale to measure the exogenous latent construct "service quality" was adapted from Masukujjaman (2010). The items to measure product quality variable was adapted from Li (2013). The information quality sub-scale was adapted from



DeLone and McLean's "information Service" success model (2003). Since the researcher adapted the sub-scales from existing literature which was conducted in the developed nation, a pilot study was necessary to find out the validity and reliability (Kumar, 2011). The researcher conducted a pilot study with 65 respondents.

The targeted populations are 18 to 70 years old customers in and around Dhaka city. The researcher has collected data from 384 samples (the number of populations is unknown). The unit of analysis is individual customers who have consumer products on their shopping lists. The researcher used a purposive sampling technique for selecting the samples (Sikder, 2019).

## RESULT AND DISCUSSION

The pilot study achieved .835 Cronbach Alpha with 42 items in 4 variables; however, expert opinion was taken from marketing research experts who have suggested reducing items. The researcher conducted a confirmatory factor (CFA) analysis and kept 28 items beside four demographic variables. The final study was conducted from July 2020 to November 2020. The research has confirmed the data purification before

statistical analysis. Mahalanabis Distance test ( $D^2$ ) was used to find out potential outliers. The  $D^2$  value was (40.3397) below the critical value considering the degree of freedom (28) and  $P < .05$ . The result indicates that the data set is free from outliers. However, the data set failed to achieve a normal distribution.

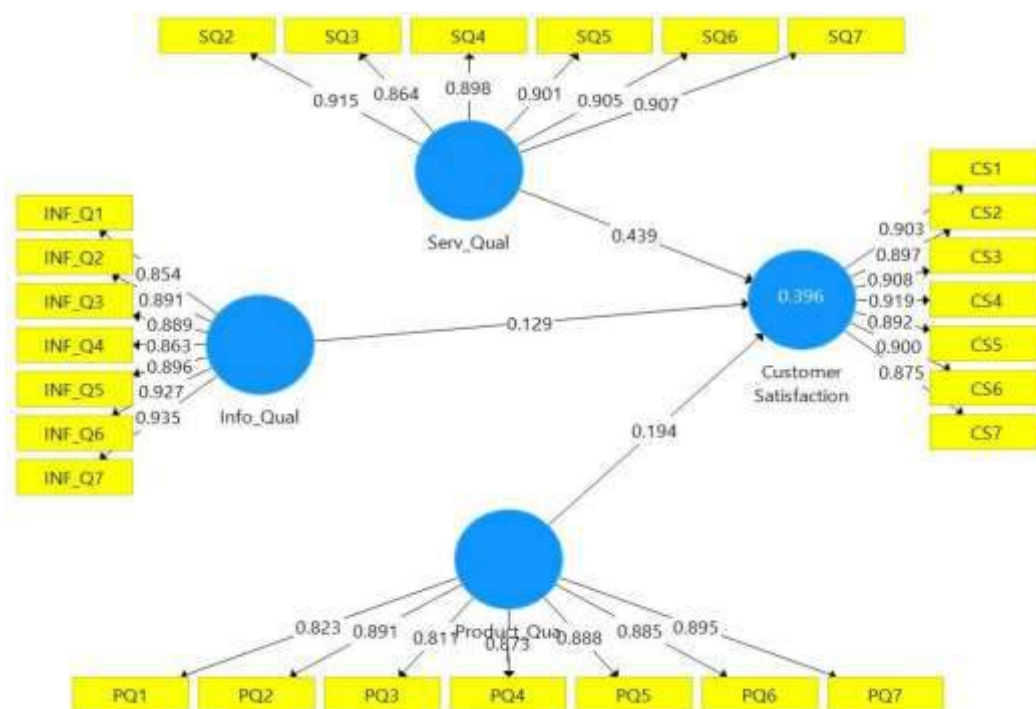
Harman's single-factor test was performed with confirmatory factor analysis on all 28 items that measure the entire constructs as an un-rotated principal factor to determine the number of factors that accounted for the constructs' variance. A single factor explained 33.18% total variance, which is well below 50%. Thus, CMB was not a potential threat to the data set (Lindell and Whitney, 2001; Reio, 2010; Henseler *et al.*, 2014; Vishwanath, 2017).

Regarding the multicollinearity, both inner and outer model variance Inflation Factors (VIF) was below five indicating the data set is free from collinearity issue. Construct validity and reliability were achieved through composite reliability and Average Variance Extracted (AVE) as seen in Table 1. The items' outer loadings were also above 0.708 (except one item in service quality which loaded with 0.532 and was deleted from the data set), measurement of the reliability of the data set can be seen in Figure 3.

Table 1: Construct validity and reliability result (SmartPLS algorithm report)

Latent Constructs	Cronbach's Alpha	rho_A	Composite Reliability	AVE
Customer Satisfaction	0.961	0.963	0.967	0.809
Info_Qual	0.958	0.961	0.965	0.799
Product_Qual	0.945	0.954	0.955	0.752
Serv_Qual	0.952	0.953	0.962	0.807

Figure 3: Showing indicators' outer loadings.



Source: PLS Algorithm report



**Table 2: Respondents' profile (n-384)**

Variables	Codes	Frequency	Per cent
<b>Gender</b>	Male	288	75.0
	Female	96	25.0
<b>Age</b>	Below 30 yrs	92	24.0
	30 to 40 yrs	119	31.0
	41 to 50 yrs	96	25.0
	Above 51 yrs	77	20.1
<b>Marital Status</b>	Married	345	89.8
	Unmarried	24	6.3
	Divorced	13	3.4
	Missing Value	2	.5
<b>Average Shopping Expenditure Per Month</b>	Below 5000 taka per month	237	15.6
	5000 to 10000 taka	102	40.1
	Above 10000 taka	45	44.3
<b>Purchase Frequency</b>	Regular	115	29.9
	Once a month	175	45.6
	Some time	94	24.5
<b>Knowledge about Products</b>	Yes	179	46.6
	No	204	53.1
	Missing Value	1	.3

As shown in Table 2, 75% of respondents are male, while 25% are female, indicating that male consumers often purchase leather goods. An average consumer spent less than 2500.00 taka per month. 45.9% of respondents purchase leather products once every three months. 53.1 % of respondents opined that they do not have any pre-idea or knowledge about good quality leather products.

## HYPOTHESES TESTING

The study sought to determine the relationship between "service quality," "product quality," "information quality" and consumer satisfaction when purchasing leather products.  $H_1$  was a premise in the prediction that service quality might influence consumer satisfaction. The path relationship is significant at 1 per cent ( $t=7.527$ ;  $p$ -value is 0.000). This statistical analysis rejects the null hypothesis (referring to Table 3). Service quality construct has a positive effect on customer satisfaction. The study rejects the null hypothesis while the alternative hypothesis is **supported**.

**Table 3: Bootstrapping result (5000 sub-sample)**

Path Relationship	Hypothesis	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
Serv_Qual -> Customer Satisfaction	$H_1$	0.439	0.441	0.058	7.527	0.000
Product_Qual -> Customer Satisfaction	$H_2$	0.194	0.193	0.060	3.225	0.001
Info_Qual -> Customer Satisfaction	$H_3$	0.129	0.130	0.049	2.620	0.009

The path relationship between product quality and customer satisfaction is significant at 1 per cent ( $t=3.225$ ;  $p$ -value is 0.001). This statistical analysis rejects the null hypothesis (referring to Table 3). The study found a positive effect of product quality on customer satisfaction confirming that the alternative hypothesis ( $H_2$ ) is **supported**.

Information quality constructs might have a significant impact on customer satisfaction ( $H_3$ ). The path relationship is significant at 1 per cent ( $t=2.620$ ;  $p$ -value is 0.009). This statistical analysis rejects the null hypothesis. There is a positive effect of service quality on customer satisfaction (referring to Table 3). Therefore, the study rejects the null hypothesis and found that the alternative hypothesis is **supported**.

## MODEL ASSESSMENT

The coefficient of determination or  $r^2$  gives the combined effects of independent variables on the dependent variable, i.e. it represents the amount of variance in the endogenous constructs explained by all of the exogenous constructs linked to it (Tabachnick and Barbara, 2019). The study achieved (referring to Figure 2) an  $r^2$  value of 0.396, indicating that the independent variables together have a 39.6% variance on the dependent variable. According to Cohen (1988), the researcher has found that information quality and product quality have a small effect on customer satisfaction while service quality has a medium effect (referring to Table 4).



**Table 4: Effect Size**

Independent Variables	Dependent Variable (Customer Satisfaction)	Decisions
Info_Qual	0.023	Small Effect
Product_Qual	0.043	Small Effect
Serv_Qual	0.199	Medium effect

Standardised Root Mean Square Residual (SRMR) reading has grown in popularity, and the researchers considered that an SRMR value below 0.08 represents a useful result. Table 5 below shows that the SRMR value is 0.044 (<0.8), indicating that the model fits the goodness of fit criterion. According to Hair et, al. (2014), the Normed Fit

Index (NFI) value of a model should be above 0.9 to achieve goodness of fit (The NFI constructs a Chi<sup>2</sup> score based on the hypothesis tested and compares it to a tangible benchmark value). As shown in Table 5, the NFI value is 0.939, above the recommended threshold (>0.9). This data analysis confirms further goodness of fit of the model.

**Table 5: SRMR and NFI report**

Result	Saturated Model	Estimated Model
SRMR	0.044	0.044
d_UIS	0.727	0.727
d_G	0.306	0.306
Chi-Square	667.447	667.447
NFI	0.939	0.939

## CONCLUSION AND GUIDELINES FOR FUTURE RESEARCH

Assessing customer satisfaction is a continuous process. Business needs to remain updated and keep their performance increasing. This research's objective was to test the effect of some defined set of variables on customer satisfaction who purchase leather goods. All three hypotheses were supported, indicating that service quality, product quality and information quality significantly influence customer satisfaction. 53.1% of respondents have limited or no knowledge about good quality products, indicating that product information is not reached to the customers. This research might help managers of leather industries to provide better service, increase product quality and inform the customers about the product (through advertising).

The research is not free from limitations. The researcher could select some more variables like store location, customer motivation, perceived usefulness, and user benefit as independent variables. Purposive sampling may limit the generalisability of the result. Due to time and fund availability, the researcher could not conduct a mixed-method or qualitative research (human behaviour also demands opinions and comments from the people involved) which could have made the research more authenticated as suggested by Ivanko (2003). Future researchers may expand the customer satisfaction study into a cross-sectional study.

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## A STUDY ON FORGIVENESS AND BENEFITS OF FORGIVENESS THERAPY TECHNIQUES

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### ABSTRACT

*Positive psychology frequently views forgiveness as a character trait and a virtue that anyone seeking a greater sense of well-being should strive to cultivate. Forgiveness is crucial for the emotional health of people who have suffered abuse. Instead of keeping them emotionally invested in injustice or trauma, it moves individuals along. This study focuses on Forgiveness as a process, decision-based forgiveness, cognitive forgiveness, emotional forgiveness, the psychology of forgiveness, and the benefits of forgiveness. This paper describes the advantages of practicing forgiveness, forgiveness therapy, Four Steps to Forgiveness (A powerful way to change life for the better), and techniques to help the clients (Enright model Intervention, REACH model, Forgiveness letter).*

**KEYWORDS:** *Decision-based forgiveness, cognitive forgiveness, emotional forgiveness, Enright model intervention, REACH model, Forgiveness letter, empathy, acceptance.*

### INTRODUCTION

Forgiveness is one of the traits explored by positive psychology that might help us lead more fulfilling lives (Seligman & Csikszentmihalyi, 2000). According to some philosophers, Forgiveness requires "an attitude of sincere benevolence towards the offender as a person" (Holmgren, 1993, p.34; see also Downie, 1965). The strongest position of forgiveness as a concept in positive psychology comes from this aspect of benevolence that is good.

Resentment or rage is let go of through forgiveness. No, reconciliation does not imply forgiveness. You are under no obligation to continue a damaging relationship or put up with an offender's behaviour. There are, however, circumstances in which a specific person might be better off not forgiving. When sexual assault survivor gives themselves permission to not forgive, they may feel more powerful. The act of forgiving someone, including oneself, is sometimes described as an individual, deliberate psychological process of letting go of resentment, bitterness, anger, and the need for vengeance and retribution. According to the evolutionary theory, our ability for forgiveness evolved in the same manner as our propensity for vengeance during natural selection.

Forgiveness and retaliation are social tendencies that helped early humans solve conflicts. We have optimism that we can change these capacities even if both of these components of our nature are unchangeable, making the world a more forgiving and less vindictive place (McCullough, 2008). Being unlike your opponent is the finest way to get revenge. (Aurelius Marcus). Changes in cognition, action on the part of the victim or offender, a conscious choice, an emotional or

expressive experience, a spiritual experience, or any combination of factors might lead to forgiveness. Forgiveness can be thought of as a personality attribute or as a component of a more complex enduring quality like resilience. Some people are more forgiving than others. There are several definitions of forgiveness that highlight various features of it and represent many of the theories and methods of comprehending it that are now in use.

It is simple to feel animosity and want to exact retribution after being badly injured or deceived by a close friend or relative. To feel kindness toward the offender and to sincerely forgive is considerably more difficult, though. According to Martin Seligman, this is why people are unable to forgive:

They believe it is wrong to forgive since it involves showing compassion to the offender but not to the victim and because it prevents retaliation, a strong emotion that many people hold onto. Enhancing optimal human functioning is becoming just as significant in psychology as preventing distress, as more practitioners build thorough protocols for forgiving therapies and research their effectiveness. In addition to researching the negative effects of anger and animosity, researchers are also focusing on the advantages of practicing forgiveness.

Because they are the only fields that specifically try to assist forgiveness, applied research like positive psychology is a major source of evidence regarding the effects of forgiveness on well-being. Research on forgiveness is also led by positive psychology, and it is becoming increasingly popular to emphasize the role that forgiveness plays in preserving and enhancing well-being. Focus on the advantages of forgiving others and developing a more forgiving personality has been a



continuous theme in positive psychology. Forgiveness is viewed by some as an example of good clinical psychology (Worthington, Griffin, Lavelock, 2016).

### THE OBJECTIVE OF THE STUDY

- To study decision-based forgiveness, cognitive forgiveness, and Emotional forgiveness.
- To study the psychology of forgiveness and the Advantages of practicing forgiveness.
- Describe forgiveness therapy and the benefits of forgiveness.
- To provide the techniques to help the clients.

### FORGIVENESS AS A PROCESS

Finally, according to Enright and Fitzgibbons (2015), in order to truly forgive, all three parts of forgiveness—cognitive, affective, and behavioral—need to alter. They contend that in order to be likely to be responsive to forgiveness, a person needs to have some degree of emotional preparation. The process of forgiving can take many different forms and includes things like developing empathy and acceptance, changing one's perspective, and looking for benefits.

For instance, a person might choose to use one or more of these techniques to retell the incident in a journal, which would help them release their anger and facilitate emotional recovery (McCullough, Root, & Cohen, 2006). Since certain research suggests that some instances of forgiveness may require sorrow, a person's capacity for acceptance is crucial to how successfully the process of forgiving others will go (McCullough, 2008).

Regardless of the intervention model, or theory, the approaches were based on, Wade, Worthington, and Meyer's (2005) meta-analysis found three components that were present in all successful forgiveness interventions: committing to forgiveness, using a variety of techniques to lessen resentment, and combating resentment with empathy or positive other-oriented emotions. Last but not least, Webb and colleagues described the act of forgiving as a coping strategy that incorporates mindfulness and entails reframing and negating negative emotions (Webb, Phillips, Bumgarner, & Conway-Williams, 2013).

### DECISION-BASED FORGIVENESS

DiBlasio (1998) places special emphasis on the use of willpower in making decisions and in forgiving others: The cognitive letting go of resentment, bitterness, and the craving for retribution is what is meant by decision-based forgiveness. It does not always signal the end of emotional suffering, though. Here, forgiving someone is seen as a deliberate act, as a decision to let go or to cling on. People are capable of separating their hurt sentiments from their ideas of anger and bitterness. DiBalsio's decision-based paradigm focuses on cognitively letting go of bitterness and resentment but ignores painful sentiments that frequently linger after the decision was made.

### Cognitive Forgiveness

The perspective that views transgressions as violations of cognitive structures, such as beliefs, is the foundation of another cognitive definition of forgiveness (Gordon et al., 2005). A cognitive approach to forgiveness uses psychodynamic therapy and traditional cognitive therapy methods to assist individuals in changing their cognitions. The cognitive model developed by Thompson, Snyder, Hoffman, and Rasmussen et al. is one such illustration (2005). They suggested the following as a definition of forgiveness: "Framing a perceived violation in a way that changes one's reactions from negative to neutral or positive to the transgressor, the transgression, and its consequences. Oneself, another person or persons, or an event that one considers being beyond the control of anyone, such as disease, fate, or a natural disaster, maybe the source of the transgression and, as a result, the object of forgiveness.

### Emotional Forgiveness

True forgiveness, according to Worthington (2006), only takes place when emotional forgiveness is possible since emotional replacement is required. When emotional forgiveness is finished, the person will have swapped out the unforgiving emotions of resentment, rage, and vengeance with the forgiving emotions of empathy, compassion, sympathy, and selfless love. They contend that changes in emotions, rather than changes in thoughts, motivations, or conduct, while all will frequently happen as well, will more truly reflect the shift in emotional forgiveness as it starts and progresses toward completion.

### The Psychology of Forgiveness

Researchers who study forgiveness emphasize various facets of this intricate psychological concept as they develop their hypotheses. While it is true that forgiveness is a situational response and a skill that can be learned, it is also strongly impacted by a personality feature and is hence referred to as trait forgiveness. Psychology explains why some people are simply more forgiving than others by pointing to individual personality variations and other dispositional traits that have a tendency to persist over time.

### Advantages of practicing forgiveness

It could be challenging to forgive someone, particularly if they apologize poorly or not at all. It is frequently the best course of action, though. According to psychologist Robert Enright, a well-known model of forgiveness specifies four steps. Understanding how you have handled or repressed your anger will help you identify it in the beginning. The next step is to decide to pardon. Start by admitting that trying to ignore or deal with the offense hasn't worked and that you might need to forgive in order to go on.

Third, learn to have compassion for the perpetrator in order to nurture forgiveness. Consider if the behavior was the result of the offender's circumstances or intentional intent. Lastly, let go of your negative emotions and reflect on how the experience and forgiving yourself may have aided in your personal development.



### To Overcome Resentment

Even when we think we've "gone on" or "forgotten about it," resentment can occasionally persist for years. In order to let go of resentment, consider possible motives for the offender's actions, allow yourself to feel the hurt, and then make an effort to forgive them. Forgiveness can give rise to a sense of strength that overcomes resentment. There are numerous instances of people who have pardoned someone who has committed heinous crimes against them, such as shooting them or killing their child. No crime is too terrible to be pardoned if it results in peace or healing in the end.

### Forgive Past Transgressions

Start by taking ownership of your deeds and owning up to your errors. Think about the circumstances around the offense and make a decision on how to stop it from happening again. Then, forgive yourself by focusing on the idea, saying it out, or writing it down. You should apologize to the person you injured and try to improve their situation.

A common association between mistakes and ingrained self-perceptions is that "I always say the wrong things" or "I'll never be able to pay my bills" are two examples. Before engaging in self-forgiveness, it could be necessary to acknowledge and address these thoughts. Because of this trap and others, self-forgiveness is extremely challenging.

### Forgive Yourself

What occurs when we do the crime ourselves? It's one thing to forgive someone else, but what about ourselves? Accepting responsibility for mistakes is important, but having intense guilt and shame has negative long-term effects. Self-forgiveness is a challenging but incredibly rewarding journey. This approach necessitates acknowledging errors, understanding how they occurred, and helping to remedy them.

### DISCUSSIONS

In order to overcome unhealthful rage, patients in forgiveness therapy are asked to face injustice and emotional suffering before working toward forgiveness. Depression may be treated with this therapy in addition to medication or cognitive behavioral therapy. There is a growing understanding that forgiving someone just entails lessening your rage against the event or the person who injured you. Because forgiveness entails a focus on goodness toward the offender, it is impossible for forgiveness and anger management to be the same thing. It might be harmful to equate forgiving others with controlling one's wrath, releasing anger or resentment; Letting go of bitterness and ideas of retaliation; An intentional and purposeful choice to vent thoughts of wrath or revenge toward someone who committed an injustice; letting go of unpleasant emotions like resentment; transcending negative emotions by becoming above them; letting go of negative emotions like wrath; replacing them with more enjoyable pursuits will help you get over your resentment. The emotional and cognitive process of forgiveness is defined by the release of anger, which has been shown to have long-term detrimental effects on one's physical, emotional, and cognitive health.

### FINDINGS

Worthington and Scherer (2004) claim that stress is a result of unforgiveness when it is viewed as a detrimental emotional and cognitive construct. This suggests that forgiving can be utilized as an emotion-focused coping mechanism, which may improve general health. The inability to forgive was associated with hatred and rage, both of which have been shown to have harmful impacts on health, particularly cardiovascular issues. On the other hand, forgiveness was connected to good feelings of compassion and empathy (Worthington & Scherer, 2004). A growing number of theorists, therapists, and medical experts have hypothesized that how people react to interpersonal crimes might have a substantial impact on their health (McCullough, Sandage, & Worthington). They discovered that those who forgive others have higher life satisfaction and lower rates of depression. Last but not least, this research has revealed that more forgiving people are more likely to participate in introspective thinking and less likely to engage in any kind of ruminating, such as: ruminative depression, which is a type of repetitive thought that depressed people experience, brooding, a type of critical thinking about oneself or others, and reflective rumination and analysis of the causes of one's feelings are other types of ruminative depression. According to research conducted by experts at Hope College, reliving painful experiences and harboring anger have a severe impact on the emotional well-being and physical health of individuals who choose to keep a grudge (Witvliet, Ludwig, & Vander Laan, 2001). Other research therein demonstrated that unforgiving reactions of rage, blame, and animosity contributed to bad health, particularly coronary heart disease. When asked to envision not forgiving an offender, study participants experienced more negative emotions, such as wrath and despair, were more aroused, and felt less in control. The sympathetic nervous system was activated, blood pressure spiked, and the heart rate increased.

