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THE USE OF ARTISTIC IMAGES IN THE GAZELLE "KELDI BAKHOR" ("SPRING HAS COME") BY MUHAMMAD REZA AGAKHI.

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ANNOTATION

The artistic Arts used in the radifli Gazal "Arrived spring" of Agahi, a scientist who has made a huge contribution to our literature as a prolific talent, leader poet, translator, historian of his time, who has a special place in Uzbek classical literature, speaks about their analysis.

KEY WORDS: *Agahi, "Arrived spring", artistic art, tazod, tashbex, tanosib, nido, tadid.*

ИСПОЛЬЗОВАНИЕ СРЕДСТВ ХУДОЖЕСТВЕННОГО ИЗОБРАЖЕНИЯ В ГАЗЕЛИ «КЕЛДИ БАХОР» («ВЕСНА НАСТУПИЛА») МУХАММАДА РЕЗЫ АГАХИ.

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Аннотация

В радифли газали "Весна наступила" Агахи, ученого, внесшего огромный вклад в нашу литературу как выдающегося поэта, переводчика, историка, ученого, занимающего особое место в узбекской классической литературе, рассказывается об искусствах и их анализе.

Ключевые слова: *Огахи, "Пришла весна", изобразительное искусство, тазод, ташбех, танасиб, нидо, тадид.*

Не будет преувеличением сказать, что Агахи, сын Мухаммада Резы Эрнийэбека, является одной из крупных фигур литературной среды Хорезма XIX века. Он признан великим деятелем своего времени благодаря размаху своего творчества, красоте и художественному весу его стихов. Мудрый поэт Камиль Хорезми дает ему очень высокую оценку. Он признает уникальность изящества и мудрости Агахи, высокую ценность его слов, его творчества, знающего прелести и скрытые тайны любви:



*Ulki ogahlarning ogahidur,
Fahm-u donish sipehrining mahidur
So 'zi ortiqdur guhardin ham,
Fazl-u donishda olam ichra alam.
So 'zni har necha qilsa bozori
Bordur olamda bir xaridori. [1]*

Основное поэтическое наследие Агахи было написано на нашем узбекском языке и собрано в книге «Тавиз ул-ашикин» (Амулеты влюбленных). Деван был составлен по предложению и просьбе просвещенного царя и поэта Феруза Мухаммада Рахимхана Сони.

Этот диван является уникальным образцом узбекской поэзии 19 века. Поэт в Девоне. Было включено более 20 000 стихов его стихов, и около 1300 из них были написаны на персидском языке. Поэзия Агахи глубока по содержанию и философична, но также и художественно совершенна. Его мир символов, ряд аллюзий и сравнений уникален и нов. Это его качество ярко проявляется в сравнениях и художественной выразительности его газелей. Анализируя радиф-газель Агахи «Келди Бахор», мы можем глубже изучить его методологию:

*Azmi sayri bog 'qil, ey gul'uzor, keldi bahor,
Qildi yuz fayz-u tarovat oshkor, keldi bahor. [1]*

В этом отрывке из газели «Весна наступила» описывается визит весны, и говорится, что когда она приходит, все вокруг наполняется благодатью и свежестью, и чтобы ощутить эту красоту, нужно прогуляться. В первой строфе поэт использовал искусство восклицания, обратившись к цветку. Ниido отличается от других поэтических искусств своей способностью открыто и мощно описывать чувства и эмоции человеческого сердца. Когда в человеке пробуждаются внутренние чувства, например, лирический герой может обращаться к любым событиям в мире, к любой вещи в природе, к своему сердцу, к собеседнику.

Во втором стихе слова «файз-у тарават» создали искусство меры, потому что они требуют друг друга. Аллитерация – это искусство использования слов, передающих родственные и близкие понятия в строфах стихотворения. Когда мы думаем о чем-то, мы видим его признаки и характеристики. Например, когда мы говорим о солнце, прежде всего, мы думаем о его лучах, а когда мы думаем о лице, мы думаем о глазах, бровях, губах и рту, которые имеют к нему непосредственное отношение. то есть.

*Bog'lara ziynat bag'ishlab, dashtlarg'a berdi fayz,
To qilur ofoqni jannat shior keldi bahor.[1]*

В этих стихах мастерски описано, что весна украшает сады и степи и превращает мир в рай, а контрасты создаются с помощью слов сад и степь. Контраст создается путем противопоставления вещей и событий. Мы знаем, что в саду растут деревья и разные цветы. Степная зона представляет собой безлесное пространство, сплошь покрытое травой, а растения здесь отличаются устойчивостью к воде и жаре. Искусство пропорций выражено в стихах словами зынат и фаиз, сад и рай.



*Zindalik berdi shahidlar xokida fayzu safo,
Mo'jiza aylab Isoni sharmsor, keldi bahor.*[1]

В этой строфе прекрасно выражено, что приход весны оживит траву в могилах, и это явление удивит даже Иисуса. В первом стихе создатель создал искусство пропорции через слова «файз-у сафа», а во втором стихе этого стиха использовалось искусство талме. Талме — арабское слово, означающее «вспышка молнии», «проблеск». Как художественное искусство это краткое, лаконичное изложение идеи путем обращения к названию исторического и легендарного события, притчи, лица, известного произведения и героев. Стих выше описывает Исо Масина. Одним из его уникальных качеств является способность воскрешать мертвых. О нем сложено много историй и легенд.

*Boqki daryo mavjlari uzra bulutlar qatrasi,
Bog', chaman uzra qilib gavhar nisor, keldi bahor.*[2]

В глазах поэта весенний дождь подобен драгоценному камню, рассыпанному по саду. Он покрывает все красотой. Здесь капли дождя уподобляются драгоценным камням и используется искусство ташбе. Аллегория в современном литературоведении называется сравнением. Это искусство, в котором сопоставляются две или более вещи и события, выраженные в словах, сходство, качество и общность между двумя или более вещами и событиями, характеристики, черты ярко проявляются, выявляются более глубоко и выразительно. В основном аллюзия помогает художнику художественно эффектно выразить свои идеи, мысли и желания.

Во второй строфе слова «Мешок» и «Чаман» относятся к искусству пропорции, потому что они одинаковы по смыслу.

*Lolayu gullar jomida har taraf shabnam bilan,
Qildi limmo-lim sharobi xushguvor, keldi bahor.
Ishratidan ayrilib maxmur dili bo'lgach hazon,
Bahri daf'i g'ussayu ranju xumor, keldi bahor.*[1]

Листья тюльпанов и цветы в стихах якобы наполнены вкусным вином. Это вино может унести печали грустного человека. Здесь создатель создал прекрасное сравнение, описав росу на цветочном листе как восхитительное вино с высоким художественным мастерством. Это сравнение является одним из лучших примеров сравнения. Слова горе и боль, используемые в стихах, являются искусством пропорции, потому что они имеют близкое значение.

*Behuda o'tkazma bu xush lahzani ogoh bo'l,
Bundan oldin ham jahonda necha bor, keldi bahor.* [1]

Весна приносит в окружающую среду красоту, но она неверна. В этих стихах художник призывает людей не тратить жизнь попусту, эффективно использовать свою молодость и указывает, что жизнь проходит в одно мгновение, как приходит и уходит весна.

*Bog'lama ko'ngil bu ishratga dahr gulzorida,
Vahshiyu kam fursatu bee'tibor, keldi bahor.*[1]

Поэт подчеркивает, что у людей, которые весело проводят день, очень мало времени и не следует привязываться к этим вещам. Здесь дикое, редкое, небрежное описание весны является



доказательством использования искусства ужаса. Одной из важных особенностей тадида является то, что он означает интеллектуальное развитие, последовательность, постепенность.

*Sayr qilgil, Ogahiy, hamroh o'lib bog'u chaman,
Vaqt gul gashli guliston, ey nigor, keldi bahor .[1]*

Эта строфа относится к скоротечности весны и трофеям юности. В этих стихах мы видим, что искусство восклицания используется в двух стихах через слова «Агахий» и «О, нигор».

Во втором куплете пропорционально задействовано другое искусство. Здесь корреляция создавалась тем, что слова время, гашт и цветок, гулистан родственны друг другу. Это показывает, насколько искусный, могущественный мастер слова и владелец пера.

В заключение можно сказать, что человек, прочитавший и знающий газели Агахи, несомненно, подтвердит свои художественные способности и тот факт, что он действительно художественный поэт. Поэт пытается открыть ранее неизведанные стороны каждого искусства, каждую деталь, необъятность неизведанной духовной территории. Каждый из нас находит новизну и новый смысл в словах и с большим мастерством использует их в своих газелях.

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ISSUES OF TEACHING AND STUDYING MEDICAL TERMS IN MEDICAL UNIVERSITIES

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ANNOTATION

This article deals with issues related to teaching and studying medical terms in a medical university.

KEYWORDS: *Latin language, information carriers, special vocabulary, terminology, method, prefixes, types of prefixes.*

ВОПРОСЫ ПРЕПОДАВАНИЯ И ИЗУЧЕНИЯ МЕДИЦИНСКИХ ТЕРМИНОВ В МЕДИЦИНСКИХ ВУЗАХ

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Аннотация

В данной статье рассматриваются вопросы, связанные с преподаванием и изучением медицинских терминов в медицинском вузе

Ключевые слова: *латинский язык, информационные носители, специальная лексика, терминология, метод, префиксы, виды приставок.*

Введение. Знание латинского языка важно для современного врача-специалиста, поскольку бурное развитие современной науки и техники и наименования современных технологий, а также введение терминов, используемых в медицине, из латинского языка требуют совершенного и основательного знания.

Как мы все знаем, сегодня резко меняются методы и средства педагогического образования, то есть в процессе обучения латинскому языку студентов медицинского вуза преподавателям современных педагогических технологий необходимо эффективно использовать информационные носители. В настоящее время нельзя добиться эффективных результатов, используя только традиционные методы обучения. С первых лет независимости в нашей стране осуществляются целенаправленные меры по воспитанию здорового и зрелого поколения, реализации творческого и интеллектуального потенциала молодежи, созданию необходимых условий и возможностей для подготовки конкурентоспособных кадров на рынке труда, что отвечает требованиям времени.



Основная часть. Развитие общества невозможно представить без развития науки. Потому что берет на себя задачи развития науки, создания ее материальной базы, технологического развития и, самое главное, кадрового обеспечения. Несколько лет назад специалистов попросили перевести информацию на любой латинский язык. Сегодня хорошо образованные и квалифицированные носители латыни работают в каждом медицинском вузе. Кроме того, среди студентов организуются обучающие курсы, семинары и занятия по обмену опытом. Также в каждом медвузе, а также в медицинских колледжах организуются курсы изучения латинских языков для студентов во время каникул в связи с потребностями студентов.

Греческий необходим для многих дисциплин: физики, химии, астрономии и особенно анатомии, ботаники и всех медицинских терминов.

Латинский язык и основа медицинских терминов для нас очень важный предмет. Поэтому прежде всего следует уточнить цель его изучения, его размер и состав вообще, почему латинский язык используется в медицине и биологии уже несколько сотен лет.

Для специалиста, успешно работающего в области терминологии, научных понятий, науки, техники и производства, необходимо понимать значение терминов специального лексикона, или, иначе говоря, терминологии, и правильно ею пользоваться. Основная функция термина (лат. terminus limit) — однозначно выражать научное понятие. В качестве термина может быть включена отдельная вода (организм, клетка, орган, ген, болезнь, аппендицит, флюорография) и комбинация воды (рак головы, шеи, гипертоническая болезнь, санитария, радиационная гигиена). Научные и научно-технические понятия выражаются терминами, отличными от популярных слов литературного языка, употребляемых в быту.

В специальных (терминологических), энциклопедических словарях термины обогащаются определениями, например: Пневмония – это воспалительный процесс легочных тканей, возникающий как самостоятельное заболевание или как осложнение какого-либо заболевания. Даже если эксперт и неспециалист одинаково употребляют общие слова и словосочетания, эксперт знает сущность научного понятия иначе, чем неспециалист, например: пневмония, туберкулез, склероз, кардиограмма, стресс и другие. Знать сущность научного понятия означает выделить это понятие (термин) из системы понятий науки. В определении лишь на определенном уровне раскрывается это единство и цель.

Целью работы является представление некоторых общих понятий терминологического образования, компонентов медицинских терминов, роли префиксов в образовании медицинских терминов, а также эффективных методов и материалов, используемых при изучении употребления префиксов в образовании клинических терминов.

Способ префиксации при образовании клинических терминов является одним из основных актуальных вопросов для студентов, которые хотят углубить понимание области медицины, а в процессе обучения необходимо правильно переводить медицинские термины и подготовить студентов к профессии, формировать у студентов профессиональные знания высокого уровня, гармонизировать отношения педагог-студент с целью достижения качества и эффективности обучения, воспитания, теоретические и практические вопросы обеспечения эффективности процесса помогут в полной мере раскрытие.

Современную медицинскую терминологию можно рассматривать как одну из широких и сложных терминов. В нем воплощены несколько тысячелетних вод и соединений. Особое значение имеет многовековая традиция латинского языка в медицинской и биологической терминологии. Изучение латыни начинается с изучения основ медицинских терминов.



Хотя латинский язык стал иностранным языком, он утратил свое значение и по сей день. В настоящее время латынь широко используется в областях медицины, истории, юриспруденции, филологии и биологии. Особенно это проявляется в медицине, так как анатомические и терапевтические термины, а также названия лекарств даны на латыни. В рецептурном бланке названия препаратов и указания фармацевту по приготовлению препарата всегда пишутся латиницей.

Если привести пример приставок, то, например, приставка *peri* вместе с названием органа указывает на наружную полость, оболочку, ткань, брюшину, покрывающую этот орган: *периметрий* - серозная оболочка матки (относящаяся к брюшине); *periosteum* - надкостница; *перибронхит* – воспаление тканей, окружающих бронх; *паранефрит* – воспаление фиброзной оболочки почки. приставка *para* вместе с названием внутреннего органа означает клетку (разреженную волокнистую соединительную ткань), окружающую этот орган: *паранефрит* - воспаление клетки вокруг почки. приставка *para-* имеет вторичные значения «отклонение от нормы», «отличный от данной словообразовательной основы»: *параакузис*- неправильное или измененное восприятие слуховых впечатлений; *параструма* – гипертрофия предхалконовых желез, напоминающая буккальную.

Заключение. Префиксация - это изучение педагогической и методической литературы по способам образования клинических терминов и ознакомление учащихся с ролью префиксов в образовании клинических терминов, предоставление сведений о видах приставок и наиболее часто употребляемых префиксах при образовании медицинских терминов. , разъяснение и пояснение темы «Способы образования медицинских терминов», показ методики, урок с приведением примеров методов и приемов, используемых в ходе курса целесообразно для студентов-медиков, чтобы иметь достаточную информацию по данной теме.

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ON COMPLEX SUBJECT SENTENCES IN THE MODERN ARABIC LITERARY LANGUAGE

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SUMMARY

The article looks into putting question about the complex sentences theory in European linguistics generally and particular in Arabic.

Absence reference to the opinion of Arabian scientists is explained thus, that they don't look into such category.

KEYWORDS: *complex sentences, main sentences, classification, Arabic, conjunctions, grammar.*

الحديث المعرف في المعقدة الموضوعية الأدبية حول
العربية اللغة

- ميرزاك بروف نامشخورة كاديروف
الإسلامية العالمية في محاضر
طشقند. أوزبكستان أكاديمية

ملخص

عام به شكل الأوروبي لغة اللغويات في المعقدة الجمل نظرية مسألة لإثارة المقال خُصص
خاص به شكل العربية واللغة

هذه مثلي عتبرون لا أنهم حقيقة يفسره العرب العلماء رأي إلى الإشارة عدم إن
الفئة

قواعد، اقتران، عربي، تصنيف، رئيسية جمل، معقدة جمل: المفرداتية الكلمات



О СЛОЖНОПОДЧИНЕННЫХ ПРЕДЛОЖЕНИЯХ В СОВРЕМЕННОМ АРАБСКОМ ЛИТЕРАТУРНОМ ЯЗЫКЕ

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Резюме

Статья посвящена постановке вопроса о теории сложных предложений в европейском языкознании в целом и арабском языке в частности.

Отсутствие ссылки на мнение арабских ученых объясняется тем, что они не рассматривают такую категорию.

Ключевые слова: сложноподчиненные предложения, главные предложения, классификация, арабский язык, союзы, грамматика.

، أنها نرى أن السهل من ، ال بسطة ب ال جمل مقارنة المعقدة ال جمل إلى ب ال نظر
، المعقدة ال ظواهر ومعرفه ، المد يط ب ال واقع معقدة معرفة عن ت ع بر ، عامة ك قاعدة
ال كلام ل ثقافة أعلى إنجازاً ت م ثل وب ال تالي

أفكارهم تجاوز ولم ، بدائياً ال بداء يين الأشخاص ت فكير كان ، ت علم كما
ب بسطة ب جمل عنه وي ع بر وي دركه ال شخص ي درك ال عمالي ن شاطهم حدود وأدكاهم
فهم في ب دأ ، لاحق وقت في . ومن فصل من فصل ب شكل ال واقع من م ت ل فة جواذب
، وال ت فكير ال لغة ت طور مع ال لغة في معقدة جمل ظهرت لذلك ون تيجة ، علاقتهم
المد يط ل لواقع الم ت ل فة ال ظواهر فهم في ال شخص ب دأ عندما ، معقدة جمل أيضاً ظهرت
ال سبب ظاهرة ب ين الم تظمة الروابط إ ذاء على القدرة اك تسب ، أعمق ب شكل
ل جملة ال نحوية ال تبعية في عنها ال ت ع بر و المكان والوقت وال ن تيجة والغرض
أخرى إلى

نهاية في ولا كن . جمل نظرية واللات ي ن يين ال يونان يين ال نحة ل دى ي كن لم
ال جمل وم فاهيم مصطلحات كانت ، العلم ال لغوي الأدب في ، عشر ال ثامن ال قرن
شائعة "ال ثانوية" و "الرئ يسية"

الرئ يسية ال جمل في يه كانت وقت هناك كان ب أنه عام ب شكل ال فرضية ق بول ت م
أي ، ي سمى الأخرى ت لو واحدة رئ يسية ل جملة الم باشر الات باع ب دأ موجودة ف قط
ال خضوع ي عني ما هو ، عكس على ، ال تركيب

ال جملة أن ف كرة عن ب رناردي أعرب ، ال تركيز في ب ال نقص ي تعلق في يما
ب جملة ال كلمة بها ترتبط ال تي الطريق ب نفس معقدة ب جملة مرتبطة ال بسطة



الثنائية الجملة تقسيم في بدأ، أساسها وعلى قبل، من ال فكرة هذه دعم تم بـ سيطرة وظروف و ص ف ات أسماء إلى

الروسية ال لغة قواعد" ك تابه في ال ثنائية ل لعبارات مشابهة تصريف لدى
"العملية".

مورفولوجية لميزة وفقاً ال ثنائية ل لجملة ال تصريف هذا تعديل تم، ذلك بـ عد
ك تب بـ سيطرة جملة لأعضاء مساوية تكون أن في بدأت ال ثنائية ال جملة أن بـ معنى
جملة أخرى من جزء هي ال تي الجملة تسمى: "الروسية ال لغة ال تاريخية ال قواعد" في
"رئيسي كجزء في بها ال ثنائية ال جملة تـ ضم ين ي تم ال تي الجملة وتسمى، ثنائية
مختلفة بـ طرق وال تبعية ال تكوين مشكلة الرسمي ال نحوي الاتـ جاه مم ثل وحل
لا" أنه بـ حجة، الروسية ال لغة في وجود على ال شك من بـ ظلال عام بـ شكل ي لقي
الإرث هذا على لـ لحفاظ حاجة هناك ليست، وبـ ال تالي، بـ بينهما موضوعي فـ رقي وجد
"الجملة نظرية من

حول شكوك عن يـ عبر لاف هو، مختلف بـ شكل وال تبعية ال تكوين مشكلة يـ حل
الرجوع وعدم لـ لانعكاس نظرية أيضاً يـ خلق بـ ل، فـ حسب وال تبعية ال تكوين وجود
بـ ين من أنه بـ يشكوف سكي يـ لاحظ. وال تبعية ال تكوين وجود عن الدفاع في
الأشكال بـ واسطة عنها ال تبعية يـ تم وال تي، الجملة داخل ال نحوية ال علاقات
رئيسيان نوعان هناك، ال فردية لـ لكلمات ال نحوية
يـ وجد حيث، متماثل، متبادل، متوازي، الأضلاع متساوي، مركب ال نوع (1)
لـ لعلاقة مؤشر

، متماثل غير، متبادل غير، متوازي غير، متكافئ غير، ثانوي هو ال نوع (2)
إحدى في فـ قط موجوداً لـ لعلاقة ال صوتي المؤشر يـ كون حيث، فـ يـ رجوع لا
الجملة في شيوغاً الاتـ صال أنواع أكـ ثر هو هذا ال صلة ذات ال عبارات
ال بعض بـ عضهما عن وال تكوين ال تبعية يـ مختلف، لـ وفقاً، معقدة جملة في
بـ عضها على ال فردية ال جملة اتماد نـ فسـ لوحظ، ال تبعية في ال طرية فـ نـ فس
ال فردية بـ ال كلمات يـ تعلق في يما ال عبارات في يـ وجد والذي، ال بعض
في رئيسي بـ شكل الروسية ال لغة قواعد في ال ثنائية ال جملة عقيمة تطورت
"الثنائية الجملة" مصطلح تـ قديم تم. عشر ال تاسع ال قرن من الأول ال نصف
الطبعة في ظهر والذي، "العملية الروسية ال لغة قواعد" كـ تاب مؤلف، بـ واسطة
وتطوير وشرح اسـ تنساخ هو - لـ تعريف وفقاً - ال ثانوي ال شرط. 1827 عام الأولى
"الرئيسي ال جملة من جزء لأي تـ فصديلي
ال صفة؟ شرط هو ما

أن إلى في بها يُشار، ال قبل هذا من جملة هي ال ثنائية ال جملة: "الطرية فـ بهذه يعرفها
في؛ معها دمجا يـ تم أخرى لـ جملة ولا كن، نـ فسها أجل من تـ تكون لا المعينة ال جملة
أنها إما: ذوعين من المعنى حيث من ال ثنائية ال جملة تـ كون أن يـ ممكن، نـ فسها الوقت



لاوب ال تالي ، (الرئ يسدية الجملة) بأكمله الآخر إليه ي شير ما ب ن فسها ت شرح جملة من جزء إليه ي شير ما ذاته حد في ب واسطة ت شرح أو ، أخرى جملة من جزءات شكل أخرى رئ يسدية جملة من جزءان فسها ت شكل الحالة هذه وفي ، أخرى رئ يسدية المعقدة الجملة من الجزء هذا" :ويلاحظ . ق بل من ب ساطة أك ثرت تعريف ت قديم ت م ي سمى نسبياً اس ت فهم ضمير أو ن سدية ك لمة أو ث انوية رب ط أداة على ي ح توي الذي الأجزاء هذه أحد أن هو المعقدة الجملة أجزاء ب ين ال ثانوية العلاقة أساس ث انوية جملة الآخر ب الجزء ي تعلق ف يما إضاف ية ت و ضيحية وظ يفة ي ودي (ال ثانوية الجملة) (الرئ يسدية الجملة).

الجملة ب أن ال قائله المعقدة هو شيو عاً الأك ثر ، ال ثانوية الجملة نظرية في الدلالة الوظيفية ت ودي (المحددة) الرئ يسدية ب الجملة ي تعلق ف يما ال ثانوية ، المختلفة الظروف ، الإضافات ، التعريفات :الجملة في عضو لأي النحوية المسند ، الموضوع مبادئ ثلاثة طرح ت م ، مختلفة أوقات في الأوزب كية القواعد علم في المعقدة الجمل ل تصديق.

ب جملة ك كل المعقدة الجملة ت شدي به على ي عتمد شيو عاً الأك ثر ال تصديق كان ب سيطرة جملة لأعضاء ال تابعة والأجزاء ، ب سيطرة ت م ي يزي ت م ، ال ثانوية الجمل ب ين من ، هذا ل تصديق لمخطط الأول ي ل لم بدأ وفقاً هذا المنسوب ، الإضافي ، المسند ، الموضوع ، الظرفية الجمل من مختلفة أنواع ال عام اللغة علم في ت قل يدي ل تصديق

لوسائل وفقاً المعقدة ل الجمل الرسمي ال تصديق ال تصديق هادي عارض ما مؤيدي ق بل من ال تصديق هذا طرح ت م .وال فرعية الرئ يسدية للأجزاء الات صال نوعين ت م ي يزي ت م ، الم بدأ لهذا وفقاً .القواعد في الرسمي ال توجي ي سمى ال تبعية) المتحالفه ال كلمات ذات الجمل :المعقدة الجمل ب ين رئ يسدين (المتحالفه ال تبعية) الات حادات مع والجملة (ال نسدية

، ال ت قل يدي الجمل مع جزئياً ت توافق الطرية قة بهذه المميزات المعقدة الجمل أنواع ت ع بر دلالية ات حادات هي ال نقابات معظم الحين ذلك منذ ، بالمعنى ت تميز وال تي موجزة ، مقارن ، هدف ، مؤقتة ، مشروطة ، سدية - العلاقات من محددة أنواع عن مفهوم على بناء ، المعقدة الجملة ل شكل أو سع فهم من ي نطلق ال ثالث ال تصديق ب ين العلاقة ط بيعة إنشاء على ال تصديق هذا ي عتمد .الدلاله الهيكلية النوع

وال فرعية الرئ يسدية الأجزاء الرئ يسدي والمؤشر الات صال وسائل أهم هي والعلاقات المتحالفه ال كلمات على ، ب ينما ، العربيه اللغة في المعقدة الجملة أجزاء ب ين النحوية ل لعلاقات ب وسائل أيضاً الوظائف هذه ت نفي ي ت م ، الأوزب كية اللغة في ، الم ثال سديل فيها المضمنة ال كلمات أشكال نسبية ، المعقدة الجملة أجزاء ترتب :أخرى هيكلية ال تجويد ، ال تكوين



، الحالات معظم في ل لغاية متنوعة المعقدة الجمل أجزاء بين النحوية العلاقات ظلال عن ل لتعابير المتحالفه والكلمات الاقتران أدوات من العديد استخدام يتم ، المؤقت للاتصال العام المعنى عن ل لتعابير ، لذلك العلاقة نفس من مخدلة تبعية عن ول لتعابير .(ذلك إلى وما ، دين / دين) "متي" الات حاد استخدام يتم (حتي) "ب ينما" الات حاد استخدام يتم ، محدودة زمنية

، المتحالفه الكلمات بواسطة المخدلة الإسناد علاقات عن التعابير يتم الجملة في وكن ، "ماذا" ، "التي" مثل الروسي الصوت إلى الترجمة في والتي ظلال في الاخ تلاف إلى يشير مما ، مخدلة بطرق إليها الإشارة يمكن العربيه / التي نسبية ضمائر هذه تكون أن يمكن ، المثال سبيل على الإسناد علاقات مع بالاقتران ، والتي ، الأمر كلمة تكون أن أيضًا يمكن وكن ، ذلك إلى وما ، التي ch- إلى أدى مما" :حرفيًا نُترجم ، لها الممييزة الخاصة وكونها الرئي يسي الجزء بعد ، إلى ، الحالة هذه في الإسناد علاقة ظل إلى ولا إشارة " s-I. إلى أدى ما " :أخرى بعبارة ، " s.I. إلى أدى الذي هو ، الآخر وليس ، هذا كان يعني هنا الأمر أن يقال أن يجب ال صورة خصوصية

ورئي يسي ثانوي : (الأقل على) جزأين من المعقدة الجملة تكون ، لذلك لأن ، مشروطة "رئي يسي جملة" و "ثانوي شرط" المصطلحات فإن ، الحال بطبيعة ومسد تقلة كاملة جملًا ليست المعقدة الجملة أجزاء

الجملة تسمى والتي ، المعقدة الجملة من الجزء هذا اكتمال أو كشف أو شرح الجملة عن مخدلة دلالية علاقات في النحوية الجملة تكون أن يمكن ، الرئي يسيية والأجزاء المعقدة الجملة بنية في المقابل التعابير تلاقى والتي ، الرئي يسيية لها المكونة

إلى الظرف شرطي شيرقد

الرئي يسيية الجملة أعضاء لأحد 1)

الرئي يسيية الجملة أعضاء لمجموعة 2)

كل الرئي يسيية لجملة 3)

بالفقرة يتعلق فيما الوظيفية نفس النحوية الجملة تؤدي أن يمكن جملة في ، ثانوي أو رئي يسي ، أعضائها من آخر أو واحدٍ وديها التي الرئي يسيية عبارة تحوي وقد ، تكميلية وظيفية أو ، تعريف وظيفية تكون أن يمكن بسبب الجملة في يقال لمان نتيجة ، نتيجة إلى إشارة أو شرط إلى إشارة على ثانوية أيضًا مكنة النحوية لجملة أخرى معاني الرئي يسيية

بالجزء لعلاقتها وفقًا - النحوية ل بنود التصنيف هذا فإن ، سابقًا ذكرنا كما

العام اللغة علم في تقل يدي تصنيف هو - الرئي يسي

الجملة مسألة إلى يُنظر ، (الكلاسيكية) النحوية العربية ال لسانيات في لا ، العربي اللغة علم في .أوروبا الهندو اللغات في عنها مخدلة شكل المعقدة



على ، الجملة من خاص ك نوع ، ومرتبطة مكونة ، "مقدمة جملة" ومصطلح مفهوم ي وجد
ال بسطة الجملة عكس

وكذلك ، النحو قواعد من ضعيفا فرعا كان العرب عند النحو أن إلى الإشارة وت جذر
وال يوناني بين الهنود بين

من مقدمة جمل الوسطى العصور في العرب النحاة اع تبر ، المثال سبيل على
مثال جملة في ، لهم وفقا. إيزافت في الزمن

قلا يلا كنتم اذ اذكروا

ال عدد قلا يلة كنتم عندما تذكر -

هو المجموعة هذه من الثاني والمكون ، أظرف هو isafet تركيبة من الأول المكون
المكون مع دمجها يتم ، موضعها وفي ، كاملة جملة شكل في عنه معبرا ، قلا يلا كنتم
الأذن الوسطى العصور في العرب النحويون يع تبر. المضافة الحالة في الأول
بالتزامن يسمونه الذين المعاصرين المسد تعرب بين نظر وجهة عن يذ تلف ظرف
التالي النحو على التقليدية العربية ال لغة في النوع هذا من الجمل تحويل يتم

قلا تكمل وقت اذكروا

أو

قلا يلا كنتم وقت اذكروا

، العربية ال لغة تركيب دراسة في المشاركون الأوروبيين العلماء بين من
لغة النحوية البنوية في النظر عند ، الذين ، إلى الإشارة أولاً الأمر على ي جب
المقدمة العروض من مذتلفة بأنواع اهتماما ، العربية

ال لغة تركيب حول موثوقة دراسة يع تبر ري كيندورف. هك تابي زال لا
من الكثير على العمل هذا يد توي. (1921 ، هليلد برج ، ري كيندورف. ه) العرب
المقدمة الجمل حول لاهتمام المثير المعلومات

إلا ، لغاية متنوعة الحديث العربية ال لغة في المقدمة الجمل أن من الرغم على
غيرت زال لا ، الفصحى العربية ال لغة في الحال هو كما ، أنها ملاحظة ي جب أنه
مسد تشرق بين أعمال تد توي لا ، المثال سبيل على. وثيقين وتطور اهتمام موضع
ن. مثله معروف بين

نظر وجهات عن المقدمة الجمل عن المسد تعرب بين بعض أعرب ، أخرى نادية من
التصنيف مبادئ حول ، بالموضوع المتعلقة والمشاكل الأسئلة حول مذتلفة

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LEARNING ENGLISH THROUGH MUSIC AND SONG

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ABSTRACT

The article is devoted to learning English through Art. The aim of the article is the analysis of learning English through music. The author comes to the conclusion that the method of learning English through music is one of the effective methods of learning.

KEYWORDS: *English, learning, art, method, music and songs.*

ИЗУЧЕНИЕ АНГЛИЙСКОГО ЯЗЫКА ПОСРЕДСТВОМ МУЗЫКИ И ПЕСНИ

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Аннотация

Статья посвящена изучению английского языка через искусство. Целью статьи является анализ изучения английского языка посредством музыки.

Автор приходит к выводу, что метод изучения английского языка через музыку является одним из результативных методов изучения.

Ключевые слова: *английский язык, изучение, искусство, метод, музыка и песни.*

English is the most widely spoken language in the world. It is used as a communication tool by about half of the globe. English has been one of the most important international languages for over two centuries. There is a variety of dialects and dialects of the English language. English (as a second language) is spoken in more than 50 countries around the world. English is the language of diplomacy, politics, science, economics, etc. More than 90% of all world media are distributed in English. More than 70% of all scientific articles and journals are published in English.



In the age of progress and technology, knowledge and study of the English language is necessary for every civilized, intelligent and self-sufficient person. Learning a language is not at all easy. This process can take a lot of time and patience.

There are many methods of learning a language, the main method is memorization of texts, words, etc. It is possible to learn English not only by cramming, but also through games, video lessons, poems, communication with native speakers and art.

Currently, non-traditional teaching methods are emerging that represent an alternative to the traditional classical system. Non-traditional teaching methods contribute to the formation of motivation for learning foreign languages[1].

Learning English through music is aimed at implementing a cognitive-communicative approach. This approach makes us take a fresh look at the traditional methods and techniques of teaching a foreign language [2].

The purpose of the article is to study English through art. And the task of the work is to analyze the process of learning English through music.

Music is far from the last place in art, due to its beneficial effect on the human body. And that is why the method of learning a language through music is one of the most effective learning methods.

The subject "music" often comes into contact with many school subjects. Integrated lessons pay off, as you can combine subjects that have nothing to do with music.

Nowadays, learning English is an integral part of education. Knowledge of English definitely simplifies the likelihood of future education and employment in European countries. Therefore, when learning English, a variety of methods are used to facilitate and accelerate the development of this language. Most of them have a strong emotional impact on students.

The full-fledged formation of actual, educational, developmental and educational tasks of training can only be subject to the impact not only on the consciousness of students, but on the sphere of their personal hobbies, predispositions and themes [3]. Music is one of the effective methods of influencing the emotional state of any person. Music is a component of the culture of absolutely any nation, thanks to which we can say that if you listen to the music of the nation whose language we study in the same language, then it is possible to more deeply comprehend the cultural and domestic characteristics, traditions, worldview and the language itself, as such. .

In the 19th century, researcher I. Dogel determined that when listening to music, the pressure and depth of breathing change not only in animals, but also in people. Many doctors turned on music during operations: thanks to their observations, we learned that the processes occurring in the patient's body proceeded more harmoniously.

Previously, in ancient Greek schools, in order to better memorize, they memorized texts by singing. One of the great teachers K. D. Ushinsky argued that singing to class is a powerful teaching method that not only unites students, helps to educate their sensuality, but also contributes to the development of memory [4].

The study of a language through songs has a fruitful effect on our knowledge in this area, because:

1. There is an increase in vocabulary

Suppose our level of knowledge is average, we understand the lyrics of modern songwriters, but when we hear "classical" English singers, we realize that their vocabulary is much wider. Naturally, many words become incomprehensible to us. This is one of the opportunities to replenish our knowledge base. To do this, you need to write out unfamiliar words and learn.



2. Learning idioms

While listening to some compositions, we cannot understand how to translate some lines. When translating each word, some kind of nonsense is obtained. These phrases are "idiom". It is recommended to memorize these idioms and memorize them.

3. Improve your listening comprehension

Listening to a variety of material in English, we work on listening. Favorite English songs help us get used to foreign speech. Normal listening does little good. In order to benefit from listening, we need to work on the song. To begin with, you need to choose the song you like, but if it is difficult to perceive by ear, then you need to stop at a song that is performed at a slower pace [5].

Then we should listen to the song and try to understand as many words as possible. We need to listen not only to the lyrics, but also to the intonation of the performer - this also helps us understand the meaning of the song.

Thirdly, we must listen to the composition and at the same time read the text, while trying to make out every word in the singer's speech. If there are new words in the text, then they need to be written out in order to pronounce them correctly later.

And the last one is the fourth. We are already listening to the composition, but we are no longer looking at the text. We try to understand every word of the singer.

4. Improving pronunciation.

When learning a language, one should listen to music with the correct pronunciation. After all, without suspecting it, we copy the speech of our favorite performer and, therefore, we can improve our pronunciation.

5. The ability to learn the language wherever it is convenient.

Listening to music often serves as independent work in learning English[6].

It is necessary to properly organize independent work on reading newspapers and magazines, since it is the correct organization of independent work that is one of the key didactic and organizing problems and the basis of university teaching foreign languages [7].

Both the lyrics and the songs themselves are freely available on the Internet and can be easily found, they can also be saved to any smartphone, tablet, laptop, etc.

Therefore, this is one of the available methods of improving and learning English.

I would like to note three performers whose work has a beneficial effect on the study of a foreign language:

1. British musician "Sting". Each composition of this singer is a masterpiece. These songs are very pleasant and useful to listen to, because they not only have a pleasant and catchy melody, but are also rich in terms of literary expressiveness[8].

2. Rock band Linkin park. I would like to draw attention not to all the work of the group, but to a particular song. Thanks to the composition "Numb" we can learn about many idioms of the English language[9].

3 Michael Jackson Listening to Michael's songs, you can catch yourself thinking that you can hear not only the words, but also the sounds themselves. He has perfect diction, thanks to which it is more pleasant and easier for us to learn the language[10].

Some researchers recommend that parents "acquaint" children with English already at preschool age. Because at this age, the memory of children is more receptive to learning English and to previously unknown information, and then it will be easier for them to study subjects in an educational institution.

When learning English, the methodological prerogatives of songs can be expressed as follows:



- songs are means of reliable assimilation of material. The researchers proved: "In the human brain, different areas are allocated for listening to music and speech. The central part of the brain responsible for music is located in the left hemisphere, which is responsible for creative activity. That is the only reason why she remembers and works faster than the speech center, located in the opposite - the right hemisphere. Music, in turn, plays a connecting role, that is, it unites the work of the two hemispheres and therefore information is remembered better than poems [11].

- songs contribute to the mastery of pronunciation skills. Frequent repetition of simple, short songs helps to consolidate the correct pronunciation;

- songs help motivate students to study, which is certainly very important, because learning without motivation is unproductive.

It must be remembered that the child needs the impressions received from the study of this subject. That is why many teachers use the creative aspect in their lessons.

The implementation of the objectives of the study is likely only when the emotional sphere of the students and the personal distinctive features of the child are affected. The constant study of songs in class greatly simplifies the process of learning English[12].

In conclusion, I would like to note that English plays a very important role in the life of every person. And, therefore, new methods must be invented for easier learning of the language.

In my opinion, the method of learning a language through art is the most effective and understandable method for almost the entire audience, since with the help of music we not only learn English, but also spiritually educate children, introduce them to art, etc. It can be used not only in English lessons, but also in the lessons of world and artistic culture, class hours and many others.

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THE EFFECTIVENESS OF THE USE OF COMMUNICATION TOOLS IN THE CLASSROOM IN ENGLISH

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ANNOTATION

This article deals with issues related to the use of cell phones in an English lesson for the development of students' oral and written speech.

KEY WORDS: *phone, vocabulary, exercise, pronunciation, grammar, tasks.*

Эффективности использование средства коммуникации на уроках английского языка

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Аннотация

В данной статье рассматриваются вопросы, связанные с использованием сотовых телефонов на уроке английского языка для развития устной и письменной речи студентов.

Ключевые слова: *телефон, словарный запас, упражнение, произношение, грамматика, задания.*

Purposeful use of mobile phones by students during English lessons in educational institutions has a positive effect on the effectiveness of the lesson. I have shown this in my own experiments.

This is simple activity that you can use as a warm-up. Students take out their cell phones and, in groups of three, discuss the favorite features of their phones. It can be anything they use regularly or that they really like. They talk about why like the feature and what they use it for. Students who do not have a phone can describe a feature that they would like to have on a phone. Take this opportunity to have students practice using descriptive language, giving support for opinions, or making comparisons of different phones and their features.

Alternatively, have students talk about the least useful feature or application on their phone. They could discuss why they dislike it, why they don't use it, and how they might change it if they could design a phone. Below is sample language students might use in this activity.



- My phone is _____. (size)
- It's _____. (color)
- My screen is _____. (brightness and size)
- I can listen to _____. (audio features)
- I do/don't like phone's _____. (size, color, features)
- My phone is a _____. (brand)
- I can/can't (take pictures) with my phone. (capabilities)
- Your phone has a (camera), but mine doesn't. (comparisons)
- On my next phone, I would like _____. (desires)
- My favorite/least favorite feature of my phone is _____ because _____. (opinion of feature using "because")

In many contexts, teachers lack material for listening practice. Cell phones have the potential to change that. You may not have access to recordings of "native speakers," but you can create your own short listening clips for students. Here are a few ways to make the most out of the voice-recording feature on cell phones:

- Record a newspaper headline or a short poem on your phone. Send it out to students in a text or via Bluetooth, then have them listen to it and try to recreate it by recording into their phone. Alternatively, plug in a speaker in class, play the recording a few times, and have students attempt to imitate it and record into their phones.

- Create video dictionaries. Students use their phones to record a list of vocabulary words, showing a picture of each item and pronouncing the name of the item at the same time. The goal is to help retention of the word for future use.

A number of projects have encouraged reading on mobile phones. West and Chew (2014) describe reading activities on mobile devices in developing countries and suggest that cell phones can be used to increase literacy. In areas that lack resources, people typically own cell phones that are simple and have limited access to data, and they tend to use talk and text functions more than apps. Below are descriptions of two activities that take advantage of the most basic features of a phone.

Vocabulary activity. Send an SMS to students with five vocabulary words per week or per day and have them find the definitions and/or practice using the words in context.

Dictation activity. The following suggestions require the cell phone to have recording function:

- Send a short recorded passage (60 seconds maximum) to students and have them listen to it and write out what they hear.
- For oral practice, have students record a passage (60 seconds maximum) and let others listen to it and write it down. Later, they can compare what they wrote with the original passage, and the teacher can focus on pronunciation, if needed.

This digital storytelling activity was adapted from tools for Digital Storytelling, which instructs learners how to create videos using cameras and computers software. Digital storytelling is a useful tool for language learning, and I wanted to do something similar without having to rely on using a computer to do the editing that a digital story needs. Using a cell phone allowed my students to record and view their work immediately and does the editing in real time. This real-time editing encourages natural repetition and revision, which includes students recording and then rerecording specific target-language structures or phrases and vocabulary they need to complete a task. Teacher can give the students a pronunciation or grammatical issue to focus on when listening to their recordings. This



activity can be done with beginning to advanced students. Below I outline a six-step process to create a cell phone story in a 90-minute period.

Keep the story short and focused. Tell students they are going to create a story with a defined purpose and audience. The story should be between a minute and a half and two minutes.

The list below gives suggestions for story topics and potential audiences. Remember that defining a purpose and audience makes creating the stories more meaningful.

- Introducing a visitor to your school or home (to low-level groups)
- Relating a story about an important or funny event in your life (to a friend)
- Explaining a cultural tradition (to a tourist)
- Illustrating how to make a family recipe (to a famous chef)
- Creating an advertisement for your city (to attract tourist)
- Highlighting how to help a fellow student who is being bullied (to classmates/peers)
- Giving suggestions on how to give an effective presentation (to a first-time presenter at a conference)
- Explaining how a system or invention works (to engineering students)
- Making a public – service announcement for an action you want the city or community to take (to the city's or local community's board of directors).

In conclusion, working with students using their mobile phones in English lessons will bring new innovative ideas, which will serve as a unique basis for students to become fluent English speakers in the future.