### BENEFITS OF FORGIVENESS

Forgiveness and forgiveness treatment have been linked to greater feelings of joy, hope, and optimism. Furthermore, the ability to forgive people may assist shield against serious conditions including post-traumatic stress disorder, depression, and anxiety. It was also proven that the activity benefited heart patients by significantly lowering their blood pressure. Every time the subject of one's anger or resentment enters the mind, the body releases stress hormones like cortisol and adrenaline. The persistent release of those hormones can lead to tension, and anxiety as well as a reduction in creativity and problem-solving abilities. Many beneficial psychological changes can result from forgiveness, including the reduction of toxic rage, the restoration of potentially beneficial relationships, personal development, and the exercising of good regardless of the reaction. Modelling forgiveness for others may result in intergenerational and even societal improvement in addition to personal advantages. lessening unpleasant feelings and depressive symptoms





- Restoration of optimistic perception
- Relationship restoration
- Decrease in anxiousness
- Stronger spirituality
- Increased self-esteem
- A higher feeling of optimism,
- Improved conflict resolution skills
- Improved stress management
- Coping mechanisms.

Figure 1 represents the benefits of forgiveness.

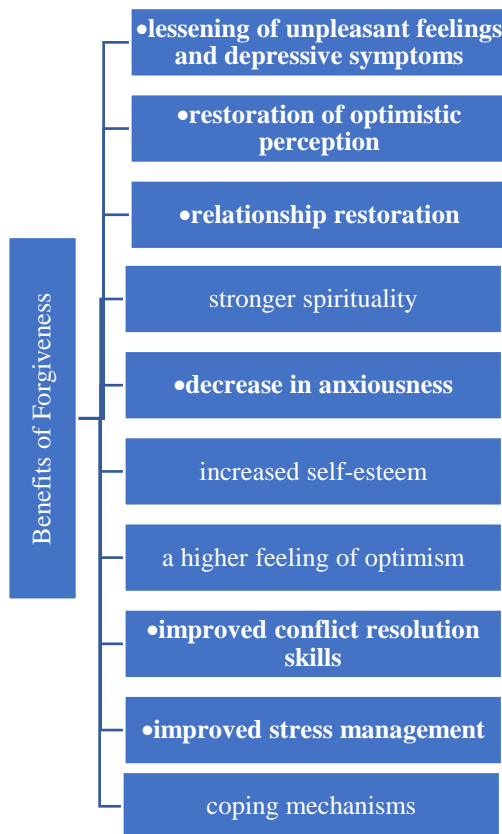


Figure-1

## **FORGIVENESS AS A MORAL VIRTUE**

The general consensus is that forgiveness emphasizes letting go of enduring and intense anger. This has resentment and vengefulness as synonyms. Readers who are not well-versed in the idea of forgiveness may take this statement at face value. But if forgiveness is a moral virtue, like justice, patience, and kindness, for instance, this intended and generally agreed-upon description cannot possibly be accurate. Given that it has the particular characteristic of goodwill toward others in common with the other moral virtues, forgiveness does appear to be a moral virtue. To forgive entails being kind to people who have wronged you (see, for example, Enright & Fitzgibbons, 2015). Love for the person who wronged you is the purest manifestation of this virtue (Enright, 2012). To be a good forgiver, one need not attain this level of forgiveness. Lewis Smedes (1984) pointed out that we are all flawed pardoners.

## **SPIRITUAL PERSPECTIVE**

All significant life occurrences, including marriage, successful and unsuccessful relationships, accidents, and serious illnesses, are mostly brought on by one's destiny. The anguish and suffering that must be endured as a result of

destiny are so frequently manifested through such events. The people who affect us the most negatively or positively in life are frequently doing so to make up for mistakes made in prior lives. Our mind is referred to as the home of our emotions and feelings. It consists of both the conscious and subconscious minds. Even though it is relatively small in comparison, our conscious mind is the portion of the mind that we are aware of. On the other hand, we know very little about and have limited knowledge of the subconscious mind, despite the fact that it is the one that greatly affects the conscious mind. It is made up of millions of impressions that characterize our personality traits, as well as our strengths and weaknesses. The give-and-take account centre is a delicate centre in our subconscious minds that houses all impressions of predetermined events. Despite our intelligence, the give-and-take account centre compels us to behave.

## **FORGIVENESS THERAPY**

Therapy that specializes in helping patients forgive and move on is known as forgiveness therapy. There are numerous varieties of forgiveness therapy, some of which we shall discuss here, but they can be divided into two groups: process-based therapies and decision-based interventions



(Akhtar & Barlow, 2018). The key differences between the two camps are that process-based forgiveness programs involve cognitive, behavioural, and affective tactics across a longer time frame. Decision-based forgiveness therapies, in comparison, are considerably more condensed (often only one session), focus mostly on cognitive techniques, and require a commitment to carry out the process of forgiving outside of the session. When someone has been harmed, the process of forgiving involves letting go of anger and showing compassion to the offender. Giving a formal pardon, forgetting the offense, or mending a friendship are not all examples of what forgiveness entails. You can forgive someone even if you don't think their acts were right or reasonable.

#### FOUR STEPS TO FORGIVENESS

A powerful way to change life for the better

- ❖ Step 1: List the people and things you need to forgive.
- ❖ Step 2: List all of the things that are making you unhappy right now about the circumstance. It's great if they are your genuine emotions rather than the wonderful things you "should" feel. Since that is where you are, you must move past how you actually

feel. You can only advance from where you are; you cannot advance from where you would like to be.

- ❖ Step 3: Compile a list of the advantages of forgiving this circumstance. These are frequently the reverse of how you are experiencing right now. Sadness will transform into happiness, rage into calm, heaviness into a sense of lightness, and so forth. If you are unsure about the advantages, pick a few basic positive emotions that you would like to experience to get started (for example, "peace," "freedom," "more at ease," "more confident," etc.). If you visualize how much better you would feel after forgiving someone, it could be easier for you to recognize the advantages.
- ❖ Step 4: Affirm your forgiveness. Write a forgiveness affirmation that includes a handful of the advantages you listed in Step 3 that currently appeal to you the most. This is just a simple declaration of whom you want to forgive, followed by an acknowledgment of the advantages of doing so. next repeat this line slowly, at least three times, while remaining silent in your thoughts. After that, you go back to Step 1 and repeat the process. Once you start to feel relieved, keep moving around. Figure 2 illustrates the steps to forgiveness.

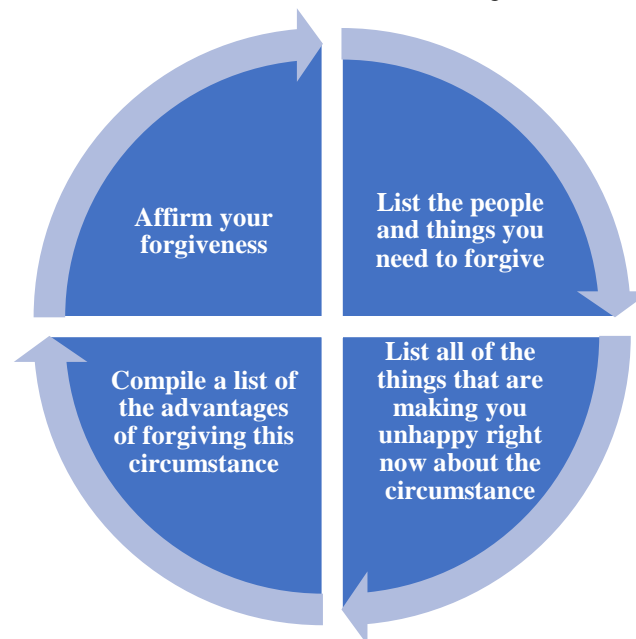


Figure-2

## FORGIVENESS THERAPY: 3 TECHNIQUES TO HELP CLIENTS

### ✓ Enright Model intervention

- The popular Enright Model is a process-based intervention (Enright & Fitzgibbons, 2000). This structured intervention consists of four phases and 20 modules. The client is assisted in understanding the psychological defenses play within them, recognizing and acknowledging the anger they feel, and assessing the psychological injury brought on by the offense in the first step, referred to as uncovering. The idea of forgiveness as a reaction is explored in the second phase, decision-making, and then a commitment to forgive is made. The client is assisted in growing empathy for the offender and accepting the suffering endured during the third phase, cognitive reframing of the offense. Clients are assisted in finding purpose in their suffering in the third phase, deepening. 2018 (Akhtar & Barlow).

### ✓ REACH Model

The REACH Model is a kind of decision-making forgiveness intervention (Worthington, 2001). The

intervention's five steps of forgiveness are denoted by the acronym REACH.

Participants start by recalling (R) the pain. They also grow to feel sympathy (E) for the wrongdoer. Third, participants reinterpret pardon as a benevolent gift (A) for the criminal.

where they commit to doing so in the fourth. They learn to hold onto their forgiveness in the last phase (Akhtar & Barlow, 2018).

### ✓ Forgiveness letter

Another illustration of a McCullough and Worthington-created decision-based forgiveness intervention (1995). The client agrees to forgive during a single session, making this a quick forgiveness intervention. Then the client apologizes in writing to the offender. The client begins the process of forgiving themselves after this intervention, which is noticeably shorter than the others and forces them to finish the job on their own. Figure 3 shows the techniques to help the client.

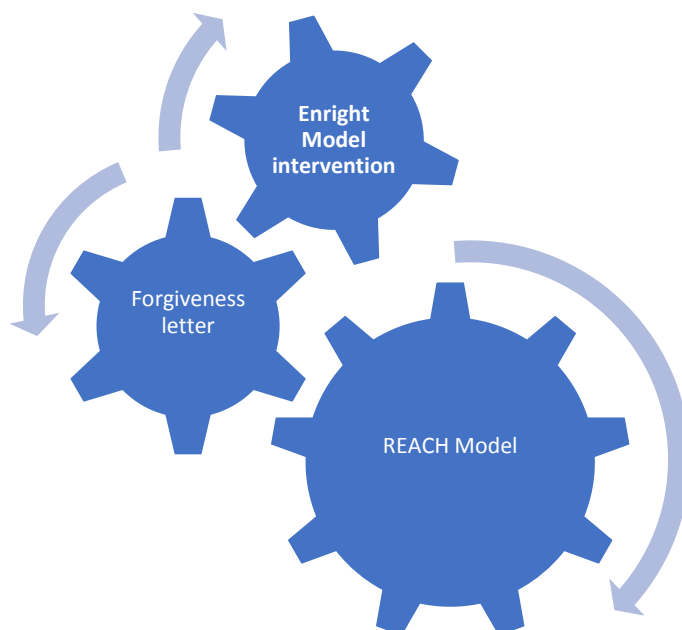


Figure-3

## CONCLUSION

There is evidence that forgiveness has positive effects on people's well-being in a number of areas, including Life satisfaction, mental health, and physical health are related to each other (Harris & Thoresen, 2005; Worthington & Scherer, 2004). It has been demonstrated that forgiveness improves mood, increases optimism, and protects against resentment,

tension, anxiety, and melancholy. Therapy for forgiveness can be highly helpful for clients who, despite having every right to do so, are nevertheless holding on to negative feelings following mistreatment. Forgiveness has been linked to a range of beneficial effects, including declines in melancholy, resentment, and ruminating. Figure 4 represents the positive effects of forgiveness.

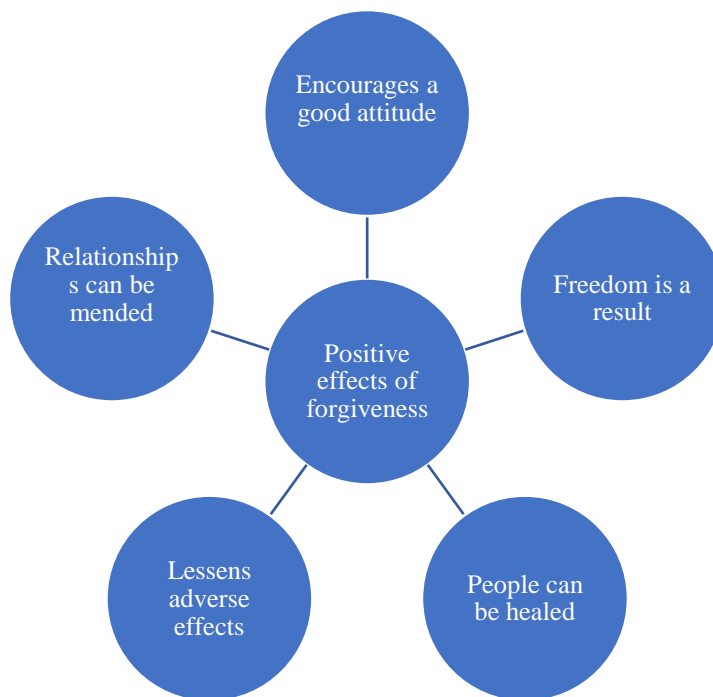


Figure-4

#### 1. Forgiveness lessens adverse effects

It's awful to keep a grudge. Recent meta-analyses on the benefits of forgiveness therapy found that forgiving reduced negative affective characteristics such as melancholy, hostility, wrath, stress, and discomfort (Akhtar & Barlow, 2018).

#### 2. Forgiveness encourages a good attitude

Beyond just making us feel better, forgiveness has many other benefits. Additionally, it can raise our overall sense of contentment, fulfillment, and compassion (Akhtar & Barlow, 2018).

According to research, persons who have been mistreated benefit from forgiveness training by feeling more hopeful and having higher self-esteem. We increasingly find forgiving activities where even young children can learn forgiveness, such as those taken from Sonja Lyubormirsky's book *The How of Happiness: A Scientific Approach to Getting the Life You Want* (2007).

#### 3. Freedom is a result of forgiveness

People who are unable or unwilling to forgive are frequently mired in a whirlwind of unfavorable feelings, and in the most extreme cases, they might spend the rest of their lives seeking revenge. Freedom from a never-ending drive for vengeance can be found in forgiveness.

#### 4. People can be healed by forgiveness

It is not always necessary to inform someone you have forgiven them. In this approach, forgiveness can serve only the damaged party's needs for recovery and empowerment.

#### 5. Relationships can be mended by forgiveness

There are situations when a significant or irreplaceable loved one is the offender. If the wronged party wants to keep their connection intact, forgiving them may be the way to do it.

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# LEXICOGRAPHIC DESCRIPTION OF MARANAO LANGUAGE

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Article DOI: <https://doi.org/10.36713/epra12488>

DOI No: 10.36713/epra12488

## ABSTRACT

*One of the most significant local languages in Mindanao is the Maranao language. It has been featured in popular literary masterpieces of Mindaonaon and played an important part in its culture and history. Using a semi-structured interview guide, the researcher explored the existence of Filipino words in the Maranao language as well as comparing both languages in terms of structure and meaning through the interview conducted with three Maranao native language speakers. The objective of this study is to provide an example of the Maranao language's overall lexicographic components, patterns and meanings. Results revealed that nouns, adverbs, adjectives, and verbs make up the majority of the researcher's established Maranao terms collected during this examination. Additionally, "hard consonants" are aspirated in Maranao syllables, which enhance the sound of the vowels that follow. When it comes to words that are used in counting, the Maranao language, like all other languages, makes use of the technique of adding new words to the root words, which alters the meaning of the word and creates a different quantity or way of counting. In addition, words are stressed but in a way that creates a down step accent rather than a stress accent. Additional encouragements for writers, students, professors, and other language experts are required in order to use Maranao as a medium in education, literatures, publications, research, and many other sectors.*

**KEYWORDS:** applied linguistics, lexicography, native speakers, Maranao language

## INTRODUCTION

One of the most distinctive regional tongues in the Philippines is Maranao. In Mindanao's Lanao del Sur region, particularly in Marawi City, the Maranao language is extensively spoken. The Darangen, a Maranao folk epic, and totol, a collection of Maranao tales, are two literary works that use the language. Even though the Philippines is home to several regional tongues, Maranao has consistently been one of the least used languages in academic writing and research. There has been a limited number of attempts to advance the study of the Maranao language and other Muslim regional dialects, but the majority of academic work is done in the Luzon areas.

Gordon (2005) in his book: *Ethnologue: Languages of the World*, 15th edition theorizes that the Maranao language had originated from the Austronesian, Malayo-Polynesian, Southern Philippines, Danao, Maranao and Iranon language family. However, Gordon Jr. did not investigate how the Arabic language and other languages had influenced the Maranao language.

In addition, it demonstrates that more than 600 Maranao words currently used by Maranao people have Arabic roots. It was determined that the Maranao language was

impacted by Arab settlers and traders after Islam arrived in the Philippines, and that the vocabulary it absorbed was mostly employed to express sociopolitical activities. No studies to date have explored how Arabic words are incorporated into the Maranao language spoken by the Maranao people of Mindanao, Philippines. Hence, this study aims to identify the Arabic words borrowed by the Maranaos (Racman & Lulu 2021).

Meanwhile, the phoneme system of the Muslim Maranao language was unknowingly deciphered in the early 1970s while numerous now-deceased Maranao Muslim experts worked to create a more ideal orthography than had previously been in use, according to Lobel (2009). This discovery, which linguists had previously been unaware of, enables rewriting of the phonological analysis and a greater comprehension of its historical development. In turn, such a revision is a prerequisite to the analysis of the morphophonemically complex verbal system, which by its nature cannot be properly analyzed unless based on a clear understanding of the language's phonological system.

However, despite the use of language in everyday conversations, there are no known studies established or conducted that will help in the promotion of the Maranao



language to other groups of people in the local areas or even in the national scope. Specifically, lexicographical description of the Maranao language is very limited even the literatures written about the language are very infrequent.

In the Philippines, linguistic analysis of local languages has yet to achieve consensus on certain aspects of grammar. Since lexicographic description also needs to take into account certain grammatical features of the language, this condition has contributed to the problems found in presenting important linguistic features in monolingual dictionaries of Philippine languages (Flores, 2015). In addition, Filipino lexicography deals with two problems related to the linguistic features of the language: the lexicon and the grammatical features including orthography. To at least assist in addressing the problems of few studies that focus on lexicographic descriptions in the Philippines, the researcher devised a plan to focus on one of the most popular local languages in the Philippines, the Maranao language, which is spoken by many communities in Marawi City. It has distinct sounds, and the interpretations and usage of the meaning vary depending on where it is from. One cannot say that the Maranao language is identical to other Muslim languages spoken in other parts of the Philippines. In addition, limited studies were conducted that focuses on the Maranao language when it comes to usage, adaptation, compilations, and evaluation. Studies focused on the Tagalog, and Visayan languages. Because of those gaps, the researcher was able to come up with focusing the present study on the lexicographic description of the Maranao Language. The researcher will be able to share the overall lexicographic components of the Maranao language through this study, which is an important part of understanding the language itself and its uniqueness.

## Research Questions

The following were the research questions of this study:

1. What are the overall lexicographic components of the Maranao language?
2. What are the patterns and meanings of the identified corpora in the Maranao language?

## LITERATURE REVIEW

### Lexicon and Lexicography

Lexicology is the scientific study of a language's lexicon, including its historical evolution and current usage. The way, in which some thematic region is encoded, its social stratification, or its quantitative makeup. Lexicography is the study of words (Dzharasova, 2020). Mel'uk and Polguère (2018) defined lexicography as a set of six lexicographic principles that are formulated and discussed in the same language as the word defined. Meanwhile, natural language is built on the foundation of lexical meanings. To begin, when we communicate linguistically, we speak in order to convey informative content – and we do so using words. Second, natural language plays a critical role in how we comprehend the world and attempt to make sense of it; this, too, is accomplished with words. Meanwhile, Stringer further explained that lexical semantics is

concerned with the inherent aspects of word meaning, semantic relationships between words, and how word meaning is related to syntactic structure.

In addition to the above definitions, lexicography is concerned with dictionaries, both the compilation process and the analysis of the final output. The latter is sometimes referred to as "metalexicography" or "dictionary research," whereas the production of dictionaries is referred to as "practical lexicography" and the study of dictionaries is referred to as "theoretical lexicography" (Jackson, 2013). On the other hand, a schism occurred within lexicography after the development of the glossary. Babich (2016) emphasized that lexicology, in particular, is concerned with words, word groups, phraseological units, and morphemes. It includes the study of morphology, etymology, and the history of words, as well as semantics and lexicography. Lexicography is a discipline of study that focuses on the creation of dictionaries and other reference materials. On the one hand, there was a new collection of even more intricate and sophisticated glossaries and dictionaries. Glosses were traditionally inserted into manuscript copies of literature from earlier eras.

Connell (2013) theorizes that there is a tendency to presume that linguistics encompasses all that has to do with language. Linguistics is often defined as the scientific study of language in all of its forms. This may need to be altered for today's professional linguist, as many features of language, or its scientific study, appear to be of little relevance to linguistics. This could be interpreted in two ways: one, as a signal that some aspects of language aren't important enough to warrant a trained linguist's attention; or two, as a recognition of the discipline's limitations, that there are important aspects of language that we don't yet have the tools to investigate.

In theory, Hoey (2014) restates his idea, which he first proposed in 2005 that the lexical priming hypothesis aims to connect psycholinguistic research with corpus linguists' discoveries. It states that each person's understanding of language is the consequence of everything we have heard and read repeatedly. To put it another way, the lexicon is probabilistic. Michael Halliday, who claims that his own understanding of grammar (and, by extension, the lexicon) is "inherently probabilistic," is one of the most well-known proponents of a probabilistic lexicogram (Halliday, 1992). Conflicting primings are reconciled by such common variables as education, mass media, literary and religious traditions, grammars, and dictionaries.

### Maranao Language

The Maranao originally inhabited the areas surrounding Lake Lanao in Northern Mindanao, particularly Lanao del Norte and Lanao del Sur. The Maranaos, on the other hand, have settled in a variety of locations throughout the Philippines. They are part of the larger Muslim ethnic group and the Philippines' sixth largest cultural minority. They are famous for their sophisticated weaving, artwork, wood and metal craft, epic "Darangen," and dance "Singkil."



In general, the Maranaos are not all found along the shores of Lake Lanao. Some of them can be found in small towns near mountains, along the seacoast, near large rivers, or along national highways. Maranaos who live near mountains and in upland areas are known as Igivaonon or Igaonun, which means "dwellers of the forests or mountains." Because this group has only been nominally Islamized, some of their traditional beliefs dating back to pre-Islamic days can still be observed. They continue to make offerings to supernatural beings or tonongs believed to inhabit the sky, rivers, lakes, rice fields, and even trees. Furthermore, they feed their inikadowa, or "unrevealed self." According to Laubach's article "An Odessey from Lanao," which was cited by Madale (1966), "the Moros of Lake Lanao region have amazingly rich in literature, all the more amazing because it exists only in the memories of the people and had just begun to be recorded to writing." (Madale v)

Furthermore, they are known for the richness of their culture, which is still visible today and has continued to live on in the hearts of every Maranao. This culture has been preserved and has stood the test of time, keeping it very much alive even after all these years. The Maranao, like other cultural groups in the country, are known for their literary involvement, which has yet to be fully recorded and appreciated. (Ulla, n.d.).

Meanwhile, Maranao has one of the most diverse morphologies of any Philippine language (cf. McKaughan), even more diverse than Tagalog, Bikol, or Waray-Waray. Complex morphophonemics and obstinate phonology further complicate the system, preventing proper analysis for the first 95 years of foreign research into the language. The findings of Lulu and Sohayle's study revealed that over 600 Maranao words have Arabic roots and are currently used by Maranao speakers. It was concluded that, following the arrival of Islam in the Philippines, the Maranao language was influenced by Arab settlers and traders, and its borrowed vocabulary was primarily used to express sociopolitical activities.

## RESEARCH METHODOLOGY

The study concentrated on the overall lexicographic components, patterns, and meanings of the identified Maranao corpora. The qualitative descriptive research method was used in this study. The term qualitative description (QD) is commonly used to describe qualitative studies on a variety of phenomena. This research design is a label used in qualitative research for descriptive studies (Polit & Beck, 2005).

### Participants/Respondents of the Study

The participants of the study were the Maranao native language speakers who are considered as the most knowledgeable members of the community when it comes to the Maranao language. The researcher utilized three (3) identified participants for the interview. The sample size for the present study was smaller compared to other quantitative research methods. According to Creswell (2018), narrative contains 1-2, phenomenology contains 3-10, and grounded theory contains

20-30. The ethnography consists of a single culture-sharing group, whereas the case study consists of five to six cases.

### Instruments of the Study

The instrument used in the study was a 615-word list and was taken from University of the Philippine's Department of Linguistics. An intent letter to use the instrument was addressed to UP which was eventually returned with UP's approval to use it for the study.

### Procedure

The data collection for this study started from coordinating with the director of National Commission on Muslim Filipinos based in Marawi City. Based on recommendations, the researcher asked for an appointment to identified participants to discuss the purpose of conducting the study. When the permission was granted, the researcher set the time and place of the interview. Recorders and documentation paraphernalia were made available. Semi-structured interview was utilized by the researcher.

The interview lasted for three hours wherein each participant was provided one hour. Each participant was encouraged to respond clearly to the questions. To support responses of the participants of the study, the researcher also asked for any available documents written in the Maranao language. Oral literatures can also be beneficial as additional documents and justification. Responses during the interview were analyzed by the researchers.

### Ethical Considerations

The researcher ensured that all ethical considerations were strictly followed based on the ethical protocols and guidelines set forth by the University of Mindanao Ethics committee with protocol number UMERC-2022-139. These ethical considerations helped the present study to avoid practices which may implicitly or explicitly abuse or exploit those whom she sought to do research with. Before the conduct of the study, the researcher asked permission from the participants by sending them both written and electronic copies of letter of intent explaining the objectives of the study. Furthermore, the possibility of loss or injury or any types of dangers during the conduct of the research were greatly considered by the researcher.

## RESULTS

This section presents the results and discussions of the study on the lexicographic components of Maranao Language.

### Lexicographic Components of the Maranao Language

#### a. Lexical Category

On the basis of the examples given and their translations, the researcher identified typical lexical categories when researching the Maranao language. Lexical categories are typically collections of words (such nouns, verbs, and prepositions) that vary in the ways in which they can be joined





to create new words. One can make new words, for example, by ending words that belong to the verb category with the suffixes -ing and -able.

In a broad sense, the Maranao language includes parts of speech found in other languages as well including pronouns, nouns, adjectives, adverbs, conjunctions, exclamations, determiners, verbs, and others. However, the researcher's established compilation of Maranao words gathered throughout this investigation primarily consists of nouns, adverbs, adjectives, and verbs.

For example, the Maranao language is rich when it comes to the use of **nouns** which can be replaced by eg (water/tubig), dumpas (mat/banig), gabon (cloud/ulap), Ida-ida (song/awit/kanta), and ikog (tail/buntot). Meanwhile, there are certain terms (used as nouns) in the Maranao language that have distinct spellings but the same meaning (synonymous). For example, ikhalot, L'b'ng which can be used either "to bury (baun/libing)" or the words Ipag/wiya which both means "sister-in-law (hipag)". The word ilo which means an "orphan" can also be replaced with a phrase wata a ilo bearing the same meaning but more specified to a "wata" (child).

Adverbs are another important lexical category in the Maranao language, second only to nouns. Adverbs (adverbs) are words that describe an action, occurrence, or circumstance that is stated in a phrase. Although the Maranao language collected in the present study has a limited vocabulary, as demonstrated by the lexical compilation, adverbs can be used alone or combined with other words to make phrases and convey meaning. For instance, "igira" [ʔi.gi.aaʔ] can be used as single-word adverb which literally means *sometimes* (paminsanmins); "guwani" [gu.wa.ni] which means once upon a time (noong unang panahon; dating panahon); and "mapita" which either means *tomorrow* (bukas, kinabukasan).

Adverbs in the Maranao language can be paired with other words to create new words while maintaining their lexical category and meaning. For example, "imanto" [ʔi.man.tu] is an adverb which means *now/this day* (ngayon) can be mixed with other Maranao words such as "gawi-i" [ʔa.ga.wi] or "alongan" [a.l.ʔan] thus retaining the same meaning and can be spelled as "manto a gawi-i/imanto a alongan" [ʔi.man.tu.ʔa.ga.wi] [[ʔi.man.tu.ʔa.ʔa.l.ʔan].

A major observation is also made about adjectives in addition to nouns and adverbs. Normally, adjectives (ædʒɪktrɪv) occur after link verbs or before nouns. In the compilation of Maranao words, adjectives can be identified as a single word with a single meaning. For examples, walopolo [wa.lu.pu.luʔ] which means *eighty/ walumpu*, uman dun [u.man.dən] which means *always/madalas* or *malimit*, t'pol [tə.pul] which means *dull/purol* or *mapurol*, malibotng [ma.li.bu.təŋ] which means *dark/madilim*, and kiyalotoan [kja.lu.tu.ʔan] which means *ripe/hinog*. In addition, just like other languages, Maranao adjectives can be used in different tenses like uyagoyag [ʔu.jag.ʔu.jag] which means *to live/mabuhay* and uyag [ʔu.jag] which means *alive/buhay*.

In case of verbs (vɜːr̩b), simple verbs can also be identified within the Maranao language. These verbs are used as part of the daily conversations in Maranao either as the grammatical center or verbs predicate. For example "tokaw" [tukaw] which mean *know/alam*. It can be used in the Maranao sentence as "Panokatokaw ka sa peur a miyasowa". Another example is the word "ipo" [ʔi.pə] which means *rub/kuskos* and used in the sentence as "Ipo anga piya piya".

This has confounded all prior attempts by non-Maranao researchers to analyze the verb system and spelling of the Maranao language and necessitates an accurate understanding of Maranao phonology a vital aspect of any examination of the verbal morphology of the language. As a result, Maranao has the highest level of morphophonemic complexity among all the languages spoken in the Philippines, and only a few viable root word forms are not closely related to the language's intricate morphophonemics. A fully functional emphasis and mode system, as well as a large number of imperative and subjunctive forms, significantly complicate the verb conjugations in Maranao beyond the morphophonemic problems. (USAID, np)

According to Simone and Masini (2014), the classification of lexical items into categories (also called 'parts of speech' or 'word classes') has been a fundamental concern in linguistic research from ancient times. This issue was already fascinating the Greek philosophers Plato, Aristotle and the Stoics as early as the fourth century B.C. They de-bated exactly "which word classes should be recognized, what their respective rationale is, and why the lexicon is organized in parts of speech instead of be-ing composed of just one type of word" (Simone and Masini, 2014)

In relation to the result, McKaughan and Al-Macaraya (1996), morphological criteria alone are insufficient for dictionaries. To determine parts of speech for this revision, a combination of morphological, syntactic, and semantic criteria are used. Pronouns, Nouns, Adjectives, Adverbs, Conjunctions, Exclamations, Determiners, Ligatures, Particles, and Verbs are the parts of speech used in Maranao. Users should be aware that the Maranao has a significant level of flexibility in this regard even though we have highlighted the most important portions of speech for each item in this revision. The same word base frequently serves as an adjective in one context, a verb in another, and a noun in a third.

In other words, another widespread modern idea, a variety of grammaticalization phenomena take place within each word class and between word classes; indeed, word classes are the locus of both grammaticalization and lexicalization. In fact, items belonging to certain word classes may diachronically derive from items belonging to other classes: for instance, conjunctions can be demonstrated to derive from adverbs, adverbs from adjectives, articles from demonstratives, nouns from adjectives and so on. Given that these transitions are regular among languages, the idea of 'lexical cycles' has been postulated, in the diachronic successions linking distinct word classes according to a specifiable order (Ross & Simone, 1972)



## B. Patterns and Meanings of the Maranao

### Language

It is very important to note that Maranao language is Austronesian in nature. Accordingly, Maranao is the only Danao language spoken with a pronounced downstep accent rather than a stress accent. Maranao also has aspirated "hard consonants," which improve the sound of the vowels that follow.

Significantly, some of the Maranao words identified in the present study are also being used commonly by the Christians specially those who are using Tagalog and Visayan dialects (e.g. Cebuano or Sugbuanon, Hiligaynon, Waray-waray)

**Table 1. Maranao Words used by Christians**

Maranao words	Transcription	English gloss
utang	[u.taŋ].	debt
ulo	[u.lu],	Head of the family
tindug	[tin.taŋ]	To stand

As shown, the word for "debt" is utang [u.taŋ]. This word is used to allude to a debt or other financial responsibility in the sentence. Another illustration is the word ulo [u.lu], which

refers to the head or another portion of the body. Additionally, the verb tindug, which is pronounced [tin.taŋ] literally means to stand or tindig.

**Table 2. Maranao Words used in Counting**

Maranao words	Transcription	English gloss
t'lo	[tə.lə]	three
t'logatos	[tə.lu.ga.tus]	three hundred
t'lopolo	[tə.lu.pu.luʔ]	thirty
t'lo-t'lo	[tə.lu.tə.lu]	by three

There are certain words in Maranao that are used in counting. Maranao language, like any other languages, utilizes adding new

word to the root word which changes the meaning of the word and forms a different quantity or way of counting.

**Table 3. Placement of Stress in between Letters**

Maranao words	Transcription	English gloss
t'bo	[t'bu]	pipe
Takhd'g	[ta.kə.dəŋ]	upward
b'tad	[bə.tad]	to place
Tagin'pun	[ta.gi.nə.pən]	dream
L'taw	[l.taw]	floating
kasig'ng/Sig'ng	[ka.si.gəŋ] [si.gəŋ]	snore

Another pattern that can be observed in the Maranao language is the placing of stress in between letters which is also common in other languages. However, stress is placed to words but creating a downstep accent rather than a stress accent. As a result, when pronouncing Maranao words, an accentual peak is lowered or reduced after another accent.

Despite the word-final glottal stop's phonemic status, Maranao has no orthographies that represent it, as with other Philippine languages. Additionally, many of the orthographies that have been used for Maranao over-specify the vowel system by drawing a false distinction between "o" and "u" (although in some native orthographies, the letter "u" is used instead of "e" to represent the schwa, which is written as <ë> in current Department of Education pedagogical materials. (USAID np)

In addition, the vowel "e" denotes the schwa, as in English "but," "what," or "shut," and these vowels are raised after a voiced stop (b, d, g) or a semivowel. The vowels "a," "i," "o," and "u" generally correspond to their equivalents in Tagalog or

Spanish (w, y). The consonants b, d, g, h, k, l, m, n, ng, p, r, s, t, w, and y all have the same values as their Tagalog equivalents (Lobel, 2009).

As cited by Lobel and Riwarung in their study entitled, "Maranao: A Preliminary Phonological Sketch with Supporting Audio", the traits of Maranao's strong consonants and their effects the vowels are startling enough, as detailed in Lobel and Riwarung (2009). They are even more notable in light of the discovery of a very similar phenomena in Madurese, a language spoken in eastern Java and Madura in Indonesia, around 2,000 kilometers southwest of Maranao.

In addition, the purpose of this kind of consonant vowel interaction is questioned by Cohn (cited by Lobel and Riwarung, 2009). For a variety of reasons, this interaction between the height of the vowel that follows the stop and its voicing or aspiration is noteworthy. First, when vowels and consonants interact phonologically, the interaction frequently involves traits that are either shared by both, like nasalization, or they entail superimposing a vocalic trait onto a vowel.



## CONCLUSION

Based on the findings, it was determined that several Maranao phrases (used as nouns) have different spellings but the same meaning (synonymous). Adverbs can be used alone or in conjunction with other words to form phrases and communicate meaning. They can also be joined to form new words while keeping their lexical category and meaning.

Additionally, adjectives can be recognized as a single word with a single meaning when it comes to the collection of Maranao terms. Similar to English, Maranao speakers frequently utilize verbs as verb predicates or as the grammatical focus of sentences. Additionally, some of the Maranao words found in the current study are also often used by Christians, particularly those who speak Tagalog and Visayan. The Maranao language, like all other languages, makes use of the technique of adding new words to the root words in order to change the meaning of the term and create a new number or method of counting.

In addition, Maranao language has the same type of letter stressing that is used in many other languages. However, rather than establishing a stress accent, downstepping is used to emphasize words. Last but not least, unlike other Philippine languages, Maranao lacks orthographies that correspond to the word-final glottal stop despite its phonemic position. Our ideas regarding the phonetic causes of voice register and other phenomena may need to be revised as a result of further research. It is hoped that the data presented in this work and the preliminary analysis thereof would provide an important starting point in that direction.

Furthermore, additional encouragements for writers, students, professors, and other language experts are required in order to use Maranao as a medium in education, literatures, publications, research, and many other sectors.

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# A COMPARATIVE STUDY TO ASSESS THE KNOWLEDGE AND ATTITUDE REGARDING CONTRACEPTIVE METHOD AMONG MARRIED WOMEN IN SELECTED URBAN AND RURAL AREA OF DISTRICT PHULWAMA, KASHMIR

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## ABSTRACT

*This comparative study was conducted with quantitative approach were selected by purposive sampling technique. 100 Married women from rural area 100 Married women from urban area were selected to conduct the study. Structured Questionnaire were prepared to assess the knowledge and attitude regarding contraceptive method among married women. Data was analyzed and interpreted using descriptive and inferential statistics. Prior commencing to data collection the investigator had obtained formal permission to collect the data.*

## INTRODUCTION

Contraception or birth control generally refers to a plan or method used to alter or avoid natural state of fertility, thereby, preventing or reducing the probability of pregnancy without abstaining from sexual intercourse. Family planning is an essential component of sustainable development goals and contributes directly to Sustainable Development Goal target 3.7 and 5.6. as a way of thinking and living that is adopted voluntarily upon the bases of knowledge, attitude, and responsible decisions by individuals and couples.

## OBJECTIVES

1. To assess the knowledge regarding contraceptive method among married women in selected urban and rural area.
2. To assess the attitude regarding contraceptive method among married women in selected urban and rural area.
3. To co-relate the knowledge and attitude regarding contraceptive method among married women in selected urban and rural area.
4. To find out the association between knowledge and attitude regarding contraceptive method among married women with selected socio demographical variables.
5. To find out the deficit area and provide pamphlets on contraceptive methods.

## METHODOLOGY

A quantitative research approach was adopted for this study. This study included 200 women of rural and urban areas of District Phulwama, Kashmir who had fulfilled the inclusion

criteria. Descriptive research design used to allocate samples. Structured questionnaire schedule is suitable to make extensive enquiries. The reliability of tool towards knowledge, attitude and practice regarding contraceptive method among married women. Ethical permission granted from Institutional ethical committee. Data was analyzed and interpreted using descriptive and inferential statistics. Prior commencing to data collection the investigator had obtained formal permission to collect the data.

## FINDINGS OF THE STUDY

### Findings related to sample characteristics of married women in selected urban and rural area

Maximum knowledgeable Age represents that attitude level of married women regarding contraception 36(22.5%) had unfavorable attitude, 78(48.75%) had moderate attitude and 46(28.75%) had favorable attitude. Religion reveals that the majority 74.4% (n=103) of the subjects belong to Muslims religion, 20% (n=20) of them were Sikh Almost 23.8% (n=38) of the subjects had middle school education and remaining 15% (n=24) of the subjects had Graduation and above. Majority 48.1% (n=77) of the married women were housewife, 23.7% (n=38) of them were on daily wages, 26.3% (n=42) were employed and remaining 1.9% (n=3) of them were self-employed. Previous information on contraception reveals that majority 72.5% (n=116) of the subjects had previous information on immunization 27.5% (n=44) of the subjects had information on immunization. Among the married women 45% (n=72) of the subjects receive information from Health personnel.





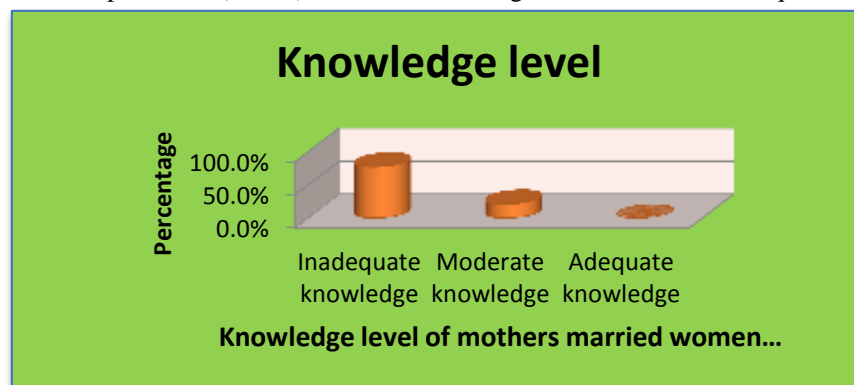
## Section -II: Assessment of Knowledge and Attitude of Married Women Regarding Contraceptives

**Table -1** Frequency and percentage distribution of level of knowledge on married women regarding contraceptives

N=160

Sr. No.	Knowledge regarding married women regarding contraceptives	Knowledge levels					
		Inadequate Below 50%		Moderate 51 – 75%		Adequate Above 75%	
		No	%	No	%	No	%
1	Over all	35	21.9	125	78.1	00	00

Table 1 represents that knowledge level of mothers regarding married women regarding contraceptives 35(21.9%) had inadequate knowledge, 125(78.1%) had moderate level of knowledge and none of them adequate knowledge.



**Fig no. 1** Frequency and percentage distribution of knowledge on married women regarding contraceptives

**Table -2** Frequency and percentage distribution of attitude score of married women regarding contraception at rural and urban area

Attitude score	Min – Max Score	Urban Mean $\pm$ SD	Rural Mean $\pm$ SD	N=160 Student's independent t-test
Overall Score	20-100	67.25 $\pm$ 7.33	59.80 $\pm$ 6.22	t=28.52, P=0.001 Significant

## Section -III: Assessment of correlation between knowledge and attitude scores regarding married women regarding contraception.

**TABLE 3:** Correlation between knowledge and attitude scores regarding married women regarding contraception

N=160

Sl. No.	Knowledge aspects	Mean	S D	r Value	Inference
1	Knowledge	16.36	4.881	0.636	Moderate positive correlation
2	attitude	12.33	2.501		

**Section -IV: Association between the knowledge and attitude of married women regarding contraception, with their selected demographic****Table – 4: Association of knowledge scores of married women regarding contraception in rural and urban area with selected demographic variables****N= 160**

Sr. No.	Variable	Frequency	Urban	Pearson Chi square test	Rural		Urban
<b>1.</b>	<b>Age in years</b>		<i>Inadequate</i>	<i>Moderate</i>		<i>Inadequate</i>	<i>Inadequate</i>
	c) 21-24	88	n	%	n	%	n
	d) 25-30	16	38	80.9%	9	19.1%	38
	e) 31 years and above	16	23	82.1%	5	17.9%	23
<b>2.</b>	<b>Religion</b>		14	56.0%	11	44.0%	14
	f) Muslim	103	5	55.6%	4	44.4%	5
	f) Sikh	32	29	93.5%	2	6.5%	29
	g) Christian	30	28	70.0%	12	30.0%	28
	h) Hindu	25	13	65.0%	7	35.0%	13
<b>3.</b>	<b>Education</b>		66	80.5%	16	19.5%	66
	g) No formal education	43	6	46.2%	7	53.8%	6
	d) Primary school	55	3	60.0%	2	40.0%	3
	e) Middle school	38	23	82.1%	5	17.9%	23
	i) Graduation and above	24	14	56.0%	11	44.0%	14
<b>4.</b>	<b>Occupation</b>		5	55.6%	4	44.4%	5
	h) House wife	77	38	80.9%	9	19.1%	38
	i) Daily wages	38	23	82.1%	5	17.9%	23
	j) Employed	42	14	56.0%	11	44.0%	14



	k) Self Employed	3	5	55.6%	4	44.4%	5
	l) Professional		29	93.5%	2	6.5%	29
<b>5. Family Income</b>			28	70.0%	12	30.0%	28
	m) 3000-5000	148	13	65.0%	7	35.0%	13
	n) 5001- 7000	12	66	80.5%	16	19.5%	66
	o) 7001- 9000		6	46.2%	7	53.8%	6
	p) 9001 and above		3	60.0%	2	40.0%	3
<b>6. Family Type</b>			23	82.1%	5	17.9%	23
	q) Nuclear family	63	14	56.0%	11	44.0%	14
	r) Joint family	33	#	%	#	%	#
<b>7. Number of children</b>			38	80.9%	9	19.1%	38
	s) one	84	23	82.1%	5	17.9%	23
	t) two	39	14	56.0%	11	44.0%	14
	u) three	20	5	55.6%	4	44.4%	5
<b>8. Previous information on Contraceptive methods</b>			29	93.5%	2	6.5%	29
	v) Yes	116	28	70.0%	12	30.0%	28
	w) No	44	13	65.0%	7	35.0%	13
<b>10. Area of residence</b>			66	80.5%	16	19.5%	66
	a) Rural	50	6	46.2%	7	53.8%	6
	b) Urban	50	3	60.0%	2	40.0%	3

**Table 4** reveals the association between socio-demographic variables and the knowledge of married women regarding contraception. All the selected demographic variables are not

significantly associated with the knowledge scores. The association was determined by using Pearson chi square test.