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THE PROBLEM OF STUDYING VARIATION IN MODERN ENGLISH

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ABSTRACT

This article provides an overview of the numerous identifiable variations in pronunciation; such differences usually come from phonetic inventories of local dialects, as well as from wider differences in standard English among different primary-speaking populations. The active is part of the dialect, concerning the local pronunciation.

KEY WORDS: *relevance, greatness, extraordinary, dialect, pronunciation, variation.*

ПРОБЛЕМА ИЗУЧЕНИЯ ВАРИАЦИИ НА СОВРЕМЕННОМ АНГЛИЙСКОМ ЯЗЫКЕ

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Аннотация

В этой статье представлен обзор многочисленных идентифицируемых вариаций в произношении; такие различия обычно происходят из фонетической инвентаризации локальных диалектов, а также от более широких различий в стандартном английском языке различных первично-говорящих популяций. Актив является частью диалекта, касающегося местного произношения.

Ключевые слова: *актуальность, величие, необыкновенный, диалект, произношение, вариация.*

Variation is a characteristic of language: there are several ways to say the same thing. Speakers can distinguish between pronunciation (accent), word choice (vocabulary), morphology, and syntax (sometimes called "grammar"). But while the variety of variation is great, there seem to be limits to variation—speakers usually don't make drastic changes to word order in sentences, and don't use new sounds that are completely foreign to the language they're speaking. Linguistic variation does not equate to linguistic grammaticality, but speakers are still (often unconsciously) sensitive to what is possible and what is not possible in their native lecture.

Variationists study how language changes by observing it. This is achieved by looking at valid data. For example, variation is studied by examining the language and social environment, and then



the data is analyzed as the change occurs. The variety of research programs must be flexible due to the nature of the language itself. This is due to the fact that the language is also mobile during the transition and does not transition from one state to another instantly.

Language variation is a key concept in sociolinguistics. Sociolinguists investigate whether this linguistic variability can be explained by differences in the social characteristics of speakers who use the language, but also investigate whether elements of the surrounding linguistic context encourage or discourage the use of certain structures.

Studies of language variation and its correlation with sociological categories, such as William Labov's 1963 paper "The Social Motivation of Intelligent Change" led to the founding of sociolinguistics as a subfield of linguistics. Although contemporary sociolinguistics includes other topics, linguistic variation and change remains an important issue at the heart of the field.

The latest studies of language, which led to the theory of discourse, are aimed at elucidating the functioning of communicative processes and procedures for the constitution of meanings, a decisive contribution to new directions in the field of language teaching. Undoubtedly, it is a wider and more complex system of signs that relates to communication, capable of accepting various languages and fulfilling its main purpose. And it is characterized as a social fact, because it is a fundamental tool of communication, because it is fundamentally a tool of communication.

The language does not present itself in a unique and uniform way: it conveys variations depending on the groups that use it. Each of the variants of these variants, provided in the use of the language, represents certain patterns - normal resources for this group, thus calling it a dialect.

How we speak is influenced by many things. Firstly, there is learning to speak English itself, where how we pronounce our words is all part of learning how to speak and copying the speech of those around us. If we are born into bilingual families, then we may learn to speak English alongside another language. Then, as we go to school, we learn to read and to write a written equivalent of English speech that has standardized forms of spelling, punctuation and grammar, known as standard English. Depending upon your home background, you may speak standard English with its associated accent Received Pronunciation (RP). Or, you may speak standard English with a regional accent such as that associated with Birmingham or the Black Country, and you might include a few dialect features different from standard English, such as vocabulary in your speech.

As we move across the country we experience not only changing landscape and architecture but also a gradual change in the sounds we hear, in the accents and dialects that relate to the place in which they are spoken and to which they belong. This phenomenon is known as a dialect continuum. The terms accent and dialect are often used interchangeably, although in linguistic terms they refer to two different aspects of language variation.

English dialects may be different from each other, but all speakers within the English-speaking world can still generally understand them. For example, a slogan on a t shirt reads: Black Country spoken, English understood.

In England, there are two main dialects or varieties of English: standard English, used widely in public institutions such as education, media and the law. We learn it in school when we are taught to read and to write. Standard English is not bound by geographic location, and is the form used most commonly in writing. Regional dialect/variation, that is bound by geographical location. It is used most commonly in speech, but also in writing such as Irving Welsh's novel English dialects may be different from each other, but all speakers of English can still generally understand them. A speaker from Birmingham for instance, might sprinkle his or her speech with localized vocabulary, such as "bab" for woman or girl and a speaker from the Black Country say cut



for canal and use regional grammatical constructions, such as Ow yam bin? or bin ya? For How have you been? In addition, such speakers use a range of local pronunciations. For all these reasons such a speaker could be described as a Black Country dialect speaker.

There are also non standard dialect features that are shared by more than one dialect. For example, the expression ain't and the double negative construction I ain't got no pencil feature in more than one dialect. This is because, as English was standardised and a grammatical description written, the grammatical pattern for expressing a negative was through the verb do or have plus the word not. I do not have a pencil; I don't have a pencil; I didn't go to school yesterday and so on. Speakers of regional varieties of English continued to use the double negative. Equally, in speech, shortenings of words like because to cos, not pronouncing the letter <g> at the end of words such as goin, stoppin and glotalling are features of spoken English used by standard and non standard speakers of English alike.

What is an accent?

Accent refers to the differences in the sound patterns of a specific dialect and not its vocabulary and grammar. A speaker from Birmingham who generally speaks standard English vocabulary and grammar, but whose pronunciation has an unmistakeable hint of the Black Country, is described as having a Black Country accent. Many of us may speak English with a regional accent, but it is becoming increasingly less common for us use dialect features of vocabulary and grammar in our speech, especially in formal contexts.

The accent most commonly associated with standard English is known as Received Pronunciation (RP). RP is not bound by geographical location, and the accent most commonly associated with the Royal Family, people in professional occupations and linked to upper and middle social classes. RP is also subject to change, as the RP of Queen Elizabeth is different from that of her children and grandchildren. BBC presenters, often once thought of as 'gatekeepers' of RP, now present the news and current affairs programmes in a wide range of regional accents. There is also regional variation in RP: for example, the fact that the sound <a> can be pronounced as short, as in cat in words like bath and grass or long, as in farm. A short <a> is characteristic of Northern England and a long <a> of Southern England. Given that the South of England is perceived as a more prestigious than the North, then we may find ourselves consciously using one or other as a way of marking identity with either region.

It is possible to speak standard English in a variety of accents: Glaswegian, Geordie, Brummie or Yorkshire, for example, but unlikely that a regional dialect will be spoken in any other accent than that associated with the dialect. That is, you are not likely to find the Black Country dialect, Geordie dialect, or any other regional dialect, spoken in an RP accent.

Is standard English better than regional varieties of English?

At one time, the variation from standard English apparent in regional dialects was thought to be idiosyncratic, illogical and thus 'incorrect' and its speakers often thought of as 'unintelligent'. However, linguistic investigation into regional accents and dialects has shown that all varieties of English to be found in the UK today, as well as other varieties across the world such as General American, are rule-governed. Thus, it is not the case that standard English is linguistically a better or more superior variety of English. Its prestige lies in the social value given to it as the language of education, the law, public administration and so on.

Is it either standard English or regional variety?

In the middle of the twentieth century, education became universally and freely available in England, and children by law had to go to school until the age of fourteen, then fifteen until the 1970s,



sixteen until the turn of this century until they are adult, at the age of eighteen. As our world has become increasingly reliant upon literacy, so the adult population has become increasingly more literate. Literacy in English has evolved over several hundred years, and reading and writing standard English is taught in school, since it is the variety of English required for educational purposes and other realms of public life. Pupils who come from backgrounds where a regional variety of English (or another language) is spoken at home – and you may be one of them – may find that learning to read and to write may influence the way that they speak, so that speech becomes a mixture of standard English and regional variation. How we speak and write then, is influenced by the context, audience and purpose of the linguistic situation in which we find ourselves. We may speak in a regional variety with family and friends, but at work, or at school or university, accommodate or modify the way we speak to sound more standard.

Does English change?

As a living language, English changes over time and varies according to place and social setting. Some people find this upsetting, and perceive English changing as English degenerating. But, life does not stand still and today's world is characterised by more rapid social and economic change than at any other time in history that in turn has an impact upon uses of English.

Although standard English vocabulary is described in dictionaries, these have to be updated on a regular basis to take account of changing social patterns, so that ways of life and vocabulary associated with it that can be edited out and new words added in. For example, in the nineteenth century and early twentieth century, there was a range of vocabulary associated with horses as a means of transport that we no longer use, replaced by trains and cars. Technology has brought with it not only new words, such as computer but also added meanings to already existing words. A mouse used to refer to a small mammal, but now also means a piece of equipment that allows you to navigate a computer screen (and if you are reading this, you may have your hand on it). You may find that your grandparents and older people generally use or know dialect features far more than you do or your parents, partly as a reflection of the world in which they were brought up.

Standard English is also described in grammars of English. Linguists once thought that all languages fitted into one general grammatical patterning known as universal grammar. We now know that this is not the case, and that different languages have different grammatical categories. What was once thought of as a singular concept then, grammar, has become pluralised, so we can talk of grammars. The advent of new technologies such as sound recording and the internet together with the increasing digitisation of data has allowed linguists to compile data sets of language use known as a corpus, or if more than one, corpora. Modern dictionaries and grammars of English are increasingly based upon language corpora and thus how language is actually used rather than how a linguist might think it is or should be used. Corpora of spoken English have also made us aware that speech has just as much a grammatical structure as writing and so there are now grammars of spoken English just as there are of written English.

What about attitudes towards variations of English?

For mainly historical reasons, certain English dialects or varieties have been viewed more positively than others. Thus, standard English, because of its association with being the national English language, has been perceived as the most prestigious of English varieties. However, the fact that some dialects and accents are seen to be more prestigious than others is more a reflection of judgements based on social, rather than linguistic, criteria.

As society changes, so too do attitudes towards dialect, accent and variational use of English generally. Until not so very long ago, variation uses of English were associated with social class.



Manual employment was characteristic of belonging to what sociologically was called the working class, and such employment demanded minimal demands of literacy and educational qualifications. It was also generally not paid very well. Occupations that did demand a higher degree of literacy and educational qualifications such as teachers, lawyers, administrators and so on were characteristic of the middle class. These occupations are generally better paid. Today, issues of social class are not straightforward as they once were; increased educational opportunity and economic prosperity means that more and more young people are exposed to standard English than ever before. Nevertheless, linguistic prejudice still exists, particularly amongst employers, some politicians and sections of the general public.

Is it possible for attitudes towards variations of English to change?

Paradoxically, as more and more young people and adults are educated to increasingly higher levels, and learning about regional varieties in English has become a part of an A level English or undergraduate degree programme in English or Linguistics, then they become more aware of attitudes and prejudices towards uses of English. A consequence of this is, is that they can come to realise that how they speak can include an element of choice: they can choose to adapt their speech to become ever more like standard English, or they can choose to draw upon variational features of regional accents and dialects to mark an identity linked to a particular region. For example, an educated speaker of standard English born and brought up in Birmingham, may deliberately choose to include words such as *Bab* and phrases such as *tarra a bit* for goodbye. Equally, middle aged adults can incorporate vocabulary learnt from their children into their speech in ways that cut across age groups, such as the abbreviation *laters* for see you later or *hood* for neighbourhood. Thus, regional variation today is no longer so strongly tied to social class but rather cuts across social categories such as social class, age, ethnicity and gender.

Speaking with a regional accent, particularly, no longer has the social connotation it once had and automatically linked to a working class background. Increased variety of accents in the media for example, also helps to break down prejudice towards variation use of English.

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PROBLEMS OF STUDYING THE FEATURES OF SPEECH ACTS IN THE MODERN RUSSIAN LANGUAGE

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SUMMARY

This article deals with the theory of speech acts connected with communication, and also the questions, being the focus of attention of its representatives. The same time, in the article is shown opinions of founder of this theory of J. Austin, related to speech acts. It is stressed that scientists couldn't produce a single opinion on a question about how to determine the definition of speech acts until now.

KEYWORDS: *speech, certain words, acts, methods, problems, statements.*

ПРОБЛЕМЫ ИЗУЧЕНИЯ ОСОБЕННОСТИ РЕЧЕВЫХ АКТОВ В СОВРЕМЕННОМ РУССКОМ ЯЗЫКЕ

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Аннотация

В данной статье рассматривается теория речевых актов, связанных с общением, а также вопросы, находящиеся в центре внимания ее представителей.

В то же время в статье показаны взгляды основоположника этой теории Дж. Остина на речевые акты. Подчеркивается, что ученые до сих пор не могли выработать единого мнения по вопросу о том, как определить дефиницию этих актов.

Ключевые слова: *речь, определенные слова, акты, методы, проблемы, высказывания.*

Словосочетание «теория речевых актов» употребляется в широком и узком смысле. В первом случае оно обозначает любой комплекс идей, направленных на объяснение речевой деятельности и является синонимом «теория речевых деятельности». Во втором случае оно



выступает как название одной конкретной теории, получившей широкое распространение за рубежом.

Ядро теории речевых актов составляют идеи, изложенные английским логиком Дж. Остином.

В его работе отражены круг проблем и методы их решения, которые можно назвать стандартной теорией речевых актов.

В этой статье хотим начать рассмотрение речевых актов с точки зрения Дж. Остина. Он рассматривает для начала, в скольких смыслах говорение есть совершение какого-то действия, иными словами, он считает, что мы совершаем действие, когда говорим, и даже через говорение. Акт «говорения» Остин предлагает назвать осуществлением локутивного акта, а исследование высказывания, проводимое на этом уровне – анализом локуции. Чтобы выявить природу локутивного акта, отличающую его от других актов, вводит понятия фонетического, ретического и фатического акта.

Фонетический акт – это просто акт произнесения определенных звуков. Фатический акт – это произнесения определенных слов, соответствующих грамматике и выступающих именно в этом качестве. Ретическим актом называется осуществление акта использования этих слов с некоторыми более или менее определенным смыслом. Так, высказывание «Кошка на ковре» передает фатический акт, в то время, как высказывание «Он сказал, что кошка на ковре» передает ретический акт. Фатический акт, как и фонетический, поддается подражанию, воспроизводству (включая интонацию и жесты). Ретический же акт, в случае утверждения, мы передаем посредством высказывания «Он сказал, что кошка на ковре», это так называемая «косвенная речь». Однако не всегда можно свободно употреблять слова «сказал, что», в повелительном наклонении используется «посоветовал», «попросил» или «сказал, что я должен». Мы можем осуществить фатический акт, не являющийся при этом ретическим, но не наоборот. Так, мы можем повторить замечание другого человека, пробормотать какое-то предложение или прочесть латинскую фразу, не понимая значения входящих в нее слов.

Обычно осуществление локутивного акта одновременно и, тем самым, является осуществлением иллокутивного акта. Чтобы определить, какой иллокутивный акт при этом осуществляется, надо установить, каким образом мы используем данную локуцию:

- спрашивая или отвечая на вопрос;
- информируя, уверяя или предупреждая;
- объявляя решение или намерение;
- объявляя приговор;
- отождествляя или описывая, и т.п.

Осуществляя локутивный акт, мы используем речь, но каким именно образом мы используем ее в данном конкретном случае? Ведь существует изобилие функций или способов использования речи, а для нашего акта, в некотором смысле, безразлично, каким образом мы ее «используем» в данном случае и какой в нее вкладываем смысл. Для нас весьма важно, идет ли речь о совете, или просто о предложении, или же о прямом приказе, для нас существенно, имело ли место твердое обещание или только объявление неопределенного намерения. Мы постоянно спорим о таких проблемах, как, имеют ли определенные слова силу вопроса или должны ли они быть восприняты как оценка. Осуществление акта в этом новом втором аспекте Остин трактует как осуществление «иллокутивного» акта, т.е. осуществление какого-то акта в ходе говорения в противоположность действию самого говорения. Учение о различных типах функций языка Остин называет учением об «иллокутивных силах».



Он указывает, что ученые отчетливее стали осознавать, что ситуация высказывания имеет серьезное значение и что используемые в ней слова должны в какой-то мере «объясняться контекстом», для которого они предназначены или в котором они были реально произнесены в ходе языкового взаимодействия.

Чтобы уточнить понятие иллюкутивного акта, Остин сравнивает локутивный акт и иллюкутивный с актом третьего типа. Существует еще один смысл, в котором можно говорить, что осуществление локутивного акта и, вместе с ним, иллюкутивного акта может также выступать как исполнение акта другого рода. Произнесение каких-то слов часто, и даже обычно, оказывает определенное последующее воздействие на чувства, мысли или действия аудитории, говорящего или других лиц, и это может быть рассчитанный, намеренный, целенаправленный эффект; и тогда мы, анализируя ситуацию, можем сказать, что говорящий осуществил акт, по номенклатуре которого его связь с локутивным или иллюкутивным актом может быть либо косвенная, либо ее нет вовсе. Остин называет осуществление акта этого типа осуществлением перлокутивного акта, или перлокуцией.

Примеры помогают понять, что он имеет в виду.

Пример 1.

Акт (А), или локуция.

«Он сказал мне: Застрели ее!», подразумевая под «застрели» именно действие застрелить и соотнося «ее» именно с «ней».

Акт (В), или иллюкуция.

«Он настоял (или посоветовал), чтобы я застрелил ее».

Акт (С), или перлокуция.

«Он уговорил меня застрелить ее».

Пример 2.

Акт (А), или локуция.

«Он сказал мне: Ты не имеешь права это делать».

Акт (В), или иллюкуция.

«Он сказал мне: Ты не имеешь права это делать».

Акт (С), или перлокуция.

«Он ударил меня, он привел меня в чувство».

Остин отмечает, что эти три понятия определены неточно, и делает несколько общих замечаний относительно этих трех классов.

Он указывает, что мы «совершаем» поступки, находящиеся в некоторой связи с говорением, но не укладывающиеся, как мы интуитивно чувствуем, ни в одном из грубо отмеченных трех классов, либо неопределенно относящиеся сразу к нескольким. Например, намеками, когда мы намекаем на что-то в ходе или посредством произнесения какого-то высказывания, подразумевает, похоже какую-то условность, как это происходит при иллюкутивном акте: но мы не можем сказать: «Я намекаю...» и здесь кроется продуманный расчет на воздействие, чем просто некоторый акт. Следующий пример относится к возбуждению эмоций. Мы можем вызвать чувства в ходе или посредством произнесения высказывания, как при ругани: но и здесь мы не можем воспользоваться перформативными формулами и другими механизмами иллюкутивного акта. Можно сказать, что мы используем ругань или божбу для того, что отвести душу. Необходимо отметить, что иллюкутивный акт конвенционален: он осуществляется соответственно конвенции.



Поскольку акты всех трех видов являются осуществлением действия, то Остин указывает, что при их рассмотрении мы должны принять во внимание возможность неудач, коренящуюся во всех действиях вообще. Всегда надо быть готовым последовательно отмечать «акт осуществления говорящий намеревается получить некий результат, этого может не произойти»:

а) когда же он намерен получить этот результат или намерен не получать его, избегаемый эффект может получиться. Чтобы справиться со сложностью;

б) Остин предлагает различать попытку и достижение; чтобы справиться со сложностью б), он обращается к обычным лингвистическим средствам отречения от намеренности..., которые всегда наготове во всех случаях совершения действия.

Ведь совершенно ясно, что перлокутивный акт для своего осуществления в более или менее подходящих обстоятельствах может довольствоваться любым высказыванием. Например, человека можно удержать от какого-либо поступка, сообщив, какими могут оказаться последствия. Остин предлагает ограничить иллокутивный акт от перлокутивного по признаку наличия последствий и, что сама иллокуция не является «последствием» локутивного акта.

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MULTI-SCALE ATTENTION BASED U-NET MODEL FOR LIVER TUMOR SEGMENTATION

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ABSTRACT

It is essential to automatically evaluate the position and size of the liver tumour for radiologists, diagnosis, and the clinical process. Many U-Net-based variants have been suggested in recent years to enhance the segmentation results for medical image segmentation, but they are unable to describe the global spatial and channel relationships among lesion regions. To overcome this issues, we proposed a novel network called Multi-scale Attention UNet (MA-UNet) to address this problem by adding a self-attention mechanism into our approach to adaptively combine local features with their global dependencies. The attention mechanism of the MA-UNet allows it to capture complex contextual dependencies. Position-wise Attention Block and Multi-scale Fusion Attention Block are the two blocks that we have developed. The feature interdependencies in spatial dimensions, which represent the spatial dependencies between pixels in a global view, are modelled using the Position-wise Attention Block. A multi-scale semantic feature fusion attention block is also used to capture the channel dependencies between any feature map. On the MICCAI 2017 LiTS Competition dataset, we assess our methodology. Compared to other cutting-edge methods, the suggested way performs better. The Dice and VOE values of liver tumors segmentation are 0.749 ± 0.08 and 0.21 ± 0.06 respectively.

KEYWORDS: *Liver tumor segmentation, Attention mechanism, Deep learning.*

1. INTRODUCTION

A significant amount of people worldwide pass away from liver cancer each year [1], making it one of the most prevalent cancer diseases today. A malignant liver tumour known as liver cancer falls into two categories: main and secondary [2]. Secondary liver cancer, also known as sarcoma, is comparatively uncommon compared to primary liver cancer and develops from the epithelial or mesenchymal tissue of the liver. Primary liver cancer is a high-incidence and extremely harmful malignant tumour. The liver, the biggest solid organ in the human body, performs numerous crucial metabolic processes [3]. When malignant masses develop in the liver, the results can be severe and potentially fatal. Therefore, increasing the survival rate of liver cancer patients requires early diagnosis and treatment [4]. In order to assess liver tumours, CT-based imaging techniques are frequently used, and CT scans can plainly display the number, size, and boundaries of lesions. Segmentation of liver lesions serves as a precondition for identification and is crucial to the disease's management [5]. Liver segmentation can be split into semi-automatic and manual segments [6]. However, adding manual intervention to the semi-automatic segmentation process will introduce bias and errors because manual segmentation primarily depends on the radiologists' judgment, which takes time and is subject to error. Given the distinctive variety and spread of liver tumour shapes, it becomes extremely difficult to automatically segment liver tumour lesions.

2. LITERATURE REVIEW

Some of the papers based on the liver tumor segmentation are reviewed below, ResNeXt50-Dilated Convolution-Transformer U-Net (RDCT-U-Net) was introduced by Li & Ma [7] for the segmentation of liver tumours. To increase the network depth, broaden the visual field, and boost the effectiveness of feature extraction without increasing the parameters, they create a backbone network with ResNeXt50 as its dominant component and dilated convolution as a supplement. Transformer is simultaneously introduced in down sampling to improve the segmentation accuracy of liver tumours and the network's overall perception and understanding of the image. High accuracy is provided by this model, but time usage is greater.

Modified U-net was developed by Manjunath & Kwadiki [8] for the segmentation of liver tumours. It is made up of an expansion track (right) and a retrenchment track (left). The structure is taken over using the retrenchment track (Encoder). Use of an



extension track (Decoder) is required to understand the precise location. The complexity of segmentation is reduced by this technique, but different-sized tumours cannot be segmented.

For image segmentation, Deng *et al.* [9] presented a powerful and portable U-Net with deep skip connections. The higher-level features are first extracted from the image by downsampling the output of the prior encoder layer. By concatenating the feature maps from the output of the most recent encoder layer or previous decoder layer and up-sampling to maintain the scale, the output from each encoder layer is then taken into the matching decoder layer to classify the pixels. The softmax activates the output of the final encoder layer to output the segmentation result last. Although the segmentation outcome is improved, processing time is lengthy.

Residual-Attention UNet++, an expansion of the UNet++ model with a residual unit and attention mechanism for image segmentation, was proposed by Li *et al.* [10]. First, the deterioration issue is improved by the residual unit. Second, the segmentation task-unrelated background area can be suppressed while the target area can be given more weight by the attention process. This increases segmentation precision, but complicates the connections between the models.

Rahman *et al.* [11] hybrid Res-UNet model for segmenting liver tumour combined the ResNet and UNet models. The suggested technique is used to extract usable segments from images of liver tumours. To diagnose the liver and find tumours in the nearby organs, CNN is used along with data augmentation, pre-processing, and other techniques. Three distinct routes are included in Res-UNet: Route of encoding transforms the data into a precise recognition. Reverses the encoding process and classifies the image pixel by pixel in decoding route. Bridge procedure that connects the two routes. ResNet, on the other hand, employs artificial neural networks and is a condensed form of residual blocks. The skip connections concept streamlines and expedites the deep learning process in complex networks for residual blocks. The hybrid Res-UNet, in contrast, provides for full standby of convolutional blocks. This method improve the accuracy, however tumor edge is unable to segment.

By combining four effective neural networks, Popescu *et al.* [12] created an intelligent judgment system for segmenting liver and hepatic tumours (ResNet152, ResNeXt101, DenseNet201, and InceptionV3). The model operates similarly to a UNet, with the segmentation head serving as a decoder and the image classification network acting as an encoder. This reduces the dimensionality of the tensor while restoring it to its initial size. Following that, a weighted decision system will be used to combine the inputs into a singular segmentation using the segmentations that were obtained from these networks as inputs. Using only the liver as an input, this process is carried out independently, first segmenting the liver tissue, and then identifying the lesion areas. Efficiency is increased by this model, but over-fitting is an issue.

SAR-U-Net, which was developed by Wang *et al.* [13] and is based on the traditional U-Net. First, the SE block is used to selectively emphasize features important to a particular segmentation task while suppressing irrelevant regions after each convolution in the U-Net encoder; Second, the transition layer and the output layer are replaced with the atrous spatial pyramidal pooling, which also allows for the acquisition of multi-scale picture data via various receptive fields. Thirdly, the traditional convolution block is replaced with the residual structures to alleviate the gradient vanishing issue, causing the network to gain accuracy from significantly more depth. But the time commitment is greater.

A new U-Net variant using stacked dilated convolutions for medical image segmentation (SDU-Net) was put forth by Wang *et al.* [14]. SDU-Net uses the architecture of standard U-Net but modifies the procedures for the encoder and decoder (an operation indicates all the processing for feature maps of the same resolution). SDU-Net uses one standard convolution followed by numerous dilated convolutions and concatenates all of the outputs from the dilated convolutions as input to the following operation, in contrast to vanilla U-Net, which includes two standard convolutions in each encoder/decoder operation. Accuracy is increased, but the process takes longer. The overview of the segmentation of liver tumours as of today is shown in Table.1.

**Table: 1 Summary of existing liver tumor segmentation**

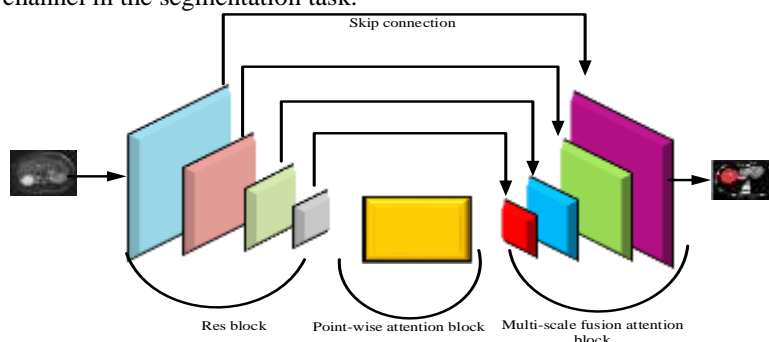
Author	Methods used	Advantages	Disadvantages
Li & Ma [7]	RDCT-U-Net	-This model provides high accuracy	-time consumption is more.
Manjunath & Kwadiki [8]	Modified U-net	- This method decreases the complexity of segmentation	-different size tumor cannot be segmented.
Deng <i>et al.</i> [9]	efficient and lightweight U-Net	-This improves the segmentation result	-time for processing is high.
Li <i>et al.</i> [10]	Residual-Attention UNet++	-improves the segmentation accuracy	- the connection of model's get complicated.
Rahman <i>et al.</i> [11]	hybrid ResUNet model	-improve the accuracy.	- tumor edge is unable to segment.
Popescu <i>et al.</i> [12]	efficient neural networks	-increases efficiency	-over-fitting problem occurs.
Wang <i>et al.</i> [13]	SAR-U-Net	- alleviate the gradient vanishing issue	- the time commitment is greater
Wang <i>et al.</i> [14].	SDU-Net	-high accuracy	- the process takes longer

3. PROBLEM DEFINITION

Liver cancer causes a major threat to people's lives and overall health. So it is necessary to detect the diseases as soon as possible. Many approaches are introduced for Liver tumor segmentation. Still, it is difficult because of the tumor's irregular form and hazy boundaries in CT images. Additionally, in a global view, the dilated convolutions and pooling operations are unable to take advantage of the spatial and channel-wise connection between pixels. Likewise, when using pooling procedures, it is simple to lose details from feature map information. As a result, liver tumour feature depiction and segmentation are inaccurate.

4. PROPOSED MA- UNet MODEL

To segment liver tumours, we suggest a new network called Multi-scale Attention based U-Net (MA- UNet) with a dual attention mechanism. The MA-UNet model's design is depicted in Fig. 1. We go into great depth about the suggested technique, mentioning Res-block, Position-wise Attention Block (PAB), and Multi-scale Fusion Attention Block (MFAB). The Low-level features from Skip-Connection have more edge information while the High-level features have rich semantic information of the picture. Images' characteristics are recovered using low-level features. For high-level and low-level features, we use the channel-wise attention mechanism, accordingly. The goal is to reduce the weight of unimportant feature information and raise the importance of relevant information for each feature channel in the segmentation task.

**Figure 1: Architecture of MA- UNet model**

The proposed MA-UNet model involves three major steps and are explained below.

(a) Res-Block:

To extract high-dimensional feature information from CT images, we employ three 3×3 Conv blocks and one residual link. In the MA-UNet, Batch Normalization is swapped out for Group Normalization (GN). The Res-block employs group normalization. The Res-block block layout is shown in Fig. 2.

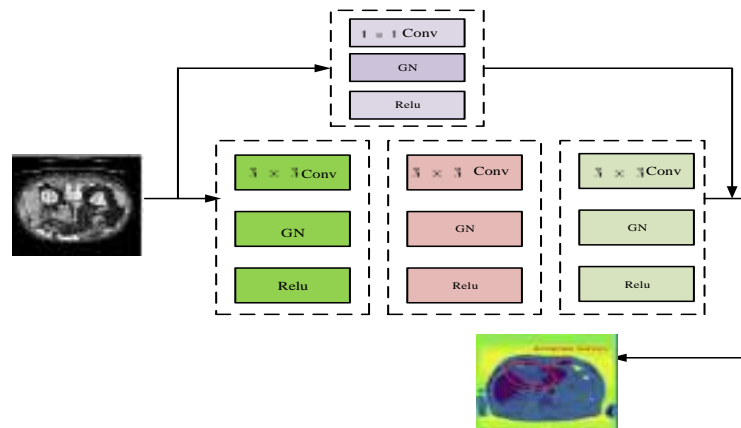


Figure 2: Block diagram of Res-Block

(b) Position-Wise Attention Block

The spatial relationships between any two position feature maps are captured using PAB. Over local feature maps, the PAB can model a broader variety of rich spatial contextual information. The block layout of a position-wise attention block is shown in Fig. 3.

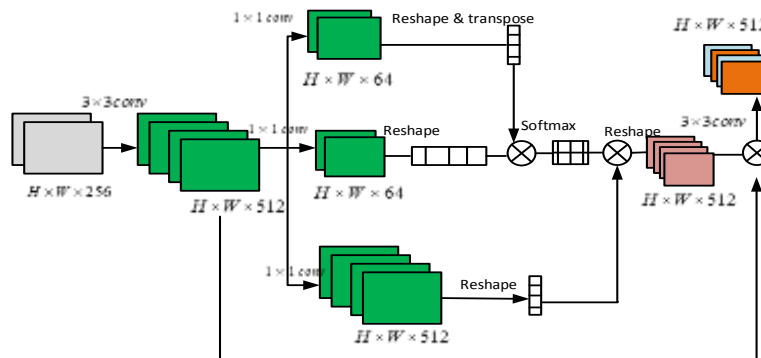


Figure 3: Block diagram of position-wise attention block

(c) Multi Scale Fusion Attention Block

We create a novel MFAB to extract the interdependence among feature channels and enhance network performance by merging the high and Low-level feature maps. The block layout for multi-scale fusion attention is shown in Fig.4. When using multi-level feature maps without additional spatial dimensions, MFAB learns the relative significance of each feature channel, enhancing the feature maps that are most helpful and suppressing the feature maps that are least helpful for the task of segmenting liver tumours.

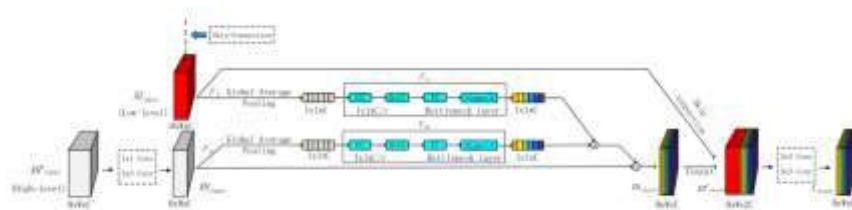


Figure 4: Block diagram of multi-scale fusion attention

5. EXPERIMENTS AND RESULTS

The proposed method is conducted on the dataset of MICCAI 2017 Liver Tumor Segmentation (LiTS) challenge. It contain 70 testing and 131 training CT scans images.

5.1 Metrics for Evaluation

To accurately assess the liver tumour segmentation performance of the suggested MA-UNet method. The formulas for evaluation measures are as follows:

$$Dice = \frac{2|P \cap Q|}{|A| + |B|} \quad (1)$$

$$VOE = 1 - \frac{|P \cap Q|}{|P \cup Q|} \quad (2)$$

where P and Q denote the predicted binary image and the ground true binary image respectively.

5.2 Comparative Analysis

Table.2 shows the performance of proposed MA-UNet model with existing methods such as RDCT-U-Net [7], Residual-Attention UNet++ [10], and SDU-Net [14]. The proposed MA-UNet model achieved the better segmentation performance than other methods for liver and tumors segmentation. Our method achieves dice value of 0.749 ± 0.08 and VOE value of 0.21 ± 0.06 .

Table: 2 Dice and values for proposed and existing methods

Methods	Dice	VOE
RDCT-U-Net	0.633 ± 0.17	0.39 ± 0.07
Residual-Attention UNet++	0.719 ± 0.11	0.21 ± 0.04
SDU-Net	0.738 ± 0.06	0.19 ± 0.05
proposed MA-UNet	0.749 ± 0.08	0.21 ± 0.06

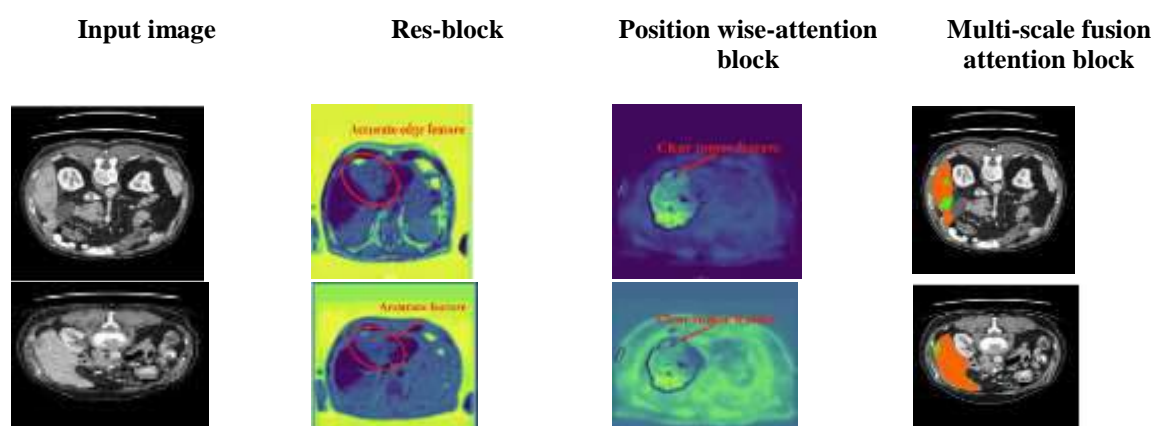


Figure 5: Results for Proposed MA- UNet model

Fig.5 shows the results of proposed MA-UNet model. The segmentation of liver tumor are considered to be the most challenging segmentation job because the shape and size of liver tumours are unpredictable. Fig. 5 shows that the suggested technique for segmenting liver tumours achieves better segmentation performance than other methods.

6. CONCLUSION

We create a novel MA-UNet model for segmenting liver tumours. In order to segment images, we add a self-attention method. In particular, we examine the Multi-scale semantic information based on the channel dependencies between any feature maps and use self-attention mechanism to capture the spatial and channel dependencies of feature maps. The tests showed that our suggested approach was superior on the 2017 LiTS dataset. The suggested approach is useful for helping the practitioner during a clinical procedure. The MA-UNet, however, also has some drawbacks and is only able to segment the liver tumour in this study. To evaluate the segmentation efficiency and robustness of MA-UNet in the future, we will investigate how MA-UNet affects other medical images.

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ATTITUDES OF ENGINEERING STUDENTS TOWARDS ENTREPRENEURSHIP EDUCATION IN NIGERIAN POLYTECHNICS

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ABSTRACT

Enterprising elements of entrepreneurship such as evaluating opportunity, developing new products, and handling start-ups are part and parcel of most business management curriculum. As for engineering discipline students interested in creating their own organization after graduation, they seem to be left in dark although in many cases they are originators of product ideas. In Nigeria, there is a growing concern that Engineering students do not have sufficient entrepreneurial skills to venture in business particularly running small and medium enterprise (SME) set-ups. The purpose of this study was to explore a broad array of attitudes toward and outcomes of entrepreneurship education on engineering students in order to understand the characteristics of students participating in related courses and activities, the nature and extent of their involvement, entrepreneurship's role in their career plans, and its impact on entrepreneurial self-efficacy. The study was conducted in three Polytechnics from the Northern Zone of Nigeria – Federal Polytechnic Kaduna, Kaduna State, Kano State Polytechnic, Kano State, Benue State Polytechnic, Benue State. Data was derived from both primary and secondary sources. Secondary data were drawn from accounts of published and unpublished materials using an in-depth interview qualitative approach and the analysis was done on ANOVA software. The study has concluded that curriculum review can be the key technique to enhancing synergy between engineering courses and entrepreneurship education

KEY WORDS: Anova, Business, Entrepreneurship, Engineering, Polytechnic, Synergy

1.0 INTRODUCTION

Changes in the economy and workforce needs have driven many engineering schools to consider offering entrepreneurship education to their students. Although entrepreneurship education is believed to be complementary to an engineering education, little is known about the degree to which it plays a role in contemporary students' academic programs. This economic trends and changes in the way employers organize and make decisions have led to an increased awareness of the potential value of entrepreneurship education to engineering students.

In an article about de-industrialization and its effect on engineering education, Wei (2005) states that, 'research and development in manufacturing companies used to be viewed as a glamorous career for the brightest engineering graduates, but the number of attractive job offers has been declining for many years. Today, a glamorous job for an Engineer might be to work in a smaller, more entrepreneurial company, which requires 'a broad range of skills and knowledge beyond a strong science and engineering background' To prepare students for this new reality, polytechnic are increasingly aware that they must graduate Engineers who not only understand science and technology, but who are also able to identify opportunities, understand market forces, commercialize new products, and have the leadership and communication skills to advocate for them.



2.0 LITERATURE REVIEWS

To prepare students for this new reality, Polytechnic are increasingly aware that they must graduate Engineers who not only understand science and technology, but who are also able to identify opportunities, understand market forces, commercialize new products, and have the leadership and communication skills to advocate for them. This has prompted a significant increase in the delivery of entrepreneurship education to engineering students through new courses, programs, and experiential learning opportunities, a movement that has garnered support from influential publications and professional organizations such as the National Academy of Engineering (NAE) and the American Society for Engineering Education (ASEE) [Rover .D 2013]

Evidence of this trend is the National Science Foundation's recent \$10 million award to launch a national STEP Center at Stanford Polytechnic which will address what is described as a critical need for entrepreneurial engineers across the United States. The center is intended to 'catalyze major changes in undergraduate engineering programs by developing an education, research and outreach hub for the creation, collection and sharing of innovation and entrepreneurship resources among the almost 350 engineering schools in the U.S.' [Kontio J. 2010].

In the Modibbo Adama Polytechnic of Technology (MAUTECH), Yola, Nigeria, entrepreneurship education is thought as, "Entrepreneurship Development" (ED). Osemeka (2012: 256) defines entrepreneurship development as "...the process of enhancing entrepreneurial skills and knowledge through structural training and institutional building programme

Entrepreneurial education is offered at both the undergraduate levels in Polytechnic. The objectives at the undergraduate level are to create awareness among students and stimulate their interests in entrepreneurship (Abbas, 2013). The course is expected, among others, to make students appreciate the risks and rewards associated with business creation and ownership. It is hoped that the course will change students' mindsets and attitudes towards entrepreneurship as well as helping in "developing entrepreneurial traits...and provide the necessary networking support..." (Agbim et al., 2013: 37). Some studies show that students perceived EE as an important and relevant course (Akpan and Etor, 2013; Akinboye and Pihie, 2014; Ramlan and Ngah, 2012). Studies by Hosseini et al. (2011) and Abbas (2013) show that EE positively changed students' perceptions of and attitudes toward entrepreneurship.

The appropriateness of the curriculum and course contents is a challenging issue in EE, and the success of the programme lies on getting this aspect right. Zegeye (2013) argues that this problem arises owing to inability to harmonize the viewpoints of the major stakeholders in EE: educators, students, programmers, and evaluators. The students, for example, come from diverse educational background and orientations. What and how to teach them are fundamental questions that need to be asked and pragmatically answered if students interests and skills acquisition in entrepreneurship are to be met. Adejimola and Olufumilayo (2009), Ramlan and Ngah (2012) identified curriculum and course contents as critical to achieving the course outcomes. Ozaralli and Rivenburgh (2016) identified the theory-based approach to EE and the non-involvement of practical entrepreneurs as responsible for low interest and poor perception of entrepreneurship among polytechnic students in Malaysia.

Those who teach entrepreneurship in Polytechnic have significant role in influencing students' attitudes to and perceptions of EE (Gustafsson-Pesonen, 2008; Akinboye and Pihie, 2014). However, studies show that students have low perceptions of existing teaching methods in positively influencing their interests in entrepreneurship (Ramlan and Ngah, 2012). This has been blamed on the dysfunctional approach to EE by lecturers handling the course. This was the position of Yasin et al. (2011:200) who observed that "lecturers lacked relevant entrepreneurial skills, knowledge or training and teaching approaches were inappropriate." This finding was collaborated by later study (Abbas, 2013).

The goal of EE is to create entrepreneurial intentions among the recipients. Entrepreneurial intention refers to "an individual's personal desire to create a new firm or a new value driver within existing organizations" (Wu and Wu, 2008). Entrepreneurial intention is seen as the first step in new business creation. ED, it is argued, will develop students' interests in and create positive perception of entrepreneurship (Agbim et al., 2013). Students will be equipped with the skills to translate their interests into business formation at some stage after completion of their undergraduate programmes.

Motivation is then translated into behaviour as a function of a person and his environment. One of the main explanatory concepts of behaviour is valence, which can be seen as a vector of power that has strength and direction. It is determined by a person's internal value for a thing (e.g. money), and the attractiveness of a certain field (e.g. entrepreneurship) to fulfill the need. Vroom (1964) in Timo, Jukka and Riitta (2002) defines motivation (the force to perform an act) as a function of valence and expectancy. Furthermore, valence is a function of perceived value and perceived instrumentality.



According to Timo, Jukka and Riitta (2002), applying this reasoning to an entrepreneurial decision, the motivation to start-up is stronger, and the more a person perceives that the rewards from entrepreneurship (instrumentality) can satisfy the needs which are important for him (value), and the more probable he sees that he is going to succeed in the tasks related to entrepreneurship. It is important to notice that all these are subjective perceptions, which means that entrepreneurial motivation can be very different between different individuals due to their different perceptions of entrepreneurship.

Prior research has dealt with several types of push factors. Specht's (1993) in Timo, Jukka and Riitta (2002), literature review showed that the five most usually used contextual factors used as determinants of entrepreneurship can be grouped as social, economic, political, infrastructure development and market factors. A failure in previous organization, getting fired, or concluding that the organization or one's career is not progressing can also be treated as factors 'pushing' towards entrepreneurship.

According to Albert et Marion (2001) the Entrepreneurial Spirit consists – for business as well as for all human activities", "in identifying opportunities, in gathering resources of various natures, in order to create a wealth that meets a solvable demand". Other authors define the Entrepreneurial Spirit as a set of positive attitudes as regards the notion of enterprise or of starting a business, or as regards the Entrepreneurial Spirit which involves taking initiatives and action (Léger-Jarniou, 2001). The Entrepreneurial Spirit also defines the basic characteristics of an entrepreneur, who is different from the manager or the inventor (Fayolle, 2002), regarding the activation of mental images allowing an organization to develop (Fonrouge, 2002). A set of personality features, of abilities, values and attitudes which reveal entrepreneurial behaviours are to be found in these models.

So there is no clear consensus as to the definition of an Entrepreneurial Spirit, and the definitions that can be found in the literature seem to be closer to the consequences of an Entrepreneurial

3.0 METHODOLOGY

3.1 Sampling Procedure

Undergraduate students of different engineering fields from Nigerian Polytechnics were chosen as convenience samples for the purpose of this study. The various engineering fields are:

- (1) Mechanical Engineering
- (2) Chemical Engineering
- (3) Electrical Engineering
- (4) Civil Engineering
- (5) Agricultural Engineering

The chosen public Polytechnics are Polytechnics from the Northern Zone of Nigeria – Federal Polytechnic Kaduna, Kaduna State, Kano State Polytechnic, Kano State, Benue State Polytechnic, Benue State.,

3.2 Measurement and Instrument Development

Some of these Polytechnics have not yet introduces an entrepreneurship subject in their programs. A survey of students was conducted to assist in developing potential courses for the academic curriculum. Data were gathered through a self-completion questionnaire, which comprised 14 major questions, with additional sub-categories where appropriate. Most of the questions took the form of a set of statements by using a type of intent-to-purchase scale, which were judged by students on a Likert Scale of 1 to 5, with a scale value of one being strongly disagree Likely and a score of five being strongly agreed Likely. The convenience and judgment sample from different fields of engineering courses was deliberately chosen to obtain as many different responses as possible. Each set of questionnaire was preceded by a covering letter that explained the purpose and importance of the survey, and provided assurances that all questionnaire responses would be treated with the strictest confidentiality.

In order to translate the collected data into meaningful research result, Qualitative analysis was done using ANOVA software from which interpretations was made on how the curricula can be accommodate entrepreneurship education, to investigate the level of engineering students' interest in entrepreneurship education to examine factors that have the potential to motivate these undergraduates at Higher National Diploma level to identify an appropriate set of undergraduate courses to be introduced to engineering students for a better outcome curricular in tertiary institutions in Nigeria.



4.0 DISCUSSIONS

4.1 Introduction

The questionnaire was distributed to Polytechnic engineering students at four major Polytechnics in Nigeria. Personal interview was suggested as a good contacted method to bring immediate and more reliable data to the survey. In total, questionnaires were sent to 200 students and all completed the questionnaires. The data collected in this survey are interesting and can be very useful to practitioners and educators. The detailed finding can be obtained from the sections discussed below.

4.2 Descriptive Statistics

A total of 200 questionnaires were distributed and only 191 were collected from back from the polytechnics. The breakdown of these students by discipline is given in Table 1. .

Faculties	Responses (numbers)	Responses (percentage)
Mechanical Engineering	52	
Electrical	41	
Chemical	37	
Civil	30	
Agricultural Engineering	31	
TOTAL	191	

4.3 Data Presentation and Analysis

This chapter describes the data and analysis of the information obtained from the field survey as well as the interpretation. The chapter is separated into two sections; the first section is concerned with data presentation for each item on the questionnaire using descriptive statistics of frequency, percentages mean, and standard deviations, while the second section deals with inferential analysis of the data in order to achieve the objectives of this research.

4.3.1 Descriptive Statistics

This section is concerned with data presentation for each item on the questionnaire using descriptive statistics of frequency, percentages for nominal and ordinal while mean, standard deviations and reliability test.

Table 1: Reliability Statistics			
Sections	Cronbach's Alpha	N of Items	Remark
Strategies that should be adopted to Enhance Synergy between Engineering courses and Entrepreneurship Education	.811	5	Significant
Gaps that could hinder the development of creative ability of Polytechnic Engineering Students after taking entrepreneurship Education?	.722	5	Significant
Perception of polytechnic students on the synergy between Engineering courses and Entrepreneurship Education	.723	5	Significant
Polytechnic Engineering students readiness to face the challenges of combining Engineering courses with Entrepreneurship Education.	.719	5	Significant

From Table 1 it can be seen the analysis carried out for reliability test, shows that the cronbach's alpha values are all significant in other word the instrument or tools used in the achievement of the various objective are all reliable.



Table 2: Strategies that should be adopted to Enhance Synergy between Engineering courses and Entrepreneurship Education.				
S/N		Mean	Std. Deviation	Remark
1	Engineering students should demonstrates their creative abilities through knowledge gained from Entrepreneurship Education after learning.	4.5399	.58611	Agree
2	Allowing Professionals in the field of Entrepreneurship Education to teach the course to Engineering students	4.2445	.61046	Agree
3	Reviewing Engineering courses Curricular to accommodate Entrepreneurship Education in all semester	4.2963	.72945	Agree
4	Creation of entrepreneurship business clinics to guide potential start up	4.2134	.76477	Agree

Table 3: Descriptive Analysis on Objective One.

Objective	Mean	Std Deviation	N of Items
The Strategies that should be adopted to Enhance Synergy between Engineering courses and Entrepreneurship Education	4.410	0.6778	5

Base on the analysis carried out it, the result of the respondents' responses revealed a mean of 4.410 with a standard deviation of 0.678, this implies that the Strategies that should be adopted to Enhance Synergy between Engineering courses and Entrepreneurship Education are reviewing Engineering courses Curricular to accommodate entrepreneurship Education in all semester and allowing Professionals in the field of entrepreneurship Education to teach the course to engineering Students.

The gaps that could hinder the development of creative ability of Polytechnic Engineering Students after taking entrepreneurship Education				
S/N		Mean	Std. Deviation	N
1	Lack of confidence due to ineffective communication skills	4.5839	0.77986	187
2	Ineffective practical application of Entrepreneurship knowledge gained	3.0331	0.33964	187
3	Perception of Entrepreneurship Education as a form of Business studies.	4.2087	.81933	187
4	Lack of mentoring		.	
			.	

Table 3: Descriptive Analysis on Objective Two.

Objective	Mean	Std Deviation	N of Items
The gaps that could hinder the development of creative ability of Polytechnic Engineering Students after taking entrepreneurship Education	3.995	0.732	5

From the result obtain it was revealed that the mean response of the respondents' was 3.995 with a standard deviation of 0.732 this indicate that there are gaps that could hinder the development of creative ability of Polytechnic Engineering Students after taking entrepreneurship Education which are ineffective practical application of Entrepreneurship knowledge gained and lack of mentoring.



Perception does polytechnic students have about the synergy between Engineering courses and Entrepreneurship Education			
	Mean	Std. Deviation	N
Positive	4.7733	.68878	194
Negative	4.2114	.71390	194
Low level of development if any synergy.	4.4949	.71570	194

Table 6: Descriptive Analysis on Objective Three.

Objective	Mean	Std. Deviation	N of Items
Perception polytechnic students have about the synergy between Engineering courses and Entrepreneurship Education	4.350	0.738	5

The result of the analysis obtain in Table 6 revealed a mean response of 4.340 with a standard deviation of 0.728 which depict that the perception Polytechnic students have about the synergy between Engineering courses and Entrepreneurship Education is positive.

Table 7: Polytechnic Engineering students are adequately ready to face the challenges of combining Engineering courses with Entrepreneurship Education.

	Mean	Std. Deviation	N
Adequately prepared	4.0657	1.04632	183
Not adequately prepared	3.284	1.42056	183
Neutral	4.2187	.93553	183

Table 8: Descriptive Analysis on Objective four

Objective	Mean	Std. Deviation	N of Items
Polytechnic Engineering students are adequately ready to face the challenges of combining Engineering courses with Entrepreneurship Education	3.866	1.66995	5

From the result obtain it was revealed that the mean response of the respondents is 3.866 with a standard deviation of 1.6695 this depict that Polytechnic Engineering students are adequately ready to face the challenges of combining Engineering courses with Entrepreneurship Education base on the items stated in Table 8.

Inferential analysis of the data

This is done in order to achieve the objectives of this research.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.991 ^a	.982	.923	.03624
a. Predictors: (Constant), MD, MC, MB				



ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.069	3	.023	17.296	.175 ^b
	Residual	.001	1	.001		
	Total	.068	4			
a. Dependent Variable: MA						
b. Predictors: (Constant), MD, MC, MB						

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constnt)	2.848	.268		10.684	.059
	EED	.155	.047	.672	3.297	.008
	CP	.401	.074	.912	5.398	.117
	TV	.232	.069	.734	-3.350	.185
a. Dependent Variable: ED						

In the model summary table above, R-square is .981, meaning 98.1% of the variation from the dependent (Entrepreneurship Education) can be explained by variation in the independent variables (Strategies for synergy, gaps hindering developments, and readiness to face challenges). The remaining 7.9% can be explained by other factors that were not in the model. With these results, it can be concluded that Entrepreneurship Education have strong predictive powers, as this variable accounts for about 98.1% of the variation in Strategies for synergy, gaps hindering developments, and readiness to face challenges

The ANOVA table above reveals that the regression equation is not significant. It implies that, most of the parameter of the model are not significant.

The ANOVA table and the table of coefficients have shown that the model is not significant since all the p-values is greater than 0.05 indicated that the parameter for determining the students perception in the synergy has no significance.

CONCLUSIONS

The primary objective of this research was to understand student interest in a variety of entrepreneurship courses that will be introduce in the Polytechnic engineering curriculums. We have evaluated the level of engineering students involvement in entrepreneurship education in the polytechnic where it is offered as a course, its impact considering their involvement and the role it may play in their career plan. There has to be Synergy between engineering courses and entrepreneurship Education. This study has concluded that curriculum review can be the key technique to enhancing Synergy between Engineering courses and Entrepreneurship Education in Nigeria Polytechnic engineering curriculum, It is therefore recommended that stakeholders in the polytechnic curriculum development should review and integrate entrepreneurship education in the curriculum, this review will be the key technique to enhancing synergy needed between Engineering courses and Entrepreneurship Education in Nigeria.

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POETIC PROPERTIES OF PROSE

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ANNOTATION

Each text and each movement has its own style. Literary type is a product of written speech that does not have elements characteristic of poetry, such as weight and rhyme. Prose as a form of written speech appeared later than poetry, as in the literature of European nations, as well as in the literature of Eastern nations. If the prose speech was quiet and lofty, like the poetic speech, when it first appeared, by the first quarter of the 20th century, it began to be devoid of excess luxury, and it increasingly obeyed the rules of realistic imagery. Artistic simplicity, naturalness, tendency to approach real life became the main criteria of Nasr. At the same time, writers did not forget that prose is a form of artistic speech. Based on their own creative style and the nature of the work being written, they chose the necessary rhythm (tone) and effectively used and are using image tools.

KEY WORDS: *Literary type, dialogic event, concentration, plot, poetry, genre, prose.*

INTRODUCTION

The birthplace of Pio Baroja y Nessi was a small border town called Vera del Bidasoa. The writer was a Basque, born on December 28, 1872. In the period from 1872 to 1879, Baroja lived in San Sebastian, and his first and most vivid impression was the bombing by the Carlists.

In 1895, Barokha's articles about Russian and French masters of the word were published. In 1897, his story "Hidden Kindness" was published, then, in 1900, the book "Shadow Life" appeared. Since 1901, the writer worked in the publication "Juventud", which also published literary works by Giner, Costa and Unamuno. Then, after the termination of the magazine, Baroja began to cooperate with the daily newspaper "El Globo", which published Baroja's first novel entitled "Adventures, attempts and Mystifications of the Sylvester Paradox", but the author became widely known in 1902, after the release of the work "The Path of Perfection"¹

All representatives of the "generation of 1898", including Baroha, experienced the collapse of youthful beliefs in their younger years. In the well-known book "The Tree of Science" the writer told about his own youth. He has been an agnostic all his life, but has not been seen to be religious. While researching Catholicism, Baroha concluded that the church has a destructive effect on society and political life. At the same time, he gravitated towards a scientific worldview, but he understood the existence of problems and phenomena that can never be known by reason, but which will always attract him with their incomprehensibility.

In his youth, the writer believed that suffering reflects the specifics of human nature, it is proportional to the intellectual development of the individual, while all actions only aggravate suffering. In his mature years, Barokha came to the conclusion that life is purposeless and meaningless. In the literary work "Shadow Life" he expressed his bitterness and disappointment caused by the injustice of society and the cruelty of people².

ANALYSIS AND RESULTS

Baroha's literary work is not focused on Spain as a country and a state, since the writer evaluated everything through the prism of human nature. Most likely, that is why he followed Asorin in favor of anarchism, although he understood the utopian nature of his ideas. The writer believed that the government and the state can in no way ensure human freedom through ethical restrictions and morality, freedom is born and strengthened in the human soul.

Baroja generally supported the desire of the "generation of 1898" to make maximum creative efforts in order to see the revival of Spain and its people in the future. In the work "Lonely Hours" (1918), he drew attention to the fact that Spain should improve its health, become more intelligent, because this will lead to the restoration of justice in society, the culture of the country should always be versatile, unique and rich, strive for perfection, a full expression of national flavor.

¹ Панченко Н.Г. «Волшебная страна великих подъемов и контрастов»: восприятие культуры Испании в России середины XIX – начала XX века // Современные проблемы науки и образования. – 2013. – № 3. – С. 60.

² Тожибоева Р.Р., Танжарикова А.В. Испанская литература на рубеже XIX-XX вв. // Международный студенческий научный вестник. – 2015. – № 5-1. – С. 63.



According to D. Shaw, Barokha and his fellow writers belonging to the "generation of 1898" were mistaken in the fact that it is easier for each individual to develop highly spiritual qualities in himself than for the whole society³.

CONCLUSION/ RECOMMENDATIONS

Baroja saw life not as an ordinary series of tragic days, but as the life of an individual with destructive feelings of hopelessness. It can be called otherwise life for the sake of life.

Baroja was convinced that Catholicism was taking anti-life positions. He believed that a person is free to move away from creative activity and do "earthly" things, preserving the energy of the creator and creating a family. The writer sought to create the ideal of a new person who is able to overcome life's difficulties and get maximum pleasure, but he himself was different, and the ideal appeared as unviable. Baroja believed that Spain suppresses creative people who are not like the rest and who, in their desire to gain freedom, can be above morality and even immoral. The heroes of his literary works tend to a simple submissive life, preferring family life in Madrid. Baroja believed that vicious and immoral people quite often, after a series of hardships and vigorous activity, choose the side of the law and good and high morality.

It is impossible to accept life through personal struggle, strong-willed qualities and noble aspirations due to the following factors: 1) the absence of an ultimate goal – life does not have a peak to which one could strive throughout the journey; 2) few people have the necessary firm will – there are rarely heroes who can overcome all the hardships of life; 3) this lifestyle conflicts with ethics, since one should live in such a way that don't hurt the others⁴.

The results of Barokhi's philosophical reflections are presented in his work "The Tree of Science" in 1911. In this book, the hero Andres Hurtado goes through serious trials, overcomes spiritual and moral upheavals. The work presents a deep analysis of the inner evolution of the hero in the conditions of overcoming the vicissitudes of fate and upheavals in society. The writer shows by the example of the hero's family what the moral and ideological crisis of the Spanish middle class turned out to be, since in 1898 ordinary teachers and small trading businesses took on many tragic blows of fate in the country⁵.

Baroja presented the specifics of social relations in Spain at the turn of the XIX – XX centuries, criticizing everyone, including workers. The main character of the literary work gradually realizes the futility of revolutionary ideas and ideals that previously seemed clear, clear and correct to him, so he avoids further struggle.

In essence, Baroja writes that the problem of Spain is of an individual nature, so each person is called upon to cope with it independently. Andres does not pretend to find solutions to problems for the whole country, he is engaged in settling his own everyday circumstances. Hurtado is not a hero, he is presented as an ordinary person who just lives with his ideas about a better fate for his country and himself, but he is not a visionary and cannot solve the problems of a large number of people alone. When his younger brother Luisito died, the hero is even more convinced of the fatality and meanness of life.

Barokha in his literary works showed the death of innocent children as a symbol of the fragility of positive ideas about life⁶.

Andres' dialogue with Iturries is a dispute between people who hold different views on life and everything that happens around them. Both share the opinion that it is necessary to accept life with all its features, in which there is no justice and a high final goal. The characters have a lot in common, but are limited in their knowledge and faith. Andres is a supporter of the triumph of science and the power of reason, and Iturries insists that even such negative manifestations as saving lies and illusions are important in life, allowing to soften the blows of fate and somehow interpret the inexplicable.

The journey of the main character of Baroja's literary work from their capital to the province opens up to the reader the reality of the Spanish world. Alcolea, to which the hero went, is a representation of Spain in miniature, it is a kind of "microcosm" of a people constrained by political and economic destruction. The aristocracy of Alcolea lives with memories of its former greatness, the middle class does not refuse any meanness in trying to at least temporarily improve its bleak socio-economic situation. The workers are characterized by complete passivity and total indifference to everything around them, they were enslaved by exploiters. In an attempt to save Andres moves to Madrid, where he starts a family, but after the death of his wife, everything in his life begins anew, unable to withstand the trials of fate, he commits suicide.

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ANALYSIS OF TWITTER DATA USING MACHINE LEARNING ALGORITHMS

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ABSTRACT

Sentiment analysis is one among the distinguished fields of knowledge and pattern mining that deals with the identification and analysis of sentiment within the text. The main challenges in sentiment analysis are word ambiguity and multi polarity. The problem of word ambiguity is to define polarity because the polarity for words is context dependent. The tweets are initially preprocessed. The preprocessing includes the removal of stop words, and lower case conversion. The tweets are then passed to the feature extraction techniques. Then the data is splitted as training and testing data. The trained data is passed to the different machine learning algorithm like Naive Bayes. Support Vector machine, Random forest, and Decision Tree and k-NN algorithm. The accuracy obtained using the Naive Bayes. Support Vector machine, random forest, and Decision Tree, k-NN and Logistic regression algorithm is 80%, 77%, 72%, 61% ,56% and 78%. The naïve bayes algorithm has achieved a better accuracy when compared to the other algorithm.

KEYWORDS: SVM, Naive bayes, Decision tree, Random forest

I. INTRODUCTION

Natural language processing utilizes two main principal strategies they are syntax and semantic analysis. The arrangement of words in a sentence to make grammatical sense is called syntax analysis. Natural language processing uses syntax analysis techniques to assess meaning from a language based on grammatical rules. Syntax structure procedures incorporate parsing, word segmentation, sentence breaking, morphological segmentation, and stemming. Semantic uses a calculation to comprehend the importance and structure of a sentence. The techniques that NLP uses with semantics include word sense disambiguation, named entity recognition, and natural language generation. The word sense infers the importance of the word dependent on the specific situation. Named entity recognition decides whether the words can be categorized into groups. Natural language generation utilizes a database to decide the semantics behind the word. NLP uses a rule-based approach where machine learning techniques are used to train the models. The models are trained in such a way that when words and phrases appear in the particular text and are given a response when those particular phrases appear in the text. The primary use case for NLP is sentiment analysis. The sentiment analysis used by

the data scientist can assess comments via web-based networking media to perceive how their business image is performing.

The challenging task in natural language processing is semantic analysis. NLP does not pick up sarcasm easily since it requires an understanding of the words being used and the context in which the words are being used. Natural language processing is additionally a difficult task by the means that language, and therefore the manner in which individuals use it, is persistently evolving. NLP makes use of a data engine that processes language and facial expression in order to monitor president trump's emotional state. Sentiment analysis is combined with image recognition to enhance accuracy. Image recognition techniques break down the image connected with the tweet, and then machine learning processes them together with the language to tell the actual emotionality of an image. Sentiment analysis is the process of determining whether or not the polarity in particular text is positive, negative or neutral. Sentiment analysis is one among the distinguished fields of knowledge and pattern mining that deals with the identification and analysis of sentiment within the text. Sentiment analysis is referred to as opinion mining. Opinion mining combines natural language processing and



machine learning techniques to assign weighted sentiment scores to each and every entity. The types of sentiment analysis are generally classified into fine-grained, emotion detection, aspect-based sentiment analysis, and intent analysis. Fine grained sentiment analysis provides different flavors of polarity by identifying the actual text as positive or negative sentiment. The text is related to a particular feeling such as anger disappointment or worries (negative feelings) or happiness; love (positive feelings). Emotion detection is used to detect emotions like happiness, anger, and sadness. The words that generally express anger may also express happiness depending on the context of the words being used. The aspect-based sentiment analysis breaks down the text into aspects. Each aspect is assigned with sentiment values as positive negative and neutral.

For instance “The battery lifetime of this camera is simply too short” The above example is expressing a negative opinion regarding the camera, but precisely it describes the battery life which is the explicit feature of the camera. The intent analysis refers to the text rather than the people say with the text. For example “I would like to know how to replace the things”. The above example can be inferred from the text, but in many cases, inferring the text requires some contextual knowledge. Multilingual sentiment analyses are often troublesome task since it needs a lot of preprocessing techniques and preprocessing makes use of wide range of resources.

The main challenges in sentiment analysis are word ambiguity and multi polarity. The problem of word ambiguity is to define polarity because the polarity for words is context dependent. For example “The story of the movie is unpredictable” [1] “The steering wheel of the automotive is unpredictable” [2]. The primary example defines the polarity of the word “unpredictable” as positive. The second example defines the polarity of the word “unpredictable” as negative.

For instance “The audio quality of my phone is so cool however the display colors are not too good” Multi-polarity sentiment analysis model can assign a negative or a neutral polarity to the particular instance defined above. The overcome this drawback, every sentence must be assigned with polarity; here “audio” is assigned with positive polarity and “display” is assigned with negative polarity. Sentiment analysis provides a quantitative and qualitative data through which we can assess the success of the market campaign. Sentiment analysis plays a vital role in Monitoring the customers and spotting the negative comments early which will help the business parties to overcome the critical situation. The biggest advantage of sentiment analysis is to increase the sales revenue which in turn improves the products/service quality and customers services. Sentiment analysis is employed across a variety of applications and for multiple purposes. One such application is the prediction of election results. Sentiment analysis has been utilized by political candidate to observe overall opinion concerning policy changes enabling them to fine-tune their approach and to better relate to voters. In brand reputation

management application, sentiment analysis enables brands to identify peaks in overall brand sentiment so enabling companies to make improvement absolutely with client demands.

II. LITERATURE SURVEY

A Twitter sentiment analysis study by Go et al does a two-classed (negative and positive) classification of tweets. The training data was preprocessed before it was used to train the classifier. The Preprocessing techniques include removing the user names and actual URLs and converting the classes into equivalence classes like 'URL' and 'USERNAME' respectively. To select useful uni-grams, they used such feature selection algorithms. The feature selection algorithm is frequency, mutual information, and chi-square method. Multinomial Naive Bayes, maximum entropy and support vector machines (SVM) are the three supervised techniques used for analysis. The accuracy of 84% was obtained with multinomial Naive Bayes using uni-gram features selected on the basis of their MI score. The accuracy was low when the tweets are processed using the bi-gram approach. The experiment did not recognize and they were not able to handle neutral tweets. To take into account neutral tweets, they collected tweets about a term that do not have emoticons. Nearly 33 tweets were manually annotated and they are used as test data. The manually annotated tweets were labeled as neutral. They merged these two datasets with the training data and test data used in the above two-classed classification. They trained a three-classed classifier and tested it, and achieved an accuracy of 78% .

Sentiment analysis on ensemble learning classifier was proposed by Ankit et al., (2018), focusing on ensemble classifier which combines the base learning classifier to form a single classifier that aims in redesigning the performance and accuracy of sentiment classification. The Ensemble approach takes the positive and negative scores of the tweet. The positive score is higher than the negative score then the score of sentiment tweet is positive. The negative score is higher than the positive score then the sentiment score is negative. If the positive and negative scores are equal then the system calculates the cosine similarity of that tweets. The cosine similarity of the tweets is in contrast with the testing data and identifies the most similar tweets. Then calculates the positive and negative score identified tweets. It failed to calculate the values of neutral tweets which incorporate neither positive nor negative sentiment.

Twitter sentiment analysis using the hybrid cuckoo search method was proposed by Avinash Chandra Pandey et al., (2017), a heuristic technique that is based on k-means and cuckoo search. The heuristic method is used to find the optimum cluster heads from the sentimental contents of the Twitter dataset. K-means data clustering method groups n data points in k clusters and distance can be calculated either by using Euclidean distance or cosine measures. K-means can be used for initial clustering which is the major



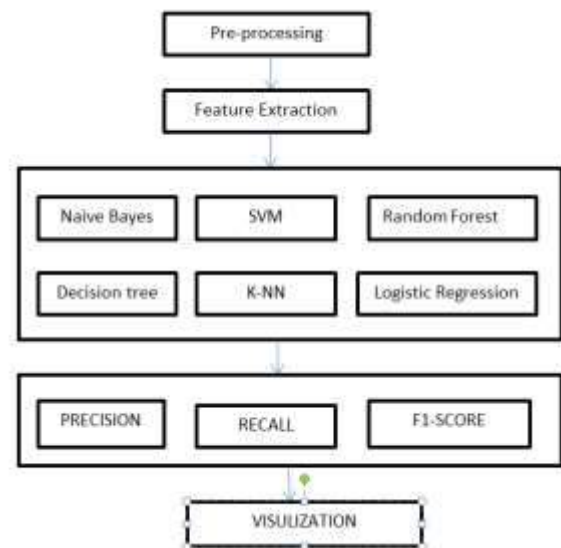
drawback. The generated cluster need to be further analyzed therefore cuckoo search method is used for further optimization of the cluster-heads. The cuckoo search approach makes use of a random initialization method that increases the number of iterations to converge and also stuck to some local solution. The process of the cuckoo search method results in faster convergence and better optimum solutions. The cuckoo search method modifies the initialization from k-means which resolves the problem of random initialization.

Twitter sentiment analysis was proposed by Barbosa and Feng (2010) used a two-phased approach for sentiment analysis. The two phases are: 1) classifying the dataset into objective and subjective classes (subjectivity detection) and 2) classifying subjective sentences into positive and negative classes (polarity detection). Suspecting that the use of n-grams for Twitter sentiment analysis might not be a good strategy since Twitter messages are short, they use two other features of tweets: Meta information about tweets and syntax of tweets. For meta-information, they use Parts of speech tags and mapping words to prior subjectivity (strong and weak), and prior polarity (negative, positive and neutral). The prior polarity is reversed when a negative expression precedes the word. For tweet syntax features, they use #, @, retweets, link, punctuations, emoticons, capitalized words, etc. SVM has achieved a better accuracy compared to the other machine learning techniques. For test data, 1000 tweets were manually annotated. The tweets are annotated as Positive, negative, and neutral tweet. The highest accuracy obtained was 81.9% on subjectivity detection followed by 81.3% on polarity detection.

III. ARCHITECTURE

The following figure 3.1 represents the architecture diagram of the Twitter data analysis using different machine learning algorithms. The dataset is collected from Twitter. The tweets are pre-processed to clean and transform the data for feature extraction. The tweets are initially pre-processed. The pre-processing includes the removal of stop words and lower case conversion. The tweets are then passed to the feature extraction techniques. Then the data is split as training and testing data. The trained data is passed to different machine learning algorithms like Naive Bayes, Support Vector Machine, Random Forest, Decision Tree, and k-NN algorithm. The precision, recall, and accuracy score are calculated and finally, the data are visualized in the graphical format.

Figure 3.1 Architecture Diagram of twitter data analysis



3.1. DATA PRE-PROCESSING

The data preprocessing includes the lower case conversion and stop words removal. The lower case conversion is done mainly because these words will be represented in two dimension vector spaces. The stop words are removed because these words occupy a unnecessary memory spaces and these words are not used during the analysis since they do not provide any meaning to the context.

3.2. FEATURE EXTRACTION

Feature extraction plays a vital role in the part of text classification. It is based on vector space model. The feature extraction is an approach to minimize the quantity of resources required to describe a dataset. Analysis with a massive range of variables requires a large amount of memory and more computational power. The classification algorithm overfit the training sample and generalizes to new samples. Hence the feature extraction technique is essential while dealing with classification problems with a large number of variables. The multiple features are compared and different accuracy scores are achieved for different features. The vector space model views the text as a dot in the N-dimensional space. The different feature extraction techniques are bag of words, n-gram, TF-IDF. Bag of words is mainly used in the document classification. Document classification mainly uses each word as a feature for training the classifier. The main disadvantage of the model is that the order of occurrence of each word is lost because for each word it creates a vector of tokens in randomized order. In order to overcome this problem we go for an approach called N-gram. The N-gram approach works based on how often the word sequences occur in the corpus text.



Input: preprocessed tweet

Output: tokenized tweet

Step 1: Token = tokenization of the word

Step 2: Polygram = gram (token, 10)

Step 3: analysis = analyze the tweet using get sentiment function

Step 4: Gram input= [text, analysis]

Step 5: Append the input value with the gram input

Classification. It specifies the class to which the data element belongs to and it is used once the output has finite and distinct values. The sentiment analysis in social media has two potential outcomes, positive or negative.

“The best economy in our lifetime”

“The Obama administration built the cages not the Trump administration”

Classification techniques will categorize the data as positive, negative or neutral. The above example “the best economy in our life time” is categorized as a positive class label. “The Obama administration built the cages not the Trump Administration” is categorized as a negative label.

3.1 NAIVE BAYES ALGORITHM

Naive Bayes is a classification technique. The principle behind the Naive bayes algorithm is Bayes theorem. Bayes theorem defines the independence among predictors. There are two types of implementations – Bernoulli and Multinomial. The difference between the models is the way in which the features are extracted from the document. According to Bayes model the conditional probability can be calculated as

$$p\left(\frac{y}{x}\right) = p\left(\frac{x}{y}\right) \cdot p(y)/p(x) \quad [3.1]$$

[3.4] Represents a very large number of $p(y/x)$ is the posterior probability of the class given attribute. The prior probability of the class is represented using $P(y)$. $P(x)$ is the prior probability of the attribute. $P(x|y)$ is the likelihood which determines the probability of the attributes given class.

$$p(y|x_1, x_2 \dots x_n) = p(y)\pi p(x_i|y) \quad [3.2]$$

We have to find the probability of the given set of inputs for all possible values of the class y and the output which has the maximum probability. The main drawback of naive Bayes classifiers is highly scalable. The naive bayes model requires a large number of variables (features/predictors) in a learning problem. Naive bayes model is easy to build and particularly useful for handling large datasets. Naive Bayes is easy to implement and needs less training data.

Positive tweet analysis

$$p(\text{tweet}_{\text{positive}}) = \frac{p(\text{totalcount}_{\text{positive}})}{p(\text{totaltweetcount})} \quad [3.3]$$

Negative tweet analysis:

$$p(\text{tweet}_{\text{negative}}) = \frac{p(\text{totalcount}_{\text{negative}})}{p(\text{totaltweetcount})} \quad [3.4]$$

Neutral tweet analysis:

$$p(\text{tweet}_{\text{neutral}}) = \frac{p(\text{totalcount}_{\text{neutral}})}{p(\text{totaltweetcount})} \quad [3.5]$$

Naive bayes method is a popular basic method to categorize the text. It uses frequencies of words in document as the feature for classification. The advantage of Naive Bayes classifier is its high scalability as it requires parameters in proportion to the number of features or variables and that too linearly. Naive bayes requires a small set of data for training the classifier.

3.2 SUPPORT VECTOR MACHINE:

SVM is a supervised machine learning algorithm. Support vector machine may be used for both classification and regression. SVM performs classification by finding the hyper-plan that differentiates the categories that are premeditated in an n-dimensional area. The algorithm works comparatively well once there's a clear margin of separation between categories. SVM is more efficient in high dimensional space.

Prediction score

$$\text{prediction}_{\text{svm}} = \text{predict}(\text{test}) \quad [3.6]$$

Accuracy score

$$\text{accuracy}_{\text{score}} = \text{predict}_{\text{testy}} * 100 \quad [3.7]$$

3.3 DECISION TREE

The decision tree is the most popular algorithm used for classification and prediction. The decision tree follows a tree-like structure that contains internal nodes, branch, and leaf nodes. The internal node represents an attribute, the branch represents an outcome and the leaf node holds the information about the class label. The decision tree is initially constructed by splitting the dataset into a subset based on the attribute. The process is repeated on the derived subset in a recursive manner. The main advantage of the decision tree is the construction of the tree does not require any domain knowledge. A decision tree can handle both continuous and categorical variables. The main disadvantage of using the decision tree - generates more errors in classification problems since we use a small number of training datasets.

3.4 LOGISTIC REGRESSION

Logistic regression is the machine learning algorithm that comes under the supervising learning techniques. In logistic regression, the outcome must be a categorical or a discrete value. The output of the logistic regression is a categorical dependent variable. The dependent variable can be predicted from the given set of independent variables. The logistic regression uses a cost function called the sigmoid function. The sigmoid function is mainly used to



map the predicted values corresponding to their probabilities. The linear regression classifier combines the weight of the input features. The weighted input features are passed as an input to the sigmoid function. The sigmoid function transforms the input into a number. The transformed input values should lie between 0 and 1.

3.5 K-NN ALGORITHM

The k-nearest algorithm is supervised machine learning. K-NN is also known as a non-parametric or lazy learner algorithm. The k-NN does not learn from the training set. The K-NN stores the training dataset and then classifies the data. The classified data is then grouped. The K-NN algorithm works by selecting the k neighbors. Then the Euclidean distance is calculated for the K number of neighbors. Take the k nearest neighbors from the Euclidian distance calculated. In each category count the number of data points. The new data points which are calculated are assigned based on the number of neighbors is maximum. Finally, the model is ready for evaluation. The main advantages of using the K-NN algorithm are more effective when the training dataset is large. The disadvantage of using the algorithm is to determine the k value which may be complex. The cost of calculating the distance between the data points for all the training datasets is high.

3.6 RANDOM FOREST ALGORITHM

The Random forest is a machine learning algorithm that can be used to solve both classification and regression based problems. Random forest algorithm belongs to a supervised learning technique. Random forest works based on the concept of ensemble learning technique. The ensemble method solves a complex problem by combining multiple classifiers in order to improve the performance of the model. The random forest contains a number of decision trees. The decision tree is classified based on the various subsets of the given datasets. Finally the average is taken in order to improve the predictive accuracy of the dataset. The number of trees constructed in the forest is greater leads to higher accuracy and preventing the problem of overfitting. The random forest algorithm works by selecting the random data points K from the training dataset. The decision tree is constructed based on the selected data points. If there are only few data points then find the predictions of each decision tree. Then assign the new data point to the category which has majority votes. The advantage of the random forest model improves the accuracy and resolves the problem of overfitting. The random forest algorithm is not more suitable for the regression-based problem.

V. RESULT AND DISCUSSION

5.1 NAIVE BAYES ALGORITHM

The following table 5.1 represents the precision-recall and f1-score achieved using the Naive Bayes algorithm. The naïve Bayes algorithm is calculated against two values i.e. 0 or 1. The precision, recall, and f1-score achieved using the positive tweets are 80%, 69%, and 82%. The precision, recall, and f1-score achieved using the negative tweet is 78%, 87%, and 82%.

Table 5.1 Precision, Recall and F1-score using Naive Bayes

	Precision	Recall	F1-score	Support
0	0.78	0.87	0.82	4500
1	0.80	0.69	0.74	3543

The following figure 5.1 represents the confusion matrix obtained using the Naive Bayes algorithm. The confusion matrix is plotted against the true negative, false positive, false negative and true positive values. The true negative value is 3912, the false positive value is 588, the false negative value is 1116 and the true positive value is 2427.

Figure 5.1 Confusion matrix using Naive bayes

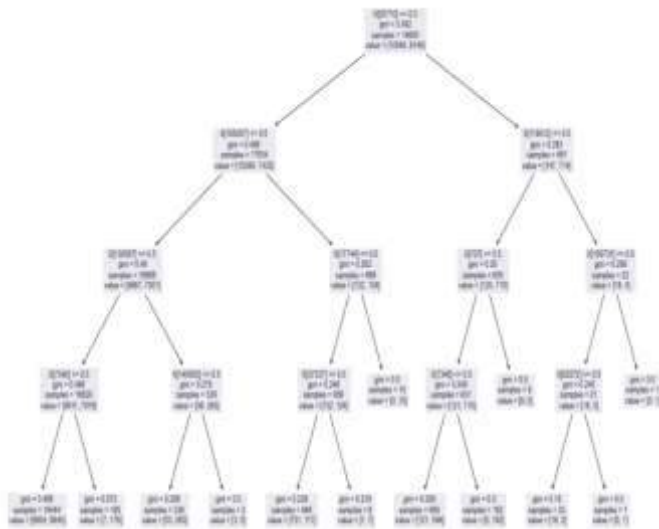


5.2 DECISION TREE

The following figure 5.2 represent the construction of the decision tree with the given set of input data.



Figure 5.2 Decision Tree Constructions



The following table 5.2 represents the precision recall and f1-score achieved using the decision tree algorithm. Decision tree algorithm is calculated against two values i.e. 0 or 1. The precision, recall and f1-score achieved using the positive tweets are 86%, 25% and 25%. The precision, recall and f1-score achieved using the negative tweet is 59%, 98% and 74%.

Table 5.2 Precision, Recall and F1-score using Decision tree

	Precision	Recall	F1-score	Support
0	0.59	0.98	0.74	4500
1	0.86	0.25	0.25	3543

The following figure 5.3 represents the confusion matrix obtained using the Decision tree algorithm. The confusion matrix is plotted against the true negative, false positive, false negative and true positive values. The true negative value is 4420, the false positive value is 80, the false negative value is 3032 and the true positive value is 511.

Figure 5.2 Confusion matrix using Decision tree



5.3 SUPPORT VECTOR MACHINE

The following table 5.3 represents the precision recall and f1-score achieved using the support vector algorithm. Support vector algorithm is calculated against two values i.e. 0 or 1. The precision, recall and f1-score achieved using the positive tweets are 80%, 64% and 71%. The precision, recall and f1-score achieved using the negative tweet is 76%, 87% and 81%.

Table 5.3 Precision, Recall and F1-score using Support vector machine

	Precision	Recall	F1-score	Support
0	0.76	0.87	0.81	4500
1	0.80	0.64	0.71	3543

The following figure 5.3 represents the confusion matrix obtained using the Support vector machine algorithm. The confusion matrix is plotted against the true negative, false positive, false negative and true positive values. The true negative value is 3918, the false positive value is 582, the false negative value is 1263 and the true positive value is 2280.

Figure 5.3 Confusion matrix using Support Vector Machine





5.4 LOGISTIC REGRESSION

The following table 5.4 represents the precision recall and f1-score achieved using the logistic regression algorithm. Logistic regression algorithm is calculated against two values i.e. 0 or 1. The precision, recall and f1-score achieved using the positive tweets are 81%, 65% and 72%. The precision, recall and f1-score achieved using the negative tweet is 76%, 88% and 82%.

Table 5.4 Precision, Recall and F1-score using Logistic Regression

	Precision	Recall	F1-score	Support
0	0.76	0.88	0.82	4500
1	0.81	0.65	0.72	3543

The following figure 5.4 represents the confusion matrix obtained using the Logistic Regression algorithm. The confusion matrix is plotted against the true negative, false positive, false negative and true positive values. The true negative value is 3969, the false positive value is 531, the false negative value is 1255 and the true positive value is 2288.

Figure 5.4 Confusion matrix using Logistic Regression



5.5 RANDOM FOREST

The following table 5.4 represents the precision recall and f1-score achieved using the Random forest algorithm. Random forest algorithm is calculated against two values i.e. 0 or 1. The precision, recall and f1-score achieved using the positive tweets are 82%, 47% and 60%. The precision, recall and f1-score achieved using the negative tweet is 69%, 92% and 79%.

Table 5.5 Precision, Recall and F1-score using Random Forest

	Precision	Recall	F1-score	Support
0	0.69	0.92	0.79	4500
1	0.82	0.47	0.60	3543

The following figure 5.5 represent the confusion matrix obtained using the random forest algorithm. The confusion matrix is plotted against the true negative, false positive, false negative and true positive values. The true negative values is 4139, the false positive value is 361, the false negative value is 1887 and the true positive value is 1656.



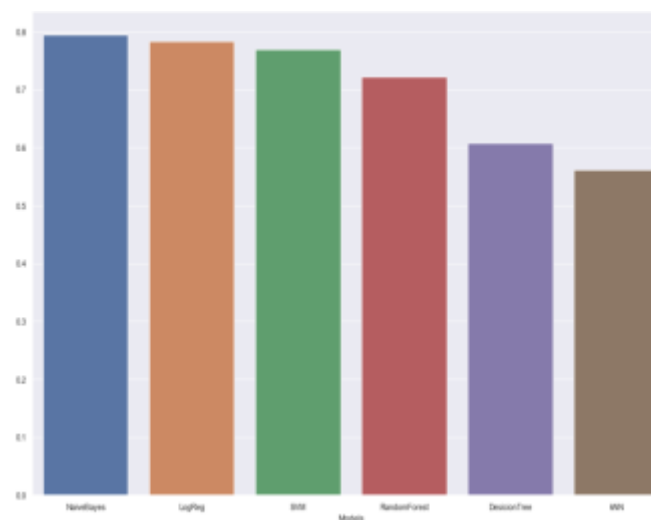
5.6 KNN

The following table 5.4 represents the precision recall and f1-score achieved using the logistic regression algorithm. Logistic regression algorithm is calculated against two values i.e. 0 or 1. The precision, recall and f1-score achieved using the positive tweets are 66%, 50% and 25%. The precision, recall and f1-score achieved using the negative tweet is 57%, 97%, 72%.

Table 5.6 Precision, Recall and F1-score using Logistic Regression

	Precision	Recall	F1-score	Support
0	0.57	0.97	0.72	4500
1	0.66	0.50	0.25	3543

The following figure 5.6 represent the confusion matrix obtained using the random forest algorithm. The confusion matrix is plotted against the true negative, false positive, false negative and true positive values. The true negative values are 4237, the false positive value is 201, false negative value is 3311 and the true positive value is 264.

**Figure 5.6 Confusion matrix using Random Forest****Figure 5.7 Graphical representations of different machine learning models**

5.7 TESTING ACCURACY

The input data is splitted as training and testing data. The training data is nearly 70% of the dataset which is used to teach the machine learning models. The test data is 20% of the given dataset where it is used to test the data for the given input, the outputs are derived correctly. The following table 5.7 represent the accuracy obtained using the test data.

Table 5.7 Accuracy of test data

ALGORITHM	ACCURACY OF TEST DATA
Naive Bayes	80%
K-NN	56%
Random Forest	72%
Decision Tree	61%
Logistic Regression	78%
Support Vector Machine	77%

5.8 GRAPHICAL REPRESENTATIO

The graph is plotted against the different machine learning model and their corresponding accuracy. The x axis contains the accuracy and the y-axis is plotted against the different machine learning models. The following figure 5.7 represents the graphical representation of different machine learning model.