Table – 5: Association of attitude scores of married women regarding contraception with selected demographic variables

Demographic variables		Level of attitude		CHI-SQUARE TEST
		Below median	Above median	
Age	18-20 Years	40	18	chi square value=0.824 p=0.662
	21-24 Years	88	49	
	25-30 Years	16	6	
	31 years and above	16	9	
Religion	Muslim	103	66	chi square value= 6.226 p=0.044
	Sikh	32	16	
	Hindu	25	12	
Mother's education	No formal education	43	22	chi square value=15.224 p=0.002
	Primary school	55	23	
	Middle school	38	19	
	Graduation and above	24	13	
Mother's occupation	House wife	77	48	chi square value=6.914 p=0.073
	Daily wages	38	22	
	Employed	42	18	
	Self Employed	3	1	
Family Type	Nuclear family	148	63	chi square value=2.424 p=0.119
	Joint family	12	2	
Family Income	Rs. 5001-8000	63	20	chi square value=17.507 p=0.000
	Rs. 8001-10000	33	10	
	More than 10001	64	18	
Number of children	one	84	30	chi square value=0.268 p=0.875
	two	39	15	
	Three	20	2	
	Four and above	17	5	
Previous information	Yes	116	13	chi square value=0.367 p=0.545
	No	44	43	
Source of information	Health personnel	72	52	chi square value=10.546 p=0.032
	Friends	28	14	
	Teachers	17	5	
	Mass media	19	10	
	No information	24	12	

## DISCUSSION

Table 11 reveals the association between socio-demographic variables and the attitude scores of married women regarding contraception. Association with religion (chi square 6.226, P=0.044), education (chi square=15.224, P=0.002), Family Income (Chi Square= 17.507, P=0.000), and source of information (Chi square=10.546, P=0.032) are significantly associated with the attitude scores. The association was determined by using Pearson chi square test

## LIMITATIONS OF THE STUDY

1. The study will be delimited to 100 married women.
2. The study will be delimited to assess knowledge and attitude regarding contraceptive methods.
3. The study will be delimited to residing in rural and urban area.

## CONCLUSION

This chapter dealt with the statistical analysis and interpretation of data. The objectives of the study were attained through various statistical method and interpretation. The sample characteristics were dealt with frequency and percentage. Descriptive statistics was used to find mean and standard deviation. Inferential statistics was computed to find out the association

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# ROLE OF HR PRACTICES ON SUPPLY CHAIN MANAGEMENT PERFORMANCE

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Article DOI: <https://doi.org/10.36713/epra12511>

DOI No: 10.36713/epra12511

## ABSTRACT

*Human resources (HR) are the backbone of every supply chain system and the key enabler for all other function to efficiently perform. HRM is centred around expanding strategic approaches to find, hire, select and retain the right employees, for the suitable job, and at the right time, such that they become future leaders to further the organizational objectives, maintaining in mind the organisation's most valuable asset – It's Employees.*

*HR is the driving forces and sources of the core competitive advantage of ecommerce business. The basic aim of this study is to examine and analyze how HRM practices and HR strategies are formulated and utilized in the context of supply chain management of ecommerce companies. The study critically analyse the different areas of HRM in the company such as hiring, training and development, performance appraisal, compensation policy and remuneration, employee motivation and retention. The study examines the application of HR practices within the supply chain management of companies. The outcomes might be utilized to improve both HR practices and SCM process and to encourage further scope of research.*

**KEY WORDS:** *Human Resource Practices, Supply Chain Management*

## INTRODUCTION

Human Resource management plays an important role in increasing the productivity and effectiveness of the firm. The growing challenges confronted by present organizations have led to transformations in the role of Human Resource. Nowadays, HR is not only considered with recruiting, selecting, and dealing with payroll; it is also associated to maintain balance among the employers and employees, encouraging positive work environment, learning and development of workforce, as well as engage and motivate them. The key role of human resource is needed to develop the capabilities of the company. Major Ecommerce companies always expand their plans consistent with their businesses expansion, so they look forward to employee retention for a huge transition.

Supply Chain Management (SCM) is the sequence of enlargement, expanding, executing, and scrutinizing the processes of the distribution capably by using technology in its rapidity. SCM extend to all activities starting from raw material procurements, storages, inventories, and finished products. The SCM in organizations have expanded significantly in recent times. At present it is identified as one of the most significant strategic functions in executing business strategies of companies.

Effective and Strategic HRM can offer a strong foundation of competitive advantages. This apprehension has been

employed to managing people and employee training in the supply chain. Strategically dealing with HR in the supply chain needed HR configurations and modernised HRD that adapts to the wider organizational strategies for well being of workforce.

In the past, the technologies that were utilized for SCM was excel sheets or an arrangement somewhat related to it. Though, at present, supply chains are administered through advanced instruments utilizing sophisticated technologies such as algorithms or machine learning. This type of algorithm assist the supply chain managers to know the needs related to product lines, access region, suppliers, manufacturing units, market pattern, etc. At present, there are automated tools like Artificial Intelligence, cloud computing, XML, internet services, etc. Therefore, looking at the demand for SCM, HR requires to integrate persons who know how to deal with and handle this structures with minimal supervision. It is impossible to recruit someone, train them for 3 months, and then begin the actual working. Naturally, many companies do that but only when they do not need supply chain managers instantly.

## OBJECTIVES

The basic objective of the study is to examine whether there is a significant connection among HR practices and supply chain management.



## HRM PRACTICES TO UNIFY THE SUPPLY CHAIN COMPONENTS

The present scenario of increasingly complex businesses environment – which is characterized by shorter product life-cycle, product proliferations, ongoing outsourcing, and the globalization of the supply base and marketplaces – magnify the challenges of HRM in SCM.

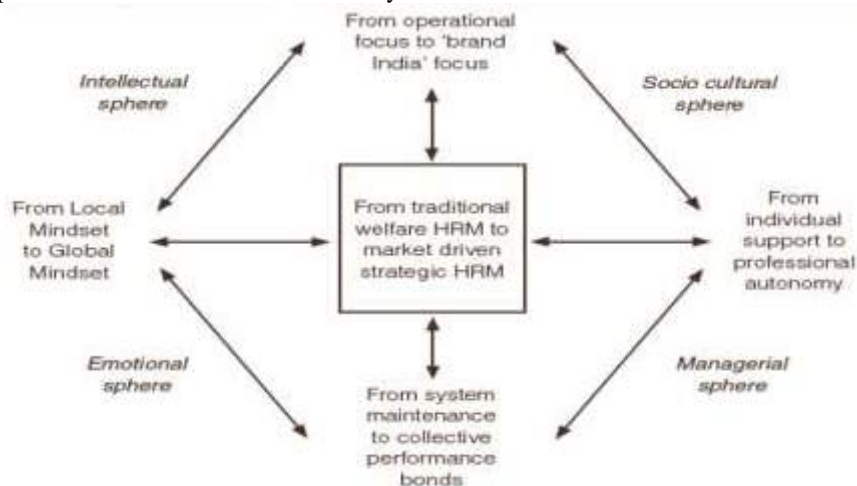
However meet these issues are well worth the attempt - HR practices can be utilized to motivate supply chain partners to expand valuable inter-firm associations and to make knowledge sharing routines. The outcome is a better coordinated, streamlined supply chain and, finally, new competitive benefit.

Ecommerce firms inspire their employees to reassess their work approach and sharpen their individual abilities, thereby enhancing the workplace structures and efficiency.

Ecommerce firms also looks HR equipped with both the ability to perform and empathy, and endorses recruitment, selection, T&D of employees based on these abilities. In these processes, Ecommerce firms recognize the role and competencies of every person, ensuring the placement of the right individual in the right place in despite their race, sex, region, recruitment type, education, employment type and other factors, with the purpose of increasing the competitiveness of the firms.

### Market Driven HR

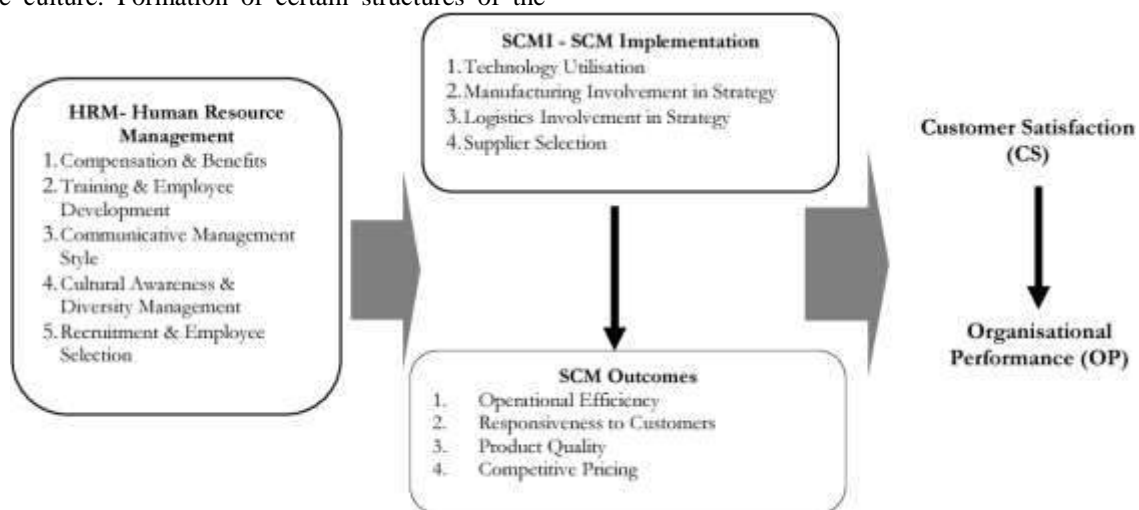
The operational focus on brands India, with collective performances with global mindset and trained autonomies gets into the system with the SCM and HRM concatenation. The intellectual field, socio-cultural areas, emotional spheres and administrative spheres assist in attaining the organizational goals with the particular functions integration with the aspects of SCM.



## BASICS OF HRM & SCM LINKAGES

All men, bearing in mind their wishes and possibilities, select occupation and every company, considering the needs of the environment and available resources will decide how to establish its organizational structures, define job and expand recognizable culture. Formation of certain structures of the

firm, except for practices with which it deals, depend on the willingness of old staff members to adapt to environment changes and the willingness of new staff to hold the culture of the firm.



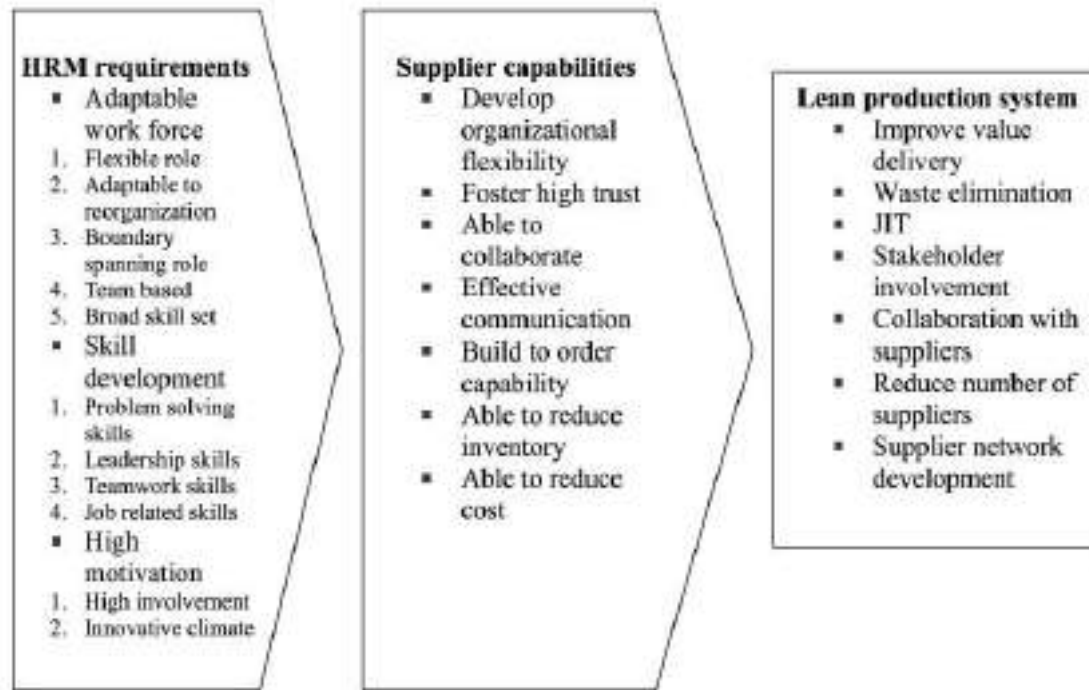
Source: Smith-Doerflin et al. (2011)



If suitable organizational structures are established, its individual members and team activities can make stimulating

and pleasant environments, to educate, adjust and to attain their objectives and purposes.

#### Association amongst lean production system, supplier capabilities and HRM



The above figures reveal the relationship between The HR practices and TQM practices adopted by the firms. It can be seen that Sigma who have low level of linkage to their clients supply chain system have HR practices that are least similar to the HR practices expanded by the firms with reasonable and high levels of linkage with their clients. Organisations with high level of linkages are related with the utilization of team work, job rotation and employee training and development. The T&D done centred around job associated capabilities and it required to attain quality certification. The firms with medium and high levels of connections utilize job rotation to make flexibility in their workforce deployment. They also train their staff members in multiple abilities to make sure that the job rotation is effectual.

#### LITERATURE REVIEW

A paper of **Anastasiou (2016)** is to present the key factors for successful HRM policies and potential sensible measures for improvement in supply chain management. A firm's effective HR policies include different aspects which can affect the final result of individual efficiency and organizational performance of firms. Successful HR policies are chiefly significant in supply chain segment. Effective operation of supply chain, for instance, needs internal and external synchronization, information sharing and communication within and among firms and departments.

**Sweeney (2013)** discusses the effect of HR practices on supply chain incorporation and their relationship. On the other hand, mainly, the distribution networks are found to be lacking. Consequently, various authors are tried to analyze

how HRM can be best managed to capitalize on production and boost creativity while managing operational costs, thereby growing business performance.

**Kimberly (2021)** points out that the premise that effective HRM is vital to satisfactory organizational performance has been accepted for some time. The evidences suggest that an even more healthy association among HR practices and the performance of companies that are executing SCM philosophies. While this notion is instinctively pleasing, there is little practical study to support it. The basic aim of this study is to illustrate upon the HR and SCM literatures to expand conceptual models depicting proposed relationship between HR, SCM operations, SCM results, client satisfaction, and organizational performance. Also, it generates survey instruments that enable valid measurement of these constructs. Next, empirically test the model employing structural equation modelling.

In a paper **Marwah, Jain and Thakar (2014)** proposes the conceptual framework pointing to the impact of HR factors on supply chain performances and to recommend best approach suitable for Indian manufacturing companies. The methods of crucial evaluations comprised on performance measurements, SCM and HR practices. The study conducted in order to classify research gap in content of impact of HRM on performance measurement of supply chain, as well as to suggest directions for further studies. Critical investigations of chosen research papers led to an intention that there can be important impact of the role of human association on overall supply chain activities.





**Jena, Sarat & Gadget (2021)** points out that HRM is struggling to manage the increasingly demand for skilled resources in the logistics industry. Therefore, Jena et al proposes the possible incorporation of HR and SCM for improved supply chain performance. The purpose of this article is to investigate the consequence of intra HRM - SCM and joint HRM - SCM decisions on the performance of the supply chains. The data gathered from 109 logistic managers from Indian ecommerce companies are employed to test hypotheses. The outcome of the study suggests that supply chain performance is considerably affected by joint HRM-SCM, in comparison with intra HRM-SCM activities, particularly under volatile demand environments.

**In an article Pandey, Bhattacharyya and Kaur (2012)** tried to establish the significance of HRM in attaining high levels of SCM via conceptual frameworks (identifying the impact of HRM on the connection among information sharing and SCM) and validating the framework empirically to set up the proposed associations. The study tried to find the relative effect of predictor variables on SCM and the moderation impact of HR strategies (training, performance appraisal and reward system) on this association. The outcome show that information sharing has a important impact on supply chain collaboration, and the connection among these two factors is found to be positively moderated by “training” and “reward management”, while “integrated performance system” doesn’t emerge as a major moderator in the proposed relationship.

## CONCLUSION

This study has tried to examine role of HRM in effecting the competitiveness of supply chain. It has considered the viewpoint of different level of employees in recognizing how the firm’s HR policies influence the working of the organisation and its effect made on the employee performance and commitment.

Performance management in HRM represent designed and executed interventions by the multinational corporations with the purpose of the management of the performances of the international employees so that those performances can contribute to the attainment of the international strategic goals and outcome of organisations.

Managing the employees does not have to a rocket science as long as a company does it right. In the case of ecommerce companies, the goal is to attract the best employees in budget friendly and fruitful means, provide adequate training programs, and maintain them. With some changes and good disciplines, ecommerce companies are already half way to the destination.

The learning and development objectives are in maintaining with requirements, skills and capabilities of the trainees and it is this that proves to be the key reasons for achievement of the training as intact. The trainees mark the feedbacks sheet and timely tests are carried out to identify the measures the

efficiency of T&D programme to employee to check their remembrance if they retains anything or not.

The company manages should share with the employees both expectations and disappointments on a daily basis by offering the staff members with regular opportunities to talk about performance before any rewards or punishments consequence take place, there will be no surprise at the time of the yearly formal reviews. These feedbacks will thus assist in minimizing severe result of appraisal such as resigning or demoralizing of workers.

The study addressed the work on quality of training and development programme give to their workforce and comprise the trainees in the building processes of this program so as to executive programs that boost their competence and employability skills.

Learning and development policies should be made known to all staff members through Policy Manual and holding of seminars by departmental heads.

For performance evaluation will be sure to make on the current performance planning and monitoring processes for employees and execute similar processes for teams.

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# AUTOMATIC SOLAR PANEL CLEANING USING WIPER

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## ABSTRACT

*One of the key environmental elements that has a big impact on solar PV module efficiency is dust. India is one of the tropical nations where dust buildup on solar panels is a major issue. Due to the dust, the power outputs of some PV modules in India are lowered by 50–60% in a month. Therefore, a model of solar panel cleaning system has been suggested to lessen the efficiency loss caused by dust deposition. This technique uses wipers that are each positioned at the panel's diagonally opposite corners and are powered by a DC wiper motor via a mechanism. The power loss due to dust may be regulated and kept between 5 to 10% of such output power by cleaning the panels by using technology either daily or weekly, depending on the rate of dust collection. The usage of this proper cleaning with PV panels will shorten the solar PV system's total payback period in locations with substantial soiling losses because it is an affordable solution to the soiling issue.*

## I. INTRODUCTION

The usage of solar PV modules as a power source is growing. In response to the rising demand for solar PV modules, efforts are being made to increase their effectiveness and financial feasibility. Both off-grid and on-grid solar power systems have difficulties in making their use affordable for the general population. Due to research on the characteristics of the semiconductors used in solar cells, the efficiency of PV systems has been limited at 15% to 20%. There are several losses linked with the power generation using solar panel like shading loss, wiring loss, sun tracking loss and soiling loss. Among all these losses the most critical one for the tropical countries is the soiling loss. So, in these areas there is no option other than cleaning the PV modules to maintain the high power output, but as the PV modules are mounted at greater height on the roof for avoiding the shading in the off grid system, their access is difficult and risky. Also, the panel cleaning is required to be done once or twice a day in the dusty areas, which would be cumbersome if done manually. So, there is a necessity of developing a system to clean the solar panel automatically, to reduce the loss of power due to soiling.

## II. LITERATURE SURVEY

### 1. Automatic Solar Panel Cleaning System Based on Arduino for Dust Removal

**Author: Md. Rawshan Habib, Md Shahnewaz Tanvir, Ahmed Yousuf Suhan, Abhishek Vadher, Sanim Alam.**

Solar panel is vulnerable to accumulated dust on its surface. The efficiency of the solar panel gradually decreases because of dust accumulation. In this paper, an Arduino

based solar panel cleaning system is designed and implemented for dust removal. The proposed solar panel cleaner is waterless, economical and automatic. Two-step mechanism used in this system consists of an exhaust fan which works as an air blower and a wiper to swipe the dust from the panel surface. a dc motor is used to power the wiper. Since, the system does not need water to clean solar panel, it avoids the wastage of water and effective in desert areas. Experimental results show that the proposed cleaning system can operate with an efficiency of 87-96% for different types of sand.

### 2. Automatic solar panel cleaning system Design

**Author: Ali Al Dahoud, Mohamed Fezari, Ahmad Al dahoud**

This paper aims to develop an automatic <sup>1</sup> cleaning system for Photovoltaic (PV) solar panels installed on the roof of University Al-Zaytoonah faculty of IT in Jordan. The experiments were done at University Badji Mokhtar Annaba Algeria. We designed a dust detector and perform tests on it for calibration. The brain of the system is an Arduino Uno microcontroller, which gets data from the dust sensor then makes treatment and sends instructions to the system to perform the cleaning process. The cleaning process is based on-power circuit that controls the speed and direction of a motor to scan all surface of the PV panel. GUI was developed to monitor the system and sensor status. The collected data is transmitted to the central unit. Finally, the primary results obtained to meet our expatiations for optimizing the efficiency of the solar panels.

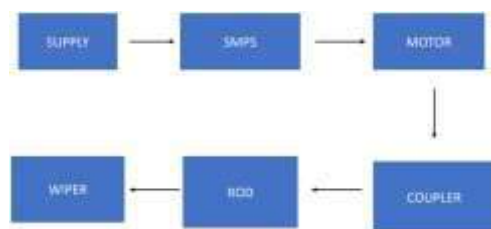


### 3. Automatic Solar Panel Cleaning System

**Author: Nagseh Maindad, Akshay Gadhave, Suraj Satpute, Babita Nanda**

This paper is about the cleaning of a solar panel. In rural areas, most of the solar street lights are used. After the installation of the solar street light, it only works for two to three months. Because, that panels are installed at a height near about 15 to 20 feet, at this height cleaning is not possible by using a ladder. If the solar panel is not cleaned regularly, then the dust in environment accumulates on the surface of the solar panel. This dust converts into a thick sticky layer due to morning dewdrops. Due to this dust solar panels not give a sufficient charging current that required for the charging of a battery. if the battery is not fully charged, then it does not gives the desired output and we have to replace that battery. It increases the cost of maintenance. In this paper, we design a cleaning system for a solar street light. which can be operated automatically and it helps us to clean solar panels without any efforts. This system reduces human efforts, it saves time, it works automatically at a specified time. Overall it increases the efficiency of the solar street light. This system is designed using an ATmega16A microcontroller due to it's advance features. It also uses GSM module, linear actuator, limit switches, DC gear motors, Roller brush, and DC submersible pump. Here, GSM Module is used for real-time operation, linear actuators for the movement of the brush. The gear motors are coupled with a brush for the rotation of brush, the pump is used to lift the water from ground surface to upper surface of a solar panel for water cleaning purpose.

### III. BLOCK DIAGRAM



**Figure1. Block Diagram**

**Supply:** The system is powered by an electrical supply, typically from a battery or solar panel system. The supply provides the necessary power to run the various components of the system.

**Switching Mode Power Supply (SMPS):** An SMPS is used to convert the DC voltage from the supply to the required voltage level for the motor. The SMPS also helps regulate the voltage to ensure that the motor receives a stable and constant power supply.

**Motor:** The motor is the primary component responsible for driving the wiper. A DC motor is commonly used in these

types of systems, as it can provide the necessary torque and speed to move the wiper across the solar panel surface. The motor is connected to the shaft rod through a coupling.

**Shaft Rod:** The shaft rod is a long cylindrical rod that connects the motor to the wiper. The shaft rod is typically made of metal and is designed to be durable and long-lasting. The shaft rod rotates when the motor is activated, causing the wiper to move across the surface of the solar panel.

**Bearing:** The bearing is a component that helps support the weight of the shaft rod and wiper. The bearing is typically a ball bearing or roller bearing and is designed to reduce friction and wear on the shaft rod.

**Wiper:** The wiper is the component responsible for cleaning the solar panel surface. The wiper is typically made of rubber or another soft material that is gentle on the solar panel surface. The wiper is attached to the shaft rod and moves back and forth across the surface of the solar panel when the motor is activated.

Overall, the block diagram for an automatic solar panel cleaning system using a wiper includes a supply, SMPS, motor, shaft rod, bearing, and wiper. The components work together to provide a reliable and efficient cleaning solution for solar panel surfaces.

### IV. MECHANISMS IMPLEMENTATION

The amount of degree of freedom that the linkage has is crucial when analysing a mechanism. The quantity of actuators required to operate the mechanism is referred to as the degree of freedom. Any actuator of the system could be used to manually move one link to a different position or attach a motor to one link's shaft. The sign for mobility, which represents a mechanism's degree of freedom, The degrees of freedom for planar connections coupled with common joints are calculated using M. Grubler's equation, which is provided by:

$$M = 3(n-1) - 2j_p - j_h$$

Where:

M = degrees of freedom

n = total number of links in the mechanism

$j_p$  = total number of primary joints (pins or sliding joints)  $j_h$  = total of higher-order joints (cam or gear joints)

The selection of the parts in this design is carefully scrutinised. The revolving wheel of the crank is connected to the motor by means of gear mechanisms, and a DC electric motor is used to power it. The rotating wheel has gear teeth that mesh with the teeth in the rotating shaft of the DC electric motor.



Second, a four- bar mechanism with direct transmission of the action of the rocker system creating an arc to the two outside wiper frames is recommended as the primary mechanism. The connecting links are also constructed of steel to increase toughness so that they can endure the forces supplied by the crank wheel without breaking or deforming. The crank wheel is often made of steel material to withstand the motor forces. The four bar mechanism's casing is composed of iron rather than steel because it simply serves to house the parts and is subject to relatively low forces.

Additionally, steel is preferable for the wiper 34 frame construction so that it may move back and forth across the windscreen without warping or breaking. Rubbers are used as the rubbing surface of the wipers because they are effective surface wipers and can effectively clean the windscreen.

The crank slider mechanism on the outside- most wiper frame is built of steel for its moving parts, allowing it to withstand the forces applied to it as it swings up and down to cover the largest possible area while wiping. Rubber material is also installed on its wiping surface.

## V.RESULT ANALYSIS

First of all before we start to test our new mechanism, it's clear from (Figure 2) below that the region cleaned by the wiper is limited. And using our new mechanism we can reach to the area which is inside the red box as shown in the figure..,



**Figure2.Solar Cleaner Using Wiper**

To provide a wiper that is new on the market and can be able to cover the maximum area of the windscreen when wiping in comparison to other designs manufactured earlier, the project design basically started from scratch and a desirable design had to be selected based on various factors depending on its use. A desired product is processed during the manufacturing process with a variety of factors and

computations. The separate elements are fitted together throughout the assembly process, commencing with the motor being linked to the four-bar mechanism and ending with the connection of the exterior wiper components.

## VI.CONCLUSION

After the conversations, it might be assumed that this work is intended to transform the auto industry by describing a modern vehicle wiper component that can handle visibility concerns during rainy conditions. Due to the standard wipers' limited ability to completely clear the windscreen, problems with water dribbling are unavoidable. This vehicle's windscreen can be completely cleaned by this windscreen wiper device. Thus, it will be useful in that it will improve driver visibility up to a comfortable distance and prevent unwarranted and unintended hits on streets. Regarding the aims, it might be noted that while creating a piece, it is important to establish a few points and goals that will guide you and provide a flowchart of what you should do. Following the completion of the job, these milestones and destinations are examined to determine whether they were attained.

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# AN EMPIRICAL ANALYSIS OF THE NEXUS OF HEALTH CARE EXPENDITURES, EDUCATION EXPENDITURES, AND ECONOMIC GROWTH IN NIGERIA

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Article DOI: <https://doi.org/10.36713/epra12508>  
DOI No: 10.36713/epra12508

## ABSTRACT

*This study investigated the nexus between economic growth, health and education expenditure in Nigeria, using time series data for the period of 28 years (1990-2018). The study adopted the use of the Philips-Pheron test for unit root, ARDL bound test procedure to co-integration, and OLS method to estimate the relationship of the parameters used in the study. The findings revealed that all variables are stationary at first level  $I(1)$ , there is a long-run relationship between economic growth, health, and education expenditure, and both education and health expenditures are good determinants of growth as revealed by the regression result. The study concluded that recurrent expenditures on health and education are required for economic growth and development, which thus affects the standard of living and life expectancy which goes a long way in contributing to aggregate output. Therefore, the study calls for the urgent need for policymakers to ensure budgetary allocations on education and health are given preeminence.*

**KEYWORDS:** *Economic growth, health and education expenditure, Cointegration.*

## INTRODUCTION

Health is a fundamental factor contributing to the economic growth and development of every nation. This is because, a sickening population does not contribute substantially to productive activities necessary to stimulate the desired level of growth as expressed in the Gross Domestic Product (GDP). Likewise, education is paramount in resulting to human and capital development which is a prerequisite to advancement emanating from improved technical know-how through research and development which is necessary for technological innovations needed for growth and development.

WHO (as cited by Bakare & Olubokun, 2011) revealed that 50 percent of economic growth differentials between developed and developing worlds are attributable to ill-health and low life expectancy. This connotes that the potential for the economic growth of the developing world lag behind because of poor health, which results in low life expectancy (55/56 years) and hence resulting in loss of labour force necessary to engineer this growth. Although the recurrent expenditure on health in Nigeria has been on the increase in recent years as compared to the previous decades, yet more needs to be done to improve this sector performance.

In the other hand, Education has been identified as the most vital instruments in the process of economic growth and development. It is being referred to as the most vital or significant investment in human capital which brings about revolution in productive processes which can stimulate growth through increasing the efficiency of labour, improving health and enhancing conditions and environment for good governance. Looking at the government expenditure in Education over the past years, it can be said that although the government have been playing significant roles in increasing the expenditure of this sector, there is still a revolutionary need for improvement.

It is obvious that various literatures in diverse geographic entity have undertaken the study to analyse the relationship between health expenditure and economic growth with little reference or inhibiting impact of education to growth. Hence, this study is undertaken to complement the information in the bank of knowledge of various existing literatures (Abdulwahab, Kefeli & Hashim, 2018; Sefa, Siew & Mehmet, 2015; Inuwa & Haruna, 2012).

## LITERATURE REVIEW

Investigation on the connections, linkages or relationship between health, education and growth has been an ongoing



subject of debate. This subject is of great interest especially in LDCs where the health and education sector has been lagging those of the developed and other developing world (Bakare & Olubokun, 2011). However, little studies have been done inculcating education in the model adopted in various studies. This research therefore reviews diverse literatures to give a background of requisite information in concord to the subject.

Serap (2016) examines the health care expenditures and Economic growth in Developing Countries using Granger causality test for the period of 1995 to 2013. The study indicated that in emerging markets, income proffer a fundamental explanation to healthcare expenditure among countries used in the study. This therefore means that the proportion of healthcare expenditure in total GDP increases with an increase in economic growth. This finding is related to the study of Fuhwei (2015) who investigated the empirical evidence from OECD countries of more health expenditure, better economic performance using Generalized Method of Moment (GMM) to derive the design of the estimators of the focal variables from 1990 to 2009. The result of his findings indicates that when the ratio of health spending to gross domestic product (GDP) is less than the optimal level of 7.55 percent, increase in health spending effectively led to better economic performance. Whereas more spending above the optimal level does not translate to better care. The study further revealed that 5.48 percent of GDP is the real level of health spending in OECD countries, with a corresponding economic growth rate of 1.87.

More so, Oni (2014) used the Multiple regression analysis to investigate the growth impact of health expenditure in Nigeria. The result shows that the key determinants of economic growth in Nigeria are gross capital formation, total health expenditures and the labour force productivity, while life expectancy rate has negative impact on growth for the period covered by the study. The study suggests that improving the health expenditures will result to improving the life expectancy, the efficiency, productivity and income of labour as well as the level of investment in the economy, hence growth.

Moreover, Bakare and Olubokun (2011) undertook an empirical study of health care expenditure and economic growth in Nigeria using the ordinary least square multiple regression analytical method for the time 1974-2008. The result of the study depicts that public expenditure has vital relationship to the growth and development of any nation. It is a priori expectation to improve the health, life expectancy, efficiency and productivity of labour. They further suggest that government of Nigeria had placed emphasis on the recurrent expenditure more than the capital expenditure on health for the time being of study. The findings show a positive relationship between Health care expenditure and economic growth which is in conformity with the priori expectation. Positive relationship also holds for Gross Capital Formation and economic growth as well as labour force and economic growth.

Similarly, Inuwa and Haruna (2012) have studied the relationship between health expenditures and economic growth in Nigeria for the period 1980-2010 using the autoregressive distributed lag (ARDL) bound test approach to the cointegration Pair Wise Granger causality test. The result of the ARDL revealed that there is a prevalence of a long-run relationship between health expenditures and economic growth whilst that of the Granger causality indicates a bidirectional causality between health expenditures and economic growth in Nigeria. The study further suggests that the Nigerian government should include investment in health as a tool of macroeconomic policy as it has the potency of increasing aggregate growth in the economy.

In addition, Nyamwange (2012) examines the relationship between economic growth and public healthcare expenditure in Kenya for the period 1982 – 2012 using ordinary least square (OLS) regression. It checks for co-integration, granger causality and unit root presence on the long-run relationship between public healthcare expenditure (PHCE) and GDP. The study which attempts to determine the properties of healthcare in Kenya finds out that healthcare in Kenya has an elasticity of 0.024 percent to GDP per capita. This is to mean that for every 1% increase in GDP per capita, PHCE should increase by 0.024 percent. The study suggests for “a suitable strategy for financing healthcare in Kenya.”

Sefa, Siew and Mehmet (2015) using a sample of 306 estimates drawn from 31 primary studies conducted a study on the meta analysis study of the effects of government education and health expenditures on economic growth. The study shows that the effect of education expenditure on growth is positive, whilst the growth effect of health expenditure is negative.

In the same vein, Abdulwahab, Kefeli and Hashim (2018) analysed the dynamic effect of healthcare expenditure and education expenditure on economic growth in Organisation of Islamic Countries (OIC) 1990 to 2015. They adopt the use of Pool Mean Group (PMG) method. The study reveals that in OIC countries there is the prevalent of robust long-run co-integrating relationship between healthcare expenditure, education expenditure, research and development and the economic growths. The investigations suggest that well managed and administered healthcare and education are device to advance the attainment of economic growth and development in OIC countries.

Also, Fatima, Zina and Abdelaziz (2014) test for co-integration and causality in examining the relationship between public spending on health and economic growth in Algeria for the period being 1974-2014. The findings revealed that there is a long-run causality from public spending on health to economic growth while it is not observed any short-run causality from public spending on health to economic growth. The recommends that The lack of durable connection from public spending on health to economic growth is not necessarily a reason to



reallocate health investment away from the health sector. In concord to the above finding, Serdar and Ebru (2014) investigate health expenditures and economic growth in G8 countries for a period of 1995 to 2012. They adopt the use of the Kao cointegration which shows the existence of long run relationship between health expenditures and economic growth.

## METHODOLOGY

Time series data obtained from the Central Bank of Nigeria (CBN) bulletin and National Bureau of Statistics (NBS) bulletin are employed for this study for the time period of 1990 to 2018. This study investigates the relationship between health expenditure, education expenditure and economic growth to determine the time series properties of the parameters using autoregressive distributed lag (ARDL) bound testing procedure to examine the cointegration (long run) relationship between the dependent (economic growth) and independent variables (health expenditure and education expenditure). The choice of the ARDL was because (i) It does not require that the variables under study must be integrated of the same order unlike other techniques such as the Johansen cointegration approach (ii) It is suitable for small or finite sample data unlike other conventional cointegration approach (iii) It is a simple technique because it allows the co-integration relationship to be estimated by OLS once the lag order of the model is identified unlike other multivariate co-integration methods. The functional form of the model is expressed as;

$$RGDP = f(HEXP, EEXP) \text{-----}(1)$$

From equation (1) the ARDL model specification of equation is expressed as unrestricted error correction model (UECM) to test for cointegration between the variables under study below:

$$\Delta \ln RGDP_t = \varphi_0 + \sum \varphi_1 \Delta \ln RGDP_{t-1} + \sum \varphi_2 \Delta \ln HEXP_{t-1} + \sum \varphi_3 \Delta \ln EEXP_{t-1} + \beta_1 \Delta \ln RGDP_{t-1} + \beta_2 \Delta \ln HEXP_{t-1} + \beta_3 \Delta \ln EEXP_{t-1} + \mu \text{-----}(2)$$

The long run relationship is estimated using the conditional ARDL model specified as:

$$\ln RGDP_t = \varphi_0 + \beta_1 \ln RGDP_{t-1} + \beta_2 \ln HEXP_{t-1} + \beta_3 \ln EEXP_{t-1} + \mu_t \text{-----}(3)$$

Where in equation (2) Real Gross Domestic Product (LRGDP) is the dependent variable and is expressed as the function of Health Expenditure and Logarithm of Education Expenditure.  $\varphi_0$  is the vector of constant where  $\varphi_1$  to  $\varphi_3$  short run elasticities and  $\beta_1$  to  $\beta_3$  are long run elasticities. The analysis of the data was carried out using Eviews 9.

## RESULT AND DISCUSSION

The bounds testing procedure does not require the pre-testing of the variables included in the model for unit roots, however, the Philips-Pheron test for unit root was undertaken and is presented in the table below.

**Table 1: Result of Philips-Pheron Unit Root Test**

Variable	PP Statistics	Test Critical Values (5%)	Decision
<i>Level</i>			
lnRGDP	0.776311	-2.971853	Non-stationary
lnHEXP	-2.971853	3.323824	Non-stationary
lnEEXP	-2.971853	5.006291	Non-stationary
<i>First Difference</i>			
lnRGDP	1.552709	0.024085	Stationary
lnHEXP	0.806136	0.068324	Stationary
lnEEXP	1.332380	0.080964	Stationary

Source: Authors Computation using Eviews 9

From the table 1 above, it could be depicted that all variables are integrated of order one.

**Table 2: ARDL Bound Test for Cointegration**

Critical Value	Lower Bound Value	Upper Bound Value
1 %	5.15	6.36
5 %	3.79	4.14

Source: Authors Computation using Eviews 9

From table 2 above, the computed F-statistics;  $F_{lnRGDP}$  (lnHEXP, lnEEXP) is = 4.82. This value is above the upper bounds of the critical value of 4.14 at 5% level of significance. This implies that there is cointegration (long run relationship)

between economic growth, health expenditure and education expenditure, the null hypothesis of no cointegration between the variables is rejected and the alternative hypothesis is accepted.



**Table 3: OLS Result**

Variables	Coefficient	T-Statistics
HEXP	38.39544	0.621242
EEXP	91.25387	2.318787
R <sup>2</sup>	0.906565	

Source: Authors Computation using Eviews 9

The above table indicates the result of the ordinary least square regression which indicates that a 1-unit increase in health expenditure will bring about 38.4-unit increase in Economic growth and a unit increase in education expenditure will result to a 91.3-unit increase in economic growth which is expressed as real GDP. However, the result of our R<sup>2</sup> connote that 90.7 percent variation in the dependent variable (RGDP) is brought about by changes or variation in the dependent variables (Health and Education Expenditure). The result of the R<sup>2</sup> indicates that our model is a good fit.

## CONCLUSION

This study examines the connections between economic growth, health expenditures and education expenditures using time series data from 1990 to 2018 obtained from CBN statistical Bulletin of 2018. The result of Philips-Pheron unit root test indicates that all variables to be stationary at first difference. The bounds testing (ARDL) approach to cointegration was employed to analyse the data which revealed that there is a prevalence of long run relationship between economic growth, health and education expenditure. However, the result of OLS indicates that our education and health expenditures are good explanatory of the variation in economic growth.

The result of our regression analysis and ARDL bound test calls for urgent need for the government to increase the budgetary allocations of Health and Education sector as it results to tremendous impact on economic activities which in the long run increases growth and thus development. Policy makers should therefore ensure that recurrent expenditures on health and educations are increased which thus impact the resaerch and development in education and increased life expectancy which in the long run result to increased aggregate output.

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## APPENDIX

Null Hypothesis: LRGDP has a unit root  
Exogenous: Constant  
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	0.776311	0.9917
Test critical values: 1% level	-3.689194	
5% level	-2.971853	
10% level	-2.625121	

\*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	2049747.
HAC corrected variance (Bartlett kernel)	5175633.

Phillips-Perron Test Equation  
Dependent Variable: D(LRGDP)  
Method: Least Squares  
Date: 03/31/19 Time: 14:29  
Sample (adjusted): 1991 2018  
Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LRGDP(-1)	0.024085	0.015512	1.552709	0.1326
C	862.5237	658.3615	1.310106	0.2016
R-squared	0.084858	Mean dependent var		1787.140
Adjusted R-squared	0.049661	S.D. dependent var		1524.064
S.E. of regression	1485.739	Akaike info criterion		17.51396
Sum squared resid	57392910	Schwarz criterion		17.60912
Log likelihood	-243.1955	Hannan-Quinn criter.		17.54305
F-statistic	2.410907	Durbin-Watson stat		0.553708
Prob(F-statistic)	0.132582			

Null Hypothesis: HEXP has a unit root  
Exogenous: Constant  
Bandwidth: 13 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	3.323824	1.0000
Test critical values: 1% level	-3.689194	
5% level	-2.971853	
10% level	-2.625121	

\*MacKinnon (1996) one-sided p-values.



Residual variance (no correction)	1361.595
HAC corrected variance (Bartlett kernel)	340.9419

Phillips-Perron Test Equation  
Dependent Variable: D(HEXP)  
Method: Least Squares  
Date: 03/31/19 Time: 14:40  
Sample (adjusted): 1991 2018  
Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
HEXP(-1)	0.068324	0.084755	0.806136	0.4275
C	7.387026	9.785071	0.754928	0.4571
R-squared	0.024385	Mean dependent var		12.69643
Adjusted R-squared	-0.013139	S.D. dependent var		38.04362
S.E. of regression	38.29273	Akaike info criterion		10.19715
Sum squared resid	38124.66	Schwarz criterion		10.29230
Log likelihood	-140.7600	Hannan-Quinn criter.		10.22624
F-statistic	0.649854	Durbin-Watson stat		2.177469
Prob(F-statistic)	0.427477			

Null Hypothesis: EEXP has a unit root  
Exogenous: Constant  
Bandwidth: 26 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	5.006291	1.0000
Test critical values:		
1% level	-3.689194	
5% level	-2.971853	
10% level	-2.625121	

\*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	1806.074
HAC corrected variance (Bartlett kernel)	293.7057

Phillips-Perron Test Equation  
Dependent Variable: D(EEXP)  
Method: Least Squares  
Date: 03/31/19 Time: 14:41  
Sample (adjusted): 1991 2018  
Included observations: 28 after adjustments



Variable	Coefficient	Std. Error	t-Statistic	Prob.
EEXP(-1)	0.080964	0.060767	1.332380	0.1943
C	8.464927	11.62959	0.727878	0.4732
R-squared	0.063914	Mean dependent var		19.27143
Adjusted R-squared	0.027911	S.D. dependent var		44.73084
S.E. of regression	44.10218	Akaike info criterion		10.47964
Sum squared resid	50570.06	Schwarz criterion		10.57480
Log likelihood	-144.7150	Hannan-Quinn criter.		10.50874
F-statistic	1.775237	Durbin-Watson stat		1.633385
Prob(F-statistic)	0.194296			

Dependent Variable: RGDP

Method: ARDL

Date: 03/31/19 Time: 14:48

Sample (adjusted): 1994 2018

Included observations: 25 after adjustments

Maximum dependent lags: 4 (Automatic selection)

Model selection method: Akaike info criterion (AIC)

Dynamic regressors (4 lags, automatic): HEXP EEXP

Fixed regressors: C

Number of models evaluated: 100

Selected Model: ARDL(4, 1, 3)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
RGDP(-1)	1.815590	0.226962	7.999542	0.0000
RGDP(-2)	-0.576219	0.461669	-1.248122	0.2325
RGDP(-3)	-0.607414	0.538291	-1.128413	0.2781
RGDP(-4)	0.640092	0.382796	1.672148	0.1167
HEXP	-32.30395	14.24892	-2.267115	0.0397
HEXP(-1)	-38.75507	12.90281	-3.003614	0.0095
EEXP	13.84480	9.740093	1.421424	0.1771
EEXP(-1)	15.26916	9.017127	1.693350	0.1125
EEXP(-2)	-1.599906	7.414884	-0.215770	0.8323
EEXP(-3)	-14.77008	7.149779	-2.065809	0.0579
C	-4835.296	2239.389	-2.159203	0.0487
R-squared	0.998762	Mean dependent var		42648.13
Adjusted R-squared	0.997878	S.D. dependent var		18544.48
S.E. of regression	854.3484	Akaike info criterion		16.63874
Sum squared resid	10218756	Schwarz criterion		17.17504
Log likelihood	-196.9842	Hannan-Quinn criter.		16.78748
F-statistic	1129.360	Durbin-Watson stat		2.069254
Prob(F-statistic)	0.000000			

\*Note: p-values and any subsequent tests do not account for model selection.