VI CONCLUSION

The proposed work analyzed the information spread over social networks like Twitter. Sentiment analysis is a uniquely powerful tool for the analysis of election results that is looking to measure attitudes, feelings, and emotions. Nevertheless, the evolution of social media analysis regarding politics is still considered to be in its infancy, despite the importance of the topic for political science. The dataset is collected from Twitter. The tweets are pre-processed to clean and transform the data for feature extraction. . The tweets are then passed to the feature extraction techniques. Then the data is split as training and testing data. The trained data is passed to different machine learning algorithms like Naive Bayes. Support Vector Machine, Random Forest, Decision Tree, and k-NN algorithm.

The accuracy obtained using the Naive Bayes. Support Vector machine, random forest, and Decision Tree, k-NN and Logistic regression algorithm is 80%, 77%, 72%, 61% ,56% and 78%. The naïve bayes algorithm has achieved a better accuracy when compared to the other algorithm.

VII. FUTURE WORK

There is a vast future scope in this research area as it is not only interesting but also challenging in the real world. In the future, sarcasm can be detected in text. Many tools and algorithms rely on the polarity of the words and the scoring is dependent on polarity. This means that accuracy drops since the semantics of the complete sentence are lost. To measure the polarity of the sentence on each and every individual words the semantics of the sentence. The semantics of the sentences make it difficult to identify the polarity. For instance, the financial industry has its own language which means completely differs from the Entertainment industry. This makes it hard for the tool to predict the emotion or semantics of the sentence.



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UDC 612

GROWTH INDICATORS OF TEENAGERS IN VARIOUS REGIONS OF THE REPUBLIC OF KARAKALPAKSTAN

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ANNOTATION

The article discusses the main growth indicators of adolescents in various regions of the Republic of Karakalpakstan. The results of the study show that the growth rates of adolescents in the northern and central regions are higher than in adolescent boys in the southern regions.

KEY WORDS: *protection, health, physical development, development, weight, height, index.*

Today, the strengthening and protection of human health on a global scale, the study of their theoretical foundations is one of the urgent problems in the field of physiological, medical and environmental sciences. Especially in different regions, this leads to a deterioration in the indicators of physical development and health of the young population. In this regard, it seems relevant to develop measures to study the characteristics of the morphological and functional indicators of the physical development of adolescence.

In recent years, extensive scientific research has been carried out in the world to study the state of physical development of the younger generation and evaluate morphofunctional indicators that determine the adaptive capabilities of the development of the human body and its relationship with the environment.

In this regard, among other things, to determine the age dynamics of anthropometric and functional indicators of adolescents depending on the environmental conditions of the region, to substantiate the negative impact of environmental factors on the human body, to analyze somatotypological indicators in adolescents based on proportional levels of character variability, and adverse environmental factors the external environment on the body of adolescents of the Republic of Karakalpak region much attention is paid to the development of measures to adapt to the impact and improve physical development indicators.

In this regard, in the Republic of Karakalpakstan, much attention is paid to the development of measures to determine the age dynamics of anthropometric and functional indicators of adolescents, depending on the environmental conditions of the region, to improve the indicators of physical development and adaptation of the body of adolescents to adverse environmental factors in the region.

In the republic, much attention is paid to carrying out complex measures to study physical development, the morphofunctional state of the human body and the mechanisms of its adaptation to harmful environmental factors. In



this regard, among other things, measures were developed to improve the level of public health, to determine the mechanisms of adaptation of the body to external environmental factors during the period of individual development.

Currently, health problems are one of the priority tasks of the social and social development of any country, which determines the relevance and necessity of conducting relevant scientific research and developing certain methodological and organizational approaches to health care, its formation and development.

In the course of the work, a set of methodological techniques was used, which allows for a comprehensive individual assessment of the functional state and physical development of each adolescent.

The study of the functional features of the subjects was carried out using a complex of traditional methods. The somatometric method of calculation was carried out by determining the indicators of the general dimensions of the body - height - weight, chest circumference.

Height was measured in a standing position using a medical stadiometer with an accuracy of 0.5 cm. In this case, the observer stands on the stadiometer bar from behind, touching the lower leg, groin, shoulder blade and elbow, and the stadiometer shoulder touches the top of the skull.

The analysis showed that the growth rates of adolescents in the northern and central regions of the age dynamics of body growth indicators were higher than in adolescent boys in the southern regions.

The average annual growth of adolescents in height was 2.04 cm in the northern regions, and 1.12 cm in the southern regions. From the data obtained on the state and dynamics of growth, we can conclude that there is a general decrease in body height in adolescents in all age groups of the southern regions (the percentage deviation was 0.6%, $p < 0.05$). We then carried out anthropometric measurements of adolescents in a sitting position (Fig. 1).

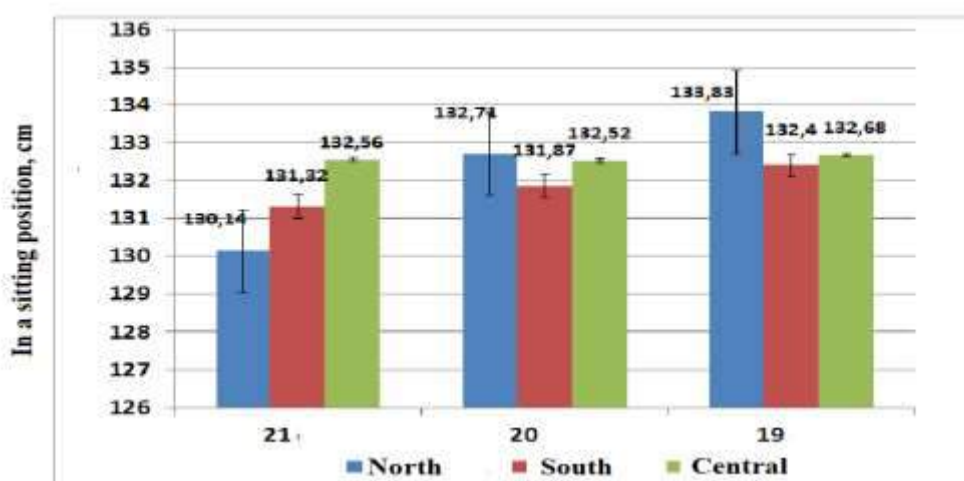


Figure 1. Dynamics of indicators of age-related body growth (in a sitting position) of young men of military age living in Karakalpakstan

As can be seen from the diagram, the highest indicators were found in 19- and 20-year-old adolescents from the northern regions (133.83 ± 1.9 cm and 132.71 ± 3.2 cm, respectively). The highest growth rate of posture in a sitting position in adolescents aged 21 was observed in adolescents from the central regions of Karakalpakstan (132.56 ± 3.1 cm).

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EFFECT OF ASSISTIVE TECHNOLOGY FOR DYSLEXIA ON STUDENTS' PERFORMANCE AND RETENTION IN READING IN PORT HARCOURT METROPOLIS, RIVERS STATE

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ABSTRACT

This study aimed to investigate the effect of assistive technology for dyslexia on secondary school students' performance and retention in Reading in Port Harcourt Metropolis, Rivers State by comparing it with collaborative and discussion instructional strategies. The study was guided by three research questions with corresponding hypotheses formulated in line with the objectives of the study. The design of the study was quasi-experimental and the population comprised two hundred and five (205) senior secondary school students one (S.S.1) in selected public secondary schools in Port Harcourt Metropolis. The sample size was two hundred and five (205) senior secondary school one (S.S.1) dyslexic students in Port Harcourt Metropolis, Rivers State. They were chosen through the census sampling technique. Experimental group 1 (N=60) was exposed to assistive technology, experimental group 2 (N=57) was exposed to collaborative instructional strategy and the control group (N=88) was taught through the discussion method. Data was collected through pre-test, post-tests and retention tests. Data were analyzed using Analysis of Covariance (ANCOVA). Findings showed that the performance of dyslexic students taught reading comprehension using assistive technology instructional strategy is higher than those of their counterparts taught using collaborative learning and discussion instructional strategies. Also, there was a significant difference in the effect of instructional strategy on the performance and retention of dyslexic students in reading and female dyslexic students taught Reading Comprehension performed slightly better than their male counterparts did. The study concluded that assistive technology instructional strategy requires students to participate in a collaborative setting, whereas collaborative learning and discussion require individuals to work together on self-directed tasks. Hence, it was recommended amongst others that government should provide assistive technology free of charge to dyslexic students to help them participate fully in the teaching and learning process, as well as influence their performance in Reading Comprehension.

KEYWORDS: *Technology, Assistive Technology, Learning Disability, Dyslexia, Academic Performance, Retention, English Language*

INTRODUCTION

Language is the principal method of human communication, consisting of words used in a structured and conventional way and conveyed by speech, writing, or gesture. It plays a central role in the human brain, from how we process colours to how we make moral judgments. It directs how we allocate visual attention, construe and remember events, categorize objects, encode smells and musical tones and stay oriented. Put simply, one cannot understand the human brain without understanding the contributions of language, both in the moment of thinking and as a formative force during earlier learning and experience. Exposure to written language restructures the brain, even when acquired late in life. There are different aspects of language but this study explored an aspect of language called Psycholinguistics.

Psycholinguistics is the study of the mental aspects of language and speech. It is primarily concerned with the ways in which language is represented and processed in the brain. Psycholinguistics is part of the field of cognitive science. According to David Carroll in "Psychology of Language," At its heart, psycholinguistic work consists of two questions. What knowledge of language is needed for us to use language? In a sense, we must know a language to use it. What cognitive processes are involved in the ordinary use of language? By 'ordinary use of language,' the researcher means such things as understanding a lecture, reading a book, writing a letter, and holding a conversation. By cognitive processes,' the researcher means processes such as perception, performance, memory,



retention and thinking. Although students do few things as often or as easily as speaking and listening, we noticed that considerable cognitive processing is going on during those activities. The researcher, therefore, investigated the language and brain of dyslexic students in Reading as one of the language skills, utilizing assistive technology as seen in the National Policy on Education.

The National Policy on Education stipulated under special educational needs that schools shall be required to arrange regular sensory, medical and psychological screening assessments to identify any incidence of disability such as dyslexia, autism, dyscalculia, aphasia, dysgraphia, dyspraxia, attention deficit hyperactivity disorder (ADHD), etc. This is to enable students with learning disabilities to fully contribute their quota to national development.

The English language plays an essential role in communication and it becomes an indispensable tool for communication in various aspects of society, economy, and culture. The English language is widely used in our daily lives and it is necessary to use effective pedagogies in its delivery as a subject in schools. Under the New National English Curriculum Standards, students living with dyslexia should be encouraged to interact with a lot of English Reading software and also to use emerging technologies. Technology can help students of all ages work around their reading challenges.

Assistive technology is defined as any tool, device, or item designed to help people with learning disabilities perform better and encourage them to become more independent and self-reliant such as Reading, taking notes, Mathematics, organizing ideas, managing time, Writing, Spelling, etc. Many assistive technological tools work on digital devices but some of the most useful tools are not digital. Assistive technology can play an important role in special education because many students with disabilities need special instructional treatment. Assistive technology for dyslexia like Read Out Loud, dyslexiaquest, optical readers, smart pens, text-to-speech, speech-to-text, amplification systems, audiobooks, grammar check software, magnification and tracking supports. Text-to-speech and audiobooks are two examples of assistive technology for reading. For students who struggle to read text, technology can be a lifeline for them. An audiobook, for instance, allows them to read a story they might not be able to read with a traditional book. A highlighter can make a text passage understandable.

STATEMENT OF THE PROBLEM

Personal observation has shown that school administrators and teachers rarely identify students living with dyslexia on time. According to available research, dyslexic students frequently experience taunts, bullying, and other forms of abuse from both peers and teachers, which can make the learning environment for them intolerable. Students who are unable to read or write correctly are often times subjected to derogatory labels such as stupid, lazy, fool, and slow learner, from both teachers and other students. These students who bring dysfunctional language skills into the classroom setting go unnoticed, ignored, or wished away by the unequipped and de-motivated teachers. Dyslexics perhaps show an inability to hold information in a retrievable form for the task at hand, a high proportion of errors in oral reading, difficulty in extracting the sense from written material without substantial re-reading, omission of words, a high degree of distractibility when reading and weak phonological awareness. Due to the stigma attached to dyslexia, lack of awareness, absence of early assessment, and very few qualified remedial teachers, many children are left at risk of dropping out of school, and subsequently facing social exclusion. Despite the possible contribution of dyslexia to the poor performance of the English language in the country, there is limited research on the extent to which dyslexia affects learning in Nigerian schools. It is against this backdrop that this study explored the effect of assistive technology on dyslexic students' performance and retention. It also explored classroom practices in this regard via assistive technology. Dyslexics are being deprived of a proper learning environment where appropriate digital learning tools are utilized. This study addressed this gap.

AIM AND OBJECTIVES OF THE STUDY

This study aimed at investigating the effect of assistive technology for dyslexia on secondary school students' performance and retention in Reading in Port Harcourt Metropolis, Rivers State. The specific objectives of the study were to;

1. Investigate the effect of assistive technology, collaborative learning and discussion method on the performance of dyslexic students in Reading.
2. Determine the effect of assistive technology, collaborative learning and discussion method on the retention of dyslexic students in Reading.
3. Examine the influence of gender on the performance of dyslexic students in Reading.

RESEARCH QUESTIONS

The understated research questions guided this study:



1. What is the effect of assistive technology, collaborative learning and discussion method on the performance of dyslexic students in Reading?
2. What is the effect of assistive technology, collaborative learning and discussion method on the retention of dyslexic students in Reading?
3. What is the gender effect on the performance of dyslexic students in Reading?

HYPOTHESES

For this study to establish and determine the stated objectives, research hypotheses that are testable and analyzable based on data collected therefore need to be formulated. The following research hypotheses were formulated to guide the study.

H0₁: There is no significant difference among dyslexic students taught using assistive technology, collaborative learning and discussion method in their performance in Reading.

H0₂: There is no significant difference among dyslexic students taught using assistive technology, collaborative learning and discussion method in their retention of Reading.

H0₃: There is no significant difference between the performance of male and female dyslexic students in Reading.

SIGNIFICANCE OF THE STUDY

This study will be beneficial to special educational needs teachers in secondary schools if they adhere to the hybrid learning approach of the 21st century which is the integration of assistive technology into teaching and learning. Teachers will understand that their duty has changed from “one who knows all” to a facilitator who is also a student in the learning process. The Special Educational Needs (SEN) teachers also knew that one size does not fit all and differentiated the learning of the dyslexics based on their abilities. This study created awareness of the need for SEN teachers to upgrade themselves and also integrate emerging technologies into their lessons. Based on the International Society for Technology in Education (ISTE) there are responsibilities stipulated for teachers such as teachers should engage in professional development and leadership, demonstrating computer-age work and learning, facilitate and show computer citizenship and responsibility. The teachers mentioned here include; English language teachers, English lecturers, primary school teachers, secondary school teachers and speech pathologists/therapists. More so, the utilization of assistive technology for Reading Comprehension can serve as a catalyst for English language teachers to emulate. It can also guide them on a better approach to introducing dyslexics to Reading via assistive technology.

The findings of this study can as well improve dyslexics’ knowledge of Reading and the importance of interactive learning which is trending globally. This study encouraged the students living with dyslexia to always be ready for Reading Comprehension lessons as it is full activity based which can arouse students’ interest and led to better performance in speaking and reading skills. ISTE standards for students showed that students are encouraged to become knowledge constructors (find it), innovative designers (make it), computational thinkers (solve it), creative communicators (share it), global collaborators (connect it), empowered learners (use it), and a digital citizen (protect it). 2016 ISTE standards and 2018 students’ readiness standards showed recent shifts in the field and are meant to equip learners for tomorrow. Interest and engagement which are two levels of interactivity via assistive technology were revealed to students living with dyslexia; it helped them judge their recent level so that they will re-adjust if actually they want to enjoy Reading via assistive technology.

METHODOLOGY

This study adopted a quasi-experimental nonequivalent pretest-posttest control group design to identify the effectiveness of assistive technology on dyslexic students learning performance and retention in Reading. This plan was viewed as most fitting since it was without randomization utilizing intact class. Dyslexic students that participated in this study got treatment in their various classes without reshuffling the class arrangement. (Nwankwo, 2016). The design is schematically represented as follows;

The design is schematically structured as:

$$\begin{array}{cccc}
 E_1 & O_1 & X_1 & O_2 - O_3 \\
 E_2 & O_1 & X_2 & O_2 - O_3 \\
 \hline
 C & O_1 & - & O_2 \quad O_3
 \end{array}$$

Where:

E_1 stands for experimental group 1.

E_2 stands for experimental group 2.

C shows the Control group that will not receive treatment but a conventional plan.



- O_1 denotes the pretest for each experimental group.
 O_2 stands for posttest for all groups.
 O_3 stands for post posttest for all groups.
 X_1 stands for treatment for the experimental group1 (Assistive Technology Reading).
 X_2 stands for treatment for experimental group 2 (Collaborative Learning Strategy).
..... denotes no treatment for the control group

The population of this study comprised two hundred and five (205) senior secondary school students one (S.S.1) in selected public secondary schools in Port Harcourt Metropolis. The sample size was two hundred and five (205) senior secondary school one (S.S.1) dyslexic students in Port Harcourt Metropolis, Rivers State. They were chosen through the census method or technique. This was done after the preliminary study to determine students that are dyslexic. The researcher used all the senior secondary students one (S.S.1) identified as dyslexic. Utilization of explicit qualities like web offices through computers, interactive whiteboards (IWB) smart boards, Ipads, (tablets) iPhones and smartphones. These gadgets served as a prerequisite to take the Reading Comprehension course utilizing assistive technology (Read-Out-Loud Speechify App) and the dyslexics must have access to the internet. Therefore, the experimental groups were made up of dyslexics who have smartphones; computers and can access the internet while the control group did not have access to the Read-Out-Loud Speechify App and the internet.

The criteria that were utilized for the proper representation of male and female dyslexic students were; public schools with ICT offices for Assistive Technology or strategy, consent of dyslexic students and trained and qualified Special Education Needs (SEN) facilitators. The instruments that were utilized to gather data for the study are: (1) Dyslexia Screening Questionnaire (DSQ). (2) Reading Performance Test (RPT) and Reading Retention Test (RRT). The research instruments were designed by the researcher and were validated by the researcher's supervisors, experts in Measurement and Evaluation and Language Education.

Dyslexia Screening Questionnaire (DSQ) was used as a preliminary study for identification of students with Dyslexia. Dyslexia Screening Questionnaire (DSQ) had four segments labeled alphabetically A, B, C, and D with 20 items (see Appendix). The dyslexics were permitted to demonstrate their level of acceptance or rejection on the number of positive and negative statements on Phonological awareness and Reading. Its questions probed dyslexics' skills, qualities, motivation, behaviour, and feelings. The researcher applied critical thinking skills to formulate the items which were relevant to ascertain the skills of the dyslexics. Section A was for demographic data which the dyslexic students wrote their names and gender. Secondly, Section B, C and D was on phonemic sounds, feelings, level of acceptance and rejection of the lessons taught and the method utilized for the lessons. Likert scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) was utilized to score the response of the dyslexic students. The following values were allotted to the responses: SA = 4, A = 3, D = 2, SD = 1. The criterion that was utilized to access the dyslexic students' skills in Reading was the average of the response figures: $(4+3+2+1)/4 = 10/4 = 2.5$. In this way, dyslexic students that scored below 2.5 had poor Reading skills while dyslexic students that scored above 2.5 exhibited high Reading skills, meaning the absence of dyslexia. The instruments were given to two secondary school English Language teachers and an expert in measurement and evaluation for validation. The test-retest method was used to generate two sets of scores from students outside the sample of this study and the scores were correlated using the PPMC to determine their internal consistency. The reliability coefficients of the instruments were 0.89 for Dyslexia Screening Questionnaire (DSQ) and 0.77 for Reading Performance Test (RPT). The researcher carried out the data collection procedure in stages for three weeks. The researcher visited the selected schools for permission in using their students and some of the school facilities. Afterward, the dyslexic students were identified utilizing Dr Warren's Dyslexia Screening Questionnaire (DSQ). The control and experimental groups were exposed to Reading Performance Test (RPT) before the experimental treatment (pre-test). This is to empower the researcher to set up the standard information of the dyslexic students in the control and experimental groups before the learning environment changed from face-to-face to web-based learning for experimental group 1. The items from the instruments were reshuffled utilizing a yellow paper to print the questions but the content remained the same for the post-test and retention test. The data of the post-test and post-posttest were utilized for the study. The post-test was scored and used to generate quantitative data which was analyzed using Analysis of Covariance (ANCOVA). The significance level of 0.05 was used to test the null hypotheses.

RESULTS

Research Question One: What is the effect of assistive technology, collaborative learning and discussion method on the performance of dyslexic students in Reading?

**Table 1: Mean score and standard deviation of the effect of assistive technology, collaborative learning and discussion method on the performance of dyslexic students in Reading.**

Instructional Strategies	n	Pretest		Posttest		Mean Gain
		\bar{x}	SD	\bar{x}	SD	
Discussion	88	5.73	2.80	13.99	1.93	8.26
Assistive Technology	60	5.13	2.25	20.33	1.53	15.20
Collaborative Learning	57	6.91	1.83	17.12	2.77	10.21

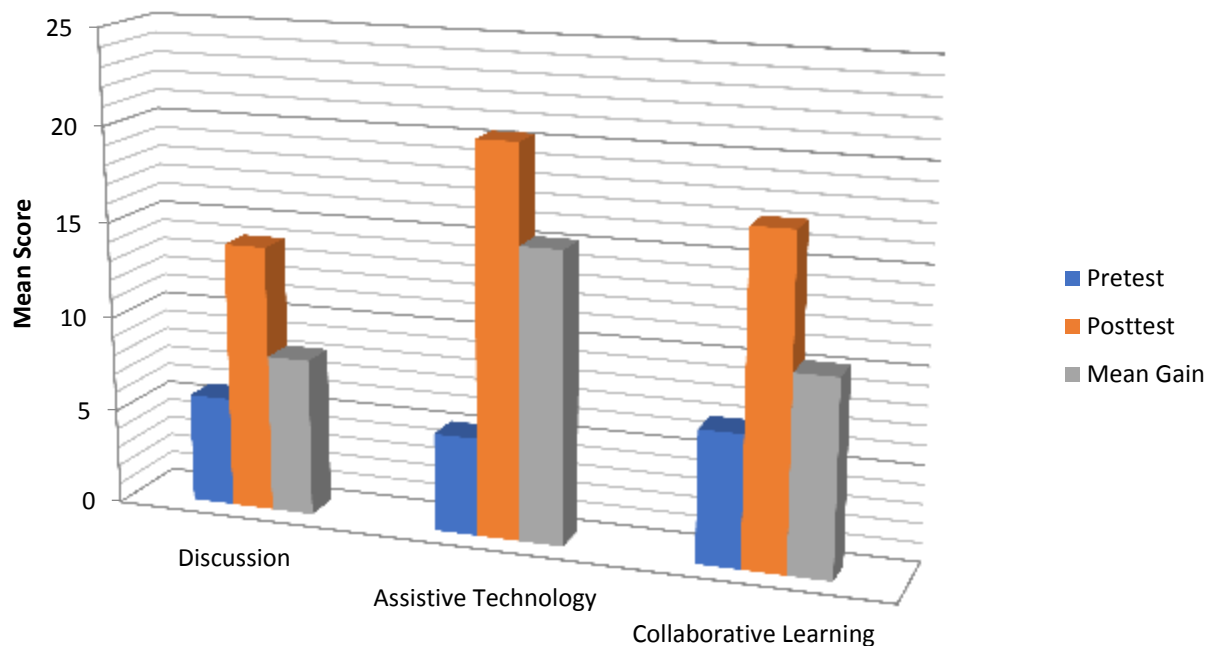
**Figure 1: Chart on the effect of assistive technology, collaborative learning and discussion method on the performance of dyslexic students in Reading**

Table and Figure 1 show the effect of assistive technology, collaborative learning and discussion method on the performance of dyslexic students in Reading. The results indicated that dyslexic students taught Reading Comprehension using assistive technology instructional strategy (Pretest; $\bar{x} = 5.13$, SD = 2.25, Post-test; $\bar{x} = 20.33$, SD = 1.53, Mean Gain = 15.20) performed better than dyslexic students taught reading comprehension using collaborative learning instructional strategy (Pretest; $\bar{x} = 6.91$, SD = 1.83, Post-test; $\bar{x} = 17.12$, SD = 2.77, Mean Gain = 10.21), followed by dyslexic students taught Reading Comprehension using the discussion instructional strategy (Pretest; $\bar{x} = 5.73$, SD = 2.80, Post-test; $\bar{x} = 13.99$, SD = 1.93, Mean Gain = 8.26). The implication of these results is that the performance of dyslexic students taught Reading Comprehension using assistive technology instructional strategy is higher than those of their counterparts taught using collaborative learning and discussion instructional strategies.

Research Question Two: What is the effect of assistive technology, collaborative learning and discussion method on the retention of dyslexic students in Reading?

Table 2: Mean score and standard deviation of the effect of assistive technology, collaborative learning and discussion method on the retention of dyslexic students in Reading

Instructional Strategy	n	Posttest		Post-Post test		Mean Gain
		\bar{x}	SD	\bar{x}	SD	
Discussion	88	13.99	1.93	13.89	1.67	-0.10
Assistive Technology	60	20.33	1.53	20.89	1.86	0.56
Collaborative Learning	57	17.12	2.77	17.30	4.01	0.18

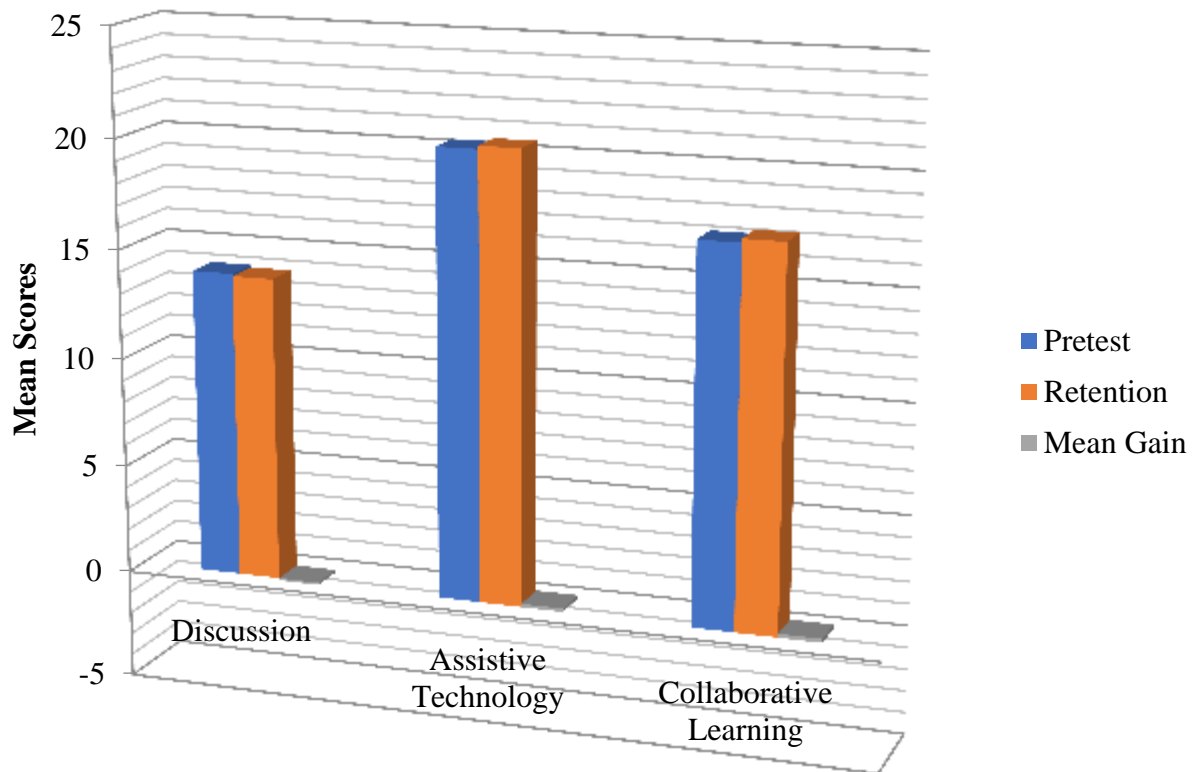


Figure 2: Chart on the effect of assistive technology, collaborative learning and discussion method on the retention of dyslexic students in Reading

Table and Figure 2 show the effect of instructional strategy on the retention of dyslexic students in Reading Comprehension. The results indicated that dyslexic students taught Reading Comprehension using assistive technology instructional strategy (Posttest; $\bar{x} = 20.33$, $SD = 1.53$, Retention; $\bar{x} = 20.89$, $SD = 1.86$, Mean Gain = 0.56) had higher retention than dyslexic students taught reading comprehension using collaborative learning instructional strategy (Posttest; $\bar{x} = 17.12$, $SD = 2.77$, Retention; $\bar{x} = 17.30$, $SD = 4.01$, Mean Gain = 0.18), followed by dyslexic students taught Reading Comprehension using the discussion instructional strategy (Posttest; $\bar{x} = 13.99$, $SD = 1.93$, Retention; $\bar{x} = 13.89$, $SD = 1.67$, Mean Gain = -0.10). The implication of these results is that the retention of dyslexic students taught Reading Comprehension using assistive technology instructional strategy was higher than those of their counterparts taught using collaborative learning instructional strategies. Conversely, dyslexic students taught reading comprehension using discussion instructional strategy showed negative retention. In other words, dyslexic students have forgotten what they learned after two weeks.

Research Question Three: What is the gender effect on the performance of dyslexic students in Reading?

Table 3: Mean and standard deviation of the effect of gender on the performance of dyslexic students in Reading

Gender	n	Pretest		Posttest		Mean Gain
		\bar{x}	SD	\bar{x}	SD	
Male	85	6.02	2.29	16.72	3.32	10.70
Female	120	5.78	2.63	16.72	3.45	10.94

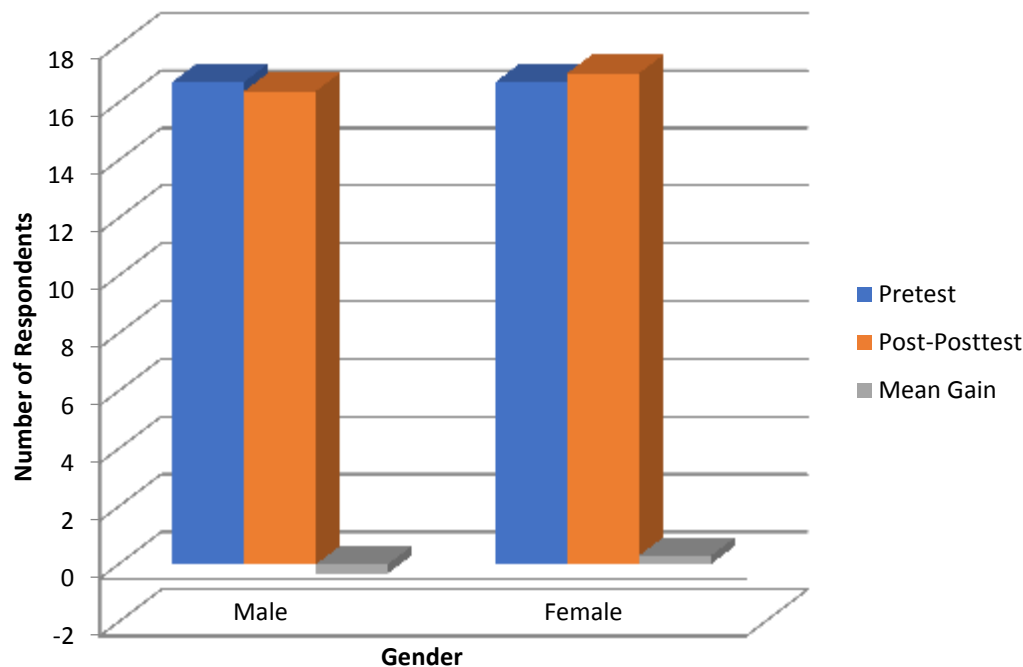
**Figure 3: Chart on the effect of gender on the performance of dyslexic students in Reading**

Table and Figure 3 showed how gender influences the performance of dyslexic students in Reading. The results indicated that male dyslexic students taught reading comprehension (Pretest; $\bar{x} = 5.78$, $SD = 2.63$, Post-test; $\bar{x} = 16.72$, $SD = 3.45$, Mean Gain = 10.94) performed better than their male counterparts (Pretest; $\bar{x} = 6.02$, $SD = 2.29$, Post-test; $\bar{x} = 16.72$, $SD = 3.45$, Mean Gain = 10.94). The implication of these results is that the female dyslexic students taught reading comprehension performed slightly better than their male counterparts did.

Hypothesis One: There is no significant difference among dyslexic students taught using assistive technology, collaborative learning and discussion method in their performance in Reading

Table 4a: Summary of Analysis of Covariance (ANCOVA) of the effect of assistive technology, collaborative learning and discussion on the performance of dyslexic students in Reading

Dependent Variable: Post-Test					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1449.13 ^a	3	483.04	109.04	0.00
Intercept	8372.33	1	8372.33	1889.85	0.00
Strategies	1441.26	2	720.63	162.67	0.00
Pretest	0.00	1	0.00	0.00	0.98
Error	890.46	201	4.43		
Total	59629.00	205			
Corrected Total	2339.59	204			

a. R Squared = 0.619 (Adjusted R Squared = 0.614)

Table 4a shows that there is significant difference in the effect of instructional strategy on the performance of dyslexic students in reading ($F_{2, 201} = 164.37$, $P = 0.00 < 0.05$). Thus, null hypothesis one is rejected at 0.05 alpha level. The implication of this result is



that the performance of the dyslexic students taught Reading Comprehension using assistive technology, collaborative learning and discussion instructional strategies differed significantly.

Table 4b: Scheffe Post Hoc analysis on the difference in the effect of assistive technology, collaborative learning and discussion instructional strategies on the performance of dyslexic students in Reading
Multiple Comparisons

Scheffe							
Dependent Variable	(I) Strategy	(J) Strategy	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Pre-test	Discussion	ATS	0.59	0.40	0.34	-0.40	1.59
		CLS	-1.19*	0.41	0.02	-2.19	-0.18
	Assistive Technology	DS	-0.59	0.40	0.34	-1.59	0.40
		CLS	-1.78*	0.45	0.00	-2.88	-0.68
	Collaborative Learning	DS	1.19*	0.41	0.02	0.18	2.19
		ATS	1.78*	0.45	0.00	0.68	2.88
Posttest	Discussion	ATS	-6.35*	0.35	0.00	-7.21	-5.48
		CLS	-3.13*	0.36	0.00	-4.01	-2.25
	Assistive Technology	DS	6.35*	0.35	0.00	5.48	7.21
		CLS	3.21*	0.39	0.00	2.25	4.17
	Collaborative Learning	DS	3.13*	0.36	0.00	2.25	4.01
		ATS	-3.21*	0.39	0.00	-4.17	-2.25

*. The mean difference is significant at the 0.05 level.

Table 4b shows that extent to which the difference in the effect of instructional strategy on the performance of dyslexic students in Reading differed. For the pre-test performance, the interaction between the discussion strategy (DS) and assistive technology strategy (ATS) was not significant (MD = 0.59, Sig = 0.34 > 0.05), while the interaction between DS and collaborative learning strategy (CLS) was significant (MD = -1.19, Sig. = 0.02 < 0.05). Also, the interaction between the ATS and DS was not significant (MD = -0.59, Sig = 0.34 > 0.05), while the interaction between ATS and CLS was significant (MD = -1.78, Sig. = 0.00 < 0.05). Furthermore, the interaction between the CLS and DS was significant (MD = 1.19, Sig = 0.02 < 0.05), and the interaction between CLS and ATS was significant (MD = 1.78, Sig. = 0.00 < 0.05).

For the post-test performance, the interaction between the DS and ATS was significant (MD = -6.35, Sig = 0.00 < 0.05), and the interaction between DS and CLS was significant (MD = -3.13, Sig. = 0.00 < 0.05). Also, the interaction between the ATS and DS was significant (MD = 6.35, Sig = 0.00 < 0.05), while the interaction between ATS and CLS was significant (MD = 3.21, Sig. = 0.00 < 0.05). Furthermore, the interaction between the CLS and DS was significant (MD = 3.13, Sig = 0.00 < 0.05), and the interaction between CLS and ATS was significant (MD = 3.21, Sig. = 0.00 < 0.05).

Hypothesis Two: There is no significant difference among dyslexic students taught using assistive technology, collaborative and discussion method in their retention in Reading.

Table 5a: Summary of ANCOVA on the effect of assistive technology, collaborative and discussion method on the retention of dyslexic students in Reading.

Dependent Variable: Retention					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1606.353 ^a	3	535.45	81.88	0.00
Intercept	584.891	1	584.89	89.44	0.00
Strategies	403.691	2	201.85	30.87	0.00
Posttest	31.369	1	31.37	4.80	0.03
Error	1314.408	201	6.54		
Total	60545.000	205			
Corrected Total	2920.761	204			

a. R Squared = 0.550 (Adjusted R Squared = 0.543)



Table 5a shows that there is a significant difference in the effect of instructional strategy on the retention of dyslexic students in Reading ($F_{2, 201} = 118.20, P = 0.00 < 0.05$). Thus, null hypothesis two is rejected at 0.05 alpha level. The implication of this result is that the retention of the dyslexic students taught Reading Comprehension using assistive technology, collaborative learning and discussion instructional strategies differed significantly.

Table 5b: Scheffe Post Hoc analysis on the difference in the effect of instructional strategy on the retention of dyslexic students in Reading.

Multiple Comparisons

Scheffe							
Dependent Variable	(I) Strategy	(J) Strategy	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Bound	
Post Posttest	Discussion Strategy	ATS	-6.60 [*]	0.43	0.00	-7.66	-5.53
		CLS	-3.41 [*]	0.44	0.00	-4.49	-2.33
	Assistive Technology	DS	6.60 [*]	0.43	0.00	5.53	7.66
		CLS	3.19 [*]	0.48	0.00	2.01	4.36
	Collaborative Learning	DS	3.41 [*]	0.44	0.00	2.33	4.49
		ATS	-3.19 [*]	0.48	0.00	-4.36	-2.01

*. The mean difference is significant at the 0.05 level.

Table 5b shows the extent to which the difference in the effect of instructional strategy on the retention of dyslexic students in Reading differed. For the post-post-test, the interaction between the DS and ATS was significant ($MD = -6.60, Sig = 0.00 < 0.05$), and the interaction between DS and CLS was significant ($MD = -3.41, Sig. = 0.00 < 0.05$). Also, the interaction between the ATS and DS was significant ($MD = 6.60, Sig = 0.00 < 0.05$), while the interaction between ATS and CLS was significant ($MD = 3.19, Sig. = 0.00 < 0.05$). Furthermore, the interaction between the CLS and DS was significant ($MD = 3.41, Sig = 0.00 < 0.05$), and the interaction between CLS and ATS was significant ($MD = -3.19, Sig. = 0.00 < 0.05$).

Hypothesis Three: There is no significant difference between the performance of male and female dyslexic students in Reading.

Table 6: Summary of ANCOVA on the difference between the performance of male and female dyslexic students in Reading.

Dependent Variable: Post-Test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4.782E-01 ^a	1	4.782E-01	0.00	1.00
Intercept	55620.02	1	55620.02	4826.00	0.00
Gender	4.782E-01	1	4.782E-01	0.00	1.00
Error	2339.59	203	11.53		
Total	59629.00	205			
Corrected Total	2339.59	204			

a. R Squared = 0.00 (Adjusted R Squared = -0.01)

Table 6 shows that there is no significant difference in the influence of gender on the performance of dyslexic students in Reading ($F_{1,201} = 0.00, P = 1.00 > 0.05$). Thus, null hypothesis three is retained at 0.05 alpha level. The implication of this result is that the performance of male and female dyslexic students taught reading comprehension did not differ significantly.

DISCUSSION OF FINDINGS

The study investigated the effect of assistive technology on dyslexic students' performance and retention in Reading in Port Harcourt Metropolis. From the data gathered, and analysis carried out, the findings of research question one showed that the performance of dyslexic students taught reading comprehension using assistive technology instructional strategy is higher than those of their counterparts taught using collaborative learning and discussion instructional strategies. Furthermore, the result of hypothesis one showed that there is a significant difference in the effect of instructional strategy on the performance of dyslexic students in reading. The finding is consistent with the findings of Marsh (2012), which revealed that the speech recognition group significantly performed better than the control group in word recognition, spelling and reading comprehension. Furthermore, the finding is supported by Smith



(2017), whose study revealed that the use of assistive technology seems to have transfer effects on reading ability and to be supportive, especially for students with the most severe difficulties.

Also, the findings of research question two showed that the retention of dyslexic students taught Reading Comprehension using assistive technology instructional strategy was higher than those of their counterparts taught using collaborative learning instructional strategies. Conversely, dyslexic students taught Reading Comprehension using discussion instructional strategy showed negative retention, in other words, the students forgot what they have been taught. Furthermore, the result of hypothesis two showed that there is a significant difference in the effect of instructional strategy on the retention of dyslexic students in reading. These findings are consistent with the findings of Bogi, Mutter, McGregor and Gordon (2017), which revealed that assistive interventions proved overall beneficial, but the most commonly used interventions were unexpectedly not the most effective. Interventions based on word processing, multimedia and hypertext proved the most effective, while smart pens and text-to-speech systems presented mixed results. Speech-to-text systems had a small positive effect. The finding is supported by Ghazizah and Fatemipour (2021), whose study revealed that assistive technology influenced their reading proficiency at a statistically significant level.

The findings of research question three showed that the female dyslexic students taught Reading Comprehension performed slightly better than their male counterparts did. Furthermore, the result of hypothesis three showed that there is no significant difference in the influence of gender on the performance of dyslexic students in Reading. These findings are corroborated by Virginia, Doo and Michael (2020), which revealed that there was no significant difference in the mean scores of the two groups.

CONCLUSION

The study investigated the effect of assistive technology on dyslexic students' performance and retention in reading in Port Harcourt Metropolis, Rivers State. Consequently, the study revealed that the performance of dyslexic students taught Reading Comprehension using assistive technology instructional strategies is higher than that of their counterparts taught using collaborative learning and discussion instructional strategies, while the retention of dyslexic students taught Reading Comprehension using assistive technology instructional strategies is higher than that of dyslexic students taught using collaborative learning and discussion instructional strategies. Furthermore, the instructional strategy was higher than those of their counterparts taught using collaborative learning instructional strategies, among others.

The gender comparison revealed that there was no significant difference in the performance and retention of dyslexic students taught using assistive technology, collaborative learning, and discussion instructional strategies, which implied that male and female dyslexic students' performance and retention did not differ significantly. Therefore, it can be deduced that dyslexic students are weak in not only reading and writing but also in comprehension, memory, and other higher-order mental processes that are necessary for accurate reading and understanding.

Based on the findings of the study, it was concluded that the provision of appropriate assistive technology would reduce the challenges faced by dyslexic students; as such technology allows them to effectively navigate the environment, increasing their ability to read and understand the content. This is because; assistive technology instructional strategy requires students to participate in a collaborative setting, whereas collaborative learning and discussion require individuals to work together on self-directed tasks.