ARDL Bounds Test

Date: 03/31/19 Time: 15:50

Sample: 1994 2018



Included observations: 25  
 Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	4.826534	2

#### Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	3.17	4.14
5%	3.79	4.85
2.5%	4.41	5.52
1%	5.15	6.36

Test Equation:  
 Dependent Variable: D(RGDP)  
 Method: Least Squares  
 Date: 03/31/19 Time: 15:50  
 Sample: 1994 2018  
 Included observations: 25

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RGDP(-1))	0.543541	0.218816	2.484012	0.0263
D(RGDP(-2))	-0.032678	0.296817	-0.110094	0.9139
D(RGDP(-3))	-0.640092	0.382796	-1.672148	0.1167
D(HEXP)	-32.30395	14.24892	-2.267115	0.0397
D(EEXP)	13.84480	9.740093	1.421424	0.1771
D(EEXP(-1))	16.36998	8.458464	1.935338	0.0734
D(EEXP(-2))	14.77008	7.149779	2.065809	0.0579
C	-4835.296	2239.389	-2.159203	0.0487
HEXP(-1)	-71.05902	20.91063	-3.398224	0.0043
EEXP(-1)	12.74398	13.36110	0.953812	0.3564
RGDP(-1)	0.272049	0.116379	2.337609	0.0348
R-squared	0.811378	Mean dependent var		1976.703
Adjusted R-squared	0.676648	S.D. dependent var		1502.441
S.E. of regression	854.3484	Akaike info criterion		16.63874
Sum squared resid	10218756	Schwarz criterion		17.17504
Log likelihood	-196.9842	Hannan-Quinn criter.		16.78748
F-statistic	6.022256	Durbin-Watson stat		2.069254
Prob(F-statistic)	0.001368			





Dependent Variable: RGDP  
Method: Least Squares  
Date: 03/31/19 Time: 16:37  
Sample: 1990 2018  
Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
HEXP	38.39544	61.80429	0.621242	0.5398
EEXP	91.25387	39.35415	2.318787	0.0285
C	22639.60	1580.311	14.32603	0.0000
R-squared	0.906565	Mean dependent var		39457.11
Adjusted R-squared	0.899378	S.D. dependent var		18991.98
S.E. of regression	6024.453	Akaike info criterion		20.34274
Sum squared resid	9.44E+08	Schwarz criterion		20.48418
Log likelihood	-291.9697	Hannan-Quinn criter.		20.38704
F-statistic	126.1340	Durbin-Watson stat		0.831321
Prob(F-statistic)	0.000000			



# ETHNOMEDICINE FOR BITES BY THE PRIMITIVE AND VULNERABLE TRIBAL GROUPS (PVTGS) OF NORTH COASTAL ANDHRA PRADESH

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Article DOI: <https://doi.org/10.36713/epra12518>

DOI No: 10.36713/epra12518

## ABSTRACT

*The paper deals with 44 species of plants covering 33 families used by the PVTGs of North Coastal Andhra Pradesh for curing a variety of bites. The methodology and mode of approach is adapted from the classical works. With 5 species Asclepiadaceae is the dominant family followed by Liliaceae (3), and others. Herbs are dominant with 18 species followed by shrubs (8 spp), and others. Root is used in 24 practices followed by leaf (20), and others. Millettia racemosa and 20 practices were found to be new.*

**KEY WORDS:** Ethnomedicine, Bites, Tribals, Andhra Pradesh

## INTRODUCTION

There are 550 tribal communities in India of which 75 were recognized as Primitive and Vulnerable Tribal Groups (PVTGs) by the Government of India as per Dhebar Commission (1961). 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, 10 communities viz., Bodo Gadaba, Chenchu, Dongria Khond, Bondo Porja, Gutob Gadaba, Khond Porja, Konda Reddi, Konda Savara, Kutia Khond and Parengi Porja are recognized as PVTGs and except Chenchu and Konda Reddi the rest are present in the study area. It falls in between 81° 51' and 84° 46' of Eastern longitude and 17° 45' and 19° 40' Northern latitude with a total area of 10,860 sq km covering 23 mandals of Srikakulam, Vizianagaram and Visakhapatnam districts with a total population of 42,88,113 of which the tribals are 6,18,500 (14.42%) and the Primitive and Vulnerable Tribal Groups (PVTGs) constitutes 1,76,324 (4.11%) as per 2011 census. Though there are publications on bites by different tribes in different parts of India (1-3) exclusive studies on the PTGs are not undertaken necessitating the present study.

## MATERIALS AND METHODOLOGY

The methodology and mode of approach for ethnomedicinal enumeration is adopted from the classical works of Croom (Croom, 1983), Jain (Jain, 189), Bellany (Bellany, 1993). Emphasis was given mainly to intensive field work in the

selected tribal pockets. The tribal pockets were identified with the help of Divisional Forest Officers, Srikakulam, Vizianagaram and Visakhapatnam and Project Officers, Integrated Tribal Development Agency, Seethampeta, Parvathipuram and Paderu and Census of India (2011) is also referred. Interviews were conducted with PVTGs at their dwellings during 2008-2011 covering all seasons of an year. During oral interviews specific questions were asked and the information supplied by the informants was noted. 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. 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. The plants were identified with the help of Flora of the Presidency of Madras (Gamble, 1915-1936). Voucher specimens were collected and deposited in the Herbarium of the Department of Botany, Andhra University, Visakhapatnam (AUV).

## ENUMERATION

The plants are arranged in an alphabetical order with their botanical name along with family name, vernacular name, locality, collector, voucher specimen number, method, mode and duration of treatment and resented in Table 1. Practices marked with an asterisk (\*) are considered to be new or less known (Table.1).



**Table 1. Plants used for bites by the PVTGs of North Coastal Andhra Pradesh**

S. No.	Botanical Name/ Vernacular Name	Family/ Locale/ V.No.	Type of Ailment	Method of practice
1	<i>Acalypha indica</i> L. / Kuppinta	Euphorbiaceae/Bokk elu/SP 8124	Insect bite	Fresh leaf juice along with quick lime is applied on the bitten area till cure.
2	<i>Achyranthes aspera</i> L. / Kukkurudhanthi	Amaranthaceae/Ellip alem/SP 8121	Dog bite & Centipede bite  Insect bite  Scorpion sting  Snake bite  Snake bite & Scorpion sting	Leaf paste is made into pills of 1 g and 1 pill is administered with water 2-3 times a day. Simultaneously root paste is applied on the bitten area.  Leaf juice is applied on the bitten area. Leaves are crushed and rubbed on the sting area. 2 g of root paste mixed with 30 ml of water is administered twice a day. Seed paste is applied on the bitten and sting areas. Leaf juice is instilled into the ears.
3.	<i>Adiantum philippense</i> L. / Challi	Adiantaceae/Modapu t/SP 8126	*Scorpion sting	Rhizome paste is applied on the sting area.
4.	<i>Aegle marmelos</i> (L.) Correa/Maredu	Rutaceae/ Gamparai/SP 8119	Mad dog bite  Snake bite	Root is made into paste with few black pepper seeds and taken with water or root is boiled and the decoction is taken orally. Roots are ground with 7 black pepper seeds and taken orally with water. Root bark powder is applied on the bitten area.
5.	<i>Alangium salvifolium</i> (L. f.) Wang. /Uduga	Alangiaceae/Pedaba yalu/SP 8003	Mad dog bite & Fox bite  *Snake bite	Root and black pepepr seeds are ground into paste and taken with water as well as applied externally. Root bark powder is applied externally on the bitten area.
6.	<i>Allium cepa</i> L./ Neerulli	Liliaceae/Medaragud a/SP 8276	*Rat bite	3 spoonful of bulb juice is given thrice a day.
7.	<i>Allium sativum</i> L./ Tellagadda	Liliaceae/Poojaripak alu/ SP 8235	*Mad dog bite & *Honey bee bite	Clove paste is applied on the bitten area and one clove is taken orally daily till cure.
8.	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC. / Ponnaganti koora	Amaranthaceae/Gad apara/JKR 9137	Snake bite	50 g of root paste mixed with 30 ml of water is taken orally.
9.	<i>Aristolochia indica</i> L. / Gadida gadapa	Aristolochiaceae/Kot aguruva/SP 8133	Scorpion sting Snake bite	Root paste is applied on the sting area. Root is ground with water and the extract is administered in doses of 2-4 spoonful till cure and paste is also applied on the bitten area.
10.	<i>Benincasa hispida</i> (Thunb.) Cogn. / Budida gummadi	Cucurbitaceae/Thota lagondi/SP 8284	*Centipede bite	Fruit stalk is made into paste and rubbed on the bitten area.
11.	<i>Bidens pilosa</i> L. /Aggi chettu	Asteraceae/Ellipalem /JKR 9055	*Snake bite	Root paste along with that of <i>Cassia occidentalis</i> is applied on the bitten area and also given orally once a day.
12.	<i>Boerhavia diffusa</i> L./ Atukamamidi	Nyctaginaceae/Chatr aiputt/SP 8136	Scorpion sting	Leaves are ground into paste and applied on the sting area twice a day till cure.
13.	<i>Calotropis gigantea</i> (L.) Dryand. / Nalla jilledu	Asclepiadaceae/Dab balapdu/JKR 9348	Mad dog bite Snake bite & Scorpion sting	Latex mixed with ghee and sesame oil is applied on the bitten area. Leaves are ground with latex and made into pill of 2 g and 1 pill is taken for every half an hour.
14.	<i>Calotropis procera</i> (Aiton) Dryand./ Tellajilledu	Asclepiadaceae/Ma mpa/SP 8139	Snake bite & Scorpion sting Snake bite	Root paste is applied on the bitten area. Latex is applied on the bitten area immediately after bite.



15.	<i>Cassia occidentalis</i> L. /Tentapu	Caesalpiniaceae/Kujj ali/SP 8101	Scorpion sting Snake bite	Root is chewed and juice is instilled into the ears. 20 g of leaves along with 12 black pepper seeds are ground with water and 10 ml of juice is taken 2-3 times a day. At the same time 3 leaves are made into paste and bandaged on the bitten area.
16.	<i>Cissampelos pareira</i> L. /Chiru boddhi	Menispermaceae/Dig umodhuputt/ SP 8014	Snake bite &*Scorpion sting	Root juice is applied on the bitten area.
17.	<i>Crateva magna</i> (Lour.) DC. / Ulimiri	Capparaceae/Jamnig uda/SP 8299	Mad dog bite	100 g of stem bark along with 10 g of mustard seeds are powered and 5 g of powder is administered with hot water thrice a day for 3 days.
18.	<i>Cuminum cyminum</i> L . /Jeelakarra	Apiaceae/Bokkela/S P 8017	Scorpion sting	Seeds are made into paste with rock salt and little ghee is added to it, warmed and applied on the sting area.
19.	<i>Datura metel</i> L. / Nalla umetha	Solanaceae/Marripu tu/SP 8208	Dog bite	10 g of roots are ground with 5 g of roots of <i>Boerhavia diffusa</i> and 5 g of paste is taken with cold water for 5 days.
20.	<i>Dioscorea pentaphylla</i> L. / Pindidumpa	Dioscoreaceae/Chint alaveedhi,JKR 9443	*Snake bite	Root paste is applied on bitten parts.
21.	<i>Elytraria acaulis</i> (L.f.) Lindau / Dhodhchettu	Acanthaceae/Gurupa lli, JKR 9321	*Snake bite	Root paste mixed with water is administered twice a day.
22.	<i>Embelia ribes</i> Burm. f. /Vayu vidangam	Burseraceae/Mahasi nghguda/ SP 8201	Snake bite	5 g of roots are ground with rice washed water and taken orally as well as applied externally.
23.	<i>Euphorbia nivulia</i> Buch.- Ham/Akujamudu	Euphorbiaceae/Koth apoipalli/JKR 9191	Snake bite	Root paste mixed with 30 ml of water is administered twice a day and also applied on the bitten area.
24.	<i>Gloriosa superba</i> L./ Vanka vajram	Liliaceae/Poojaripak alu/SP 8023	Centipede & Scorpion sting Snake bite & Scorpion sting	Tuber paste is applied on the bitten area. Tuber paste is applied on the bitten area.
25.	<i>Grewia rothii</i> DC. / Peddacheepuru	Tiliaceae/Sundarayy agud/SP 8312	*Centipede bite	Leaf juice is applied on the bitten area.
26.	<i>Gymnema sylvestre</i> (Retz.) R. Br. ex Sm./ Podapathri	Asclepiadaceae/ Jargula/SP 8313	Snake bite	Leaf paste is rubbed on the bitten area.
27.	<i>Gyrocarpus americanus</i> Jacq. / Kosemchettu	Hernandiaceae/Bales uguda/SP 8354	*Snake bite	Tender leaf paste is applied on the bitten area.
28.	<i>Heliotropium indicum</i> L. / Naga danti	Boraginaceae/Gurup alli/SP 8083	Scorpion sting	Leaf juice is applied on the sting area.
29.	<i>Kalanchoe pinnata</i> (Lam.) Pers./ Poddosso	Crassulaceae/Dabbal apadu/JKR 9108	*Dog bite	5 leaves warmed on fire are applied around the abdomen once a day for 5 days. Root paste mixed with root paste of <i>Achyranthes aspera</i> is administered with 30 ml of water once a day for 5 days.
30.	* <i>Millettia racemose</i> (Roxb.) Benth. / Naga vishamchettu	Fabaceae/Rajupakalu /JKR 9266	Snake bite	Root paste mixed with 30 ml of water is administered soon after bite.
31.	<i>Mimosa pudica</i> L./ Kunukurodda	Mimosaceae/ Chinthalaveedh/JKR 9338	Snake bite	Root and leaf paste mixed with water is administered twice a day and also applied on the bitten area immediately after bite.
32.	<i>Momordica charantia</i> L. / Adavi Kakara	Cucurbitaceae/Gedd amputt/SP 8032	*Dog bite	Leaf paste is bandaged on the bitten area.
33.	<i>Moringa oleifera</i> Lam. /Munaga	Moringaceae/Pilliput tu/SP 8075	*Dog bite  Snake bite	5 g of leaf, 2 black pepper seeds and 1 clove are made into paste and taken orally daily once for 5 days.





				Root paste is applied on the bitten area.
34.	<i>Mucuna pruriens</i> (L.) DC./ Duladama	Fabaceae/Devarapalli/SP 8169	Scorpion sting	Crushed seed paste is applied on the bitten area.
35.	<i>Ocimum tenuiflorum</i> L. / Krishna tulasi	Lamiaceae/Kappada/SP 8073	*Insect bite Scorpion sting Snake bite	Leaves are crushed and the juice is applied on the bitten area. Root powder/paste is applied on the sting area. Roots are chewed and swallowed. Leaves are crushed and the juice is applied on the bitten area.
36.	<i>Oroxylum indicum</i> (L.) Kurz / Pampenga	Bignoniaceae/Gadapara/SP 8172	*Dog bite	100 g of stem bark facing east and west is collected. <i>Phoenix lureirii</i> dried leaf is burnt. The bark and ash are ground into paste and 1 g of paste mixed with water is taken twice a day for 1 week before meals (Smoking, drinking and non-vegetarian food are strictly prohibited for a month).
37.	<i>Saccharum officinarum</i> L. / Cheraku	Poaceae/Donubayi/SP 8336	*Scorpion sting	30 to 50 g of jaggery is eaten for the poison to come down and ¼ Kg is taken for complete relief.
38.	<i>Sansevieria roxburghiana</i> Schult. &Schult.f. / Nela kithalu	Agavaceae/Edulagaruvu/JKR 9181	Snake bite	Root paste mixed with 30 ml of water is administered twice a day till cure. It is also applied on bitten area.
39.	<i>Sapindus emarginatus</i> Vahl / Kunkudu	Sapindaceae/Pandirai/SP 8182	*Insect bite	Stem bark is made into paste and applied on the bitten area.
40.	<i>Sida acuta</i> Burm. f./ Nagabala	Malvaceae/Edulagaruvu/ JKR 9458	Snake bite	Root paste mixed with 30 ml of water is administered twice a day.
41.	<i>Strychnos nux-vomica</i> L. / Mushidi	Loganiaceae/Geddamput/SP 8189	*Mad dog bite	1 - 3 g of seed powder is taken with ghee once a day for 5 days.
42.	<i>Tiliacora acuminata</i> Miers / Tivvamushini	Menispermaceae/Seethampeta/SP 8057	Snake bite	Root paste is applied on the bitten area soon after bite.
43.	<i>Tylophora indica</i> (Burm. f.) Merr./ Mekameyanaku	Asclepiadaceae/Rajupakalu/JKR 9030	*Snake bite	Leaf paste mixed with 30 ml of water is administered twice a day.
44.	<i>Wattakaka volubilis</i> (L. f.) Stapf / Bandigurajaku	Asclepiadaceae/Somagandi/SP 8350	Snake bite	5 leaves and 5 black pepper seeds are ground and the juice is taken twice a day. If the patient is unconscious, leaf juice is directly poured into the mouth. Later when he becomes conscious, then the normal dosage is administered for 8 days. Depending upon the toxicity, the interval of dose is maintained.

## RESULTS AND DISCUSSION

The paper deals with 44 species of plants covering 42 genera and 33 families used by the PVTGs of North Coastal Andhra Pradesh for curing a variety of bites viz., centipede, dog, fox, honey bee, insect, mad dog, rat, scorpion, and snake. Habit-wise analysis showed the dominance of herbs with 18 species followed by shrubs (8 spp), trees and climbers (9 spp each). Asclepiadaceae is the dominant family with 5 species followed by Liliaceae (3), Amaranthaceae, Euphorbiaceae, Cucurbitaceae, Menispermaceae, Fabaceae (2 spp each), and others with one species each. Morphological analysis showed the maximum utilization of root in 24 practices followed by leaf (20), seed (4), stem bark (3), tuber and latex (2 each) and bulb, root bark, stem, rhizome, fruit stalk and clove in one practice each. They are administered either in the form of juice, paste, powder, or extract, along with either water, lime, ghee or sesame oil. A maximum of 23 practices were observed for snake bite followed

by scorpion sting (10), dog bite and snake bite & scorpion sting (5 each), insect bite and mad dog bite (4 each), centipede bite (2), and rat bite, dog bite & centipede bite, mad dog bite & honey bee bite, mad dog bite & fox bite, and centipede bite & scorpion sting (1 each). *Millettia racemosa* and 20 practices were found to be new (Jain 1991; Kirtikar & Basu 2003). Some species with similar usage recorded in different parts of India and Pakistan are: *Achyranthes aspera*, *Alangium salvifolium*, *Aristolochia indica*, *Calotropis gigantea*, *Calotropis procera*, *Cissampelos pareira*, *Gloriosa superba* for snake bite by the Bhil, Damor, Garsia, Kathoda, Meena, Sahariya tribes of Rajasthan (Jain *et al.*, 2011); *Achyranthes aspera* for scorpion sting by the people of Nawabganj Bird Sanctuary, Uttar Pradesh (Garg, 2016); *Achyranthes aspera* for scorpion sting and snake bite, *Calotropis gigantea* for scorpion sting, *Calotropis procera* and *Cissampelos pareira* for snake bite, *Gloriosa superba* for scorpion sting and snake bite and *Mucuna pruriens* for scorpion



sting by the tribes of Madhya Pradesh (Jadhav, 2017); *Achyranthes aspera*, *Datura metel* for dog bite; *Calotropis procera*, *Gloriosa superba*, *Gymnema sylvestre*, *Mimosa pudica* for snake bite by the Baiga tribe of Dindori district, Madhya Pradesh (Ahirwar, 2017); *Achyranthes aspera* for scorpion sting by the people of Haridwar district, Uttarakhand (Balakrishna *et al.*, 2019); *Calotropis procera* for snake bite in Arid Regions of Northern Punjab, Pakistan (Ashfaq *et al.*, 2019); *Sida acuta* for snake bite by Pnar and War communities of West Jaintia Hills district of Maghalaya (Langshiang *et al.* 2020) and *Aristolochia indica* for snake bite by the people of Noida (Dogra *et al.*, 2020). The promising plants be subjected to phytochemical analysis.

## ACKNOWLEDGEMENTS

The authors are grateful to the primitive tribal informants and practitioners for their cooperation and help during field work by providing information on bites.

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# PRAGMATIC AND LINGUOCULTURAL PECULIARITIES OF THE SPEECH ACT OF GRATITUDE

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## ABSTRACT

*Gratitude expression is classified as a polite mode of communication in English and Uzbek Languages. 'Thank you' expression is a type of real-life communication that is always present in daily activities. In this situation, thank you is one remark that feels light and sounds easy, but might be difficult to say in the appropriate place and time. Despite the fact that this statement carries its own meaning, individuals who speak and receive these words are very appreciated. There are several reasons to express gratitude. Thank you may be offered to someone for a present, assistance, or having a significant influence on his life. This study focuses on observation is the language manifestation of the reality under consideration. The integration of verbal and nonverbal ways of communication in a certain society's speech is explored, and the theory of nonverbal communication is brought into direct touch with linguacultural studies and paralinguistics.*

**KEY WORDS:** *expression, manifestation, integration, gratitude, communication, verbal, non-verbal*

## INTRODUCTION

Certain achievements in the study of gratitude have been made in science as well. Responsive rejoinders - reactive speech acts have already become an object of study in works on the theory of linguistic pragmatics, however, the focus was on a single type of initiating speech acts like request, advice, question, etc. and different types of responses, with the analysis of gratitude as a response being occasional. Over the past decade, a number of scientific works have been published in Uzbekistan, in which the expression of gratitude is studied - partially from the position of communicative and pragmatic approach. At the same time, gratitude is considered as a communicative category, expressive speech act, frame-script and speech genre.