RECOMMENDATIONS

Considering the findings, discussion and conclusions of this study, the following recommendations were proffered:

1. Government should provide assistive technology free of charge to dyslexic students to help them participate fully in the teaching and learning process, as well as influence their performance in Reading Comprehension.
2. Parents of dyslexic students should know that early intervention with explicit and intense instruction in the sound structure of language (phonemic awareness) and how sounds relate to letters (phonics) is the key. They should provide Text-to-Speech assistive technology for their wards to enable them to gain the ability to retain what is learned extensively.
3. The Rivers State Ministry of Health should carry out intensive diagnosis and remediation programmes in public schools in Port Harcourt Metropolis, as many male and female dyslexic students are not aware of their predicament.

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IMPACT OF BREASTFEEDING PRACTICES AWARENESS AND ATTITUDE TOWARDS EXCLUSIVE BREASTFEEDING ON THE PREVALENCE OF EXCLUSIVE BREASTFEEDING AMONG NURSING MOTHERS IN URBAN AND RURAL IMMUNIZATION CLINICS IN RIVERS STATE, NIGERIA

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ABSTRACT

Background: Breastfeeding is essential for a child's growth and existence. World Health Organization (WHO) recommended six months exclusive breastfeeding (EBF) for infant death reduction. However, poor knowledge and negative attitude towards EBF result in a decline in breastfeeding practice which is common in various underdeveloped nations including Nigeria.

Objective: To compare the impact of knowledge of breastfeeding practices and attitude towards EBF on the prevalence of EBF among nursing mothers attending immunization clinics in rural and urban regions in Rivers State.

Methods: A comparative cross-sectional research with 252 breastfeeding women who attended immunization clinics at the designated health facilities in Obio-Akpor and Emohua LGAs were recruited by systematic sampling. A semi-structured questionnaire was applied for the data collection on socio-demographic factors, knowledge, attitude and breastfeeding practices. The data obtained were analyzed with SPSS version 3.2.2.

Results: The overall knowledge of various breastfeeding practices and overall attitude toward EBF among the urban and rural participants were statistically significant (P -values= 0.003 & 0.044) respectively. The prevalence of EBF among breastfeeding mothers in urban and rural regions were (66.7 & 54.0%) respectively (P -value= 0.039).

Conclusion: The knowledge of breastfeeding practices and overall positive attitude towards EBF and EBF practices are higher in urban than the rural regions of Rivers State.

Recommendations: Breastfeeding practices should be considered as an important aspect of antenatal and postnatal health education. Advocacy on the importance of breastfeeding should be stepped up, especially in rural communities.

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

INTRODUCTION

Breastfeeding is fundamental in child subsistence and healthiness through the provision of indispensable nourishment and fortification required for initial growth¹. It offers several advantages for the mother and the newborn. Apart from the point that breastfeeding aids postpartum uterine size reduction and acts as a form of postpartum contraception; it as well plays a significant part in the reappearance of the maternal weight to pre-pregnancy state, breast or ovarian cancer and cardiovascular disease reduction². Breast milk has been



found to provide essential nutritional factors which offer immunity from immediate and long-term illnesses such as obesity, diabetes, asthma and, dermatological diseases in children; it is also regarded as the most cost-effective and simplest intervention to protect the lives of babies at risk of infection³. Breastfeeding during the first few months of life has a significant role in the composition and stability of the gut microbiome that can only be acquired after birth and these bacteria make digestion of solids easier, thus, preventing gut problems and illnesses at a later stage of life⁴. It has been recommended by WHO that mothers should initiate breastfeeding within 1 hour of delivery and breastfeed exclusively for 6 months and continue breastfeeding till 24 months. This nutritional approach can save 800,000 lives of children under five years annually⁵.

WHO defined EBF “as the intake of only breast milk in the first 6 months of life⁶. EBF provides the best easily absorbable nutrients to infants, it gives passive immunity thus serving as the first immunization for the baby, helps in mental development and gives long term protection against non-infectious diseases such as diabetes mellitus and obesity⁷.

Adequate knowledge about breastfeeding practices is said to be the fundamental tool that can direct the course of EBF practice among mothers⁸. A cross-sectional study in Osogbo, Osun State Nigeria indicated that 97.6% of mothers have knowledge of EBF but only 64.6% have adequate knowledge and their higher knowledge about breastfeeding correlated with longer duration of practice⁹.

Positive maternal attitudes toward breastfeeding are associated with the zeal to continue to breastfeed longer and having a greater chance of successful breastfeeding. Besides, mothers with a positive attitude toward breastfeeding were likely to exclusively breastfeed their infants¹⁰.

The huge benefits of breastfeeding especially EBF in the reduction of mortality rates in children in Africa and Nigeria in particular is fact. Irrespective of these benefits, neonatal mortality is still high in African countries particularly in Nigeria. Such death can be avoided through the increase of the awareness of breastfeeding practices and development of positive attitudes towards EBF which will in turn promote the practice of EBF.

Only few studies are available on the impact of knowledge of breastfeeding practices and attitudes towards EBF on prevalence of EBF in Nigeria. Among the available studies, very few were conducted in Rivers State of which all were carried out in the urban health facilities with no consideration to rural dwellers. This represents a knowledge gap which this study aims to provide answers to. In view of the paucity of studies on this topic in Nigeria, there is a need for more research to add to the body of evidence, this will be beneficial in intervention design to promote breastfeeding especially EBF which will in turn reduce infant 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 260km² and has a population of 464,789¹¹. 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 831km² and a population of 201,901¹¹. 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 immunization clinics 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 immunization clinics 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 immunization clinic in two primary health facilities in Emohua LGA representing rural health facilities in Rivers State and equal number of nursing mothers who attended immunization 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%)¹² and rural (68.0%)¹³ 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 immunization 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(%)	χ^2	p-value
Age (years)					
< 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 ^t	0.486
Range	18 – 45	16 – 45			
Marital status					
Married	111 (88.1)	126 (100.0)	237 (94.0)	17.254 ^F	<0.001*
Divorced	3 (2.4)	0 (0.0)	3 (1.2)		
Separated	12 (9.5)	0 (0.0)	12 (4.8)		
Occupation					
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)		
Education					
No education	0 (0.0)	4 (3.2)	4 (1.6)	5.176 ^F	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)		
Husband occupation					
Artisan	4 (3.2)	4 (3.2)	8 (3.2)	14.318 ^F	0.007*
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)		
Husband education					
No education	3 (2.4)	0 (0.0)	3 (1.2)	5.514 ^F	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)		

χ^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). Out of the 36 (14.3%) participants that were farmers 27 (21.4%) lived in the village while 9 (7.1%) were urban dwellers.

Education: There was no statistically significant difference in the educational levels of the participants in both rural and urban health facilities. However, nursing mothers who attended child welfare clinic in the rural health facilities had higher educational levels compared to their urban counterparts. 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. All the participants from the rural health facilities had formal education while 4 (3.2%) participants from the urban health facilities had no formal education.

Husband occupation: Majority of the participants' husbands in rural and urban areas were traders and civil servants. 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). There were more of the husbands of the respondents with secondary and tertiary educational level in both arm of the study. 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%). The husbands of urban participants had formal education while 3 (2.4%) of the husbands of the rural participants did not attend school.

Table 2: Knowledge of respondents about various breastfeeding practices

Variable	Rural n=126(%)	Urban n=126(%)	Total N=252(%)	χ^2	p-value
Exclusive breastfeeding is important					
Yes	122(96.8)	126(100.0)	248(98.4)	4.065 ^F	0.122
No	4(3.2)	0(0.0)	4(1.6)		
Colostrum nutritionally beneficial to the child					
Yes	118(93.7)	126(100.0)	244(96.8)	8.262 ^F	0.007*
No	8(6.3)	0(0.0)	8(3.2)		
Exclusive breastfeeding improves child's immunity					
Yes	120(95.2)	124(98.4)	244(96.8)	2.066 ^F	0.281
No	6(4.8)	2(1.6)	8(3.2)		
Is it important to initiate breastfeeding within 1hr of birth					
Yes	111(88.1)	117(92.9)	228(90.5)	1.658	0.198
No	15(11.9)	9(7.1)	24(9.5)		
Exclusive breast feeding can prevent diarrhea in child					
Yes	105(83.3)	108(85.7)	213(84.5)	0.273	0.601
No	21(16.7)	18(14.3)	39(15.5)		
Breastfed infants grow faster than formula fed					
Yes	104(82.5)	116(92.1)	220(87.3)	5.155	0.023*
No	22(17.5)	10(7.9)	32(12.7)		
Duration of EBF					
< 6 months	49(38.9)	81(64.3)	130(51.6)	22.073	<0.001*
6 months	58(46.0)	42(33.3)	100(39.7)		
> 6 months	19(15.1)	3(2.4)	22(8.7)		
Breastfeeding should be combined with other feeding options within 6 months					
Yes	46(36.5)	74(59.2)	120(47.8)	12.949	<0.001*
No	80(63.5)	51(40.8)	131(52.2)		

χ^2 : Chi square test; F: Fisher's exact test; *: p value <0.05

There was no statistically significance difference on the knowledge about the importance of exclusive breastfeeding among the participants in the urban and rural primary health facilities. 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. This was not statistically significant (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).



Knowledge on the prevention of diarrhea disease in children by exclusive breastfeeding did not show any statistically significant difference. 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). There was statistically significant difference on the knowledge that breastfed infants grow faster than formula fed. One hundred and sixteen (92.1%) positive responses were obtained from the urban health facilities' participants 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 (%)	χ^2	p -value
Adequate	41 (32.5)	48 (38.1)	89 (35.3)	11.716	0.003*
Moderate	67 (53.2)	75 (59.5)	142 (56.3)		
Poor	18 (14.3)	3 (2.4)	21 (8.3)		

χ^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 (%)	χ^2	<i>p</i> -value
Breastfeeding should be on demand					
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)		
Mother-child bonding increase by breastfeeding					
Agree	108(85.7)	120(95.2)	228(90.5)	8.657 ^F	0.011*
Disagree	6(4.8)	0(0.0)	6(2.4)		
Unsure	12(9.5)	6(4.8)	18(7.1)		
Formula feeding better than breastfeeding					
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)		
Mothers' shape changes with breastfeeding					
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)		
EBF is time-consuming/more demanding					
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)		
Breastfeeding should continue till 2 years					
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)		
Breast milk only is adequate for first 6 months					



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)		
Babies should be given water while being exclusively breastfed					
Agree	39(31.0)	21(16.7)	60(23.8)	14.500 ^F	<0.001*
Disagree	87(69.0)	97(77.0)	184(73.0)		
Unsure	0(0.0)	8(6.3)	8(3.2)		

χ^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. This was statistically significant, Chi-square value of 26.557 (P -value < 0.001). There was statistically significant difference on whether breastfeeding increase mother-child bonding. Out of the 228 (90.5%) participants that agreed to this statement; 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. This showed statistically significant difference (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 and it was statistically significant (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 urban health facilities and it was statistically significant (P -value < 0.001). Regarding the duration of breastfeeding, the number of participants that agreed that breastfeeding should continue for 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) which was significant statistically. Seventy-five (59.5%) of nursing mothers who attended child welfare clinic in the rural primary health centers and 89 (70.6%) of those from the urban primary health centers agreed that breast milk only is adequate for the first 6 months of life. This showed a statistically significant difference with (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) and it was statistically significant.

Table 5: Overall attitude of respondents towards exclusive breastfeeding

Attitude towards exclusive breastfeeding	Rural n (%)	Urban n (%)	Total N (%)	χ^2	p -value
Positive	93 (73.8)	106 (84.1)	199 (79.0)	4.038	0.044*
Negative	33 (26.2)	20 (15.9)	53 (21.0)		

χ^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 and it was statistically significant (P -value= 0.044).

Table 6: Breastfeeding practices of respondents

Variable	Rural n (%)	Urban n (%)	Total N (%)	χ^2	p -value
Your child's first feed					
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)		
Time of initiation of breastfeeding					
After 24 hours	19(15.1)	7(5.6)	26(10.3)	6.203	0.045*
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)		
Frequency of breastfeeding					
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)		
Breastfed baby exclusively					
Yes	68(54.0)	84(66.7)	152(60.3)	4.244	0.039
No	58(46.0)	42(33.3)	100(39.7)		

χ^2 : Chi square test; F: Fisher's exact test; *: p value <0.05

Majority of the participants 209 (82.9%) gave breast milk to their children as their first feed. Urban health facilities respondents slightly out number their rural health facilities' counterparts 108 (85.7%), 101 (80.2%) respectively. Thirty (11.9%) participants fed their babies first with glucose water while 13 (5.2%) gave formula. There was no statistically significant difference in child's first feed options of the participants (P -value= 0.482). Time of initiation of breastfeeding was statistically significant. 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%) and there was statistically significant difference (P -value= 0.045). Frequency of breastfeeding did not show any statistically significant difference. More women fed their children on demand. The number of urban respondents were only 2 (1.6%) higher than the rural respondents. The number of participants that breastfed at random were almost twice 89 (35.3%) that of those that breastfed at specific intervals 47 (18.7%). This showed no statistically significant difference (P -value= 0.172). There was statistically significant difference in the number of participants who practiced exclusive breastfeeding or not. One hundred and fifty-two (60.3%) participants breastfed exclusively comprising 84 (66.7%) urban participants and 68 (54.0%) rural participants. Those that did not breastfeed exclusively were 100 (39.7%). Chi-square value 4.244 and (P -value= 0.039).

DISCUSSION

This study showed that nursing mothers in the urban region of Rivers State had more knowledge of various breastfeeding practices and at the same time exhibited more positive attitudes towards breastfeeding than 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 said to be the fundamental tool that can direct the course of EBF practice among mothers⁸. 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 reflected 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 due to the fact that mothers in the urban area are more likely to be exposed 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 practice⁹. Though 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 practice¹⁴. 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 EBF¹⁵.

More city dwelling nursing mothers (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 found out that the EBF was also higher in nursing mothers in the urban region of the State. This is similar 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 infants¹⁰. According to 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 positive¹⁶. However, in this index study a positive attitude was a score of 50%.



A survey conducted in Nigeria in 2015 reported EBF rate of 23.7% for the country and 27.2% for South-south region¹⁷. The low prevalence of EBF in this survey could be due to the fact that the advocacy on child's survival strategy such as EBF and the knowledge about EBF were not as elaborate as they are currently.

CONCLUSION: Knowledge of breastfeeding practices, overall positive attitude towards EBF and EBF practice are higher in the urban than the rural regions of Rivers State.

RECOMMENDATIONS

1. Breastfeeding practices should be given a priority during antenatal and postnatal health education.
2. Advocacy on the importance of breastfeeding should be stepped-up especially in the rural communities.

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ATTENTION BASED CONVOLUTIONAL NEURAL NETWORK FOR FACIAL EXPRESSION RECOGNITION

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ABSTRACT

Many deep learning-based methods have been suggested in recent years to improve facial expression recognition performance, but they are unable to extract the small facial changes in skin textures, such as wrinkles and furrows, which indicate changes in expression. We put forward an attention mechanism-based Convolutional Neural Network (CNN) for face expression recognition to get around this issue. The attention module, classification module feature extraction module and the reconstruction module make up the architecture's four components. The feature extraction module, which consists of two distinct CNN processing streams—one for raw images and the other for Local Binary Pattern (LBP) feature maps. The LBP features extract image texture data before capturing the minute facial movements, which can enhance network efficiency. The neural network can pay more attention to useful characteristics by using an attention mechanism. To improve the attention model and produce improved results, we combine LBP features and convolutional features. We use the CK+ and Oulu-CASIA datasets to test the proposed methodology. The experimental findings show that the suggested method is workable and efficient.

KEYWORDS: Convolution neural network, Local binary pattern, Facial expression recognition.

1. INTRODUCTION

A major non-verbal method that humans use to communicate is facial expression [1]. Facial expressions can be categorized into six groups, including those that convey anger, disgust, fear, happiness, sadness, and surprise, in accordance with Ekman's theory of the six fundamental cross-cultural emotions [2]. Since its widespread use in areas like human-computer interface, virtual reality, intelligent course systems, and more over the past 20 years, facial expression recognition has seen significant advancements in the field of computer vision [3]. With the advancement of technology, facial expression analysis may be used in the field of education, allowing us to understand pupil commitment in a virtual classroom [4]. Additionally, facial expression recognition can be used in medicine when a doctor has automatically identified a patient's pain online [5]. Security applications of facial expression analysis include spotting suspicious people by watching their feelings. Facial expression recognition is used to identify the emotions in a particular image, even in animation. Because of this, the study of facial emotion recognition is fascinating and exciting in many ways [6]. However, because of the complexity, diversity, occlusion, and lighting, automatic face emotion recognition has become very difficult.

2. LITERATURE REVIEW

Some of the papers based on facial expression are reviewed below,

Frequency neural network (FreNet), a deep learning-based method developed by Tang *et al.* [7], is used to recognize facial expressions. To learn features in the frequency domain, the learnable multiplication kernel and build multiple multiplication layers are first introduced. In order to further produce high-level features, a summarization layer is then suggested after multiplication levels. Thirdly, based on the discrete cosine transform (DCT) property, they build the Basic-FreNet using multiplication layers and summarization layers, which can produce high-level features on the commonly used DCT feature. Finally, the Block-FreNet is introduced in order to further improve performance on Basic-FreNet, with a weight-shared multiplication kernel intended for learning features and a block subsampling designed for dimension reduction. This approach lowers the processing expense. However, it takes longer.



Deep residual network ResNet-50, which combines convolutional neural network for facial emotion recognition, was introduced by Li and Lima [8]. They make use of ResNet-50 as their network foundation. Convolutional neural networks are used to retrieve the features. Batch normalization and the activation function ReLU are then used to enhance the model's capacity for convergence. Although there are only a few images available for processing, this model has good accuracy and a good recognition impact in terms of average recognition accuracy.

An appropriate and light-weight Facial Expression Recognition Network Auto-FERNet that is autonomously searched by a differentiable Neural Architecture Search model was presented by Li *et al.* [9] in their research. Additionally, they suggest a relabeling technique based on the similarity of facial expressions to reduce the uncertainty issue and avoid the model over fitting by altering these biased labels within similar expressions. This model only has a few features. The time commitment is greater. In order to recognize facial expressions, Wang *et al.* [10] created the oriented attention pseudo-siamese network (OAPSN), which uses both global and local facial information. The network has two branches: an attention branch with a UNet-like design to gather local highlight information, and a maintenance branch with several convolutional blocks to benefit from high-level semantic features. They specifically enter the face picture into the maintenance branch first. They determine the correlation coefficient among a face and its subareas for the attention branch. They then correlate the facial features and the correlation coefficients to create a weighted mask. The focus branch is then sent the weighted mask. The classification findings are then output after the two branches have been combined.

For the purpose of recognizing facial expressions, Kola & Samayamantula [11] introduced Local Binary Pattern with Adaptive Window (LBPAW). The feature length is shortened from 256 to 32 using this method. A new neighbourhood is created by averaging along radial direction for texture classification in order to have noise robustness. Based on the variations in intensity, a window that is adaptive is taken into account around each pixel in this study. Additionally, averaging of pixel intensities in each radial direction is taken into account to achieve robustness in the presence of noise; as a result, a 3×3 window is used to compute the LBP. This approach takes longer, but the computational complexity is reduced.

For the purpose of recognizing facial expressions, Gera *et al.* [12] proposed the spatio-channel attention net (SCAN). In order to make the FER model resilient to occlusions and pose variations, the local-global attention branch known as SCAN computes attention weight for each channel and each spatial position within each channel across all taken local patches. Additionally, it is demonstrated that all local fixes can share the local attention branch without noticeably degrading performance. The neighbourhood attention branch becomes light because of this. This technique provides more complementary information, but it is challenging to distinguish between the mouth and the noise region.

Swin transformer-based facial expression method (STFA) was suggested by Kim *et al.* [13] for the recognition of facial expressions. It is made up of three streams: an auditory stream, a temporal stream, and a visual stream. All streams are supported by the Swin transformer, and the visual stream-video shot that processes numerous frames uses the Shallow 3D CNN structure. Each visual stream-image, visual stream-video shot, and audio stream were separately trained before score fusion was used in the final inference. Efficiency is increased by this approach, but costs are higher. The summary of current facial emotion recognition is shown in Table.1.

Table: 1 Summary of existing facial expression recognition.

Author	Methods used	Datasets used	Advantages	Disadvantages
Tang <i>et al.</i> [7]	FreNet method	CK+,Oulu-CASIA, KDEF, FER2013	-This method reduces the computational cost.	-Time consumption is more.
Li & Lima [8]	ResNet-50 method	Self collected datasets	-This model has good accuracy and good recognition effect	limited number of images for processing.
Li <i>et al.</i> [9]	Auto-FERNet	FER 2013 datasets, CK+, & JAFFE	This model has limited number of parameters.	Time consumption is more
Wang <i>et al.</i> [10]	OAPSN method	Ck+	-solve the occlusion problem	-occurs error in classification
Kola & Samayamantula [11]	LBPAW method	Japanese Female Facial Expression database,Cohn-Kanade database	-reduces the computational complexity	- Consumes more time

Gera <i>et al.</i> [12]	SCAN method	AffectNet, FERPlus, RAF-DB, SFEW, FED-RO, CK+, Oulu-CASIA	-gives richer complementary information	-recognizing mouth and noise region is difficult
Kim <i>et al.</i> [13]	STFA method	Aff-Wild2 dataset	-increases efficiency	-expense is more

3. PROBLEM DEFINITION

Numerous real-world uses for automatic facial expression recognition include improving human-computer contact and distance learning. Numerous techniques are developed for recognizing facial expressions. However, using automatic facial emotion detection is challenging due to irrelevant facial information (such as hair and hats) and complicated background clutter. Additionally, the adopted region-level technique is used to assess the significance of various regions, but this method is unable to infer skin textures from changes in facial features. As a result, face expression recognition and feature extraction become more accurate.

4. PROPOSED ATTENTION MECHANISM-BASED CNN MODEL

The proposed architecture of an attention-based CNN is shown in Fig. 1. To categorize various facial expressions, we suggest a novel attention method based convolutional neural network. The feature extraction module, the attention module, the reconstruction module, and the classification module make up the architecture's four components. Initial features are extracted from raw images in the feature extraction module and then sent to subsequent modules for processing. The initial features that are obtained are typically too coarse, but we need more extracted features to transmit to the later attention module in order to make it function properly right away. Therefore, we combine convolution features and LBP features in an attention module. The ability of the attention module can be enhanced in order to increase the recognition accuracy of the network with the aid of LBP features that offer texture information and can reflect small differences on the face.

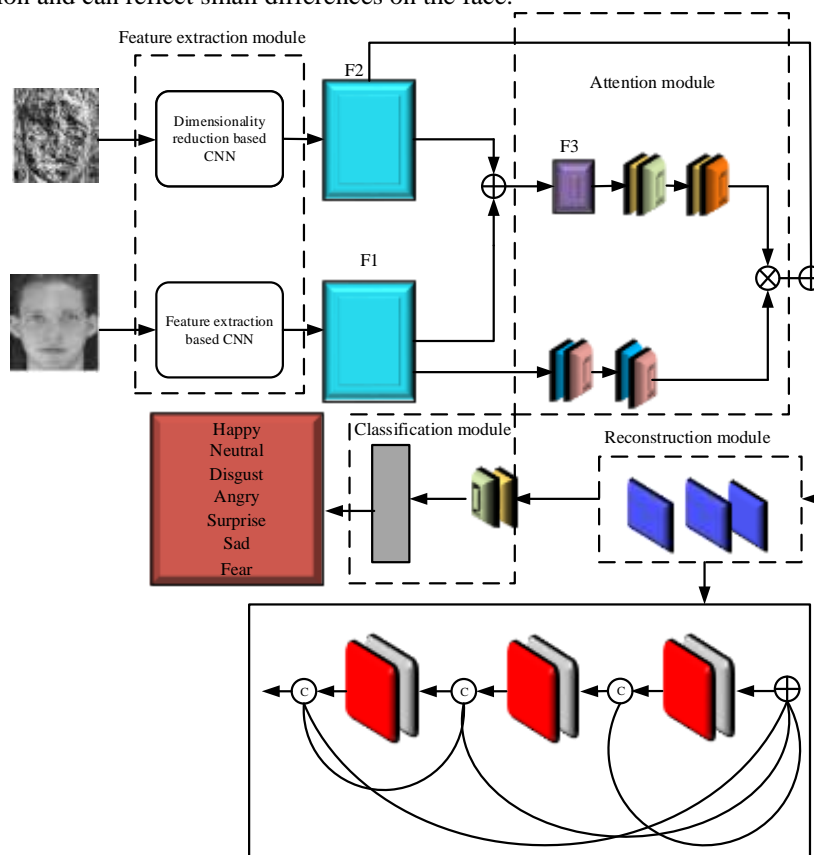


Figure 1: Architecture of proposed attention based CNN

The proposed Attention Mechanism-based CNN model involves four major steps and are explained below.

(a) Feature Extraction module

This module is made up of two distinct CNNs that extract two distinct features. In addition to raw images, LBP features also have texture information and can reflect small changes in skin texture on the face, making it possible to differentiate between minor expressions. After that, we combine the features F1 from the raw pictures with the features F2 from the LBP feature images before adding the combined features F3 to an attention module. The block layout for the feature extraction module is shown in Fig. 2.

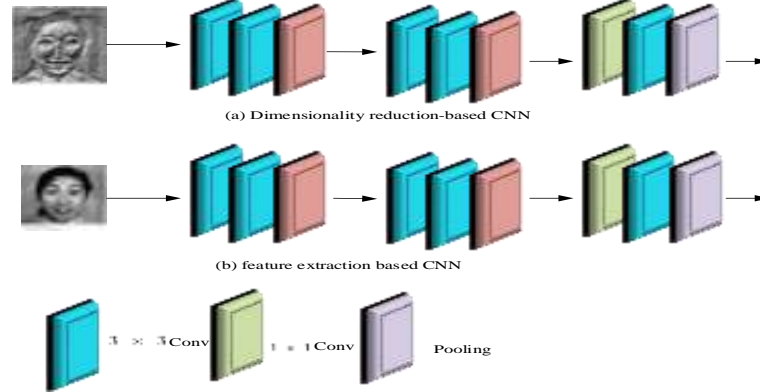


Figure 2: Block diagram of feature extraction module

(b) Attention Module

The attention module makes the network concentrate more on these features, which are essential for expression recognition, by increasing the weights of helpful features. The network can recognize various expressions more effectively in this manner. The block layout of the attention module is shown in Fig. 3.

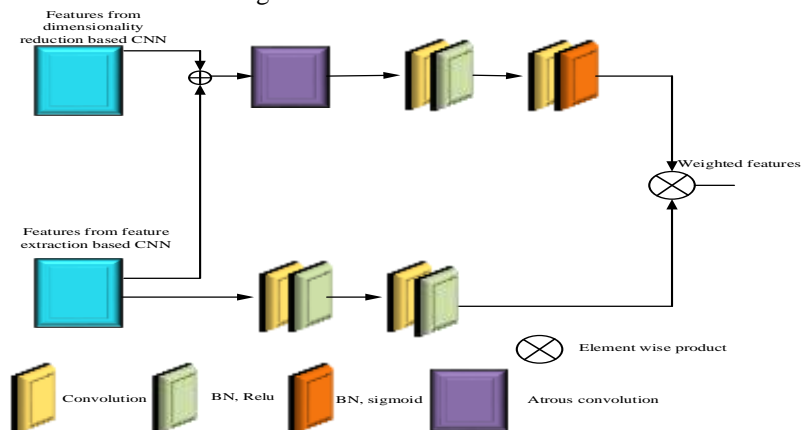


Figure 3: Block diagram of attention module

(c) Reconstruction Module

After the attention module, we modify the attention map using a dense atrous convolution as the reconstruction module to produce an improved feature map for the classification module. The feature-maps of all former layers as well as characteristics F1, are combined as inputs for each layer, and its own feature-maps are used as inputs into all layers that came after it. The result of the attention module is used to perform element-wise sum operations on the fused feature maps F3. This module can reuse helpful features and extract deeper features in addition to assisting in the resolution of the disappearing gradient issue. The reconstruction module's block layout is shown in Fig. 4.

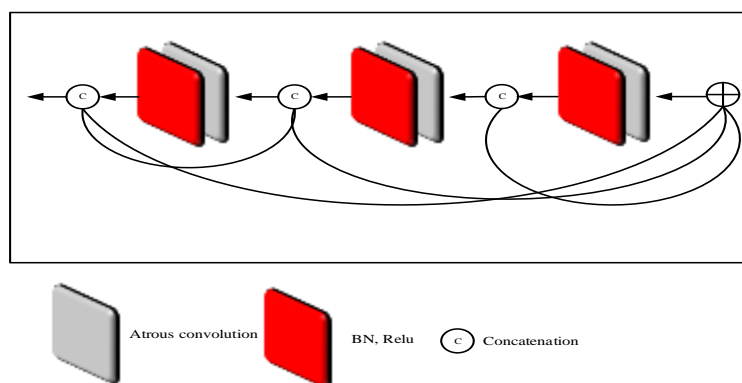


Figure 4: Block diagram of reconstruction module

(d) Classification module

At last, fully connected layers with softmax are used for classification. We use the batch normalization after each layer to speed up the convergence of the network and avoid over-fitting. Block diagram of classification module. Fig.5 shows the block diagram of classification module

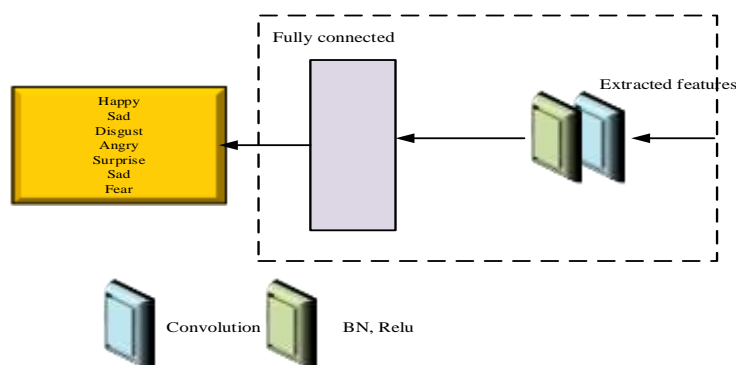


Figure 5: Block diagram of classification module

5. EXPERIMENTS AND RESULTS

We tested the proposed method on the dataset of CK+ and Oulu-CASIA facial expression datasets.

CK+ dataset: The training set and test set were built using the three peak expression frames from each expression sequence, yielding a total of 981 images.

Oulu-CASIA dataset: It includes videos that were shot under regulated lab circumstances. To create the training set and the test set, we choose the final three frames from each sequence that were recorded with visible light and strong illumination (consisting of 1,440 images in total).

5.1 Comparative Analysis

Table.2 shows the performance of proposed attention mechanism based CNN model with existing methods such as FreNet [7], OAPSN [10], and SCAN [12]. The proposed attention mechanism based CNN model achieved the better performance than other methods for facial expression recognition. Our proposed method achieves accuracy of 99.54 and 89.47 for CK+ and Oulu-CASIA dataset.

Table: 2 performance of proposed and existing methods in terms of accuracy for CK+ and Oulu-CASIA dataset

Methods	Accuracy	
	CK+ dataset	Oulu-CASIA dataset
FreNet	95.37	86.77
OAPSN	92.45	86.90
SCAN	95.78	87.01
Proposed	99.54	89.47

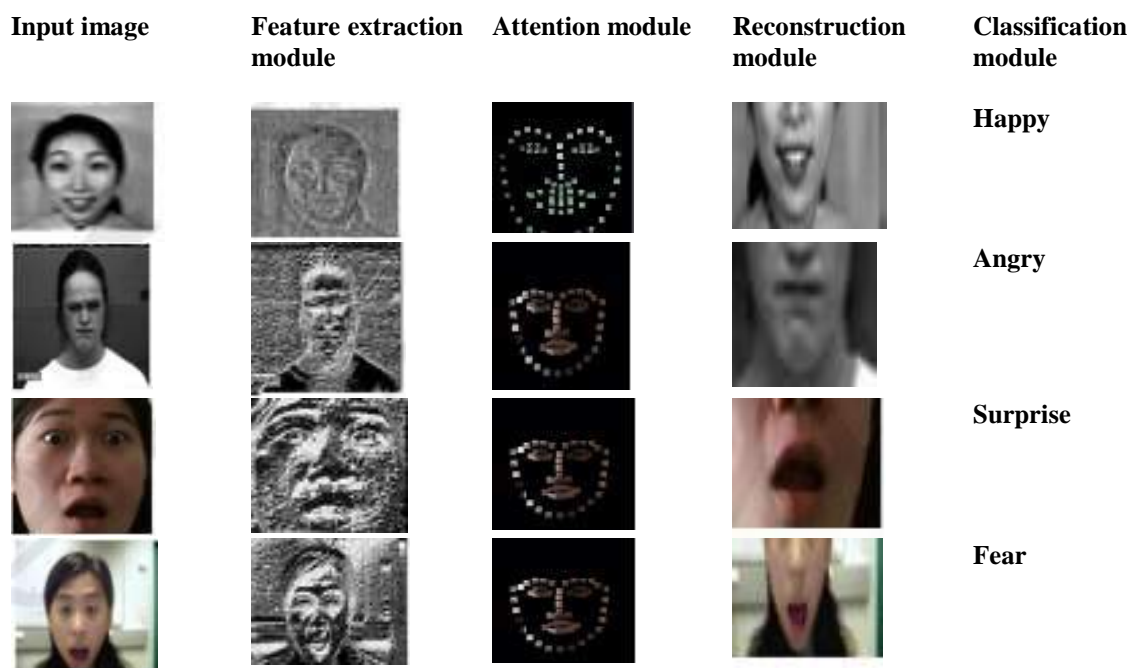


Figure 6: Results for Proposed attention based CNN model

Fig.6 illustrates the results of proposed attention based CNN model. Our method can achieve competitive result by using the facial expression data. In the feature extraction module, initial features are extracted from raw images and then sent to later modules for future processing. Generally, the obtained initial features are too coarse, but we need more refined features to send to the later attention module in order to make it work directly. Therefore, the feature extraction module is necessary in the network for extracting refined features. The attention module can make our network focus more on useful features and improve the accuracy. The reconstruction module can improve the accuracy by adjusting the attention map to create an enhanced feature map. We conclude that each module performs better for facial emotion recognition based on the experimental results.

6. CONCLUSION

In order to recognize facial expressions, this article introduces a novel convolutional neural network with an attention mechanism. The technique combines LBP features with convolution features before adding an attention mechanism to boost the network's performance. On the Oulu-CASIA and CK+ datasets, the proposed approach is assessed. The experimental findings demonstrate that, on these datasets, our technique outperforms a large number of other approaches. We will develop our architecture in the future to make it appropriate for video data, 3D face datasets, and our depth image data, and we will investigate improved machine learning techniques to strengthen the network.

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UDC:632.4; 632.9

PHYTOPHTHORA DISEASE OF TOMATO AND ITS CONTROL

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ABSTRACT

Phytophthora disease of Solanum lycopersicum L. is one of the most widespread and economically damaging diseases of the tomato plant. Under the influence of the disease, productivity can decrease up to 10-50%, and in epiphytota up to 100%. The disease begins during flowering and damages the leaves, stems and fruits of the plant. This article presents the results of our research on the application of Vinkozeb 80% w.p. fungicide against phytophthora disease of tomatoes in the open field.

KEY WORDS: tomato, disease, phytophthora, fungus, phytophthora infestans, disease control.

INTRODUCTION

Fungi are one of the main pathogens of plant diseases. There is a variety of methods for pathogenic fungi to reproduce, spread, and cause disease in plants. Some fungi kill the host plant and feed on dead matter (necrotrophs), while others thrive on living tissue (biotrophs). Fungi use virulence factors to reproduce and spread within the host plant. Depending on the method of infection, virulence factors perform different functions. Almost all pathogens destroy the primary defenses of plants, while necrotrophs produce toxins to kill plant tissues [21; 23].

Tomato is the second most important vegetable crop in the world and its production is the main branch of agriculture [15]. Phytophthora disease of tomato, caused by the oomycete pathogen *P. infestans*, is one of the most destructive diseases of tomatoes grown in field conditions [10; 26]. Phytophthora is common in many countries and is a major threat to tomato production [10]. For example, phytophthora disease caused a large economic loss in the production of tomatoes in Mongolia, China, and the United States of America in the early 2000s [11; 27].

LITERATURE REVIEW

Phytophthora infestans (Mont.) de Bary is not a true fungus, but a fungus-like organism. This pathogen is currently classified as an oomycete, a member of the order Chromista (Stramenopiles or Straminopiles). Oomycetes belong to one of two orders, *Saprolegniales* and *Peronosporales*. The order *Peronosporales* includes species of *Phytophthora* and a number of other highly important phytopathogens, including the genus *Pythium*. *P. infestans* is widespread worldwide, but the most severe epidemic often occurs in regions with cool, humid climates [16]. The annual yield loss due to phytophthora is 10-50%, and in epiphytota it can be up to 100% [1].

Plant pathogens can be classified as biotrophs, hemibiotrophs, or necrotrophs based on their infestation strategy. Biotrophic pathogens are reproduced inside the tissue and feed on living tissue, while necrotrophs destroy host plant tissue and feed on dead cells [13; 28], oomycetes such as *Phytophthora infestans* are hemibiotrophic pathogens, exhibiting an initially asymptomatic biotrophic phase followed by a necrotrophic phase. In the biotrophic phase, *P. infestans* successively forms appressoria, primary and secondary hyphae, and finally special structures called haustoria, through which proteins and small molecules called effectors are delivered to neighboring plant cells [12; 14; 28]. These effectors allow pathogens to control host plant metabolism and overcome its defense mechanisms [8; 25; 28]. The next necrotrophic phase is characterized by branching of the hyphae, followed by tissue hydration and necrosis [14; 28].



The disease begins at the stage of flowering of the plants. The leaf bands are bent down and the leaves hang down; scald-like spots appear on the leaves, which then turn brown or dark brown, and later the leaf tissue becomes slightly pale and papery. In wet weather, a soft, thin, oozing layer of mold appears around the spots on the underside of the leaves. In high humidity and warm temperatures, the leaves can completely rot and almost all plants can die. When the flowers are infected, the corollas and sepals darken and wither. Elongated or variably shaped, reddish-brown spots develop on the affected shoots, the leaves and shoots appear burnt. Hard, irregularly shaped, brown spots and wounds appear on the fruits. Such fruits quickly rot completely under the influence of secondary microorganisms. High humidity (rain, dew) and cool temperature (10-25°C) are favorable conditions for the development of the disease [7].

RESEARCH METHODS AND EXPERIMENTAL SITE

We conducted our experiments in 2022 in the fields of the "Kibray Salar Fayz" farm in Kibray district of Tashkent region. Fungicide spraying was carried out in the open tomato fields where phytophthora was spread, on June 10, 25 and 10, 2022, with the consumption of 300 liters of working solution per hectare. It was taken into account that the air temperature would be 25°C and the wind speed would be 1-2 m/sec.

In the experiment, we applied the fungicide Vinkozeb 80% w.p. containing 800 g/kg of Mankozeb at the rate of 1.2 - 1.6 kg/ha and as a standard fungicide Pennkozeb 80% w.p. at the rate of 1.6 kg/ha against phytophthora disease of tomato by spraying during the growth period.

Prevalence of the disease was found according to the following formula:

$$P = \frac{n \cdot 100}{N}, \text{ here}$$

P - prevalence of disease, % ;

n - number of infected plants, piece;

N - total number of sampled plants, piece [3; 4; 5; 6; 9; 17; 18; 19; 20;].

Disease progression was calculated by the following formula:

$$R = \frac{\Sigma(a \times b) \cdot 100}{N \cdot K}$$

here, R – disease progression %; $\Sigma(a \cdot b)$ – the sum of the number of plant parts affected by the disease multiplied by the number of their points; N – total number of observed plant parts; K – the highest point in the scale [3; 4; 17; 18; 19; 20; 21; 22; 24].

The disease index was determined according to the following empirical formula:

$$K_{\text{и}} = T \cdot P / 100$$

here, $K_{\text{и}}$ – disease index;

T – disease prevalence, %;

P – disease progression, %.

Biological efficiency of fungicides was determined by the following formula:

$$C = \frac{(Ab - Ba)}{Ab} \cdot 100, \text{ here}$$

C – biological efficiency of fungicides, %;

Ab – disease progression in control option, %;

Ba – disease progression in experimental option, % [3; 4; 5; 6; 9; 17; 18; 19; 20; 21; 22; 24].

**RESEARCH RESULTS AND THEIR DISCUSSION**

As a result of our research, it was found that the prevalence of the disease in the control variant was 34.8% in the leaf, 28.3% in the stem, 32.2% in the fruit, and the development of the disease was 13.3% in the leaf, 11.6% in the stem, and 12.4% in the fruit (Table 1).

Table – 1**Biological efficiency of Vinkozeb 80% w.p. against the Phytophthora disease of tomato**

№	Preparations	Consumption rate, kg/ha	Infected parts	Disease prevalence, %	Disease progression, %	Biological efficacy, %
1	Vinkozeb 80% w.p.	1,2	leaves	12,8	1,8	86,5
			shoots	11,3	1,6	86,2
			fruits	11,8	1,6	87,1
2	Vinkozeb 80% w.p.	1,6	leaves	13,2	1,2	91,0
			shoots	11,7	1,1	90,5
			fruits	12,5	1,0	91,9
3	Pennkozeb 80% w.p. standard	1,6	leaves	13,1	1,7	87,2
			shoots	11,7	1,5	87,1
			fruits	12,4	1,4	88,7
4	Control – fungicide free	-	leaves	34,8	13,3	-
			shoots	28,3	11,6	-
			fruits	32,2	12,4	-

In the experimental option, the highest biological efficiency was observed in the variant treated with fungicide Vinkozeb 80% w.p. at a rate of 1.6 kg/ha. In this case, the disease progression was 1.2% in the leaf, 1.1% in the stem, 1.0% in the fruit, and the biological efficiency was 91.0% in the leaf, 90.5% in the stem, and 91.9% in the fruit. In the variant treated with this fungicide at the rate of 1.2 kg/ha, the biological efficiency was 86.5% in the leaves, 86.2% in the stem, and 87.1% in the fruit.

In the option treated with fungicide Pennkozeb 80% w.p. taken as a standard preparation, at a rate of 1.6 kg/ha, disease progression was 1.7% in leaf, 1.5% in stem, 1.4% in fruit, and biological efficiency was 87, 2% in leaf, 87.1% in stem and 88.7% in fruit.

Many researchers have tested different means of control against phytophthora. In particular, O.A. Palastrova tested the fungicide Ridomil Gold MS w.d.g containing 640 g/l of Mankozeb and 40 g/kg of Mefenoxam at a consumption rate of 2.5 kg/ha against phytophthora disease of tomatoes in the open field in the Kurgan region and this application showed high biological efficiency and the total yield was 297.7 tons/ha [2]. In our research also, it can be seen that preparations containing Mankozeb have a strong effect against phytophthora of tomatoes.

CONCLUSION

Phytophthora is considered one of the most dangerous diseases of tomatoes, and if timely control measures are not taken, the yield can be significantly reduced. When the first symptoms of phytophthora disease appear in tomato fields, the initial treatment with fungicide Vinkozeb 80% w.p. at the rate of 1.6 kg/ha and the second treatment after 15 days and the third treatment after 30 days will stop the development of the disease. With the application of this fungicide against tomato phytophthora disease, it is possible to achieve a high yield of tomatoes.

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IN-VIVO ASSESSMENT OF HYPOGLYCEMIC AND ANXIOLYTIC ACTIVITIES ON SWISS ALBINO MICE AND ANTHELMINTIC ACTIVITY ON EARTHWORM OF METHANOLIC EXTRACT OF *MICROCOS PANICULATA* LEAVES

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ABSTRACT

The aim of the present study is to investigate the hypoglycemic, anxiolytic and anthelmintic activities of the methanolic extract of *Microcos paniculata* Leaves. The hypoglycemic activity was evaluated by measuring the blood glucose level of swiss albino mice, and anxiolytic activity was evaluated by hole board and elevated plus-maze tests on swiss albino mice. The anthelmintic activity was evaluated by measuring the paralysis and death times of adult earthworms. The methanolic extract of *M. paniculata* showed a highly significant ($p < 0.001$) hypoglycemic effect by reducing blood glucose levels with time, and the reduction is also dose-dependent. In the hole board test, the extract caused a large increase in the number of head dips. In the elevated plus-maze test, the extract caused a large increase in the amount of time spent in the open arm and a decrease in the amount of time spent in the closed arm. The extract showed highly significant ($p < 0.001$) anthelmintic activity by causing paralysis and death of earthworms in a short period, which is inversely proportional to increasing the concentration of extract. The evaluated results indicate the presence of hypoglycemic, anxiolytic and anthelmintic activities of this plant extract. Further investigation needs to be done to pick out the phyto-constituents responsible for these activities.

KEYWORDS: Hypoglycemic, Anxiolytic, Anthelmintic, *Microcos paniculata* Leaves, Swiss albino mice, Earthworms

INTRODUCTION

Many plant species have antidiabetic properties [1] and these plants are the precursors for the synthesis of drugs due to therapeutic values [2]. Diabetes mellitus is indicated by hyperglycemia resulting from defects in insulin secretion, and chronic hyperglycemia affects carbohydrate, lipid and protein metabolism that ultimately causes malfunction and defect of organs, including eyes, kidneys, nerves, heart and blood vessels [3]. Diet, obesity, and sedentary lifestyle, high family aggregation, insulin resistance, nutritional status, age, and lifestyle change for urbanization are all risk factors for diabetes [4]. The recent treatment of diabetics, such as insulin and various oral hypoglycemic agents i. e. sulfonylureas, metformin, glucosidase inhibitors, troglitazone, etc., show serious adverse side effects such as diarrhea, liver problems, lactic acidosis [5] those effect is increasing alarmingly in the whole world [6]. Due to the undesirable side effects of currently available antidiabetic drugs, there is an urgent need for novel molecules to treat diabetes [7, 8] along with the sufficiency and few adverse effects of herbal medicine used in taking care of and regulating diabetes in the current world [9-11]. Neurological disorders affect people, and recent life stress associated with suffering and tribulations is liable for the perpetration of a variety of psychiatric disorders. Many plants have effects against C.N.S. disorders, and they decrease human suffering in comparison with drugs that act by initiating pharmacological and psychological effects in the intrinsic system of the body [12]. However, conventional medicines used for the treatment of neurological diseases have side effects. For example, benzodiazepines' deterioration of cognitive function, physical dependence tolerance, respiratory, digestive, and immune systems, etc [13]. Parasitic worms (Helminths) produce harmful effects on humans and other animals around the world, mainly in third-world countries in the tropical region [14]. Men are to be infected with soil-transmitted helminths, while helminth infection is also a serious problem in livestock growth, causing significant economic losses and threatening food safety [15, 16]. The helminthic infection causes



various problems, including respiratory symptoms, dermatological consequences, and epilepsy, and this infection may also annihilate immune activities against pathogens of other diseases such as malaria and tuberculosis, H.I.V. [14]. Drugs used to treat helminths, such as synthetic anthelmintic drugs, exhibit resistance to parasite [17] along with a lack of efficacy of these drugs [15]. *Microcos paniculata* L., locally known as 'Kathgua' or 'Fattashi' in Bangladesh, contains Tiliaceae family and traditionally, the plant possess a wide range of activities such as analgesic, anti-diarrheal, anti-inflammatory, antipyretic, antimicrobial, brine shrimp lethality, cytotoxic, free radical scavenging, insecticidal, larvicidal, neuropharmacological, nicotinic receptor antagonistic and α -glucosidase inhibition activities [18]. Therefore, the current study was designed to investigate the hypoglycemic, anthelmintic and anxiolytic activities of the methanolic extract of *Microcos paniculata* leaves.

MATERIALS AND METHODS

Collection of Plant Materials

For this study, plant sample was collected from Brahmanbaria, Bangladesh. The collected plant sample was identified and authenticated by the expert of the National Herbarium, Mirpur, Dhaka, Bangladesh, and given Accession Number of the plant was **35348**. All other ingredients used in this evaluation were analytical grades collected from the laboratory of the Department of Pharmacy, Noakhali Science and Technology University, Bangladesh.

Preparation of *Microcos paniculata* leaves extract

After collection, plant samples were cleaned and sundried for 7 days. After drying, the samples were grounded into a coarse powder using a high-capacity grinding machine. Then the powder was soaked in 95% methanol for 14 days with occasional shaking and stirring. The whole mixture was filtrated by cotton and then Whatman filter paper (Bibby RE200, Sterilin Ltd., U.K.). The filtrate was then dried at room temperature and found the methanolic fraction of *Microcos paniculata* leaves extract was stored in the refrigerator at 4°C until use.

Preparation of Animals

For this study, Swiss Albino Mice (25-35g) of either sex, 3-4 weeks of age, were collected from the animal house of Jahangirnagar University, Savar, Dhaka and all experiments were approved by the NSTU research cell committee, Noakhali Science and Technology University. Animals were nursed in animal houses at an ambient temperature 25°C and 45-60% humidity to acclimatize to the environment for seven days prior to the experimentation beginning. They had free access to standard pellets such as basal diet and water ad libitum.

Drugs & Chemicals

Glibenclamide, Diazepam, Albendazole were collected from Square Pharmaceutical Limited, Bangladesh and glucose and 1% Tween-80 were collected from Lab, NSTU.

Hypoglycemic Activity Test

Hypoglycemic activity test is performed according to Osadebe *et al.*, 2014 [19] with slight modification. Mice were grouped randomly, containing four mice in each group. Group-I was given 1% Tween-80 with normal saline orally, whereas the standard drug glibenclamide (5mg/kg body weight) was administered in Group-II mice. The experimental groups, Group-III and Group-IV were treated with methanolic extract of *Microcos paniculata* leaves orally at the dose of 200 mg/kg and 400 mg/kg body weight, respectively. After 60 minutes of administration of test samples, the mice of all groups were orally treated with 20 mg/ml glucose solution (200 mg/kg body wt). The blood glucose level of the experimental animals was then determined using a glucometer by collecting blood samples from the tail vein right before and after 1, 2, 3, and 4 hours of glucose administration.

Anxiolytic Activity Test

Hole board and Elevated plus maze test are used to evaluate the anxiolytic activity of the methanolic extract of *Microcos paniculata* leaves.

Hole board test was performed according to Somani *et al.*, 2010 [20] with slight modification in a wooden box (40 x 40 x 25 cm) with 16 holes (each of diameter 3 cm) and elevated to the height of 35 cm. The mice were grouped randomly, containing four mice in each group. Group-I was given distilled water (10 ml/kg), whereas Group-II was treated with diazepam (1 mg/kg) and experimental group-III and IV were given plant extract 200 and 400 mg/kg body weight, respectively, orally. After one hour of treatment, each mouse was placed in a head dipping box, and the number of head dips for 5 min period was counted for the individual mouse.



An elevated plus maze test was performed according to Thippeswamy et al., 2011 [21] with slight modification, and mice were grouped randomly, containing four mice in each group. Group-I was treated with distilled water (10 ml/kg, p. o) and diazepam (1 mg/kg, i.p) was administered to group-II whereas group-III and IV were given plant extracts (200 and 400 mg/kg, i.p), respectively. After one hour of treatment, mice were individually placed in the centre square facing either one of the open arms and the time spent in both the open and closed arms was recorded for 5 min period for an individual mouse.

In-Vitro Anthelmintic Activity Test

Anthelmintic activity of methanolic extract of *Microcos paniculata* leaves was evaluated according to Ajaiyeoba et al., 2001 [22] with slight modifications. Adult earthworms (*Pheretima posthuma*) were used to evaluate the anthelmintic activity due to their anatomical and physiological resemblance with the intestinal roundworm parasite of human being [23, 24] and also the availability of them [25]. After the collection of earthworms, they were washed with saline water. Five concentrations of methanol extract of *Microcos paniculata* leaves, i. e 20, 40, 60, 80 and 100 mg/ml were used as test samples; normal saline was used as the control group, and albendazole 10mg/ml was used as the standard. Earthworms were put in a Petri dish with 15 ml of sample solution. The time it took for each worm to become paralyzed and die was timed. Paralysis is considered to exist when no movement is observed in response to forceful shaking of worms. The conclusion of death was reached when the worms did not move in response to forceful shaking or immersion in 50°C water.

RESULTS

Assessment of hypoglycemic activity test

After administration of glucose, at 0 hours, blood glucose level at 200 mg/kg and 400 mg/kg was 3.10 mmol/l and 5.10 mmol/l, but after 1 hour, that increased at 8.35 mmol/l and 10.35 mmol/l, respectively. Then the blood glucose level reduced gradually and reached at 2.98 mmol/l and 3.18 mmol/l, respectively, at a dose of 200 mg/kg and 400 mg/kg body weight after 4 hours when compared to the control group. The blood glucose level of the standard drug glibenclamide was 6.72 mmol/l at 0 hour and 10.95 mmol/l after 1 hour, which was reduced to 3.50 mmol/l after 4 hours (Table 1). It was noticed that there is a highly significant ($p < 0.001$) reduction of blood glucose level with time when compared with control, and also the reduction of blood glucose was more at a dose of 400 mg/kg than 200 mg/kg body weight which confirmed dose dependent reduction of blood glucose.

Table 1: Hypoglycemic activity of methanolic extract of *Microcos paniculata* leaves on mice

Group	Blood Glucose concentration (mmol/l) at different time				
	0 h	1 h	2 h	3 h	4 h
Control 0.2 ml/ 10 g	6.92±0.28	17.42±0.41	15.88±0.30	12.65±0.417	9.20±0.23
Glibenclamide 5 mg/kg	6.72±0.25	10.95±0.5***	7.85±0.30***	5.57±0.17***	3.50±0.27***
Extract-200 mg/kg	3.10±0.16***	8.35±0.13***	6.42±0.27***	4.32±0.06***	2.98±0.14***
Extract-400 mg/kg	5.10±0.34*	10.35±0.12***	8.35±0.12***	4.65±1.08**	3.18±0.05***

Values are presented as mean ± S.E.M. Data was analyzed using one way ANOVA followed by Dunnett's t-test, and groups were compared with the control. (n=4) *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Assessment of Anxiolytic Activity

In the hole board test, methanolic extract of *Microcos paniculata* leaves increases the number of head dipping 48 ± 6.5 and 64 ± 7.4 at a dose of 200 mg/kg and 400 mg/kg body weight respectively, when compared to the control group, which are statistically highly significant ($p < 0.001$) (Table-2). In the elevated plus-maze test, the extract also increased the time spent in the open arm 93.2 sec and 95.5 sec. at a dose of 200 mg/kg and 400 mg/kg body weight, respectively, when compared to the control group, which indicates the statistically highly significant ($p < 0.001$) effect (Table-3).

**Table 2: Effects of the methanolic extract of *Microcos paniculata* on the number of head dipping in hole board test in mice**

Treatment Group	Number of head dipping (Mean \pm S.E.M)
G-I (Control: 10 ml/kg)	40.5 \pm 1.3
G-II (Diazepam: 1 mg/kg)	34.83 \pm 1.6***
G-III (Extract: 200 mg/kg)	48 \pm 6.5***
G-IV (Extract: 400 mg/kg)	64 \pm 7.4***

Values are presented as mean \pm S.E.M., Data was analyzed using one way ANOVA followed by Dunnett's t-test and groups were compared with control. (n=4) ***p< 0.001; **p< 0.01; *p< 0.05

Table-3: Effects of methanolic extract of *Microcos paniculata* leaves on time spent in open and enclosed arms in elevated plus-maze test in mice

Treatment Group	Time (s) spent in	
	open arm	Enclosed arm
G-I (Control: 10 ml/kg)	32.8 \pm 5.4	233.5 \pm 7.8
G-II (Diazepam: 1 mg/kg)	103.0 \pm 10.5	169 \pm 12.4
G-III (Extract: 200 mg/kg)	93.2 \pm 28.52 ***	206.5 \pm 28.52
G-IV (Extract: 400 mg/kg)	95.5 \pm 28.95 ***	204.7 \pm 28.95

Values are presented as mean \pm S.E.M., Data was analyzed using one-way ANOVA followed by Dunnett's t-test and groups were compared with the control. (n=4) ***p< 0.001; **p< 0.01; *p< 0.05

Assessment of Anthelmintic Activity Test

The methanolic extract of *Microcos paniculata* leaves exhibits not only paralysis but also death in earthworms. Among the five used concentrations, the highest anthelmintic activity exhibited by the extract at the highest concentration of 100 mg/ml includes 22.34 \pm 0.98 minutes for paralysis and 25.17 \pm 0.60 minutes for the death of the worms. The shortest times are required at the highest concentration for the paralysis and death of the worms. On the other hand, the standard drug required 35.17 \pm 0.31 min. and 67.34 \pm 0.99 min. for paralysis and death of worms, respectively (Table 4). So it is said that the anthelmintic activity of different concentrations of the extract is inversely proportional to the paralysis and death time of the earthworms and also in a dose-dependent manner.

Table-4: Paralysis and Death Time of methanolic extract of *Microcos paniculata* leaves on earthworms

Groups	Concentration (mg/ml)	Paralysis time (min)	Death time (min)
Control	-	No Paralysis	No Death
Standard	10	35.17 \pm 0.31	67.34 \pm 0.99
ME Extract	20	96.67 \pm 0.98***	117.33 \pm 0.67***
	40	83.83 \pm 0.91***	102.83 \pm 0.48***
	60	32.34 \pm 0.98	38.5 \pm 0.57***
	80	27.17 \pm 0.75**	33.17 \pm 0.65***
	100	22.34 \pm 0.98***	25.17 \pm 0.60***

Values are presented as mean \pm S.E.M.; Data was analyzed using one way ANOVA followed by Dunnett's t-test and groups were compared with control. (n=6) ***p< 0.001; **p< 0.01; *p< 0.05



DISCUSSION

Polysaccharide is converted into monosaccharide by the alpha-amylase enzyme, and due to this, diabetes can be managed by inhibiting this alpha-amylase enzyme; however, carbohydrate digestion is aggravated, and glucose absorption from starch is also decreased [26, 27]. Phytoconstituents such as saponins, alkaloids, terpenoids, flavonoids, tannins, steroids, phlorotannins, and anthraquinones might be liable for restricting the alpha amylase enzyme [28]. A previous literature study showed that *Microcos peniculata* extract contains phyto-constituents such as flavonoids, tannins, carbohydrates, alkaloids, saponins, triterpenoids, and glycosides [29] and plants that contain saponins and flavonoids have potent antidiabetic activity [30]. As a result, our experimented plant extract showed antidiabetic activity in mice by reducing blood glucose levels, which may be due to the presence of saponins and flavonoids that ultimately hinder the alpha amylase enzyme. Tannins have an anthelmintic effect and cause the death of parasites by energy depletion due to uncoupling of the oxidative phosphorylation reaction or binding with glycoprotein on the cuticle of the parasite [31,31]. The experimental plant shows anthelmintic activity due to the presence of tannins in this plant.

C.N.S. activity of any drug evaluated on the locomotor activities of animals and investigation of excitability of the C.N.S. refer to the locomotor activity of the animal. An increase in alertness is considered to be locomotor activity, and a decrease in locomotor activity is considered to be sedative effect [32]. C.N.S. depression may be due to the reduction of locomotor activity and sedation, and C.N.S. depressant drugs exhibit their activity via GABAA receptor [33]. A higher concentration of GABAA receptor in the brain shows a C.N.S. depressant effect [34]. C.N.S. depressant drugs bind to the GABAA receptor as well as its subtypes and have explicit anxiolytic, sedative, and amnesic effects [35, 36]. Flavonoids and tannins contained in plants have explicit activity against C.N.S. disorders [37] and *M. peniculata* extract show anxiolytic effects owing to the binding of such phyto-chemicals to the GABA_A-Benzodiazepine receptors. It is also reported that plants having flavonoids, saponins, sterols, tannins have explicit anxiolytic activity [38]. In the elevated plus-maze test, *M. peniculata* extract revealed that time spent in the open arm increased, but time spent in the enclosed arm decreased, which may be a sign of the anxiolytic action of this plant extract.

CONCLUSION

From the investigation of the above study, it can be summarized that the methanolic extract of *M. peniculata* has significant hypoglycemic, anxiolytic and anthelmintic activities, but the further investigation needs to be done on the higher animal to find out and segregate the compounds responsible for these activities.

Conflict of Interest

The authors declare that they have no conflict of interest.

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PARTICIPATORY GENDER ANALYSIS: A STUDY ON WOMEN PARTICIPATION IN SOCIETAL DOMAINS

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ABSTRACT

Scholars of women's studies investigate the status, roles and treatment of women, as well as the historical and regional variation in meanings of womanhood and how 'woman' relates to other identity categories. When it was first established, the goal of women's studies was to have women not only as objects of analysis, but also as subjects producing new types of knowledge. Since then, the field's scope has expanded to include research into the full range of gender formations. This paper will look at specific areas where women are contributing towards a better society.

KEYWORDS: *Women, Education, Literature, Politics, Election*

INTRODUCTION

In light of the past two crucial decades, feminism researchers have engraved essential protest to the way social science has outlined men, women, and society. Since the beginning, debates over epistemology, technique, and methodology have been intertwined with discussions on the best ways to correct inaccurate and incomplete accounts in the context of traditional analyses (Adhikari & Saha, 2021b). One needed to observe the implications of the most obvious methods one may aim to modify the androcentrism of the features of traditional in order to grasp the depth and breadth of the metamorphosis of social sciences required to identify women and gender activities. In an effort to 'add women' to these analyses, feminists (Beauvoir, 1949). We discover three different types of women who emerged as unquestionable candidates for this mechanism: women who contributed to public life and were already the subjects of social science studies; women who are social scientists; and lastly, women who had fallen victim to the most egregious and flagrant manifestations of male preeminence.

GENDER ANALYSIS

According to historians, men's attitudes and ideals are inextricably linked to both their reasoning and their behaviour. His standard for judging them rests on the evidence of their behaviour, not some mental construct of his own. It is up to him to detach it and rebuild it using the guidelines of an academic debate or the expansion of Methodism. Any field of knowledge can only be understood by some selection principle and its methodical application. Finding meaning in a situation does not mean imposing it from without; rather, it means giving coherence to what men have deemed significant. Critical theorists have worked to identify the causes and audience of such decisive praxis throughout the 20th century and the present. The ability to recognise the pervasive connection between action and cognition has remained critical theory's most important intellectual strength. Marx asserts that theory cannot be resolved through practical endeavours and that practise always triumphs over theory in this instance. Any kind of social life is just pragmatic. The entire enigma that motivates theory is mysticism that has been rationally and objectively explained in human practise and in the understanding of this practise. Social theory as a whole is in trouble. The new theories advanced by phenomenology, Marxism, structuralism, feminism, and others sought to be more adept at defining a contemporary society and providing direction and inspiration for its redesign (Brace, 2000). These theories have stirred up a lot of controversy in the field of social theory and sparked a fiery debate regarding the processes, character, and objectives of critical theory. Hence, critical theory is remarkably self-critical and self-reflexive, compelling theorists to continuously think about the nature, approach, and outcomes of a critical theory. The promise of modernity, which itself was predicated on the assumption that the development of science and technology would enhance human control and dominance over nature and yield greater individuality, freedom, and happiness, was abandoned here, in their opinion, by the disintegration of subjectivity.

EDUCATION AS A MAJOR DOMAIN

Education paves the way for women to assert their power, claim their rights, and achieve liberation. It empowers women to think independently. Education is therefore a means for releasing women from their routine enslavement and desire to follow and be instructed by men. It is true to say that education has a significant role in determining the presence of the second gender in politics. Women with higher levels of education are more inclined than those with lower or no educational backgrounds to engage



further in a variety of political activities. Education encourages women to participate more actively in political conversation, debate, and opinion-sharing than those who lack it. As a result, formal education is important and should be strongly connected with political engagement for both men and women. Political engagement can be predictably controlled and regulated through education. Complementing factors supporting political commitment include contacts and resources that improve political access to various non-political associations, such as religious institutions or charitable organisations, which can be used as a recruitment criterion for political activity. Education is also a key to soaring jobs. Intriguingly, there is a relationship – and at the same time a difference – between women’s educational attainment and their active engagement in various political activities as well as their delegation in official politics.

WOMEN IN POLITICS

Political engagement is hampered by illiteracy. So, those in the educated strata of society offer a different perspective, whereas others who are less educated or ignorant are viewed as passive citizens, whose political participation is restricted to casting a ballot. In comparison to their male counterparts, women who participate in politics frequently have more refined educational backgrounds. Education emerges as a very important factor in bringing about a favourable and constructive transformation that will reflect on the political standing of women (Adhikari & Saha, 2021c). This culminates in placing its beneficiaries in a world that is independent, more informed, and transforms a person into one who is intellectually and culturally wealthy. Women who have received an education are thought to be more conscious of and appreciative of the rights of women, which extend to obligations leading to the political mainstream. This enables students to develop their understanding of how oppressed women see themselves as well as their capacity to come up with solutions to political problems. It broadens their perspective, increases their awareness, and speeds up how quickly they comprehend the environment around them. The modern education has significantly improved the prospects for women. The principles they upheld while being coerced by lures have undergone a significant transformation.

To be more specific, a new conception of womanhood is emerging in India, which intriguingly stands in stark contrast to the conventional assumption that women should exclusively devote themselves to and confine themselves to the domestic sphere. The scenario for this mechanism in the twenty-first century is entirely different. A woman is in charge of managing the household as well as taking an active role in public life. Education enforces and starts the process of resolving gender disparities. Secondly, education fosters remarkable effects for dynamic shifts in how people view women in politics, especially in emerging nations like India. Our goal is to determine whether education has a functional impact on the ways, to what degree, and in what ways women participate in politics.

Voting has enormous power and vulnerability, and it affects how women are mobilised and treated equally. Nonetheless, it is noted those casting votes exhibit the least internal motivation and effort. Many women view the day of voting as a much-needed reprieve from their tedious and worn-out routine (Kumar, 2017). They actually do not seem to understand the rationale behind supporting a particular politician. Unfortunately, despite the fact that women's involvement in politics has significantly increased, both during elections and in accordance with their willingness to express their innate opinions on matters that affect their lives, their ability to make an impact on the political process has been imperceptible due to the scant attention and recognition given to their political mobilisation and education by both women's organisations and political parties, see women voters (Sahu & Yadav, 2018). However, there has been no corresponding rise in the number of women running for office in legislative elections. Political parties show a complete unwillingness to field and campaign for female candidates. Another barrier preventing female candidates from running for office is the rising expense of electoral canvassing. These end up playing a significant role in the rising trend of women running for office as independent candidates.

WOMEN IN ACTIVISM

One such example of the success attained by Indian women running a full-fledged campaign as they resisted deforestation is the Chipko movement, which began in the 1970s. The environmental issues championed by activists Medha Patkar and author Arundhati Roy have received a lot of attention as a result of the Narmada Bachao Andolan. Throughout the struggle, Medha Patkar organised numerous fasts and Satyagrahas and was often imprisoned as a result. Indian farmers have been demonstrating against the Farmer’s Bill all around Delhi since November 2020. It’s interesting to note that women with agricultural backgrounds, especially those who are very domestic in nature, are frequently spotted in protest sites, actively supporting the effort to repeal the Farm Laws. It is fair to say that their political engagement and behaviour must advance and become more enlightened. As a result, the movement becomes considerably louder and more determined. It was once thought to be ‘unsafe and ungraceful’ for women to walk the streets; however, ladies of all castes, faiths, and social standing do so. Women are speaking up more and more, which strengthens the protests as they, too, face lathi charges, jail, and resolute resistance to leaving the political sphere. In times of crisis, women from all over the world have actively participated in political movements, but after the crisis has passed, they are once again consigned to the home sphere. A paradigm is being established by women’s active engagement in municipal bodies. Despite the fact that India's constitution is among the most progressive in the world and provides equal rights



for men and women, Indian women continue to eagerly await the realisation of their hopes for equality. Perhaps the most effective weapon for eradicating inequality is political power.

WOMEN IN EDUCATION AND LITERATURE

Since education alone has the power to create a new world and open possibilities for beneficial consequences, education is currently a priority for every country. The 19th century saw an educational awakening thanks to Raja Rammohan Roy and Henry Derizio, who created a new path for education in Bengal, India (Adhikari & Saha, 2021e). India is currently a leading nation in the area of women's education. The conditions weren't always the same, though. In their efforts to move beyond the domestic sphere and establish a new standard, Tarabai Modak, Durgabai Deshmukh, Anutai Wagh, Pandita Ramabai, Pandita Brahmacharini Chandbai, and Nawab Begum Sultan Kaikhusrau Jahan paved the way (Adhikari & Saha, 2021d). Three famous women educationalists, who emerged at similar times and with similar educational philosophies in three distinct centuries, left their mark on western culture through their contributions to education. With their quick work in education, Mary Wollstonecraft, Maria Montessori, and Nel Noddings (Adhikari & Saha, 2021g, 2021h) have brought important concerns pertaining to women and children's education to light (Adhikari & Saha, 2023). These three women educators were connected by their interest in education despite being born in various eras and regions of the world. Strong female characters can also be seen in mythology, such as Shakuntala, British literature, such as Webster's *The Duchess of Malfi*, and Indian English literature, such as Arundhati Roy's *The God of Little Things* (Adhikari & Saha, 2021a).

CONCLUSION

Education is widely acknowledged as the foundational component of human resources. The impact of education on life expectancy, population control, nutritional status, infant mortality, and the strengthening of civil institutions are all well-known and play a part in the economy's growth. The new transitory century is now upon us. The main difficulty we face right now is to start the process of changing society so that gender discrimination no longer exists, not only to raise awareness of gender equality. On improving women's conditions, not much has been stated or done. As a result, women must be made independent. Their affiliation and political involvement have given them fresh perspectives. It is vital to focus on working for women's development through their participation in establishing the agenda for their own growth and the development of others. Certainly, this might result in the empowerment of women. Women's empowerment and their participation in politics and decision-making therefore have a dialectical relationship and tight interplay. It is possible to develop a set of tactics and measures to address the shortcomings, empower women in many ways, and support their successful participation in politics. Such involvement in political, educational, and other societal programmes would result in a qualitative shift.

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THE SEMANTIC AND STYLISTIC FEATURES OF USING FRENCH EXPRESSIONS IN LITERARY TEXTS

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ABSTRACT

The present article presents the contexts from Russian literary works with French words and speech formulas are analyzed. Such French borrowings fulfill stylistic, semantic and pragmatic functions and add special melody, beauty and sound to the text.

KEY WORDS: setting, thesaurus, Russian literary works, extralinguistic factors, French borrowings, speech formulas.

A literary text is a rich material for investigating language units and their stylistic, pragmatic functions. G.G. Molchanova notes that while analyzing literary text one should pay attention to the following:

a) use of language units in literary context and the whole idea of the text;

b) The analysis of the system of language units (words, expressions, idioms, proverbs);

c) The accordance of language units with the situation of communication and exact pragmatic functions;

d) Revealing cognitive functional settings and integrity of the whole text [3, p. 67].

It should be noted that conceptualization of stylistic phenomena in literary text is formed due to concrete cognitive settings. The cognitive principle of distribution of informative data is based on realization of the known information and new information which is considered to be a perceptive method or way of getting information. The system of known information includes general knowledge which create thesaurus of a person. The new information is considered as unknown data in comparison with the known information, widen and deepen person's thesaurus [2, p. 78].

The realias and concepts of national culture which are reflected in cultural models of metaphor, metonymy, comparison, etc., thus reflect national-cultural specifics of definite society [1, p. 20].

Let's discuss literary texts in which French words and expressions are used. We should certainly reveal their stylistic-pragmatic role in context.

From the Russian literary texts we get information that children from noble families usually addressed to their parents in French. The idea is proved by the extract from L.Tolstoy's novel "War and Peace":

Mon pere, Andre? – сказала неграциозная, неловкая княжна с такой невыразимой прелестью печали и самозабвения, что отец не выдержал ее взгляда и, всхлипнув, отвернулся [6, p. 26]. From the translation we understand that daughter addresses to her father using French words "mon pere" – my father.

In Russian aristocratic society of the XVIII-XIXth centuries friends also used French speech replicas when they communicated between each other:

Ma bonne amie, - сказала маленькая княгиня утром 19 марта после завтрака, и губка ее с усиками поднялась по старой привычке [6, p. 27]. The underlined expression means "my dear friend" (girl).

Really in Russian literary texts we can often come across with French speech formulas:

Медведя-то, говорит, как не бояться? Да как увидишь его, и страх прошел, как бы только не ушел! Ну, так-то и я. Demain, mon cher! [6, p. 18]. The underlined expression means «Good bye, dear!».

According to communicative aim the most popular speech formulas and set phrases of communication act are divided into the following groups:

- Speech formulas of greeting and saying good bye;
- Speech formulas of getting introduced;
- Speech formulas of congratulations and wishes;
- Speech formulas of request;
- Speech formulas of expressing feelings and opinion;
- Speech formulas of gratitude;
- Speech formulas of invitations;
- Speech formulas of agreement / disagreement;
- Speech formulas of hesitation;
- Speech formulas of apology;
- Speech formulas of comforting;
- Speech formulas of condolence;



Speech formulas of suggestions and advice;
Speech formulas of compliments;
Speech formulas of approval / refusal;
Speech formulas of permission / prohibition [7, p. 12-13].

In the following extract speech formula of farewell is used:

- *Это ужасно! Ужасно! – говорила она. – Но чего бы мне ни стоило, я исполню свой долг. Я приеду ночевать. Его нельзя так оставить. Каждая минута дорога. Я не понимаю, чего мешают княжны. Может, бог поможет мне найти средство его приготовить... Adieu, mon prince, que le bon dieu vous soutienne...* [5, p. 52]. The farewell ends with the French sentence which means “Good bye, God save you!”.

In Russian literary texts French expressions fulfill the role of euphemisms for concealing the rude or very strong, extraordinary content. For example, in the following sentence there is the scene of confessing love which takes place with the help of the French expression “*Je vous aime*” (I love you):

- *Но в чем же я виноват? – спрашивал он. – В том, что ты женился, не любя ее, в том, что ты обманул и себя и ее, - и ему живо представилась та минута после ужина у князя Василия, когда он сказал эти не выходявшие из него слова: «Je vous aime» Все от этого?* [6, p. 22].

Sometimes in literary text phrases of great writers are used:

*Но в ту минуту, как он считал себя успокоенным такого рода рассуждениями, вдруг представлялась она и в те минуты, когда он сильнее всего выказывал ей свою неискреннюю любовь, и он чувствовал прилив крови к сердцу, и должен был опять вставать, двигаться, и ломать, и рвать попадающиеся ему под руки вещи: «Зачем я сказал ей: Je vous aime?» - все повторял он сам себе. И, повторив десятый раз этот вопрос, ему пришло в голову Мольерово *mais que diable allait-il faire dans cette galere?*, и он засмеялся сам над собою* [6, p. 23]. The sentence is taken from Moliere’s work and means “Why I have got mixed up the job?”.

The stylistic function of French borrowings in Russian fiction text is actualized in hidden transfer of the rude and non-standard lexics. For example the meaning “get off, dry up” is conveyed in the following extract in French:

Потом он вспомнил ясность и грубость мыслей и вульгарность выражений, свойственных ей, несмотря на ее воспитание в высшем аристократическом кругу. «Я не какая-нибудь дура... поди сам попробуй... allez vous promener», - говорила она [6, p. 22].

In this extract the meaning “highly distinguished, dear” is expressed in French with the help of irony:

- *Ну, как же, батюшка, mon tres honorable, Альфонс Карлыч, - говорил Шиншин, посмеиваясь и соединяя (в чем и состояла особенность его речи) самые простые народные русские выражения с изысканными французскими фразами. – Vous comptez vous faire des*

rentes sur l’etat, - с ренты доходец получить хотите? [5, p. 54]

In the same way in literary texts political thoughts and ideas are expressed in French:

L’Angleterre a vecu, - *проговорил он, нахмуриваясь и указывая на кого-то пальцем* [5, p. 49]. The underlined expression deals with England.

The literary texts with French expressions should be translated very carefully. For doing literary translation a specialist should possess a deep knowledge of different stylistic devices, expressive and emotive means and ways of transferring all feelings, colours, images that are depicted in the original text. Mostly, literary translation is done by writers or poets because only they can do it with preserving literary content. When literary translation is done by a common translator, the text will lose its emotional colour, expressiveness and beauty of language means. The text will be “dry”. On this reason not every translator deals with literary texts. However, some translators of literary texts can exaggerate the plot of the text and use too many stylistic and expressive means of the target language. So, emotional and imaginary content of the literary translation also has its bounds which shouldn’t be overstepped [4, p. 176].

So, we can conclude that the use of French expressions in Russian literary texts can be explained by several reasons:

- 1) Stylistic function (the use of stylistic device of euphemism, metaphor, comparison, etc.);
- 2) Pragmatic function (prevention, hint, approval, negation, denial, etc.);
- 3) Linguocultural aspect (culture, traditions, customs, speech formulas and models of behavior of the exact epoch).

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CAN FORGIVENESS MARITAL ENHANCEMENT PROGRAMME (FMEP) REDUCE MARITAL CONFLICT AND AUGMENT SUBJECTIVE WELL-BEING OF MARRIED COUPLES?

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ABSTRACT

This study examines the effect of the Forgiveness Marital Enhancement Programme (FMEP) on couples with Marital Conflict (MC) in their intimate dyadic relationships via an experimental design. It was hypothesized that conscious, intentional daily awareness and expression of forgiveness would produce a significant decrease in marital conflict and an increase in Subjective Well-being (SWB). Seventy-six participants were randomly assigned to either experimental or control groups. The experimental group alone was asked to complete a 50-day FMEP. All participants answered the Heartland Forgiveness Scale (2005), Marital Conflict Scale (1985) and Subjective Well-Being Inventory (SUBI, 1994) before and after the FMEP, and at a follow-up test after two months. Differences between control and interventional groups were analysed via independent samples t-tests and changes across testing phases within groups were evaluated via Repeated Measures of ANOVA. Between-group and within-group analyses indicated that participation in the FMEP resulted in a reduction in Marital Conflict and enhancement in Subjective Well-being of married couples.

KEYWORDS: Forgiveness, Marital Conflict, Subjective Well-being, Forgiveness Marital Enhancement Programme (FMEP), Intimate/dyadic Relationships

1. INTRODUCTION

Marriage is one of the most lasting relationships between a man and a woman, yet it is not exempted from its conflicts (Warsah, 2020). Some of the possible reasons for marital conflicts can be money, sexual affairs, kindred relations, friends, children, drug use, spending of leisure time, religious differences, infidelity, diminishing mutual love, physical abuse, emotional, financial, and communicative problems (Boostanipoor and Zaker, 2016). Any unresolved conflict will potentially have impacts on physical and psychological health (Ross, Boon, & Stackhouse, 2017). The question of how to resolve or minimise the conflict, remains unanswered. Positive psychology which is a branch of the psychological field focuses on how humans should best live (Kim, Keck, Miller, & Gonzalez, 2012), suggests that forgiveness can assist people in overcoming conflicts, to maintain marital satisfaction, marital stability (Karney and Bradbury, 1995) and individuals' wellbeing (Proulx, Helms & Buehler, 2007; Kamp Dush, Taylor & Kroeger, 2008; Margelisch, Schneewind, Violette, & Perrig-Chiello, 2017). Positive psychology and forgiveness scholars opine that constant awareness and exercise of forgiveness would help one to overcome broken relationships (Osei-Tutu, Dzokoto, Oti-Boadi, Belgrave, & Appiah-Danquah, 2019) maintain social bonds, and romantic and family relationships (Gordon, Arnette, & Smith, 2011). Thus, the current study aims to examine whether the conscious, intentional daily awareness and expression of forgiveness would enhance the well-being of dyadic relationships by reducing the marital conflict of married couples. This question is examined using an experimental forgiveness intervention called Forgiveness Marital Enhancement Programme (FMEP).

2. DEFINING STUDY VARIABLES

2.1 Forgiveness

Forgiveness is the ability to let go from the mind and heart of all past pains and bad feelings and eliminate anger and revenge on the wrongdoer (Amanze & Carson, 2020; Miceli & Castelfranchijtsb, 2011; Baharudin, Sumari, & Hamdani, 2019). It is a way to overcome broken relationships on a pro-social basis (McCullough, Kurzban, & Tabak, 2013; McCullough, Pedersen, Tabak, &



Carter, 2014; Osei-Tutu et al., 2019). It is a voluntary (Baskin & Enright, 2004), conscious, intentional process of the person to forgive the transgressor (Fincham, Jackson, & Beach, 2005).

2.2 Marital Conflict (MC)

Marital conflict is defined as a process that couples partake in when they disagree, or have opposing interests, perspectives, or opinions on an emotional, cognitive, or behavioural level (Cahn, 1992; Bell & Blankeny, 1977; Gurman, 2008; Mayer, 2000). It is the state of tension or stress, struggle, clash, disagreement or quarrel between marital partners over opposing needs, ideas, beliefs, values, or goals (Abelneh & Koye, 2021).

2.3 Subjective Well-being (SWB)

Subjective well-being is a broad concept that includes the presence of positive affect, absence of negative affect and life satisfaction (Diener, Lucas & Oishi, 2002; Suh & Oishi, 2002; Watson, Pichler & Wallace, 2010).

3. IMPORTANCE OF FORGIVENESS IN MARITAL RELATIONSHIP

Forgiveness is one of the most important positive ways of dealing with marital problems and has been found to be a significant factor in marital satisfaction and happiness (Fincham, 2000; Fincham and Beach, 2002; Fincham, Beach & Davila, 2004; Paleari, Regalia & Fincham, 2005; Orathinkal and Vansteenwegen, 2006; Gordon, Hughes, Tomcik, Dixon, & Litzinger, 2009; Bugay, 2014). In the context of marriage, forgiveness refers to a single act (episodic forgiveness) or general tendency (dispositional forgiveness) to forgive a spouse for a particular offence or multiple wrongdoings (Paleari, Regalia & Fincham, 2009). Specific forgiveness is usually understood as a process of abandoning negative thoughts, emotions, motivation, and behaviour towards the offender (McCullough, Worthington Jr, & Rachal, 1997; Rye and Pargament, 2002). However, some scholars suggest that forgiveness in close relationships can be looked at from two dimensions (Fincham and Beach, 2002; Wade and Worthington, 2003; Fincham, Hall, & Beach, 2006; Gordon et al., 2009): a negative one, that entails the degree to which an individual overcomes nurturing grudges, withdrawing from the relationship, and desire for revenge or punishment against the partner and a positive one, that deals with the readiness of an individual to get closer to the partner and an increase in empathy and compassion. In a long-lasting relationship, like marriage, both components are important to resume closeness (Fincham et al., 2006; Brudek, & Kaleta, 2023).

Researches reveal that in the dyadic relationship, forgiving of a partner positively correlates with happiness or well-being in marriage and fosters intimacy and commitment to the relationship, and promotes a positive impact on the quality of marriage (Paleari et al, 2005, 2009; Tsang, McCullough & Fincham, 2006; Fincham, Beach & Davila, 2007).

4. CONFLICT IN DYADIC RELATIONSHIP AND THE ROLE OF FORGIVENESS INTERVENTION

Interpersonal conflict is defined as a state of disharmony that develops because of natural differences between partners in roles, communication, needs, expectation, etc. (Mackey, Diemer, & O'Brien, 2000). Any persistent interpersonal conflict can obstruct healthy progress in relationships and promote more destructive conflict, chronic defensiveness, dissatisfaction, and estrangement (Gottman & Krokoff, 1989; Mackey et al., 2000) and at times leading to the breakdown of communication and even separation (Gottman & Krokoff, 1989).

To resolve this issue although third-party interventions, like psychotherapy, can be an option yet some still view them as intrusive and invasive, which would increase attrition (Geraghty, Wood, & Hyland, 2010). Thus, the researcher, in this current study, intends to use a readily available positive resource, namely, Forgiveness Marital Enhancement Programme (FMEP) which was prepared by the researcher, to effect positive change in marital conflict without the third party's mediation.

5. AIM OF THE STUDY

The study seeks to determine how the independent variable of forgiveness as elicited in Forgiveness Marital Enhancement Programme (FMEP), could increase the dependent variables like Forgiveness and Subjective Well-Being and decrease the Marital Conflict in the dyadic relationship.

6. HYPOTHESES OF THE STUDY

HYP 1. The Forgiveness Marital Enhancement Programme (FMEP) would reduce the level of MC and enhance the Forgiveness and SWB of the experimental group for the Pre, Post and Follow-up test conditions.

HYP 2. The Control Group of Forgiveness, MC and SWB will not show any significant difference in pre-test and post-test conditions.



HYP 3. The Experimental Group and Control Group will not show a significant difference in the Pre-test scores regarding the study variables Forgiveness, MC, and SWB.

HYP 4. There will be a significant difference between the Experimental Group and Control Group in the Post-test scores regarding study variables Forgiveness, MC, and SWB.

HYP 5. The higher the level of Forgiveness the higher will be SWB and the lower will be MC.

7. TOOLS

7.1. Heartland Forgiveness Scale (HFS)

Heartland Forgiveness Scale (HFS) is developed by Thompson, Snyder & Hoffman, (2005) to measure one's overall willingness to forgive with 18 items. HFS is a 7-point Likert scale which spans from 'almost always false of me' (1) to 'almost always true of me' (7). HFS has three subscales: Forgiveness of Self (items 1–6), Forgiveness of Others (items 7–12), and Forgiveness of Situations (items 13–18). Total HFS scores vary from 18 to 126 and three HFS subscales have scores ranging from 6 to 42. The higher scores imply a higher level of forgiveness in total as well as in each dimension. Cronbach alpha coefficients for the forgiveness of self, others, situations, and overall HFS are found to be 0.75, 0.78, 0.77 and .86 respectively (Thompson et al., 2005).

7.2. Kansas Marital Conflict Scale (KMCS)

The Kansas Marital Conflict Scale (KMCS) is a 27-item self-report, 5-point Likert scale scores ranging from 1 (Never) to 5 (Almost always), designed to measure marital interactions and conflict of distressed and non-distressed married couples (Eggeman, Moxley, & Schumm, (1985). The sum of twenty-seven items gives the overall score of marital conflict of an individual. The higher scores represent a lower conflict. For an easy understanding of the score, R. A Fisher's data transformation method (Wicklin, Rick, 2013) is adopted. Thus, the new scoring method is 'the higher the marital conflict score, the higher will be the marital conflict'. The test-retest correlations of the three stages range from 0.64 to 0.96 (Eggeman et al., 1985).

7.3 The Subjective Well-being Inventory (SWBI)

The Subjective Well-Being Inventory developed by Sell and Nagpal (1992) is a self-report questionnaire containing 40 items with 11 dimensions designed to measure an individual's overall feeling about life. For positive items, the score is 3, 2 and 1 respectively and vice versa for the negative items. The total score of all 40 items reveals an overall Subjective Well-being score. The higher score shows better the Subjective Well-being and vice versa. The test-retest reliability of the inventory is 0.79 and its validity is 0.86 (Sell & Nagpal, 1992).

8. INCLUSION & EXCLUSION CRITERIA FOR EXPERIMENTAL RESEARCH PARTICIPANTS

1. Should be married and living with the partner under the same roof.
2. Must be within the age group of 19 to 50.
3. The pre-test scores must fall under a high level of marital conflict.
4. They must be free from any mental illness.
5. Widows, separated, divorced, and living together couples are excluded.