Different strands of pragmatics research have emphasized the importance of conventional expressions in the realization of speech acts. Cross-cultural comparisons of speech act realization by native speakers have caught our attention with titles derived from such culturally-based formulaic expressions as *Poison to your soul* (Coulmas, 1981) and *May God increase your bounty* (Bodman & Eisenstein, 1988). Even mundane expressions may be conventional, however, and Coulmas and others brought to our attention the role of conventional expressions as part of the social contract of communication. [5]

## MATERIALS AND METHODS

According to this study, speech act of gratitude is actualized as a reaction to a number of stimuli, namely asked advice, attention (gift, call, visit, time given), invitation, congratulation, services rendered or help and promise of help, as part of the rejoinder-rejection, invitation, reaction to a request, as gratitude, expressed in advance, in the situation of farewell, when communicants sum up their meeting and

express the wish for a good time, evaluation of the meeting, repeated gratitude to each other, compliments, intention to meet again and a direct farewell line. The relevance of verbal gratitude as a reward for this or that action, gift, service, etc. is determined by the type of culture, for example, for English and Uzbek Languages in many situations (in the family, when communicating with friends) helping each other is considered quite natural and does not require a formal smile and verbal explication. In English verbal behaviour, the expression of gratitude, as one of the most important means of demonstrating mutual respect and attention to others, is of great importance in everyday communication. The British say thank you more often than the Uzbeks, this applies both to the sphere of service and to other spheres and situations of communication (at work, in the family, in communication with friends, etc.). This strategy is manifested in situations in which the communicator mildly rebukes the partner for excessive expenditures and hospitality as a sign of gratitude. This strategy is manifested in situations where the communicant mildly rebukes the partner for excessive spending and hospitality as a thank you, cf. *You shouldn't have / This is too much / Thank you so much for all the wonderful presents*. You should not have gone to that much expense. When expressing gratitude, English communicators are more verbose. As verbosity is one of the strategies of politeness of rapprochement, characteristic of the English communicative culture, where combinations and repetitions are actively used to enhance politeness. The English are less likely to limit themselves to a single line, usually adding to it a repeated thank-you line, a compliment, praise or an evaluative line. In case the reason for gratitude is of high value, the number of English rejoinders can be up to five. Thus, the use of thank-you formulas in the absence of an explicit object of gratitude is especially characteristic of the service sector. In such



situations, thank you takes on the meaning of the end of the conversation, there is also a desemantization of the thank you formula, which turns into a formal marker of politeness, whose pragmatic function is not gratitude, but giving attention to the recipient, demonstration of affinity to him, a kind of communicative gift.

## RESULTS

As a result, the English use various ways of enhancing the formulas of gratitude, which manifests itself in expressiveness and a tendency to exaggeration. In English there is a great variety of formulas where gratitude is reinforced by different intensifiers. For instance, in addition to thank you /*thanks*, thank you very much / *thank you so much* / *thank you so much* / *thank you ever so much* / *thank you awfully* / *thanks a lot* / *many thanks* / *a million thanks* / *thanks a million*, very many thanks is used in letters. These lines can also be reinforced by the following: *I am very (so) appreciative* / *I really appreciate it* / *I can't tell you how much I appreciate this* / *I don't know how I can thank you enough* / *I have no words to express my gratitude* / *I can't find words to express my thanks* etc. In a formal setting, Thank you very much indeed is often used. In order to increase the degree of thankfulness, the following can also be added to the standard thank-you formulas: *I'm so grateful for your help* / *I'm much obliged for your cooperation* / *I appreciate your efforts very much* / *I would be extremely grateful if you would be able to do that for me*.

Expressions of gratitude are often reinforced by evaluative remarks to the listener, also by compliments, which in most cases contain a direct evaluation of the interlocutor's qualities: *Thank you very much. You're so kind* / *supportive* / *helpful* / *thoughtful* / *hospitable* / *considerate* / *generous*. The tendency in English communication is to reinforce gratitude by using several lines with different intensifiers at the same time: *I want to thank you both very much indeed for coming to say goodbye. It's so nice of you. I really do appreciate that* / *That was great. Thank you very much for a lovely dinner. The food was gorgeous and I really enjoyed the afternoon* / *That's fantastic. You're great. Thank you so much. I really appreciate it* / *That's simply gorgeous. Thank you very much. That's the most amazing present ever. I really love it*.

However, it is an important feature of English communicative behaviour that in interpersonal interactions, especially when the communicants are familiar, an explicit thank you is usually accompanied by (or replaced by) an emotionally appreciative thank you. In some situations (e.g. responding to an invitation) the expression of emotional appreciation is more important than an explicit thank you. The most common responses to gratitude in English are: *OK* / *That's OK* / *That's all right* / *It's no problem* / *Don't mention it* / *Not at all* / *You are welcome* / *Any time* / *(It's) my pleasure* / *It was a pleasure* / *You are welcome* and its intensified versions: *You are very welcome* / *You are always welcome* / *You are always very welcome* / *You are more than welcome* / *You are most welcome*. When expressing gratitude in non-verbal communication such nonverbal means as a handshake, relevant primarily for mature people, as well as a smile and a hug, which are most popular among young people, are used

predominantly. Nods and kisses are least relevant in expressing gratitude. Kissing, as well as hugging, is possible in close relationships that allow for the violation of the boundaries of the intimate zone. In sporadic cases such non-verbal ways of gratitude as bowing, putting the hand to the heart, pat on the shoulder, touching the hand, enthusiastic intonation, raising the eyebrows, etc. were noted.

## DISCUSSION

Positive politeness strategies aimed at expressing benevolent and respectful attitude to the interlocutor, showing attention, sympathy, interest to him/her, marking intragroup affiliation are more often verbalized in the speech acts of gratitude (as well as in the cases of greeting, goodbye and apology). The etiquette units serving for the verbalization of gratitude in English implement the category of explicit politeness with varying degrees of intensity, this allows communicators to create a desirable tone of communication and achieve their goals. The expressive speech acts meet the conditions of sincerity, but due to the repetition and stereotyping of situations in some cases they become formulas that are pronounced automatically, because "it is the custom" and "national mentality". The functions of gratitude include signaling the end of the conversation, the function of praise, when gratitude is expressed for the performed action, the function of positive assessment of the actions of the communication partner.

## CONCLUSIONS

It is noted that gratitude acts as a reaction to such stimuli as a wish, a compliment, praise and even invective formulas, when the speaker feels contemptuous indifference about the scolding sounded to him, and the insult is not considered by him as a significant damage. The relationship between the type of response and the nature of the verbal stimulus is also revealed. Reactions to gratitude can be verbal or non-verbal. Verbal reactions are divided into positive and negative reactions based on the recipient's acceptance or rejection of the act. The pragmatics of non-verbal reactions to gratitude are driven by the desire to avoid turning communication into a meaningless exchange of polite remarks. As the study carries out a complex analysis of the reactive speech act of gratitude, in addition to the intent and stimulus of this speech act, the communicant factor, i. e. the addressee and the addressee, is also considered. It is obvious that communicants solve different types of tasks in communication: the speaker seeks to successfully implement the illocution of gratitude or apology; the addressee has to give an adequate reaction to the speech act addressed to him.

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# A COMPARATIVE ANALYSIS OF CUSTOMER SATISFACTION OVER E-BANKING SERVICES OF PUBLIC SECTOR AND PRIVATE SECTOR BANKS

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Article DOI: <https://doi.org/10.36713/epra12531>

DOI No: 10.36713/epra12531

## ABSTRACT

*In today's scenario, dynamic changes in the banking sector have brought competition in winning and maintaining existing customers. Presently, banks have realized the importance of appealing to new customers is far more important than retaining existing customers of the banks, for the same cause banks are emphasizing more over customer satisfaction in providing competitive services. A comparative analysis of customer satisfaction levels in public sector banks and private sector banks has given the pathway to banks in magnifying the customer's demand for comparative premium-quality services and products offered with a minimum waiting period. This research paper showcases the impact of e-banking services offered by banks to customers to avail maximum benefits. The study also identifies that e-banking services are improved versions of traditional banking systems and services because customers prefer technically sound banks as well as bankers rather than traditional banker and banking systems. The study aims to evaluate the e-banking services offered by both types of banks, including user-friendliness, security, range of services, and accessibility, and multiple services like ATMs, NEFT, Debit cards Credit cards, mobile banking*

**KEYWORDS:-** ATMs (Automatic teller Machines), NEFT (National Electronic Fund Transfer) Debit Cards, Credit Cards.

## INTRODUCTION OF PUBLIC AND PRIVATE SECTOR BANKS

**Public Sector Banks:** The government owns and operates public sector banks. These banks are often larger in size and have a broader reach than their peers in the private sector. Public sector banks need to provide competitive financial services to all segments of society, including those living in impoverished and rural regions. The government may also employ these banks to carry out certain programs, such as promoting savings and investing or financing to particular parts of the economy. State Bank of India, Punjab National Bank, and Bank of Baroda are examples of public sector banks in India.

**Private Sector banks:** Private people or businesses own private sector banks. These incorporate finances only to make money and are not bound by government regulations or laws. Private sector banks generally have a smaller customer base and are more focused on offering personalized assistance to their clients. Private sector banks additionally possess a more efficient decision-making process and can adapt more quickly to shifts in the market.

ICICI Bank, HDFC Bank, and Axis Bank are examples of private sector banks in India.

One of the key distinctions between public and private sector banks is the quality of customer service and technology adoption. Private sector banks have been more diligent in adopting technological advances and providing their customers access to digital banking services. As a result, online account accessibility. Public sector banks, on the reverse banks nowadays are capable of providing more accessible and effective banking services, including mobile banking and extreme, have been slower to embrace technological advancement and may prefer to use traditional banking techniques.

## INTRODUCTION OF THE E-BANKING SECTOR

In recent decades, there has been a substantial change in the banking industry in the direction of e-banking services, which has transformed the way customers conduct their financial transactions. E-banking services have become a fundamental part of the banking system across the globe,



offering customers ease of access to their accounts and the ability to carry out various financial transactions online. With access to e-banking, customers do not need any more to visit the physical bank branch to execute the transaction, e-banking has made it a highly convenient way for users.

This research will analyze and will focus on customer satisfaction with the e-banking services of public and private sector banks in India. Public sector banks are owned and monitored by the government and are accountable for providing banking services to a multitude, whereas private sector banks are owned by corporate entities and accommodate high-net-worth individuals and businesses. The purpose of the study is to evaluate the e-banking services offered by both banks, encircling security, range of services, user-friendliness, and accessibility.

The comparative study will help in understanding the strengths and weaknesses of e-banking services offered by the public and private sector banks, and also emphasizes the areas of advancement. By analyzing the e-banking services provided by the public and private sector banks in India, the study will provide a valuable contribution to the customers, regulators, and banking professionals. Ultimately the research will lead to the development of better e-banking services in the banking sector.

## GROWTH OF THE E-BANKING SECTOR IN INDIA

In India, e-banking has shown tremendous growth in past decades. The government's initiative towards the cashless economy has increased the adoption of digital technologies that were improvised by digitalization in India. The banking sector in India is entirely transformed because of the way Indian citizens use financial services, by making it convenient, secure and easy, and user-friendly to the customers.

There can be multiple factors that are directly or indirectly contributing to the growth of the e-banking sector in India some of them are discussed below, Firstly, the increment in the use of smartphones and gadgets with the availability of the internet has made banking services easy, and accessible for the usage of the customer. With the reference to the internet report and Mobile Association of India, India has appx. 718 million internet users and 504 million smartphone users as of 2020.

Secondly, the government's initiative toward digital payments under the program of Digital India, (UPI) Unified Payments Interface, and Bharat Interface for money (BHIM) has become an easier solution to access banking services digitally through their phones. UPI single handily has changed the entire market and has given real-time transactions between customers and bank accounts of the customer through smartphones without going to the bank to practice traditional processes to get access to banking services.

Thirdly, the pandemic in 2019 has changed the complete usage of e-banking services after the or while at the time of pandemic, since then e-banking sector has been at a boom. People around the nation found e-banking the easiest and most convenient option to carry out financial transactions. The use of contactless payments through mobile wallets was the safest option for the users to use at the time of the lockdown.

The E-banking sector in India is rapidly growing and has shown significant growth in the last few years, with the factors like an increase in the use of the internet and smartphones, and the government's initiative. The pandemic and change in the traditional banking systems

## ADVANTAGES OF E-BANKING SERVICES

The e-banking sector in India is progressively increasing over time. Here are some of the advantages of the progressively growing banking sector in India.

**Convenience:** With help of banking services provided by the banks you do need not to go to the physical branch for accessing the bank account. One can use and operate the bank account individually at anytime from anywhere across the globe.

**Cost Effective:** E-banking services are more cost-effective than the traditional banking system. Online banking has decreased the banking operating charges like a reduction in the need for paper and statements. For relevant instance, online transactions are usually cheaper than offline banking systems and procedures.

**Security:** E-banking services provide safe ways to access your bank account and carry out transactions. Your data is safeguarded against unauthorized access using encryption and secure login procedures. Additionally, you can monitor account activity and get alerts for any unusual activity.

**Efficiency:** In comparison with traditional banking, e-banking can process banking activities quicker and more smoothly. Compared with the traditional bank e bank just takes a few minutes to accomplish business transactions. It reduces the manual work that has been done at traditional banks.

**Access to offered services:** A variety of banking services can be accessed through e-banking, including bill payments, banking transactions, financial records, and payments via credit card, amongst many others. This makes it simple for you to manage your finances without going to a physical bank branch.

In rational conclusion, e-banking facilities in India provide us with a variety of benefits, including cost efficiency, convenience, security, and access to services. You can manage your money more easily and appropriately by using the utmost facilities provided by the banks.



## THE OBJECTIVES OF THE STUDY

1. To identify and analyze the services of the public and private sector banks in India.
2. To measure the level of customer satisfaction with the benefits rendered by the public and private sector banks in India
3. To determine the elements such as accessibility, security, availability of facilities, and customer support that contribute to customer satisfaction.
4. To analyze the difference in the level of customer satisfaction between public and private sector banks
5. To endorse the public and private sector banks to enhance the e-banking facilities for the customers to get the maximum satisfaction and win over the competitor.

## REVIEW OF LITERATURE

The four distinctive features of services—intangibility, inseparability, heterogeneity, and perishability—and how they affect customers' views of high-quality service from banks were examined by Anne M. Smith in 1990. The survey found that elevated customer expectations and heightened competition have produced an environment where quality is increasingly important.

The service quality features may be divided into two categories, one of which is product-related and the other not. This is according to Liang et al. (2004). Customers may perceive symbolic, practical, or experiential benefits as a result of these characteristics. The study's findings made it abundantly clear that customer satisfaction has a favourable impact on customers' commitment to and faith in service providers, which in turn has a positive impact on customers' behavioural loyalty.

According to Sarin and Anil's (2007) advice, employees in service firms should prioritize ensuring that customers are satisfied. Banking ought to highlight the areas that need development and further shed light on the actions that consumers believe should be taken to raise the caliber of offerings.

According to Meidan (1976), 90% of the respondents banked at the branch that was most convenient for both their home and place of employment. When choosing a bank, convenience in terms of location was considered to be the most crucial consideration.

Geiger (1975) conducted research to determine the demands of the clients. The social standing of the bank's clients, their perceptions of banks, their assessments of the services the bank offered, the efficiency of different sales promotion and advertising strategies, and the customers' saving and other habits were all analyzed. Results showed that clients who are pleased with their banks' offerings are more upbeat compared to others.

In 2009, Dutta et al. did a survey to look at how consumers perceive their expectations of all Indian banks. Foreign

banks were discovered to be the most favored banks, followed by private banks and state banks.

## RESEARCH METHODOLOGY

This survey compares how satisfied customers are with the e-banking services offered by banks in the public and private sectors. The research methodology is made to give a thorough explanation of the study's constraints, sample selection, collecting data, analysis of data, and research objectives.

### Research Design

A descriptive research design is going to be applied to this research. The questionnaire method is intended to collect primary data as part of the research design. The survey questionnaire will be used to collect information from both public and private sector bank customers. The questionnaire was designed to extract data on customer satisfaction with e-banking services provided by public and private sector banks.

## SAMPLING TECHNIQUE

The survey's sample will be chosen using a stratified random sampling technique. Customers of public and private sector banks who use e-banking services will be the study's population. The sample size will be determined using the sample size determination formula. The sample size was 110 individuals, with 45 coming from public sector banks and 65 representing private sector banks.

**Sampling Unit** - The targeted sampling unit is the users of public and private sector banks who use the e-banking services offered by the banks and are the contributors to the analysis of customer satisfaction.

**Sampling Size** - The sample size for this survey was set at 110. The questionnaire was generated containing 20 questions including information like age gender income group etc. The questionnaire was shared online via non-profitability convenience sampling, and thus the link was sent to Indian respondents. We sought out respondents via social networks and WhatsApp. Respondents were divided into groups based on gender, age, occupation, and income.

**Data Collection Method** - A survey questionnaire will be used to collect primary data. The questionnaire will be intended to gather data on customer satisfaction with both private and public banks' e-banking services. Customers of public and private sector banks who use e-banking services will be given a survey to answer online. The information will be gathered over multiple time frames.

## DATA ANALYSIS AND INTERPRETATION

The research was conducted through a questionnaire with 110 respondents as gives the base for the analysis of customer satisfaction with e-banking services of the Public and Private sector banks.

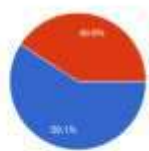




## FINDINGS

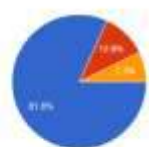
The Interpretation and analysis of the data gathered through the survey questionnaire are shown below:

Which bank do you prefer for banking services:  
110 responses



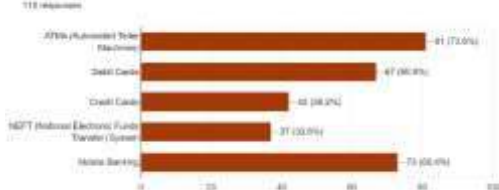
The above-mentioned pie charts show that a large portion of the respondents is using public sector banks i.e., 59.1% and 40.9% of respondents are using private sector bank. With help of information gathered through the survey questionnaire, we can conclude that the maximum population is using e-banking services.

Do you use e-Banking Services  
110 responses



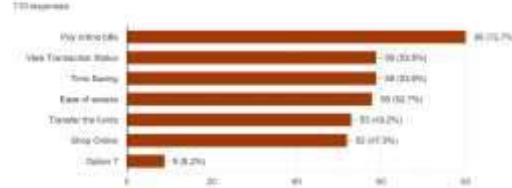
People do use e-banking services to carry out their financial transactions. A larger portion of the population uses e-banking services i.e., 81.6% of the total population 10.9 % do not use e-banking they still prefer traditional banking services to do banking activities.

Which e-Banking Services do you prefer to use  
110 responses



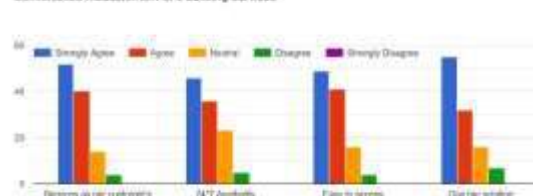
There are multiple e-banking services that are provided by banks in India, some of them are listed below to check which services people use to get the maximum benefits out of them. ATMs services are used by the maximum population in India due to their availability, Mobile banking due to its accessibility, and NEFT for the convenience of the users. Debit cards and credit cards for ease of use.

Why do you prefer to use e-banking services  
110 responses



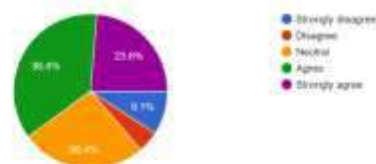
There are multiple services provided by banks Like to pay online bills, viewing statements transferring funds, and shopping online and many are listed above to analyze the services that people used for multiple benefits. Paying online bills is the most common reason to use e-banking services.

Convenience measurement of e-banking Services



With the help of the above-mentioned chart we can analyze the convenience measurement of the services offered by public and private sector banks with regards to e-banking services people strongly believe that the services are as per customer's need, 24\*7 Availability, Easy to access, One tap solutions.

e-banking Services are user friendly  
110 responses



With the help of the above-shown pie chart, we can analyze that 36.4% of people are agreeing that e-banking services are user-friendly, and 23.6% of the population has shown a strong opinion on the user-friendliness of the e-banking services provided by the banks. 26.4% of the total population shares a neutral opinion on the above case.

e-banking services maintains the security measures of users  
110 responses





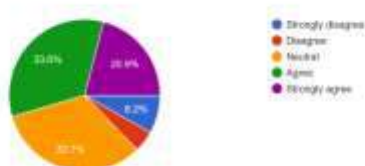
The above chart presents the e-banking services that maintain the security measure for the users and with reference to the pie chart 40.9% of the population feels a strong opinion on the above case, 28.2% of the people has a neutral opinion on this case.

e-banking services has improved the quality of services that traditional banking is offering to the users  
110 responses



The above charts present improvement in the quality of the traditional banking system 41.8% of the people have a strong opinion on the above case. 25.5% of people have neutral opinions on the above situation. With this, we can analyze that services are improving day by day so that customers can use more of these services and recommend them to others to use these services as well.

e-banking services are associated with the cost benefits to the users  
110 responses



The above chart presents the cost benefits that the banks are providing to users of the e-banking services 33.6% of the sampling unit agrees with the above case, and 32.7% of the population has a neutral opinion on the above issue that banks are either proving cost benefits or not providing cost benefits.

## CONCLUSION & RECOMMENDATION

In conclusion, whereas both public and private sector banks provide banking services, there are a few significant differences between both. Public sector banks are managed and operated by government policies and have a wider scope and are authorized to provide services to all segments of society. Private banking institutions are run by wealthy persons or companies, have a narrower customer base, and put more emphasis on personalized services. Other important contrasts between the two also include quality of customer service, technological adoption, and lending standards.

According to the aforementioned analysis, customers in private banks are more satisfied with e-banking- banking services than customers in public banks. Customers in different education groups and individuals have differing levels of satisfaction and acceptance of services for electronic banking, The old folks are inherently resistant to using banking services online, the adoption of electronic

banking services, Specifically, the elderly have a disinclination to use e-banking facilities; hence, appropriate training for using e-banking should be given to them, and bankers should adopt suitable tactics for attracting different age groups to utmost use the facilities provided to the customers. As a matter of fact, banks should make every effort to ensure that e-banking is accessible to customers 24/7. Customers are mainly concerned about safety issues so banks should educate their customers on the safe use of their passwords and pin details and they should insist customers that should keep changing their passwords and pin numbers quiteoften so no unauthorized fraudulent practices happen in online banking.