9. PARTICIPANTS

Adopting the purposive sampling technique three hundred and ninety-six married couples were chosen from six villages of Dindigul district in Tamil Nadu and administered questionnaires. Seventy-six couples out of three hundred and ninety-six who had high marital conflict mean scores were chosen and assigned equally (N=38) to control and experimental groups randomly. Only the experimental group received FMEP for 50 days of intervention. Soon after the intervention, a post-test was carried out and a follow-up test was conducted after two months. Data were collected and analysed using SPSS version 22 on descriptive and inferential levels. Descriptive statistics included mean and standard deviation and inferential statistics included repeated measures of ANOVA, paired and independent t-tests and correlation.

10. INTERVENTION MODULE

The below module is based on the 3Ps: 1. Preparative Stage, 2. Processing Stage, and 3. Persevering Stage



Table No.1.
Forgiveness Marital Enhancement Programme (FMEP)

Description of FMEP	Time
1. PREPARATIVE STAGE	
SESSION - 1: General Orientation In this FMEP session, the researcher welcomed the participants and explained the nature, purpose, confidentiality, time schedule, and proceedings of the interventions and collected informed consent.	80 Mints
SESSION - 2: Happiness in Marital life and Forgiveness the Positive Path to Happiness Discussed in general the role and benefits of positive emotions in daily life and conducted a brainstorming session on happiness in married life. The positive emotion of forgiveness and its three dimensions 1. Forgiving Oneself; 2. Forgiving Others 3. Forgiving the Situation were discussed.	90Mints
2. PROCESSING STAGE	
SESSION - 3: Recalling Persons and Events Instructed the participants to prepare a forgiveness inventory list which included hurtful events, grudges or grievances, wounds or offences which they were unable to forgive or release and write them down in the order of priority in a special sheet.	60Mints
SESSION - 4: Realising the Need for Forgiveness Explained the meaning of general, emotional, and decisional benefits of forgiveness and the burdens of unforgiveness with examples. Helped to list the advantages of forgiveness in physical, mental, spiritual, and relational. Sharing with the group what they learnt and doing homework on the negative effect of unforgiveness.	75Mints
SESSION - 5: Reliving and Releasing One's Grudge Writing a forgiveness letter choosing any one of the persons, problems, or situations, especially with the partner. Told to pay attention to how emotionally, physically, psychologically, and spiritually affected by the incidents. As homework, asked to take four hurtful or painful incidents and describe them elaborately in forgiveness letters form to their partner.	90Mints
SESSION - 6: Recognising Positive Intention Pay attention to a person's positive intention behind their action or behaviour. Basically, we do things with good intentions and reason. This helps for a loving and peaceful relationship with the person and situation. Taught Empty Chair Technique and Tole Play to realise the motive behind their action.	80Mints
SESSION - 7: Reconstructing One's Hurtful Story Explained the importance of reconstructing a story concerning what happened to them when they are hurt. Most suffering is not caused by what happened to us, but rather by how we tell ourselves about what happened to us due to our selective inclusion and exclusion. Thus, asked to discuss the story objectively by distancing themselves from the story as a third party and create a new story which would be the essence of forgiveness.	75Mints
SESSION - 8: Rewriting a New Story The essence of forgiveness is to create a new story about what happened. It is narrating the events of what actually happened from a different perspective. It is a process of shifting from seeing oneself as a victim to seeing oneself as a hero. In the end, they were asked to write the new story again and again till they are satisfied.	70Mints
SESSION - 9: Reconnect with Self, Others and Your Partner Through Forgiveness Spoke about forgiving oneself, others, and partners. Forgiveness is not complete without self-forgiveness. Self-awareness tells that an individual also played his/her part in creating the bad situation. After forgiving themselves and experiencing forgiveness from others the couples were encouraged to forgive one another and share how they have forgiven each other's offences among themselves.	90Mints
SESSION - 10: Loving-Kindness Meditation Instructed the couples to close their eyes and repeat these: 'May I be safe and protected.... May I be happy.... May I be healthy and strong.... May I live happily, peacefully, joyfully and with ease in this world.... May I be free from all harm, disease, physical pain, and suffering....'. Now consider someone who makes you upset or angry. Think about this person and send loving thoughts to him or her. Say to him or her the above statements. Discussion based on the meditation and are asked to do meditation twice a day in the morning and evening.	90Mints



3. PERSEVERING STAGE	
SESSION - 11: To Hold on to Forgiveness in Daily Life Instructed to thank God for the gift of their partner by holding hands and saying Forgiveness and Peace Prayer and reciting the following statements aloud or silently in their hearts one by one as per the guidance: Step 1. I feel happy for you, I am thankful to you, I am lucky to have you, & you are a great treasure. Step 2. May you --- (partner's name) experience peace and ease, may you --- be free from pain and suffering, may you ---- be happy and healthy and may you --- be alive and joyful etc. Step 3. Write a pledge and place it on the Forgiveness Notice Board or near the feet of God and read it every day: We forgive each other, we are grateful to each other, we are happy to be together, we are blessings to each other, we feel safe in each other's company, we are a gift to each other.	90 Mints
SESSION - 12: Evaluation and Termination The main purpose of the last session was to review the intervention held in earlier sessions and to arrive at conclusions about enhancing forgiveness and subjective well-being. Presented the summary of the whole program. The participants briefly shared their experiences with the intervention group and reviewed the sessions' content. After administering the post-test questionnaire to the experimental group, a short evaluation was conducted.	90 Mints

11. ETHICS CONSIDERATIONS

The subject matter and the aim of the study were clarified to the participants in the first session, and the participants' consent who were willing to take part in the study was acquired. They were apprised of the fact that the study would cause them no harm of any kind. The participants were alerted that they could terminate their participation in the study at any given stage of the study without any prior information. Participants were not asked to provide their names or other identifiable information about them.

12. RESULTS

Repeated measures of ANOVA were administered (N=38) to find out whether the Forgiveness Marital Enhancement Programme (FMPEP) was effective in reducing the MC and enhancing the Forgiveness and SWB of couples with marital conflict from pre-test to follow-up tests.

Table No.2.

Descriptive Results of Forgiveness, MC and SWB of Control and Experimental Groups in Pre, Post and Follow-Up Tests

Groups	Forgiveness				Marital Conflict			Subjective Well-being		
		Pre-Test	Post-Test	Follow-Up	Pre-Test	Post-Test	Follow-Up	Pre-Test	Post-Test	Follow-Up
Control	M	37.91	55.40	58.53	66.59	41.44	37.79	42.54	56.68	61.71
	SD	2.906	2.338	2.699	3.799	4.322	3.820	2.350	2.682	3.966
Experiment	M	37.60	38.12	38.25	67.12	67.68	67.03	42.87	43.29	43.06
	SD	2.367	2.428	1.630	4.036	3.607	3.841	2.083	2.697	1.821

Table 2 presents participants' descriptive statistics (Mean and SD) based on the phase of study and group for Forgiveness, MC and SWB variables.

A. Results on repeated measures of ANOVA for Forgiveness, MC and SWB (Exp. Group)

HYP 1. The Forgiveness Marital Enhancement Programme (FMPEP) would reduce the level of MC and enhance the Forgiveness and SWB of the experimental group for the Pre, Post and Follow-up test conditions.



Table No.3.
Within Subject Contrasts from Pre-test to follow-up test on Forgiveness, MC and SWB

Measure	Time	df1	df2	F	Sig.	η_p^2
Forgiveness	Pre-test to Post-test	1	37	962.86	.000	.96
	Post-test to Follow-up	1	37	98.22	.000	.73
MC	Pre-test to Post-test	1	37	1258.98	.000	.97
	Post-test to Follow-up	1	37	67.49	.000	.65
SWB	Pre-test to Post-test	1	37	1267.86	.000	.97
	Post-test to Follow-up	1	37	125.19	.000	.77

It is evident from the above table that the contrasts at each level were statistically significant from the pre-test to the follow-up test. Further Bonferroni corrected pairwise comparison test of mean values at the various stages of testing is presented in the following table:

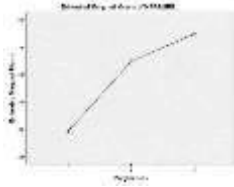
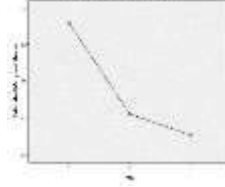
Table No.4.
Bonferroni Corrected Pair Wise Comparison on Forgiveness, MC and SWB

Measure	(I) time	(J) time	Mean Difference (I-J)	Significance
Forgiveness	Pre-test	Pre-test to Post-test	-25.526*	.000
		Pre-test to Follow-up test	-35.553*	.000
	Post-test	Post-test to Pre-test	25.526*	.000
		Post-test to Follow-up test	-10.026*	.000
	Follow-up test	Follow-up to pre-test	35.553*	.000
		Follow-up to Post-test	10.026*	.000
MC	Pre-test	Pre-test to Post-test	24.737*	.000
		Pre-test to Follow-up test	30.526*	.000
	Post-test	Post-test to Pre-test	-24.737*	.000
		Post-test to Follow-up test	5.789*	.000
	Follow-up test	Follow-up to pre-test	-30.526*	.000
		Follow-up to Post-test	-5.789*	.000
SWB	Pre-test	Pre-test to Post-test	-27.605*	.000
		Pre-test to Follow-up test	-36.776*	.000
	Post-test	Post-test to Pre-test	27.605*	.000
		Post-test to Follow-up test	-9.171*	.000
	Follow-up test	Follow-up to pre-test	36.776*	.000
		Follow-up to Post-test	9.171*	.000

*. *The mean difference is significant at the .05 level.*

There were significant statistical mean differences at each stage while comparing the mean values of other levels. The partial eta squared values showed that there was an overall high effect size for the study variable. In addition, within-subject contrast has underscored the effect sizes at each stage, further showing high effect sizes.

It has been found that sphericity was met as indicated by Mauchly's test for Forgiveness $\chi^2(2) = 2.69$, $p > .05$, for MC $\chi^2(2) = 0.15$, $p > .05$ and SWB $\chi^2(2) = 4.21$, $p > .05$. The univariate test results showed that there was a significant relationship regarding Forgiveness $F(2,74) = 831.19$, $p < .01$ and there was a huge effect $\eta_p^2 = 0.96$ and for MC $F(2,74) = 1036.70$, $p < .01$, and there was a huge effect $\eta_p^2 = 0.97$ and for SWB $F(2,74) = 1337.90$, $p < .01$, and there was a huge effect $\eta_p^2 = 0.97$. The graphs below further explain the results of the three study variables.

**Figure: 1**
Increase of Forgiveness**Figure:2**
Reduction of MC**Figure: 3**
Increase of SWB

Thus, the hypothesis 1 that the Forgiveness Marital Enhancement Programme (FMEP) would reduce the level of MC and enhance the Forgiveness and SWB of the experimental group from the pre-test to the follow-up test is accepted.

B. Results Comparing the Pre and Post-Test of Control Groups Forgiveness, MC & SWB

HYP 2. The Control Group of Forgiveness, MC and SWB will not show any significant difference in pre-test and post-test conditions.

Table No.5.

S. No.	Variables	Control (N=38)				t (37)	P	Cohen's d
		Pre-test		Post-test				
		M	SD	M	SD			
1.	Forgiveness	38.49	3.27	39.47	3.13	-1.30	0.20 ^{NS}	0.31
2.	MC	66.87	3.93	67.47	3.74	-0.95	0.35 ^{NS}	0.16
3.	SWB	42.79	2.04	43.13	2.61	-0.64	0.53 ^{NS}	0.15

$NS - p = >.05$

Paired samples t-test was performed to find out if there was a difference between the pre and post-tests of Control Groups on the total score for Forgiveness, MC and SWB. The results revealed that there was no significant difference between pre-test and post-test scores of the total score for Forgiveness, MC and SWB. Thus, hypothesis 2 is accepted.

C. Results Comparing the Control & Experimental Groups at the Pre-test Phase for the Study Variables - Forgiveness, MC, and SWB

HYP 3. The Control Group and Experimental Group will not show a significant difference in the Pre-test scores regarding study variables Forgiveness, MC, and SWB.

Table No.6.

Group	Variables	Pre-test Scores				t (75)	p	Cohen's d
		Control		Experiment				
		M	SD	M	SD			
Forgiveness Marital Enhancement Programme (FMEP)	Forgiveness	38.49	3.27	39.21	2.08	-1.15	0.25 ^{NS}	0.26
	MC	66.87	3.93	65.64	3.45	1.46	0.15 ^{NS}	0.33
	SWB	42.79	2.04	41.96	2.02	1.79	0.08 ^{NS}	0.41

$NS - p = >.05$

Independent samples t-test was administered to find out the difference between the Control Group and Experimental Group pre-test scores regarding the total score for Forgiveness, MC, and SWB. The results indicated that there was no significant difference between the Control Group and the Experimental Group regarding the pre-test total score for Forgiveness, MC and SWB. Thus, hypothesis 3 is tenable.

D. Results Comparing the Control & Experimental Groups at the Post-test Phase for the Study Variables - Forgiveness, MC, and SWB

HYP 4. There will be a significant difference between the Control Group and Experimental Group in the Post-test scores regarding study variables Forgiveness, MC, and SWB

**Table No.7.**

Group	Variables	Post-test Scores				t (75)	p	Cohen's d
		Control		Experiment				
		M	SD	M	SD			
Forgiveness Marital Enhancement Programme (FMEP)	Forgiveness	39.47	3.13	64.67	4.47	-28.58	.000	6.53
	MC	67.47	3.74	41.10	3.20	33.27	.000	7.58
	SWB	43.13	2.61	69.50	4.65	-30.54	.000	6.99

*** $p < .001$ **Forgiveness Marital Enhancement Programme (FMEP)**

Independent samples *t*-test was performed to find out if there was a difference between the Control and Experimental Groups in post-test scores regarding the total score for Forgiveness, MC, and SWB. The results regarding the total score for Forgiveness indicated that there was a significant difference between the Control Group ($M = 39.47$, $SD = 3.13$) and Experimental Group ($M = 64.67$, $SD = 4.47$) post-test scores $t(75) = -28.58$, $p < .000$. There was a very large effect ($d = 6.53$) 95% CI (-26.95, -23.44).

The results regarding MC total score indicated that there was a significant difference between the Control Group ($M = 67.47$, $SD = 3.74$) and Experimental Group ($M = 41.10$, $SD = 4.47$) post-test scores $t(75) = 33.27$, $p < .000$, and there was a large effect ($d = 7.58$) 95% CI (24.79, 27.95).

The results regarding SWB total score indicated that there was a significant difference between the Control Group ($M = 43.13$, $SD = 2.61$) and Experimental Group ($M = 69.50$, $SD = 4.65$) post-test scores $t(75) = -30.54$, $p < .000$, and there was a large effect ($d = 6.99$) 95% CI (-28.09, -24.65).

Thus, the hypothesis 4 that there would be a significant difference between the control group and experimental group at the post-test phase regarding the total score for Forgiveness, MC and SWB is tenable.

E. Correlation Among the Mean Scores of Forgiveness, MC and SWB (Experimental Group)

H.5. The higher the level of Forgiveness, the higher will be SWB and the lower will be MC.

Table No. 8.

Variables	1	2	3
1. Total Forgiveness Score	1		
2. Total MC Score	-0.266**	1	
3. Total SWB Score	0.533**	-0.257**	1

 $p^{**} < .01$

A Pearson Product-Moment Correlation Coefficient was computed to assess the type and degree of relationship between Forgiveness, MC and SWB. Table 8 clearly showed that Forgiveness positively correlated with SWB at a significant level $r(38) = 0.533$, $p < .01$ and MC negatively correlated with SWB at a significant level $r(38) = -0.257$, $p < .01$. Thus, hypothesis 5 that there would be significant relationships among the research variables for married couples, namely, Forgiveness, MC and SWB is verified.

13. DISCUSSION

It was hypothesized that conscious, intentional daily awareness and practice of forgiveness would reduce marital conflict and augment the subjective well-being of dyadic relationships. This hypothesis was tested through an experimental model called Forgiveness Marital Enhancement Programme (FMEP).

It is proved from the study that a conscious, intentional and deliberate step would enable one to forgive the transgressor (Fincham et al., 2005) and help one alleviate the bad effect of unresolved conflict on physical and psychological health (Biagini, 2019; Ross et al., 2017) and predict a more healthy and productive relationship (Paleari et al., 2005). The present study result reveals that forgiveness is significantly and positively correlated with marital happiness and well-being. This finding is consistent with previous findings of the research examining the relationship between these two variables (Fincham et al., 2002; Gordon et al., 2009; McNulty, 2008; and Orathinkal & Vansteenwegen, 2006). In addition, individuals are found to be more willing to forgive their partners and their conflict discussions are typically constructive (Hoyt, Fincham, McCullough, Maio, & Davila 2005).

The broaden-and-build framework states that a single positive experience of forgiveness can extend and intensify the positive emotions and positive actions circle and build onto one another, thus creating upward spirals (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008; Fredrickson, 2001). The study conducted by LouieDoss & SoosaiNathan, (2023) on gratitude intervention found that a mindful practice of positive emotion of gratitude exercises helped the participants not only to remember positive events but also



broaden their views to have positive thoughts amidst a negative situation and learn lesson from it which is true of forgiveness too since forgiveness is also a positive emotion.

Expressing forgiveness to one's couple makes them feel that he or she is understood, accepted, and loved in all odd situations of their relationship. This mechanism influences not only the thought processes but the ability to think positively about their future relationship too. Thus, forgiveness may have the potential to not only work to buffer couples against distress but also as a positive mechanism facilitating an optimistic outlook for the future of the couple (Gordon & Baucom, 2009).

Scientific findings of positive psychology regarding forgiveness highlights that the attitude of forgiveness is important to be well embedded and continuously constructed in married couples' mind and heart which benefits them to maintain positive mental and physical health, advantageous relationships with others, and positive well-being (Warsah, 2020). The current study reveals that FMPEP intervention of positive emotions helped persons to develop resources to deal with life challenges that in turn lead to well-being and life satisfaction (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009) and assists the couple in acquiring effective conflict resolution behaviours (Fincham et al, 2007).

14. SCOPE FOR FUTURE RESEARCH

More research is necessary to investigate forgiveness relationships with other variables within and outside the dyadic relationship. Conducting interventions in the early stages of married life will have a deeper and long-lasting impact on their life. A longitudinal study with larger samples needs to be conducted to observe the change in their forgiveness after the FMPEP Intervention. Future research may consider comparing the prevalence of forgiveness and the relationship between MC and SWB among early, mid, and late married couples to find out and define whether different marital stages of couples influence the level of forgiveness or not. The FMPEP can be incorporated into the premarital preparation programme.

Some concerns: Though the instructions were comprehensive, reminders were given regularly and communication between the researcher and participants was well maintained, yet it is uncertain how well the participants followed the protocol as it was intended (e.g., writing entries every day), given that they were largely left to complete the exercise at their discretion.

15. CONCLUSION

The current study confirms that participation in a Forgiveness Marital Enhancement Programme (FMPEP) can significantly reduce marital conflict and enhance subjective well-being in intimate dyadic relationships. It also reveals that conscious, intentional daily awareness and expression of forgiveness can trigger an upward spiral in well-being by buffering against negative emotions. The study's results demonstrate that enhancing the forgiveness via FMPEP can have remarkable effectiveness in counselling and therapeutic interventions. FMPEP is a positive, novel, and non-invasive approach to amplifying positivity in a dyadic relationship. Thus, generating a positive attitude of forgiveness among married couples, would certainly develop the ability to adapt, evolve and maintain a positive physical and mental well-being in family and society.

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IMPACT OF ADVERTISEMENTS ON CONSUMER BUYING BEHAVIOUR: AN EMPIRICAL STUDY OF LIFE INSURANCE POLICY HOLDERS OF MANGALORE CITY

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ABSTRACT

Indian economy is one of the fastest growing economies in the world. Majority of the country's population comprise of youths falling in the age group of 15 to 35. Human life is a precious asset and life insurance is a type of insurance which provides financial protection on the happening of an uncertain event. Life insurance allows people to financially secure their family at the time of any uncertain event. But insurance sector shows little penetration when compared to other countries. Presently, insurance companies are emerging out with variety of products having wider risk coverage and greater benefits. This paper makes an attempt to analyze the impact of advertisement on consumer buying decisions related to insurance products. The study result shows that advertisement has an impact on consumer buying behaviour.

KEYWORDS: *Advertisements, consumer behavior, life insurance products*

INTRODUCTION

Service sector has shown a rapid growth in India. Insurance industries have contributed a major share to this growth. Life Insurance Corporation of India retained monopoly till 1999, the year in which it was liberalized. At present there are 24 Life insurance companies in India offering wide variety of life insurance products. Life insurance products are vital for individuals in the present scenario. It protects the dependents on the happening of an uncertain event and also provides for retirement life. Life insurance products aim at benefitting the survivor or the business on the death of the insured. It aims at replacing the income or pay off mortgages of the deceased. It also promotes savings among people.

Previous studies showed that there is a need for creating awareness among the people regarding the insurance products and their benefits. This can be better served by advertisements. Advertising is a method to communicate with the users of a product or service. According to advertising association of the UK, Advertisements are messages paid for by the sender and are intended to inform or influence people who receive them. Advertising is a way of communication to encourage an audience for making purchase decision about a product or service and conveying information to viewers. It is considered as a vital and essential element for the economic growth of the marketers and businesses (Ryans, 1996). Advertising provides direct communication to the existing and prospective customers about the product or service. It is the process of persuading the targeted audience to take a specific action, whether that's buying a product or bringing awareness towards an issue.

Consumer behavior is defined as "the study of individuals, groups, or organizations and the processes they use to select, secure, use and dispose of products, services, experiences, or ideas to satisfy needs and the impacts that these processes have on the consumer and society." (Hawkins et al., 2001:7.). It is the action the buyers take before buying a product or service. Buyers use various search engines, engages in social media posts and takes up various other actions before taking up a purchase decision. This necessitates every business to understand consumer buying behavior and take up required marketing initiatives which can influence the consumers to buy a product or service.

REVIEW OF LITERATURE

Babita Yadav & Anshuja Tiwari (2012), in their research article titled "A study on factors affecting customers investment towards life insurance policies" proved that LIC is one of the most accepted and popular brand in life insurance. The study also showed that the



market share of private insurers gradually increased with the increasing trust and better services offered by the company. The study was conducted in Jabalpur District of Madhya Pradesh with the sample size of 150 policyholders.

R. Uppily (2016), in the study titled “A Study on Consumer Behaviour on Life Insurance Products - With Reference to Private Bank Employees in Chennai” tried to analyse the consumer behaviour of private bank employees in respect of purchase of Life insurance products. The study was conducted in Chennai with a sample size of 54 employees. The study showed that Life insurance industry in India was still at very low penetration levels. The reason for this being lack of awareness and no product innovation.

Sujatha S & Seema (2012) in their research article titled “A study on the benefits of advertisements on the promotion of products – a special reference to IDBI Federal Life Insurance Company Ltd” tried to analyze the benefits of advertisement as a tool for promotion of products by Insurance Company. The study covered IDBI Federal Life Insurance Company Ltd. The study was conducted with 150 respondents. The study showed that advertisements can help the insurance companies to reach the end users easily. The company’s must use other promotion strategies like conducting more events and experience, publicity etc. that would help in reaching the end users effectively.

Praveen Sanu, Gaurav Jaiswal and Vijay Kumar Panday (2009) in their study titled “A Study of Buying Behaviour of Consumers towards LIC” observed that, in the present Indian market, the investment behaviour of Indian consumers change frequently. The study also showed that the individual’s perceptions about various investment plans are different.

OBJECTIVES OF THE STUDY

- 1) To analyze the impact of advertisements on consumer buying behavior related to life insurance products.
- 2) To analyze the relationship between demographic profile and consumer buying behavior related to life insurance products.

NEED FOR THE STUDY

There are both public and private companies offering variety of life insurance products. These companies spend huge amount on advertisements. This study makes an attempt to analyze the impact of these advertisements on consumer buying behavior.

SCOPE OF THE STUDY

The study is undertaken in Mangalore city with 150 respondents. Only life insurance policy holders are included for the study.

RESEARCH METHODOLOGY

The present study uses both primary and secondary data. Primary data is used to analyze the impact of advertisement on consumer buying behavior and also to analyze the impact of demographic profile on consumer buying behavior. Secondary data is used to understand the concept of life insurance. Primary data will be collected from 150 respondents. Random sampling technique will be used to collect the data. Various statistical tools like correlation and regression is used to analyze the data.

HYPOTHESIS

H₁: there is relationship between advertisement and consumer buying behavior related to life insurance products.

H₂: there is relationship between demographic profile and consumer buying behavior related to life insurance products.

DATA ANALYSIS

Table showing the impact of advertisement

ANOVA					
	Sum of squares	DF	Mean square	F	sig
Impact of Advertisement on Consumer Buying Behaviour of LIC products	2.068	1	2.068	2.308	0.02
Effect of advertisement on gender	50	48	0.616	3.553	0.058
Impact of income on Consumer Buying Behaviour with reference to life insurance products	50	48	1.982	3.884	0.023



FINDINGS AND SUGGESTIONS

The above table shows that there is significant difference in the mean square. Hypothesis is rejected in the first and last case as the significance value is lesser than 0.05. Alternate hypothesis is accepted which means that Advertisement has an impact on consumer buying behaviour with regards to life insurance products. Income also has an impact on consumer buying behaviour. But in the second case hypothesis is accepted which means that Advertisement effect do not differ on the basis of gender.

CONCLUSION

Advertisement is a tool which is widely used by the companies for attracting consumers towards their product or services. Previous studies have showed that advertisement can influence consumer buying behaviour. The present study also reflect the same.

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CMS 21: INTEGRATING GAME-BASED LEARNING IN BASIC AUTOMOTIVE

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ABSTRACT

This study sought to determine the effectiveness of Car Mechanic Simulator 21 (CMS 21) in learning concepts in Automotive. This study described the performance of two groups of students in different skills in Automotive before and after a series of instructions using the two learning interventions (module and CMS 21) using pre-test and post-test design. This study was conducted at Nueva Ecija University of Science and Technology, and Bachelor of Science in Industrial Education (20) students served as subjects. The study used the experimental design of research. Using t-tests, results revealed that i) there is statistical evidence to reject the null hypothesis "There is no significant difference in the performances of subjects under the controlled group in the pre-test and post-test, and ii) there is statistical evidence to reject the null hypothesis There is no significant difference in the performances of subjects under the experimental group in the pre-test and post-test. Lastly, after applying statistical treatments, there is statistical evidence to reject the null hypothesis There is a significant difference in the performances of the students between the two groups after their respective interventions. Thus, the use and implementation of CMS 21 is recommended.

KEYWORDS: Basic Automotive; Car Mechanic Simulator 21; Distance Learning; Game-based learning, Modular learning

1. INTRODUCTION

The coronavirus disease (COVID-19) pandemic and related lockdown and physical distancing measures caused unprecedented disruption in the delivery of education and training and catalyzed innovation in distance learning. According to the International Labor Organization (2021), due to these lockdown measures, the adoption of distance learning solutions by TVET programs has facilitated the acquisition of practical skills and the organization of work-based learning, both of which are essential components for the success of TVET programs, specifically in learning the basics of Automotive.

On the contrary, based on the statistical results of the examinations conducted by the researcher among his students, it was shown that learning the basics of Automotive is one of the least learned competencies of the students during the first semester of their second year under the program Bachelor of Science in Industrial Education and Bachelor of Technology and Livelihood Education. With this, it resulted in students' difficulty involving learning the basic concept in Automotive.

In an effort, to engage learners in learning the basic concept in Automotive, only few teachers used game-based learning. The idea of using games to engage learners in the process of active learning is not new. As cited by Cicchino (2015), Game-Based Learning environment enables learners to make meaningful choices within problem (McCall, 2011) and often present learner with ill-structured problems, well-structured rules with ill-structured paths to resolution, students typically work in small groups and construct knowledge through the activation of prior understanding, as well as by engaging in collaborative discourse.

Game-Based Learning interventions were effective in promoting higher levels of critical thinking including the development of independent beliefs prior to engaging in collaborative discourse and providing opportunities for guided reflection (Cicchino, 2015). Thus, this paper focused on determining the effectiveness of Car Mechanic Simulator 21 (CMS 21) in learning concepts in Automotive.

Statement of the Problem

1. How may the performance of the subjects before the respective integration be described considering the students in:
 - 1.1 Controlled group; and



- 1.2 Experimental group?
2. Is there a significant difference between the performance of the subjects in the two groups before the intervention?
3. How may the performance of the subjects after the respective integration be described considering the students in:
 - 3.1 Controlled group; and
 - 3.2 Experimental group?
4. Is there a significant difference in the performance between pre-test and post-test results of the subjects in:
 - 4.1 Controlled group; and
 - 4.2 Experimental group?
5. Is there a significant difference between the performance of the subjects in the two groups after the intervention?

2. METHODOLOGY

2.1 Research Design

This study utilized the quasi-experimental research design. According to L. Thomas (2022), quasi-experimental research, as opposed to true experimental design, is the systematic study of establishing a cause-and-effect relationship between an independent and dependent variable in which subjects are assigned to groups based on non-random criteria. This study aims to assess the effectiveness of integrated game-based learning for teaching Basic Automotive in the form of an already downloadable software application known as Car Mechanic Simulator 21 or CMS 21. With this given problem, in the mind of the researcher, this research design is the most appropriate to be employed in this study.

2.2 Participants

Twenty selected 3rd year BSIE students served as the subjects of this study. These students were grouped based on the results of the pre-test conducted before the implementation of the two interventions. After determining the groupings, ten (10) 3rd year BSIE students were assigned to controlled group with modular learning as learning material. Moreover, ten (10) 3rd year BSIE students were assigned to the experimental group who used the CMS 21 as a learning material.

2.3 Instrument

This study utilized instruments that are of great help towards the attainment of the objectives of this research. This study made use of i) Summative Assessment for Basic Automotive, ii) Car Mechanic Simulator 21, and iii) Module in Basic Automotive to attain the goals of the study.

i. Summative Assessment for Basic Automotive (SABA)

Description. Summative Assessment for Basic Automotive (SABA) is a teacher-made test which contains items involving basic concepts and skills including basic car parts and functions which under the subject "Basic Automotive". It is a multiple choice type of test that contains 50 items with four (4) choices each. A Table of Specification of SABA was prepared for this purpose.

Validation. The draft form of SABA was checked by an expert in the field of Basic Automotive and was pilot-tested to a group of College students who have taken the course under study and were not members of the sample. After the pilot-testing and analyzing the internal consistency, the 60 item test later became 50 with an alpha index of 0.813. One point was allotted to every correct answer given by the student.

ii. Car Mechanic Simulator 21 (CMS 21)

Description. Car Mechanic Simulator 21 (CMS 21) is a mobile game which simulates how to operate a car. It also engages its users with different knowledge and skills about automotive such as basic parts, simple cleaning procedures and troubleshooting. This mobile application is available at Google Playstore for free.

iii. Module in Basic Automotive

Description. Module in Basic Automotive is a teacher-made learning module that will serve as the guide and mode of instruction. The topics in the learning module are based on the syllabus of instruction for Basic Automotive, a major subject offered for Bachelor of Technology and Livelihood Education and Bachelor of Science in Industrial Education. Considering the process of validation of modules in the College of Education, this instrument underwent the following procedure: i) checking of grammar and technicalities of writing by an English Expert through the aid of Plagscan and Grammarly, ii) content validity by experts in the field of Automotive, and iii) final checking by the College Dean.

2.4 Procedure of the Study

The researcher conducted this study into three phases, namely: Pre-test, Instruction, and Post-test.

Pre-test. In the first phase, the validated teacher-made pre-test was administered to the two groups of participants to test their prior knowledge on Basic Automotive. The results of the pre-test were also used in determining the groupings of the participants.



Instruction. During this phase, two modes of learning were implemented in the two separate groups. In the controlled group, a modular mode of learning was implemented where students used modules that facilitated learning by themselves. Meanwhile, the experimental group utilized game-based learning using the CMS 21 application. This application was implemented to the participants to learn the basic concepts and skills in Automotive.

Post-test. In this stage, the validated teacher-made post-test was utilized by the two groups of participants to test their learned knowledge and skills on Basic Automotive. The results of the post-test were compared to the results of the pre-test, and further tests of differences were conducted to determine the more effective learning approach.

2.5 Data Analysis

In this study, the data that were obtained in each phase were described and analyzed using the following framework or statistical treatment:

1. To describe the performance of the students in the two groups before and after the implementation of learning module and CMS 21 in the controlled and experimental group respectively, mean score and standard deviation were used. Also, the scores were interpreted as follows: 41 – 50 (Excellent), 31 – 40 (Very Satisfactory), 21 – 30 (Satisfactory), 11 – 20 (Needs Improvement) and 0 – 10 (Poor).
2. To determine significant differences within and between groups, paired sample t-test and two sample t – test respectively were used.

3. RESULTS AND DISCUSSION

3.1 Performance of Subjects before the Implementation of Learning Modalities

3.1.1 Performance of Subjects under the Controlled Group before Implementing Modular Learning

Table 1 Pre - Test Results of Subjects under Controlled Group

Subjects	Scores	Verbal Interpretation
C1	13	Needs Improvement
C2	15	Needs Improvement
C3	16	Needs Improvement
C4	20	Needs Improvement
C5	22	Satisfactory
C6	25	Satisfactory
C7	26	Satisfactory
C8	27	Satisfactory
C9	27	Satisfactory
C10	32	Very Satisfactory
Mean Score	22.3	Satisfactory

Table 1 shows the performance of the subjects in the controlled group before implementing the modules for Basic Automotive. As shown in the table, it was revealed that 40% or 4 out of 10 subjects in the controlled group obtained scores from 11 - 20 with verbal interpretation of *needs improvement*. Moreover, 5 out 10 or 50% of the subjects in the group performed satisfactory with scores from 21 to 30. Lastly, only one or 10% of the subjects obtained a score of 32 verbally interpreted as very satisfactory. In general, the group obtained a mean score of 22.3 verbally interpreted as satisfactory.

Based on these results presented, it can be deduced that most of the subjects in the controlled group performed satisfactory in the pre-test involving selected concepts in basic automotive. Impliedly, this result suggests that there is still a room for intervention and improvement among the subjects in the controlled group since most of the subjects performed satisfactorily.



3.1.2 Performance of Subjects under the Experimental Group before using CMS 21

Table 2 Pre - Test Results of Subjects under Experimental Group

Subjects	Scores	Verbal Interpretation
E1	14	Needs Improvement
E2	14	Needs Improvement
E3	17	Needs Improvement
E4	19	Needs Improvement
E5	21	Satisfactory
E6	26	Satisfactory
E7	25	Satisfactory
E8	26	Satisfactory
E9	28	Satisfactory
E10	32	Very Satisfactory
Mean Score	22.2	Satisfactory

Table 2 displays the subject's performance in the experimental group prior to the game-based CMS 21 intervention. According to the table, 40% of the experimental group's 10 subjects, or 4 out of 10, obtained scores between 11 and 20, with verbal interpretation of *needs improvement*. Additionally, 5 out of 10 participants, or 50% of the subjects, scored satisfactorily with scores between 21 and 30. And only one subject, or 10% of the group, obtained a score of 32, which is considered to be very satisfactory verbally. The group had a mean score of 22.2 overall, which was verbally assessed as satisfactory.

Based on the results, it can be concluded that the majority of the experimental group's subjects did satisfactorily on a pre-test that included fundamental automotive principles. Given that some of the subjects continue to perform below expectations, this result implies that there is still room for intervention and improvement among the individuals.

3.2 Test of Difference between the Performances of the subjects in the Two Groups before the respective learning modalities

Table 3 T Test results between Performances of the subjects in the two groups before the implementation of the respective learning modalities

	Scores	Scores
Mean	22.3	22.2
Variance	38.23333	37.73333
Observations	10	10
Hypothesized Mean Difference	0	
df	18	
t Stat	0.036282	
P(T<=t) one-tail	0.485729	
t Critical one-tail	1.734064	
P(T<=t) two-tail	0.971457	
t Critical two-tail	2.100922	



3.3 Performance of Subjects After the Implementation of Learning Modalities

3.3.1 Performance of Subjects under the Controlled Group After Implementing Modular Learning

Table 4 Post-Test Results of Subjects under Controlled Group

Subjects	Scores	Verbal Interpretation
C1	22	Satisfactory
C2	26	Satisfactory
C3	24	Satisfactory
C4	30	Very Satisfactory
C5	32	Very Satisfactory
C6	33	Very Satisfactory
C7	33	Very Satisfactory
C8	32	Very Satisfactory
C9	30	Very Satisfactory
C10	35	Very Satisfactory
Mean Score	29.7	Satisfactory

Table 4 displays the subject's performance in the controlled group after using modules in Automotive as learning intervention. According to the table, 30% of the controlled group's 10 subjects, or 3 out of 10, obtained scores between 21 and 30, with verbal interpretation of *satisfactory*. Additionally, 7 out of 10 participants, or 70% of the subjects, scored *very satisfactory* with scores between 31 and 40. After using module as a learning intervention, the group obtained a mean score of 29.70, which was verbally assessed as satisfactory.

Based on the results, it can be concluded that since the scores of all of the subjects under the controlled group have a drastic positive change compared to the pre - test results of the group, it can be deduced that the performance of the subjects under this group improved after using the intervention specified for the group.

3.3.2 Performance of Subjects under the Experimental Group After using CMS 21

Table 5 Post - Test Results of Subjects under Experimental Group

Subjects	Scores	Verbal Interpretation
E1	25	Satisfactory
E2	27	Satisfactory
E3	30	Satisfactory
E4	32	Very Satisfactory
E5	35	Very Satisfactory
E6	35	Very Satisfactory
E7	38	Very Satisfactory
E8	39	Very Satisfactory
E9	42	Excellent
E10	40	Very Satisfactory
Mean Score	34.3	Very Satisfactory

Table 5 displays the subject's performance in the experimental group after using CMS 21 as a learning intervention. According to the table, 30% of the experimental group, or 3 out of 10, obtained scores between 21 and 30 verbally interpreted as *satisfactory*. Additionally, 6 out of 10 participants, or 60% of the subjects, scored *very satisfactory* with scores between 31 and 40. Lastly, one of the subjects in the group obtained a score of 42, verbally interpreted as excellent. After using CMS 21 as a learning intervention, the group obtained a mean score of 34.30, which was verbally assessed as very satisfactory.

Based on the results, it can be concluded that since the scores of all the subjects under the experimental group have a drastic positive change compared to the pre-test results of the group, it can be deduced that the performance of the subjects under this group improved after using the intervention specified for the group.

Moreover, when compared to the change in the controlled group, it can be clearly shown that the experimental group performed better compared to the controlled group. Also, when the highest and lowest scorer in the experimental group were interviewed, they stated that they found the use of CMS 21 in learning Basic Automotive more creative and enjoyable on their part as



students. Also, the use of such intervention helped them to be more active in learning concepts in Automotive. This result greatly supports the study conducted by Alvarez (2021) where it was revealed that the use of game-based interventions was found to be more effective compared to the traditional ways of presenting intervention.

3.4 Test of Difference between the performance of subjects in each group before and after using the respective interventions

3.4.1 Test of Difference between the performance of subjects in the controlled Group before and after using modular learning modality

Table 6 T - Test results between the Pre - Test and Post - Test of Subjects under Controlled Group

t-Test: Paired Two Sample for Means		
	Pre-Test	Post-Test
Mean	22.3	29.7
Variance	38.23333	18.45556
Observations	10	10
Pearson Correlation	0.911444	
Hypothesized Mean Difference	0	
df	9	
t Stat	-8.13891	
P(T<=t) one-tail	<0.01	
t Critical one-tail	1.833113	
P(T<=t) two-tail	<0.01	
t Critical two-tail	2.262157	

Table 6 shows the result of the t-test conducted and it was revealed that there is a statistically significant difference in the individuals' test results before and after a series of interventions using the module in Automotive, with a mean difference of 7.40, were in favor of the post-test results. The computed sig is less than the sig critical value, which is 0.05. Therefore, at the 95% level of significance, there is sufficient statistical evidence to reject the null hypothesis that there is no significant difference between the students' performance in fundamental automotive concepts before and after the module's implementation. Therefore, it can be said that there is a considerable difference in the students' basic automotive performance before and after using the Automotive module as a learning intervention.

3.4.2 Test of Difference between the performance of subjects in the Experimental Group before and after using CMS 21

Table 7 T - Test results between the Pre - Test and Post - Test of Subjects under Experimental Group

t-Test: Paired Two Sample for Means		
	Pre-Test	Post-Test
Mean	22.2	34.3
Variance	37.73333	32.45556
Observations	10	10
Pearson Correlation	0.941084	
Hypothesized Mean Difference	0	
df	9	
t Stat	-18.4048	
P(T<=t) one-tail	<0.01	
t Critical one-tail	1.833113	
P(T<=t) two-tail	<0.01	
t Critical two-tail	2.262157	

Table 7 shows the result of the t-test conducted and it was revealed that there is a statistically significant difference in the subjects' test results before and after a series of interventions using CMS 21, with a mean difference of 12.10, in favor of the post-test results. The computed sig is less than the sig critical value, which is 0.05. Therefore, at the 95% level of significance, there is sufficient statistical evidence to reject the null hypothesis that there is no significant difference between the students' performance in



basic automotive concepts before and after using CMS 21 as game - based intervention. Therefore, it can be said that there is a considerable difference in the students' basic automotive performance before and after using the CMS 21 as a learning intervention.

Comparing the results of the two paired sample t-test, it can be deduced that with a mean difference of 0.10, the controlled group performed better compared to the experimental group considering the pre - test results. However, after the implementation of the respective interventions, it was found out that with a mean difference of 5.60, the experimental group performed better compared to the controlled group considering the scores in the post - test.

Lastly, based on the results of the paired sample t-test presented, it can be deduced that both interventions were statistically found to be effective in amplifying the performance of the students in learning basic automotive concepts.

3.5 Test of significant difference between the performance of the subjects in the two groups after the intervention

Table 8 T - Test results between the Post - Tests of Subjects in the Two Groups

t-Test: Two-Sample Assuming Unequal Variances		
	Controlled	Experimental
Mean	29.7	34.3
Variance	18.4555556	32.4555556
Observations	10	10
Hypothesized Mean Difference	0	
df	17	
t Stat	-2.0386916	
P(T<=t) one-tail	0.0286723	
t Critical one-tail	1.73960673	
P(T<=t) two-tail	0.05734459	
t Critical two-tail	2.10981558	

Table 8 displays the results of the t test and the statistically significant difference in scores between the experimental and control groups following a course of corresponding interventions. The computed sig, which is 0.028, is below the sig critical value, which is 0.05. Therefore, there is sufficient statistical evidence to reject the null hypothesis that, at the 95% level of significance, there is no significant difference between the test scores of the students in the two groups after the respective interventions. Therefore, it can be concluded that after the treatments, there is a significant difference between the test results of the children in the two groups.

After further analysis of the mean scores of the two groups, it was revealed that the experimental group performed better compared to the controlled group with a mean difference of 4.60 in favor of the experimental group. The t test conducted further supports that this computed difference is significant and thus implied that using CMS 21 as an intervention in learning basic concepts in automotive compared to using of module in Automotive.

4. CONCLUSIONS

Based on the findings of this study, the following conclusions were drawn.

1. The controlled group performs better in the experimental group before the implementation of the respective interventions. However, after implementing the corresponding interventions, it was found out that the increase in the performance of the experimental group is greater than the controlled group.
2. The two interventions were statistically found to be both effective. However, after the interventions, the use of CMS 21 in learning concepts in Basic Automotive was found to be more effective compared to the use of modules in Automotive.
3. The use of game - based learning through CMS 21 were statistically revealed to be effective.