## LIMITATIONS OF THE STUDY

1. The study is limited to e-banking customers, who may not be a representative sample of the whole group of customers.
2. The study is limited in scope and may not be representative of the entire population.
3. The study is limited to data collected through a questionnaire form, which may be biased due to characteristics and individuals

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# IMPACT OF COMPUTER-AIDED DESIGN AND DRAFTING ON STUDENTS' ATTITUDE AND PERFORMANCE IN TECHNICAL DRAWING IN UNITY COLLEGES IN PORT HARCOURT

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Article DOI: <https://doi.org/10.36713/epra12535>

DOI No: 10.36713/epra12535

## ABSTRACT

*The study investigated the impact of Computer-Aided Design and Drafting (CADD) on students' attitude and performance in Technical drawing in Unity Colleges in Port Harcourt using quasi-experimental and descriptive survey designs. Samples of eighty (80) Technical drawing students from the two unity colleges in Port Harcourt were drawn from a population of 228 students. Two research questions were answered and two hypotheses tested at 0.05 level of significance. Instruments used for data collection were Technical Drawing Achievement Test (TDAT) to determine students' performance and Technical Drawing Structured Questionnaire (TDSQ) used to measure students' attitude towards Computer-Aided Design and Drafting usage. Data collected were analyzed using SPSS (Mean and Standard Deviation to answer research questions, while ANCOVA and Independent t-test were used to test the hypotheses). The findings revealed among others; that CADD had significant impact on students' performance in Technical drawing, and also positively influenced the attitude of the students. Recommendations include among others; that the Nigerian Educational Research & Development Council (NERDC) should design a curriculum that will enforced the incorporation of modern technology software such as the CADD in the teaching and learning process in Secondary Schools in every subject areas as this will help to promote the learning outcome and thus bringing about positive change towards students' attitude in the different subject areas.*

**KEYWORDS:** Computer-aided Design, Drafting, Attitude, Technical Drawing, Performance

## INTRODUCTION

Technical Drawing (TD) is a graphic subject that makes use of lines, symbols and signs to convey information. It is a core subject offered by all technology/technical students in senior secondary schools in Nigeria, with the primary objectives of equipping students with basic and fundamental skills needed in the pursuit of engineering courses in tertiary institutions. Technical drawing is a foundation to which other technical/engineering courses are laid, and a pre-requisite subject for studying engineering and related technical courses in tertiary institutions, and it is often referred to as the 'language of the engineers'. In the primitive or 'stone age', the only way the draughtsman could illustrate or express his ideas was by drawing on the walls and stones, then that was replaced by drawing on paper, and today the use of Computer Aided Design software is gradually replacing the manual drafting. Technical drawing is used by engineers, architects, artist, and by technicians and craftsmen. Technical drawing finds its applications in so many works of life which include:

construction and manufacturing industries, government parastatals, Schools, hospitals, et cetera.

The Federal Government in recognition of the prominent role technology plays in production and nation building, advocated for provision of adequate technological tools in all educational system for efficient instruction and learning process (FRN,2013), all in effort to promote learning outcome. The learning outcome and attitude of students in any subject is very crucial in the teaching and learning process. For an effective teaching and learning to take place, there is need to put into consideration the way and manner learners learn. In this technology era, where learners are exposed to different technological tools ranging from smart phones, personal computers, to tablets, and uses them to communicate and access information. It becomes imperative that the teacher understands and adapts to the available technology instructional materials in order to enhance students' academic performance or learning outcome, as the use of right and appropriate materials in the teaching and learning process is very crucial to the performance



of the students and goes a long way to determine the quality of learning outcome Obanya, (2014).

Technical Drawing as a graphic subject can be taught using Computer-Aided Design and Drafting (CADD) software and other graphic designs software such as; AutoCAD, Corel Draw, Smart Draw, Sketch-up etcetera. CADD has powerful features in its environment that can help shift teaching and learning from teacher-centered classroom to student-centered classroom, and it is able to create interactive and engaging learning environment for teachers and learners. It also provides tools such as; the drawing tools, modifying and editing tools, et cetera in its environment that makes drawing faster, consistent, neater and accurate.

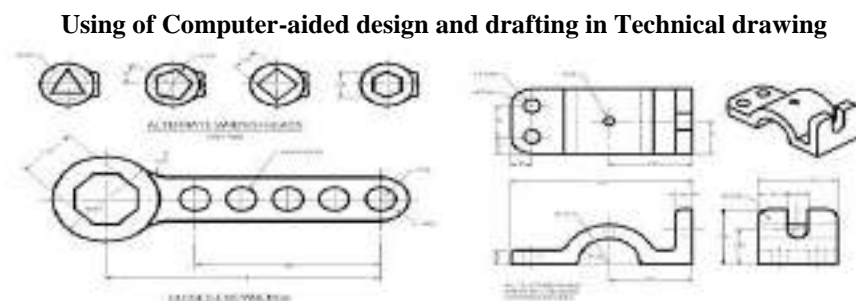
However, the consistent weak/poor performance and negative attitude of students over the years in Technical drawing Diraso, et al (2013); Siminialayi, (2018) should be of great concern. These authors pointed out that apart from the poor performance, there is also low enrollment of students in engineering and related courses in tertiary institutions, which they attributed to the negative attitude of students in Technical drawing at the secondary school levels, The Technical drawing students at this level are the ones who eventually enroll for engineering courses at the tertiary institutions. So this study intends to determine whether the application of Computer-Aided Design and Drafting in the teaching and learning of Technical drawing will have positive impact on students' performance and attitude towards

Technical drawing in unity Colleges in Port Harcourt in Rivers State.

## LITERATURE REVIEW

Computer-aided design and drafting (CADD) is the process of drafting Technical drawing with the use of computer software. It is the technology for design and technical documentation which replaces the manual way of drafting with an automated process (STANDS4Network, 2021). The CADD output conveys information such as: the process involved; the dimension of the product; and the tolerances depending on the application of a specific convention. CADD software is used to a make drawing and editing of 2D (2-dimensional) and 3D (3-dimensional) designs easier and faster. It makes use of visual and symbols, and it is a powerful tool for the engineers, architects, artists and draughts men for making of designs (Charter, 2020). It is used for manufacturing of component parts and for drafting and design of different types of buildings (Encyclopedia, 2020).

Computer-aided design was first released by Autodesk as a commercial software application in 1992, but before then it has been existing as a desktop application since 1982 and as a mobile, web and cloud-based app since 2010 (Nunns, 2016). The CADD application depends on the profession of the user and the type of software.



**Figure 1: Use of Computer-aided design and drafting in Technical Drawing.**

Source: <https://summaryplanet.com>





**Table 1: Advantages of Computer-Aided Design and Drafting over the Manual drafting in Technical drawing**  
**(Rajesh, A. et al (2020))**

Entity	Computer Aided Drawing (CADD)	Manual drawing
Line thickness	Line thickness is available from 0.0000mm to 5000mm	Depends on the type of pencil used by the draughtsman
Storage space	Does not occupy much space	The space is dependent on the skills developed by the draughtsman
Prototype	With CADD, making of prototype of any product is possible	It is not possible making a prototype of product with the manual drawing
Editing	It is very easy to edit drawing with CADD	Editing with the manual drawing is not always very easy.
Scaling factor	Scaling with the software can be done by just one command.	Scaling using the manual instrument could be time consuming.
Conversion of 2D to 3D	With CAD it is possible converting 2-dimensional objects to 3-dimensional objects.	Conversion is not possible with the manual drafting.
Virtual manufacturing	It is possible to do virtual drawing.	It is not possible.
Animating process	Animation is very easy and possible with the CADD software.	Not possible with the manual method.

Apart from the above advantages of CADD over manual drafting, others advantages include: accuracy, consistency, enhancing speed, neatness and legibility (Siminialayi and Fomsi, 2018).

The research is anchored on Constructivism theory. Constructivism is a learning theory based on the idea that new knowledge is constructed on the learners' prior knowledge (www.cwcmavista.org 2017). The theory views learning as a process in which individual construct meaning as a result of previous knowledge along with experience. The theory does not see learners as "empty vessels" that needed to be filled, but rather believes that every learner has previous knowledge inside them. This theory is of opinion that students' prior knowledge serves as important foundation for new learning. This means that student's prior knowledge of the course contents plays significant role in students understanding of the new method or techniques. That is to say, Technical drawing students' previous knowledge of the manual drawing method can enhance their learning of the new technology approach.

Constructivism, according to (David and Alan, 2005) is the theory whereby people create their individual understanding as well as knowledge of the content, by experience and reflecting on it. When learners encounter new thing, they resolve it using prior knowledge and their previous experience. The constructivist believes the opinions and ideas of learners are of top most importance in the teaching-learning process. The theory is also of the view that students should apply prior knowledge and experiences to create innovative related and or adaptive concept of learning. This therefore implies that the application of Computer-Aided Design and Drafting as a tool for instruction can enable students construct knowledge of

Technical drawing overtime with their previous knowledge. This learning theory believes that the teachers should act as facilitators in providing guide lines, plans, or organizes and provides directions to the learners who are accountable for their learning. The major proponents of this theory are; Plaget (1896), Brumer (1915); Vygotsky (1896), and Dewey (1859) as cited in Rintaningrum, (2008).

The theory is connected to this study: "Impact of Computer Aided Design and Drafting on students' Attitude and Performance in Technical drawing in unity colleges, because the students' previous knowledge of the concept and fundamental principles of Technical drawing is needed for learners to effectively apply the technological approach. This can help to change their attitude and thereby improve the learning outcome. Technical drawing is also a subject that is concerned with students' ability to construct their individual knowledge, ideas and problem solving and so the theory is also related to the study in this aspect.

Siminialayi (2018), on a study to investigate the effect of AutoCAD on students' performance in Technical Drawing in Unity schools in Rivers State'. The study adopted quasi-experimental designs. Total population used for the study was 492 Technical Drawing students from the three Unity Colleges in Rivers State. Sample size of 92 Senior Secondary School 11 Technical Drawing students were drawn from the population using purposive sampling technique. The instrument used for data collection was Technical Drawing Achievement Test (TDAT). Result from findings revealed that students taught with AutoCAD performed better than their counterpart who were taught using the conventional method.



Similarly, Zira and Wilfred (2019) carried out an investigation on the impact of AutoCAD application instruction on students' Academic Performance in Building Engineering Drawing in Technical Colleges in Adamawa State. The study was guided by two research questions and two hypotheses. The sample size comprised of 86 Year 11 Building Engineering Drawing students from the Technical Colleges. The instrument used for the study was standard questions adapted from National Technical and Business Examination Board (NABTEB) past questions. Mean and standard deviation were used to answer research questions, while ANCOVA and t-test were used to test the null hypotheses at 0.05 level of significance. Findings of study revealed among others that teaching and learning of Building Engineering Drawing using AutoCAD motivated learners and thus increased academic performance significantly. In the same vein, Santayo & Galiano, (2019) investigated a study on the attitude of students towards Design Discipline in the use of Computer-Aided Design (CAD) in Higher Education in Mexico City. Sample size for the study comprised of 141 students from seven different Universities in Mexico. The instrument used for data collection was Sociological-type closed survey instrument. Result from the study revealed that there was no significant difference in the quality of design when CAD or no test at all was used. The finding from recent study, (Hu,2021) on the 'Realization of Intelligent Computer Aided Design System also showed that students taught using conventional method had negative attitude while those taught using CAD had positive attitude in physical education, which they attributed to the students' high enthusiasm in the use of technological tools.

### STATEMENT OF THE PROBLEM

With the information and technology age where learners communicate and access information using various technological tools, it has become pertinent to inculcate these digital tools into every subject area including Technical drawing as this might help to promote better performance and attitude towards in Technical drawing.

The enrollment of students in National Examination Council (NECO) and West African Examination Council (WAEC) in Technical drawing over the years has been on the decrease, this is evidence in the total number of students that enroll for Technical drawing in external exams such as NECO. For instance, the overall percentage of students who enroll for Technical drawing in NECO examination between the periods of 2012 to 2016 was just 9.7 percent of the total students in SS3 in three selected schools for the study in Rivers State (Siminialayi, 2018). This of course calls for serious concern and worry, knowing the vital role of engineering and technology in National development of any county (Enu and Eus, 2011).

This low number of students offering Technical drawing, and the persistent low level of performance at the secondary school level, may continue to have adverse impact on the number of engineering graduates in the country, leading to insufficient

manpower in the construction /manufacturing industries, and thus affecting National development. The researcher therefore, wonders whether enforcing the incorporation of Computer-Aided Designs software into the teaching and learning process can help to enhance students' performance and attitude towards Technical Drawing in Unity Colleges in Port Harcourt.

### AIM AND OBJECTIVES OF THE STUDY

The aim of this study is to find out whether the application of Computer-Aided Drawing and Drafting software can help to improve students' performance and change their attitude towards Technical drawing in Unity Colleges in Port Harcourt.

The study sought to:

- i). determine the impact of Computer-Aided Design and Drafting (CADD) on students' performance in Technical drawing.
- ii). find out the attitude of Technical drawing students' in the use of Computer-Aided Design and Drafting.

### RESEARCH QUESTIONS

The following research questions were answered during the study.

- i. What effect does the use of CADD have on students' performance in Technical Drawing?
- ii. How will the use of CADD affect the attitude of students towards Technical Drawing?

### HYPOTHESES

For the purpose of the study, a null hypothesis was formulated and tested at 0.05 level of significance.

1. There is no significant difference in the performance of students taught with CADD and those taught without CADD in Technical Drawing.
2. There is no significant difference in the attitude of students taught with CADD and those taught without CADD towards Technical Drawing.

### METHODOLOGY

Technical drawing Achievement Test (TDAT) was administered as a pre-test to the control and experimental groups prior to the introduction of the conventional (traditional) and technology approaches. A lesson plan was prepared using both traditional and technology methods by the researcher, the control group was taught by the subject teacher, while the experimental group was taught by the researcher with the help of the ICT teachers in the school. The lesson lasted for two weeks after which a post test was administered using the same question as the pretest, but varying the questions (i.e. re-arranging the numbers). The students' scripts were marked and recorded which constituted the data for students' performance.

Technical Drawing Structured Questionnaire (TDSQ) was also used to determine students' attitude in the use of Computer-



Aided Design and Drafting in Technical drawing (table 2). The researcher personally administered the questionnaire to the 80 students.

## RESULTS

**Research question 1:** What effect does the use of CADD have on students' performance in Technical Drawing?

The scores from the Technical Drawing Achievement Test were used to answer this research question. The result of the findings was reported on table 2;

**Table 2: Mean and standard deviation analysis showing the effect of CADD on students' performance in Technical Drawing.**

Groups	N	Mean	S/D
Experimental Group	40	35.375	13.511
Control Group	40	27.875	17.055

Experimental group mean (35.375) higher than control group mean (27.875).

**Hypothesis 1:** There is no significant difference in the performance of students taught with CADD and those taught without CADD in Technical drawing.

**Table 3: ANCOVA analysis showing the no significant difference in the effect of CADD on students' performance in Technical Drawing.**

Source	Df	F	Sig.
Corrected Model	2	15.807	.000
Intercept	1	85.982	.000
Pretest	1	8.723	.000
Group	1	25.377	.004
Error	77		

$F(77) = 25.377, p < 0.05$

The result from table 2 shows that the experimental group taught with CADD has a mean score of 35.375 and a standard deviation of 13.511 while the control group which was taught without CADD had a mean of 27.875 and a standard deviation of 17.055. The table therefore reveals that the mean score 35.375 of the experimental group is higher than the mean score of 27.875 of the control group showing that the experimental group had higher achievement scores than the control group. This shows that the Computer-Aided Design Drafting has positive effect on the performance of students in Technical Drawing.

Similarly, table 3 indicates that the computed F of 25.377 is statistically significant at the chosen alpha level of 0.05.

Therefore, with the effect of pretest which contains extraneous variables partialled out or removed, there is a significant difference in the effect of CADD on students' performance in Technical drawing as  $F(77) = 25.377, p < 0.05$ . The null hypothesis of no significant difference in the effect of CADD on students' performance in Technical drawing is rejected and the alternate accepted.

**Research question 2:** How will the use of CADD affect the attitude of students towards Technical Drawing as measured by their mean scores?



**Table 4: Mean analysis showing the attitude of students in the use of CADD**

S/N	Statement	N	Mean	SD	Decision
1.	I enjoy the traditional method of teaching Technical Drawing (TD)	40	2.29	1.066	Disagree
2.	The traditional method of teaching TD can be very boring.	40	2.12	.969	Disagree
3.	I am comfortable with the time frame in the teaching and learning TD in the traditional classroom	40	2.45	1.041	Disagree
4.	The time of teaching and learning TD in the traditional classroom is not always enough	40	1.81	.994	Agree
5.	There is no need to introduce new technology in the teaching and learning of TD	40	3.62	.661	SD
6.	I prefer the new technology to the traditional method	40	1.69	.680	Agree
7.	I get distracted when using the new technology	40	2.81	.740	Disagree
8.	I am satisfied with learning with the new technology	40	1.62	.731	Agree
9.	I am able to draw very well with the traditional method.	40	2.05	.697	Disagree
10.	I don't see any need of the new technology approach.	40	3.60	.544	SD
11.	Drawing with the manual instrument is fun and interesting	40	1.86	.683	Agree
12.	Drawing using the Computer aided software is fun and interesting	40	1.55	.633	Agree
13.	I get anxious whenever I don't have my complete drawing tools for drawing	40	1.36	.759	Agree
14.	I am not bothered even when my drawing tools are not complete	40	3.76	.692	SD
15.	irrespective of the method used, I am able to draw very well	40	2.00	.855	Disagree
16.	drawing very well in TD has a lot to do with the method used	40	1.50	.834	Agree

Note: 1= Strongly Agree, 2 = Agree, 3 = Disagree and 4 = Strongly Disagree.

**Hypothesis 2:** There is no significant difference in the attitude of those taught with CADD and those taught without CADD and towards Technical Drawing.

**Table 5: Independent samples t-test analysis showing difference in the attitude of students towards Technical Drawing of those taught with CADD and those taught without CADD.**

t-test for equality of means				
t	df	@	Sig (2-tailed)	Decision
12.238	90	.05	.000	Rejected H <sub>01</sub>

$t(90) = 12.238$   $p < 0.05$ , i.e.  $p = .000$  is less than 0.05

On table 4, the mean scores of 4.00 – 2.00 means negative attitude, while the mean scores of 1.99 – 0.99 means positive attitude. So items with mean scores of 4.00 – 3.00 indicates strongly disagree; 2.99 – 2.00 implies disagree; 1.99 – 1.00 indicates Agree and 0.99 and below implies strongly agree.

In the same vein, table 5 shows that  $t(90) = 12.238$   $p < 0.05$ , i.e.  $p = .000$  is less than 0.05 therefore, the null hypothesis of no significant difference in the attitude of students taught with CADD and those taught without CADD towards Technical drawing is rejected and the alternate accepted. This means that the attitude of students taught with CADD and those taught without the software is significantly different.

## DISCUSSION OF FINDINGS

### Use of CADD and Students' Performance in Technical Drawing.

The result obtained from research question 1 as reflected on table 2 shows that the experimental group (i.e. those students taught with CADD) has a mean score of 35.375, as against the control group (those taught without CADD) with a mean score of 27.875. This means that students taught with CADD performed better than those taught without CADD as measured by their mean scores. Statistical analysis also shows that there is a significant difference between the performance of students taught with CADD and those taught without CADD. More so, the result obtained from the hypothesis as reflected on table 3 shows that the computed 25.377 is statistically significant at the





chosen alpha level of 0.05, and therefore the null hypothesis was rejected.

The finding means that students taught with the computer-aided design and drafting were able to achieve better performance in Technical drawing than their counterpart who were taught without CADD. However, this result is expected, because the CADD environment provides drawing and modifying tools which makes drawing to accuracy possible (Rajesh, et al 2020). The high performance of students taught with CADD could be attributed to the enabling environment created by the software thus making the drawing faster and easier (Charter, 2020). Likewise, the reason why those taught without the CADD did not perform very well could also be attributed to insufficient time, as the use of manual drawing instrument requires a lot of time and 'technical-know-how'. This finding is in agreement with some past research findings; (Siminailay, 2018; Zira and Wilfred 2019). Findings from each of the study revealed positive impact of computer-aided design on students' performance.

However, the study of Santayo and Galiano (2019) revealed findings which is dissimilar to the present study, their results revealed that there was no significant difference between students taught with the computer software and those taught without the software. This could probably be to the lack of adequate or appropriate technology software application tools or as a result of the teachers' inability to make use of modern technological instructional tools.

#### **Attitude of Technical Drawing students towards Computer-Aided Design and Drafting usage.**

The data on table 4 were used to provide the answer to research question 2. The results of the analysis indicated that the majority of the students showed negative attitude towards the use of traditional method in the teaching and learning of Technical drawing as seen in the mean (item 1). This response is not surprising as drawing using the manual instrument could be tedious and tasking. Apart from this, the students indicated negative attitude regarding the time frame in the traditional method (item 3), meaning that the traditional method of drawing is time consuming, unlike the technological method that saves time of theoretical explanations. However, the majority of the students showed positive attitude in the incorporation of computer-aided design into the teaching and learning Technical drawing (item 5-8 and item 10). This again is not surprising as the 21<sup>st</sup> century learners will always show positive attitude whenever computer is being used for instruction (Hu, 2021). The students were also in agreement that drawing very well has to do with the method use (item 15 and 16). However, some students also agree that drawing with the manual method could be fun and interesting.

Similarly, result from table 5 shows that  $t(90) = 12.238$ ,  $p < 0.05$ , i.e.  $p = .000$  is less than 0.05 therefore; the null hypothesis of no significant difference in the attitude of students towards

CADD usage in Technical drawing is rejected. This implies that the attitude of students taught with the computer aided design and drafting and those taught without the software towards Technical drawing is significantly different.

#### **CONCLUSION**

From the findings, it can be concluded that the use of Computer-Aided Design and Drafting (CADD) in the teaching and learning of Technical drawing had a positive impact on students' performance and attitude. The significant difference between the performance of students taught with CADD and those taught using the traditional method was in the favour of those taught with CADD. This could be as a result of the enabling environment created by the computer-aided design software.

The implication of this is that the use of computer-aided design and drafting software will help to improve students' performance and attitude towards Technical drawing and hence encouraging more students to show interest in studying engineering and technology related courses in tertiary institutions which will in turn led to increase in manpower and thereby promoting National Development.

#### **RECOMMENDATIONS**

Based on the findings, discussion and conclusion the following recommendations were made:

- i. The Federal Ministry of Education should make provisions to train and re-trained Technical drawing teachers/instructors on Information and Communication Technology training programs on regular basis, so as to equip them with the current technology trends that will foster better academic performance and positive attitude of students towards Technical drawing.
- ii. Technical drawing teachers should avail themselves of the opportunity provided by CAD software package by embarking on self-updating, so as to remain relevant in the information age.
- iii. The Nigerian Educational Research & Development Council (NERDC) should design a curriculum that will enforced the incorporation of CAD software in the teaching and learning of Technical drawing at the senior secondary school as this will help to foster learning outcome.
- iv. The various education bodies should initiate plans and proposals on ICT initiative and school projects to ensure full implementation of computer technology instructions.

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