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CHEMOTHERAPEUTIC DRUG DELIVERY SYSTEMS: NEW IDEAS AND PERSPECTIVES

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ABSTRACT

Targeted medication delivery to the organ, tissue, or cells currently offers great opportunities in the field of drug therapy. Drug delivery systems (DDS) are essential for improving the efficacy of chemotherapy in cancer treatment. Chemotherapy is a subject of great interest since new drug delivery techniques are constantly being created. The ability of therapeutic agents to reach their intended sites and their low accumulation in non-specific sites (healthy organs and tissues) are both crucial components of anti-tumor chemotherapy success. As a result, the targeted distribution of medications to the organs, tissues, or cells is currently thought to provide wonderful prospective in the field of chemotherapy. The fundamental idea behind targeted delivery is that molecules that can be recognised by a specific receptor on cells or target sites can be used to modify delivery systems (such as the vector, containers, and others) rather than just the medication itself.

These are therefore referred to as "targeted drug delivery systems." Yet, the development of multifunctional nanocarriers, such as nanoparticles, liposomes, micelles, dendrimers, and others, can greatly improve the effectiveness of numerous therapeutic and diagnostic procedures.

I. INTRODUCTION

Before reaching their target areas, all administering medications (molecules or particles) must go past a number of biological obstacles. What obstacles are influenced by drug delivery methods, modes of action, and pharmaceutical formulations? The intersection of a subcellular cell membrane and an organelle is one of these barriers, as are the reticuloendothelial system (RECs), gastrointestinal epithelial lining, vascular endothelium, and stroma (interstitial tissue) barriers (transport across the cell). As a result, the ability of medications to effectively reach their targets directly affects the therapeutic impact of those therapies. Every therapeutic treatment's effectiveness is greatly influenced by the therapeutic agent's bioavailability at the site of action in the human body, in addition to its pharmacokinetic/pharmacodynamic activity. The importance of dose forms was first made public by biopharmacy fifty years ago, which also identified drug formulation as the primary pharmaceutical factor affecting the therapeutic efficacy of medicines. Parallel to this path, scientists made early attempts to develop pharmacological formulations with specific pharmacokinetic properties. These pharmaceutical drug forms—also known as therapeutic systems or drug delivery systems—have a structure and technology that are significantly more complex than those of conventional drug forms (DDS).

II. DRUG DELIVERY SYSTEM (DDS)

A formulation or piece of machinery known as a drug delivery system (DDS) enables a therapeutic substance to target its site of action while avoiding nontarget cells, organs, or tissues. The main goals of constructing such systems were to increase the lifespan of pharmaceuticals in biological fluids, the direction of their actions, the enhancement of their solubility and bioavailability, shield drugs from early biodegradation before they reached problematic areas, decrease undesirable drug reactions in healthy tissues, organs, or cells, and minimise the emergence of side effects. It was necessary for the drug to be distributed relatively uniformly throughout the organism after conventional administration in order for targeted drug transport to appear. Drugs must also penetrate not only the target sites where they must have a therapeutic effect but also other organs, tissues, or cells where their action may have negative effects. When medications are distributed uniformly, their concentration in problematic locations might be reduced below the therapeutic level, which results in a weak drug therapeutic effect. Higher dosages of the medication are prescribed for better outcomes, but this



increases the chance of unintended side effects (this is the main problem for most antineoplastic drugs). Drug adverse drug reactions, therapeutic drug doses, and frequency of administration can all be significantly reduced by transporting the drug solely or at least predominately in the region affected by the pathological process. Currently, researchers are concentrating on nanotechnological ways to achieve these goals.

III. NANOTECHNOLOGY

New opportunities are made possible by nanotechnology that are not possible through conventional means. Because of its distinctive size and high surface-to-volume ratios, nanotechnology has the potential to provide solutions to the present problems in cancer therapy. Because of the makeup of their materials, nanotechnologies have characteristics such as self-assembly, stability, specificity, drug encapsulation, and biocompatibility. Due primarily to the improved half time and targeted drug delivery, DDS at the nanoscale (10–1000 nm) or on multifunctional carriers were capable of altering the therapy for a number of diseases. Targeted drug delivery is currently carried out using a variety of nanotechnological platforms, each with unique physical and chemical properties, including polymersomes, nanoparticles, nanoshells, quantum dots, nanotubes, nanoemulsions, nanoerythrocytes, dendrimers, polymeric micelles, and polymer-drug conjugates. Moreover, nanomaterials are now used by pharmaceutical companies for packaging as well as drug delivery. Hence, it is possible to retain medicine consumer attributes while increasing productivity. The distribution of anticancer medications can be accomplished using liposomes, which are uni- (mono), bi-, or multi-laminar vesicular structures having a range of desired features. Liposomes are biocompatible from a biomedical perspective, cause little to no antigenic, pyrogenic, allergic, or toxic reactions, and easily degrade in the body. They can transfer encapsulated substances to intracellular space in various cells and shield the host from any negative side effects of the entrapped medicine while also shielding it from the physiological medium's inactivating effects. From a clinical perspective, liposome biodistribution is a crucial factor. The stability and inactivity of these standard liposomes in the treatment of cancer and cancer tissue led to a severe issue with their ability to supply sufficient concentration at the site of tumour tissue. One of the key drawbacks for the potential use of liposomes as DDSs is their excellent absorption by macrophages and subsequent elimination from circulation when the diseased target location is outside the mononuclear phagocyte system. In this situation, new technological approaches like nanotechnology, biotechnology, and others can be used to solve some difficulties. Ordinary liposomes can be altered using a variety of techniques to create distinct kinds of liposomes with unique qualities, including those that are pH-sensitive, thermosensitive, stealthy, targeted, and others. If we take a look at "stealth liposomes," they are hypothetically covered with a highly hydrating polymer, covalently attached antibodies, and other protective surface proteins (serum proteins), preventing macrophages from recognising them as foreign objects that need to be cleared away. Animal experiments have demonstrated that the therapeutic effects of anticancer medications were exceptionally amplified when utilised in "stealth liposomes," and in some cases, led to a complete remission of malignancies. A significant reduction in the size of the metastasis was seen in cancerous tumours. Doxorubicin (DOXIL®) in the form of liposomes (stealth liposomes) significantly improves the effectiveness of treatment against Kaposi sarcoma, and Lipoplatin TM (liposomal cisplatin) significantly lessens the neurotoxicity of cisplatin in phase III human clinical trials with patients with pancreatic, head, neck, and non-small-cell lung (NSCL) cancer. Moreover, the biopharmaceutical qualities of vincristine (VCR) and vinblastine (VLB) sulphate can be enhanced by using well-known liposome technology. For instance, Jeffrey A. Silverman et al. demonstrated that the pharmacokinetic limitations and dose-limiting adverse effects of vincristine might be overcome by the liposomal version of vincristine sulphate (Marqibo®). Also, there is scientific proof that the circulation half-life of liposomes is increased when polyethylene glycol (PEG) is connected to their surface.

IV. RESEARCH PERSPECTIVE

Researchers concentrate on a number of elements when creating new chemotherapeutic DDSs. These variables may have an impact on the carrier's therapeutic options, as well as the enhanced permeability and retention (EPR) effect of some tumours, extravasation potential, intratumoral distribution, tumour heterogeneity, and overexpression of particular cell markers on the target, among other things. For the development of novel anticancer DDS, researchers now use research data and evidence of the histological and physiological characteristics of the majority of cancer types (including the overexpression of cell markers, the EPR effect, the pH of tumour tissues, hypoxia in tumour tissues, and others) (pH-sensitive, redox sensitive, targeted and others DDS). To improve the effectiveness of the main cancer treatment, targeted drug delivery systems (TDDS) or drug formulations with tailored action are more crucial. "Active targeting" and "passive targeting" systems are the two categories into which targeted drug delivery can be divided. The idea of passive drug targeting was first put forth by Prof. Hiroshi Maeda in 1985 and was based on the EPR-effect of tumours and the potential use of nanocarriers for target anticancer medication delivery by the EPR. However, certain instances demonstrate that the passive targeting strategy can be restricted to particular types of tumours, as they merely lack the expression of the EPR effect and may not all have the same shape of tumour blood vessels. Programmed nanocarriers, which can actively and selectively interact with particular target cells after extravasation, can get beyond these restrictions. It can be done by adding targeting molecules, such as



ligands, to the surface of nanocarriers, which can then bind to particular cell surface receptors through various chemical conjugations (polymer conjugates, linkers, and others). A unique contact between the drug carrier and the target cells via ligand-receptor interactions was thought to be the definition of active direction. The drug carrier needs to be very close to the target cells (less than 0.5 nm). Nevertheless, these DDSs lack the capacity to navigate themselves to the target site. These systems also penetrate the target by extravasation and blood flow. Targeted medication delivery can also be divided into two categories: intracellular direction and system locations (systemic targeting) (intracellular targeting).

V. CONCLUSION

Chemotherapeutic drugs are currently delivered through a variety of techniques, each of which has advantages and downsides. The majority of DDS are synthetic in nature and can produce hazardous chemicals during metabolic processes in the human body, which can lead to problems and harmful effects on elimination, among other things. Hence, developing a more natural mechanism for the delivery of medicinal drugs is important. At the moment, targeted administration of chemotherapeutic agents, and drug delivery systems can fundamentally transform strategies and approaches to the treatment of cancer therapy, decrease adverse effects of the medications, and boost overall effectiveness of therapy. As we will see in this article, the majority of these techniques, platforms, and medication formulations are still under investigation, however some of the discovered ways are slowly finding practical use in medicine and other fields. The ultimate objective of all these initiatives is to enhance chemotherapeutic efficacy while also enhancing living conditions and convenience for cancer patients. We may infer from the analysis of available data that the theoretical foundation of these methods will hold up in the event that chemotherapy quality needs to be improved in the future. We still have a lot of questions to address about the current issues with medicine distribution, but researchers are moving forward in the correct direction and will eventually uncover the solution that Paul Ehrlich predicted would be the magic bullet.

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ENERGY TRANSITIONS IN NIGERIA: THE ROLE OF POLICIES FOR THE ADOPTION OF LOW-CARBON TECHNOLOGIES AND SYSTEM INTEGRATION

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ABSTRACT

This study underscores the role of Policies for adopting low-carbon technologies and system integration in Nigeria's energy transition. Although the nation has abundant energy resources, a sizeable section of its people lacks access to power, creating severe problems with energy accessibility. To address this problem, the government has implemented several programmes and plans. However, the high initial costs of low-carbon technology, particularly in rural regions, have hampered their development. The study emphasises the importance of a user-centred approach, contextualisation of technology, consideration of social norms, and the role of intermediaries in facilitating the adoption and use of low-carbon technologies. It also highlights how policy interventions can either accelerate or delay the adoption of low-carbon technologies. The study recommends that policymakers and technology developers adopt a holistic approach by considering various issues in policy formulation concerning the transition to low-carbon technologies.

KEYWORDS: Energy Transitions, Low-Carbon Technologies, System Integration, Policies, Plans, and Nigeria

1.0 INTRODUCTION

The fight to lessen climate change's effects is facing an unprecedented challenge due to limitations in adopting low-carbon technologies, and incorporating renewable energy sources into the present energy mix, with non-renewable energy source accounting for 76.5% of global electricity supply (International Renewable Energy Agency [IRENA], 2018). The transition to a low-carbon economy necessitates extensive government policy action to encourage the adoption and ensure proper integration into current systems. The energy sector produces a sizable amount of greenhouse gas (GHG) emissions, and changing to a low-carbon economy necessitates changing the energy system. Policies that promote the use of low-carbon technologies, such as wind and solar energy, can aid in lowering the carbon footprint of the energy sector. In addition, such laws could cover the usage of renewable energy in the energy mix, feed-in tariffs for renewable energy generation, and incentives for renewable energy projects.

According to Heiskanen, et al. (2017) systems integration is critical for low-carbon technologies to reap the advantages of the global energy transition. Coordination and optimisation of multiple energy sources, storage infrastructure, and on-demand resources are included in the system integration. In addition, the reliability and efficiency of the energy system can be improved with policies that support system integration. Regulations regulating the installation of smart grids, creating energy storage technologies, and promoting demand management techniques are examples of such policies.

Low-carbon technologies and system integration have significant economic advantages, such as energy security. Energy security can improve by using renewable sources, which can assist in lessening the reliance on fossil fuels. Developing low-carbon technologies can also lead to new markets and employment possibilities. Governments can use these economic advantages to design programmes to encourage the adoption of low-carbon technologies and system integration (Sadiq, 2020).



Adopting low-carbon technologies and integrating systems both present difficulties for the energy transition. System integration needs to be improved because of the erratic nature of renewable energy sources like wind and solar. In addition, the effectiveness of regulations meant to encourage the adoption of low-carbon technology can also be hampered by the absence of suitable infrastructure for the distribution and storage of renewable energy. Comprehensive and integrated low-carbon technology deployment and systems integration strategies are required to address these issues. They must consider the overall energy system and the interconnections between various energy sources and technologies. To successfully transition to a low-carbon economy, policies must be developed with a long-term vision and implemented over many years.

It is essential to reiterate that systems integration and the deployment of low-carbon technology are critical to reducing the effects of climate change. However, doing so needs massive political action on the part of governments. Reduced GHGs, improved energy security, the emergence of new industries and employment opportunities, and an improvement in the dependability and efficiency of the energy system can all be achieved with the aid of policies that support the adoption of low-carbon technologies and systems integration. The political, economic, technological, and public perception and acceptance levels must all be considered while developing and implementing these policies.

2.0 LITERATURE REVIEW

Nigeria is transitioning to cleaner energy sources, such as renewable energy and improving energy efficiency and to address the challenges of energy security, climate change and GHG emission, policies have been developed to encourage the adoption of low-carbon technologies, such as the National Renewable Energy and Energy Efficiency Policy (NREEP), which aims to increase the share of renewable energy in the country's energy mix. In addition, initiatives such as the Nigerian Electrification Project (NEP) and the Energizing Education Program have been launched to support adopting low-carbon technologies and increasing access to electricity. However, system integration is also crucial to Nigeria's energy transition, and integrating renewable energy into the grid requires significant political support. This review will examine the role of public policy in promoting the uptake of low-carbon technologies and systems integration in Nigeria's energy transition.

The International Energy Agency's (IEA, 2020) report on transitions to low-carbon electricity systems, key economic and investment trends changing course in a post-pandemic world, analyses the trends and challenges in the transition to low-carbon electricity systems, particularly in the context of the COVID-19 pandemic. The report highlights the significant decline in electricity demand and investment due to the pandemic but also points out the opportunity to accelerate the transition to clean energy. In addition, the report emphasises the need for ambitious policies and regulatory frameworks that support deploying renewable energy technologies and the decarbonisation of the power sector. The report also highlights the importance of investments in grid infrastructure, energy storage, and flexible options to integrate higher shares of variable renewable energy sources. Overall, the report provides valuable insights into the key economic and investment trends shaping the energy transition and emphasises the urgent need for action to achieve a low-carbon electricity system.

Heiskanen, et al. (2017) in their study examine the adoption and use of low-carbon technologies in Finland using data from 100 pilot studies, field experiments, and demonstrations. According to the authors, several variables, such as the technical properties of the technology, user behaviour and practices, and the institutional framework in which the technology is used, affect whether low-carbon technologies are adopted and used.

Schwarz's (2020) study thoroughly analyses California and Switzerland's policies to encourage the adoption of low-carbon technology and its integration into the energy system. According to Schwarz, regulations are essential in facilitating the shift to a low-carbon energy system, and decision-makers should prioritise policies that offer long-term predictability and stability for investors in the renewable energy sector. Schwarz further suggests that decision-makers prioritise initiatives that encourage energy efficiency and transportation electrification.

Olufolahan, Frank, and Agni (2018) explore applying the multi-level perspective on socio-technical transitions to rentier states: the case of renewable energy transitions in Nigeria underscores the renewable energy sector in Nigeria and how the multi-level perspective (MLP) framework can be applied to analyse the interactions among different levels of actors and factors involved in socio-technical transitions. The authors found that the renewable energy sector in Nigeria faces several challenges, including the dominance of the oil and gas industry, limited policy incentives and support for renewables, and inadequate infrastructure. However, there are also niche-level developments, such as the emergence of solar energy entrepreneurs and community-based renewable energy initiatives, which offer opportunities for sustainable development. The authors recommend the need for more supportive policy



frameworks and incentives, increased investments in infrastructure, and greater awareness and education about renewable energy to promote the transition towards a more sustainable energy system in Nigeria.

Sadiq (2020), in his investigation of models of community-based low-carbon distributed energy systems in Nigeria, used different models and methods to analyse their technical, economic, social, and environmental feasibility. The author found that community-based low-carbon distributed energy systems have the potential to provide affordable and reliable electricity to underserved communities in Nigeria while also reducing carbon emissions. However, implementing these systems faces several challenges, including financial barriers, lack of government support, and limited awareness and education about renewable energy. Therefore, the author recommends that relevant government agencies engage and coordinate their efforts to address energy challenges like climate change and increase the deployment of innovative technologies such as small-scale distributed energy systems and energy storage. These efforts involved introducing new players into the sector, with various decision-making institutions, including the Energy Commission, the Ministry of Power, and the Ministry of the Environment, coordinated by the Ministry of Planning.

Shialsuk's (2021) study is an insightful analysis of the ongoing energy transition in Nigeria. The author argues that despite focusing on fossil fuels, Nigeria is quietly transitioning towards renewable energy sources, particularly solar energy. The study highlights several examples of this transition, including the emergence of solar energy entrepreneurs and the adoption of solar energy systems in homes and businesses. The author also notes that the growth is driven by a combination of factors, including the declining cost of harnessing solar energy, increasing energy demand, and environmental concerns. The study concludes by recommending the need for greater awareness and education about renewable energy, supportive policy frameworks and incentives, and increased investment in renewable energy infrastructure to accelerate the energy transition in Nigeria. Overall, the article provides valuable insights into Nigeria's shift towards renewable energy sources and offers practical recommendations for policymakers and stakeholders in the energy sector.

The book "Low-Carbon Development Opportunities for Nigeria" (Cervigni, Rogers, & Henrion, 2015) comprehensively analyses low-carbon development opportunities in Nigeria. The authors examine different sectors of the Nigerian economy, including energy, agriculture, transport, and waste management, and explore ways to reduce carbon emissions and promote sustainable development. The book highlights several key findings, including the need for supportive policy frameworks and incentives, increased investment in renewable energy and energy efficiency, and greater collaboration between the public and private sectors. The authors also recommend greater awareness and education about low-carbon development opportunities and the potential benefits of transitioning towards a low-carbon economy. The book provides a valuable resource for policymakers, stakeholders, and researchers interested in promoting low-carbon development in Nigeria and other developing countries.

Agaptus Nwozor et al. (2021), in their study of the transition to green energy and sustainable development in Nigeria, employ a literature review approach to analyse the prospects of green energy transition and sustainable development in Nigeria. The study found that Nigeria has a high potential for renewable energy sources, particularly solar and wind energy. Still, the transition to green energy requires supportive policies, institutional reforms, and investments. Therefore, the authors recommend a comprehensive energy transition strategy considering sustainable development's economic, social, and environmental dimensions. They also suggest the importance of stakeholder engagement, public awareness, and technology transfer to facilitate Nigeria's transition to green energy. Overall, the article provides valuable insights into the challenges and opportunities of green energy transition and sustainable development in Nigeria and offers recommendations for policymakers, stakeholders, and researchers in the energy sector.

Aye, I., Odude, F., Odekina, I., & Iheonye, I. (2022), in their study of Renewable Energy Law in Nigeria, provide an overview of the legal framework and policies governing renewable energy development in Nigeria. The authors highlight Nigeria's ambitious target of achieving 30% renewable energy penetration by 2030 and the government's efforts to create an enabling environment for renewable energy investment. They also discuss the challenges facing the renewable energy sector in Nigeria, including inadequate infrastructure, high investment costs, and a lack of access to financing. The authors recommend that the government implement more incentives and regulatory frameworks to attract private sector investment in the renewable energy sector and ensure that renewable energy projects are integrated into the national grid. They also suggest the need for increased public awareness of the benefits of renewable energy and the condition for sustainable energy development.

The oil and gas industry in energy transitions report by the International Energy Agency (IEA) (2020) examines the role of the oil and gas industry in the transition to clean energy and the challenges the industry faces in this transition. The report argues that the oil and gas industry has a critical role in the energy transition by reducing greenhouse gas emissions, increasing energy efficiency, and

investing in renewable energy sources. However, the report also highlights the industry's challenges, including policy uncertainties, high investment costs, and the need for technological innovation. The report recommends a collaborative effort between the industry, policymakers, and other stakeholders to address these challenges and accelerate the transition to a low-carbon energy system, primarily through adopting low-carbon technologies and system integration.

Beck, Bellone, Hall, Kar, & Olufon (2020), in their contributions to the big choices for oil and gas in navigating the energy transition report by McKinsey and Company, analyse the challenges and opportunities for the oil and gas industry in transitioning to a low-carbon future. The authors highlight three strategic choices that the industry must make: (1) prioritise decarbonisation efforts, (2) expand into low-carbon businesses, and (3) enhance operational efficiency. The report also emphasises the importance of collaboration between industry players, governments, and other stakeholders to achieve a successful energy transition.

2.1 Global Energy Transition

The present global energy transition is the fourth energy transition initiated at COP21, which saw 196 countries ratifying a legally binding worldwide agreement on climate change to keep global warming between 1.5 and 2°C by the year 2050. At COP 21, developed countries pledged about \$100 billion per year toward developing renewable energy initiatives to usher in the non-fossil fuel era, setting the foundation for the fourth Energy Transition, which has seen changes in government policy and investment flows (Beck, Bellone, Hall, Kar, & Olufon, 2020).

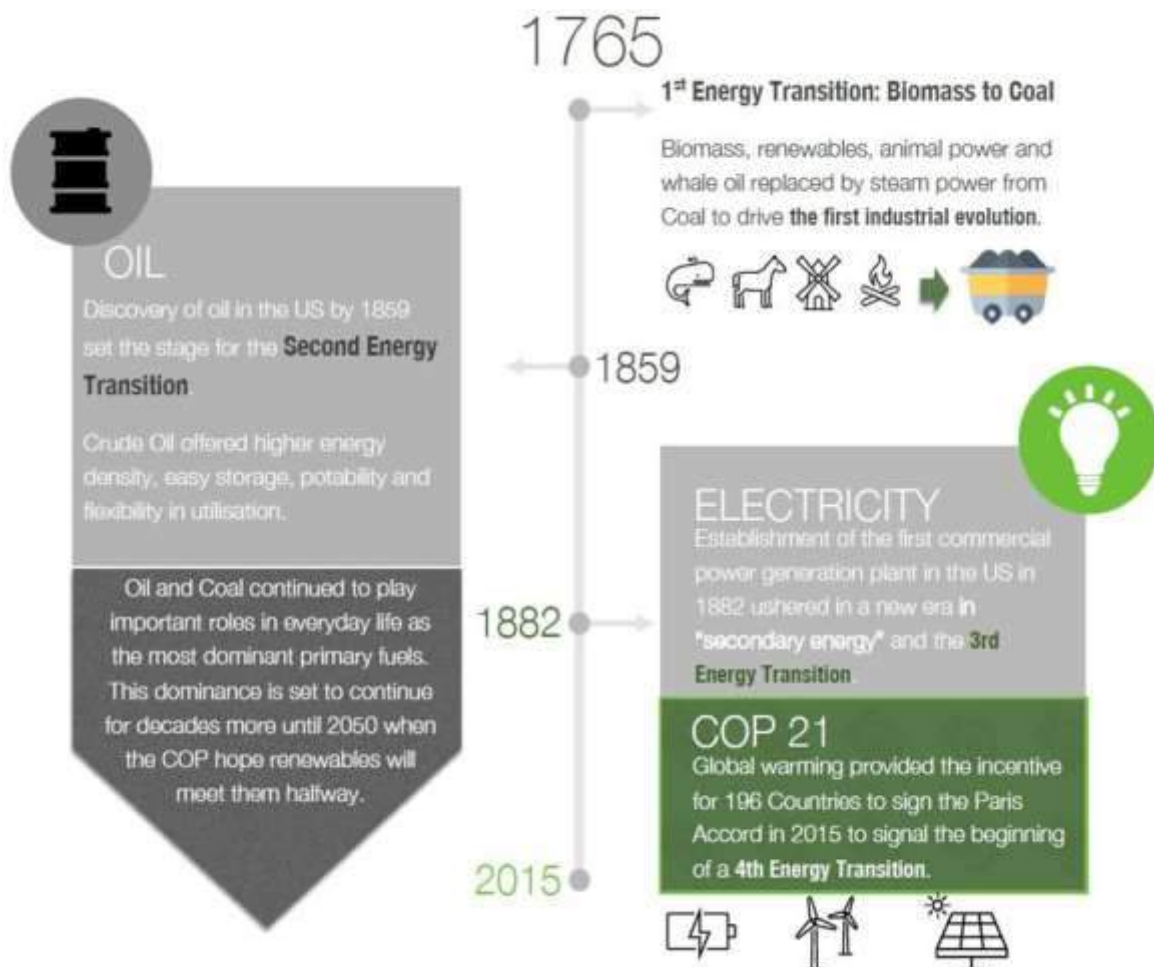


Figure 1: Global Energy Transitions. Adapted from Shialsuk, N. N. 2021, Hidden in Plain Sight: Nigeria's Energy Transition. Seplat Energy Summit



Global concerns over increasing climate change, global warming, energy security and sustainable development have sparked an increase in demand for a global effort towards transitioning from fossil fuel-based energy systems to more sustainable and greener renewable energy systems (Gielen et al., 2019). This has led governments, corporations and organisations to set ambitious targets to limit their carbon footprints and transition to renewable energy. For instance, the European Union aims to achieve carbon neutrality by 2050 (European Commission, 2019). China has pledged to reach peak carbon emissions by 2030 and achieve carbon neutrality by 2060 (Sun et al., 2022). This has also spurred the demands and adoption of renewable energy technologies such as wind, solar, and hydropower towards meeting these targets (IRENA, 2018).

Issues around intermittency and a need for energy storage pose a significant challenge for the full transition to renewable energy systems (Kebede et al., 2022). However, research suggests that transitioning to renewable energy presents promising socio-economic opportunities, including job creation, poverty alleviation, increased health and wellness and reduction in environmental catastrophe (Arndt et al., 2019).

Furthermore, advances in energy storage technologies such as batteries and hydrogen fuel cells have led to significant strides in addressing the intermittency Challenge and improving the integration of generated renewable energy into the existing power grids (IEA, 2020).

2.2 Low-Carbon Technologies and System Integration

The urgent need to limit greenhouse gas emissions, climate change, and global warming makes adopting and deploying low-carbon technologies and system integration critical in current global energy systems (IEA, 2020). Low-carbon technologies involve properly harnessing resources such as wind, solar, and hydropower, as well as energy-efficient buildings, electric vehicles, and optimal energy storage systems (IRENA, 2018), while system integration involves the coordination of the energy output from the various low-carbon technologies, optimise their performance and minimise their associated costs (Arent et al., 2021).

Renewable energy sources have grown significantly recently while their costs have simultaneously decreased significantly, with technologies like solar and wind energy becoming increasingly competitive with fossil fuels (IRENA, 2021). However, integrating these low-carbon energy sources into existing power grids presents challenges around energy storage, grid flexibility and capacity (Phuangpornpitak & Tia, 2013). Storage systems such as Li-ion batteries and hydrogen fuel cells are being developed to address these energy storage challenges (Kebede et al., 2022). In addition, advanced control and optimisation algorithms are used to monitor and manage the system to ensure reliability and stability (Jin & Peng, 2018).

Utilising energy-efficient buildings and electric vehicles as virtual power plants is also essential to a low-carbon future, integrating these technologies into the global energy systems will provide the additional flexibility and reliability critical for optimum low-carbon systems integration (Barone et al., 2022). In addition, smart grid technologies and demand response programs can help achieve the desired systems integration (Pfeifer et al., 2018).

3.0 ENERGY TRANSITIONS IN NIGERIA

Nigeria's energy demand is witnessing a big upsurge due to the country's high Population growth and economic development, like in many countries in the Global South (IEA, 2019). Nigeria is Africa's largest oil producer and exporter with fossil fuel accounting for most of its energy mix (IEA, 2021). The Nigerian government has recognised the need to diversify its energy mix and its need for energy transition and has set an ambitious target of achieving 30% renewable energy share by 2030 (Daudu & Idehen, 2021).



Figure 2: Nigerian Commitment to the Energy Transition. Adapted from IRENA 2018, *Renewable*
<https://www.irena.org/publications/2018/apr/renewable-energy-policies-in-a-time-of-transition>

According to the Nationally Determined Contribution (NDC) report, Nigeria is committed to reducing GHG emissions by 20% unconditionally and 45% conditionally with the necessary assistance to comply with the COP21 Paris Agreement (Shialsuk, 2021).

A key driver of Nigeria's energy transition is improving access to electricity. Nigeria's electrification rate is just over 55%, with rural areas significantly underserved (World Bank, 2020). To improve electricity access, the Nigerian government has implemented various initiatives, including the Rural Electrification Agency (REA) to champion the electrification of underserved rural communities and the Energizing Education Programme, which is geared towards providing off-grid solar power to universities and teaching hospitals across the country (Vincent & Yusuf, 2014).

Another important driver of Nigeria's energy transition is the need to mitigate the effects of global warming and climate change. To this effect, the Nigerian government has also committed to reducing the country's carbon emissions by 20% by 2030 (FMoE, 2021). In achieving this, the government is partnering with other stakeholders and investing in low-carbon energy technologies such as solar, wind, and hydropower and is committed to deploying the necessary energy efficiency management measures (FMoE, 2021).

3.1 Low-Carbon Technologies and System Integration in Nigeria

Nigeria's push in transitioning from a high-carbon to a low-carbon economy requires it to move from using fossil fuels that cause significant carbon and greenhouse gas emissions and environmental degradation towards more sustainable low-carbon alternative energy sources (IEA, 2021). To achieve this ambitious target, the Nigerian government has started investing in renewable energy technologies, such as solar, wind, and hydropower, as well as efficient energy systems integration measures (FMoE, 2021).

Furthermore, there are concerns about the country's current energy infrastructure and the ability to properly and efficiently integrate the energy outputs from various renewable energy sources. Hence, the government is implementing a national innovative grid system to ensure a comprehensive system integration strategy and to enable better monitoring and management of the power grid (FMoE, 2021).

One example of low-carbon technology and system integration implemented in Nigeria are off-grid and mini-grid solar systems. These systems provide electricity to communities not connected to the national power grid, particularly in rural communities, and they equally augment the power supply to important institutions like universities and teaching hospitals (REA, 2018). The Rural Electrification Agency (REA) has been recording success in the implementation of these systems (Vincent & Yusuf, 2014).



4.0 POLICIES FOR ADOPTING LOW-CARBON TECHNOLOGIES AND SYSTEM INTEGRATION IN NIGERIA

Historically, Nigeria has created various policies to assist in first solving its power failure problem which had impacted its industrial capacity development, and is recently being hampered by the global energy transition and the call for sustainable, cleaner, affordable energy. These policies, in general, are complementary towards ensuring the availability, accessibility and affordability of energy while trying to solve the problem of energy poverty in the country.

The following is a review of the various energy policies in the country.

4.1 National Electric Power Policy 2000

A significant turning point in the development of Nigeria's power sector was the National Electric Power Policy of 2001. The policy laid a thorough plan for constructing Nigeria's power infrastructure to address the industry's issues. The strategy responded to Nigeria's rising demand for electricity and the requirement to update the nation's deteriorating power infrastructure.

The Nigerian Electricity Regulatory Commission (NERC) and the Nigerian National Petroleum Corporation (NNPC) were among the industry participants who helped the Federal Ministry of Power and Steel draft the strategy. The system provided a development plan for the nation's electricity infrastructure, emphasising expanding the national grid's capacity, enhancing the dependability of power supply, and encouraging the use of renewable energy sources.

One of the policy's main goals was to boost Nigeria's national grid's capacity to 10,000 MW by 2007. The strategy suggested building new power plants, renovating existing ones, expanding the transmission and distribution networks, and other measures to accomplish this goal.

Additionally, the programme mandated the privatisation of the power industry, with the government holding just a little interest. The policy acknowledged the relevance of renewable energy sources in supplying Nigeria's expanding energy needs. Accordingly, the strategy suggested promoting renewable energy technologies, including solar, wind, and hydropower. The policy also mandated the creation of a fund to encourage the growth of renewable energy in Nigeria and a legal framework for the construction of renewable energy projects.

The subject of tariff reform in Nigeria's power sector was also covered under the National Electric Power Implementation Policy of 2001. The strategy advocated implementing cost-reflective tariffs to allow the electricity sector to function commercially. The policy also mandated the creation of the NERC, an impartial regulator, to supervise the execution of the programme for reforming tariffs and ensuring that rates were established at levels that would allow the electricity sector to run sustainably.

The plan acknowledged the need for greater investment in the power industry. As a result, it suggested creating a special purpose entity called the National Integrated Power Project (NIPP) to draw in private investment for the industry. The NIPP was designed to promote private investment in building new power plants and renovating existing ones, with government guarantees for loan repayment and the purchase of the electricity produced by the plants.

Finally, the National Electric Power Implementation Policy of 2001 marked a crucial turning point in the growth of Nigeria's power industry. The programme outlined a thorough strategy for constructing the nation's electrical infrastructure, focusing on boosting the national grid's capacity, enhancing the security of the power supply, and encouraging the use of renewable energy sources. In addition, the policy recognised the need for more industry investment and addressed the tariff reform issue. Although there have been significant difficulties with the policy's execution, it continues to be a crucial guide for the growth of Nigeria's electricity sector.

4.2 National Energy Policy 2003

Nigeria's National Energy Policy (NEP) was adopted in 2003 in response to the nation's rising energy needs and the requirement for sustainable energy development. The policy aims to support the growth of Nigeria's energy industry, provide energy security, and increase the sector's contribution to the nation's socioeconomic development.

One of the NEP's main goals is to give all Nigerians access to dependable and affordable electricity. Renewable energy sources, including solar, wind, hydro, and biomass, will be developed, while the country's enormous natural gas reserves will also be utilised. The policy also intends to enhance the nation's capacity for producing power to 10,000 MW by 2020.



The NEP suggests creating a diverse energy mix combining traditional sources like oil and gas with non-conventional ones like renewable energy to reach its goals. The policy also emphasises raising energy conservation and efficiency standards across the board. The NEP recognises the significant contribution made by the private sector to the growth of the energy sector and promotes its involvement in all facets of the industry. It covers the construction of energy infrastructure and the discovery, production, and distribution of energy resources.

The strategy also suggests creating an impartial regulatory organisation to monitor the energy industry and guarantee honest competition among market participants. Creating and enforcing laws, rules, and regulations that support the efficient and effective operation of the energy sector is the responsibility of this regulatory agency. The NEP also suggests creating a national energy fund to finance the creation of projects that improve energy efficiency and rely on renewable energy sources. A board of trustees will oversee the fund's management and ensure that funds are distributed to initiatives that advance the goals of the policy.

The NEP also acknowledges the value of regional and global collaboration in the energy sector's growth. Therefore, to facilitate the transfer of technology and experience in the energy sector, the strategy suggests creating regional energy integration initiatives and forming relationships with international organisations.

Overall, Nigeria's National Energy Policy is a comprehensive policy framework that offers a road map for the growth of the nation's energy sector. It is anticipated that its emphasis on advancing the use of renewable energy sources, enhancing energy efficiency and conservation measures, and encouraging private sector involvement will result in the sustainable development of the energy sector and support the nation's socioeconomic development.

4.3 Renewable Energy Policy Guidelines 2006

An important policy document in Nigeria that attempted to encourage the use of renewable energy was the Renewable Energy Policy Guidelines of 2006. The strategy was created in response to Nigeria's need to diversify its energy mix, which had previously been heavily reliant on fossil fuels, and the country's rising energy demand. The policy guidelines gave the nation a framework for the growth and promotion of renewable energy technologies, focusing on boosting biomass, solar, wind, and hydropower use. The goals of the guidelines were to contribute 10% of renewable energy to the country's energy mix by 2025.

The policy guidelines suggested various methods and tactics to accomplish this goal, including creating a Renewable Energy Fund that would finance renewable energy projects and R&D. To enhance access to electricity in rural regions, the policy also supported the creation of rural electrification projects based on renewable energy.

The policy guidelines also aimed to encourage the production and use of biofuels to boost the use of renewable energy in the transportation sector. The regulations promoted the development of renewable energy sectors and opening positions in the field.

The policy guidelines also acknowledged the necessity for capacity building and public awareness efforts to encourage the usage of renewable energy. The recommendations included the creation of programmes to train technicians in renewable energy as well as the integration of renewable energy education into curricula at colleges and universities.

The importance of cooperation and coordination across sector stakeholders, including the government, corporate sector, civil society organisations, and international development partners, was also emphasised in the Renewable Energy Policy Guidelines of 2006. The policy also Acknowledged the private sector's crucial role in creating and carrying out renewable energy projects. As a result, it suggested creating a supportive climate for personal sector involvement.

The Nigerian government's 2006 Renewable Energy Policy Guidelines was a major milestone in developing and promoting renewable energy. The goal of the strategy was to create a sustainable energy future for the nation by providing a comprehensive framework for supporting renewable energy technology and system integration. However, the policy's implementation could have been done more quickly, and more progress needs to be made in reaching the goals that have been stated.

4.4 Captive Energy Generation Regulations 2008

The Nigerian Electricity Regulatory Commission (NERC) created the Captive Energy Generation Regulations 2008 to control the production, transmission, and distribution of captive power in Nigeria. In contrast to being supplied by the national grid, captive management refers to energy production for use by a single user or a group of consumers inside a building or other structure. These



rules were created to make it easier for captive power generation to grow in Nigeria and to improve the efficiency and dependability of power supply to commercial and industrial consumers. The Captive Energy Generation Regulations of 2008 offer a framework to establish and operate captive power plants in Nigeria.

All captive power plants must register with the NERC and get an operating licence to comply with the requirements. The laws also outline captive power producers' technical and safety criteria, including environmental compliance and connectivity requirements with the national grid. The Captive Energy Generation Regulations of 2008 include an important regulation regarding power wheeling. Wheeling uses the national grid infrastructure to move electricity from a captive power plant to another place or facility. In addition, the rules include a procedure for resolving disagreements between captive power generators and the national grid operator and the payment of transmission and distribution fees for moving electricity.

The Captive Energy Generation Regulations of 2008 also create captive power associations, which are collections of captive power generators that cooperate to increase the effectiveness and dependability of power delivery to their constituents. The regulations stipulate that all captive power associations must register with the NERC and specify guidelines for these groups' operations. The need for captive power providers to adhere to the government-set renewable energy targets is another significant feature of the Captive Energy Generation Regulations 2008. The regulations mandate that captive power generators obtain a minimum portion of their energy needs from renewable sources, such as solar, wind, and biomass, and also provide for certifying these resources.

A legal foundation for creating and running captive power generation in Nigeria is provided by the Captive Energy Generation Regulations of 2008. In addition to encouraging the use of renewable energy sources and the creation of captive power associations, the regulations seek to improve the efficiency and reliability of the power supply to industrial and commercial consumers. The rules thus played a significant part in the growth of Nigeria's captive power industry and helped improve the nation's electricity supply.

4.5 National Renewable Energy Efficiency Policy 2013

The Nigerian government introduced the National Renewable Energy Efficiency Policy (NREEP) in 2013 to promote renewable energy sources and enhance national energy efficiency. The policy was created as part of the nation's initiatives to address the problems posed by climate change and achieve sustainable economic development. NREEP aims to support adopting renewable energy technology in various economic sectors while fostering growth. Additionally, the strategy seeks to promote energy-saving practices to lower the nation's overall energy demand. In doing so, Nigeria will be able to lessen the effects of climate change and cut greenhouse gas emissions.

The policy provides a framework for developing renewable energy technologies in Nigeria. It lists different renewable energy sources, such as solar, wind, hydro, geothermal, and biomass, and presents plans for utilising and developing them. However, the policy also lists several obstacles to using renewable energy technology in Nigeria, such as their high cost, lack of funding, and insufficient regulatory frameworks.

The creation of proper legal frameworks, the construction of finance channels, and the encouragement of public-private partnerships are only a few of the initiatives suggested by NREEP to overcome these obstacles. The strategy also aims to foster capacity building in pertinent industries and raise stakeholders' understanding of the advantages of energy efficiency and renewable energy initiatives.

The NREEP also specifies a number of goals for implementing Nigeria's energy efficiency and renewable energy measures. Among these are plans for a 10% share of renewable energy in the nation's energy mix by 2025 and a 20% decrease in energy use by 2030. Additionally, the strategy includes particular goals for several industries, including buildings, transportation, and energy.

The National Renewable Energy and Energy Efficiency Authority is a suggestion by NREEP to ensure that the programme is implemented efficiently and effectively. This organisation would oversee policy implementation and offer stakeholders technical assistance. Furthermore, to finance the development of renewable energy technologies and energy efficiency measures, the strategy also suggests the creation of a fund for renewable energy and energy efficiency.

Globally speaking, Nigeria's National Renewable Energy Efficiency Policy is a significant step toward creating a sustainable energy system. It offers a comprehensive framework for building energy efficiency and renewable energy technology and explains tactics for removing obstacles to their adoption. The strategy could significantly contribute to Nigeria's efforts to lessen the effects of climate change and achieve sustainable economic development.



4.6 National Energy Efficiency Action Plans (2015–2030)

Nigeria's National Energy Efficiency Action Plan (NEEAP) was created in 2015 to address the nation's energy efficiency issues. The strategy was developed according to the National Renewable Energy and Energy Efficiency Policy of 2013 and the National Energy Policy of 2003. It attempts to advance energy efficiency to lessen energy waste and GHG emissions, enhance energy security, and support sustainable economic growth.

The NEEAP lists several goals and tactics to accomplish its objectives. One of the main goals is to lower energy usage in the nation by promoting energy-efficient behaviours and innovations. This will be achieved by creating minimum energy performance requirements for equipment and appliances, promoting energy-efficient building codes and standards, and implementing energy management and systems in the industrial and commercial sectors.

Promoting renewable energy sources across the nation is another goal of the NEEAP. By 2030, the strategy wants to see a 30% proportion of renewable energy in the country's energy mix. This will be accomplished by creating policies and regulations for renewable energy, encouraging investments, and offering financial incentives for renewable energy projects.

The programme attempts to raise public understanding of renewable and efficient energy sources and usage. The NEEAP also recommends that energy education and awareness programmes, energy efficiency and renewable energy centres, stakeholder training and capacity building, are all needed.

The plan specifies several tactics and steps stakeholders must adopt to implement the NEEAP. These include the creation of laws and policies that support energy efficiency and renewable energy, providing funding and incentives for energy efficiency and renewable energy projects, and creating centres dedicated to these topics that offer technical assistance and knowledge. To track the plan's development and guarantee its efficacy, the NEEAP also provides a structure for monitoring and assessment. The framework comprises indicators and targets to gauge renewable energy adoption, greenhouse gas emission reductions, and energy savings.

The National Energy Efficiency Action Plan 2015–2030 is an important policy document regarding Nigeria's efforts to address its energy efficiency and renewable energy issues. The strategy includes various tactics and initiatives to advance renewable energy and energy efficiency nationwide. It also offers a framework for tracking and assessing progress toward these objectives. As a result, Nigeria can save energy, lower greenhouse gas emissions, and encourage sustainable economic growth by implementing the NEEAP.

5.0 DISCUSSIONS AND RECOMMENDATION

The role of policies cannot be overstated, especially in a country where the accessibility of energy is minimally low, with a significant population without access to electricity and often having to rely on fuelwood for its energy source (Isah, 2023). In 2021, the total Electricity generated by the Generation Companies (GenCos) stood at 36,397.92 (Gwh), while 35,654.43 (Gwh) was transmitted (NBS, 2022), which is below the national demand. The government's various efforts to meet these demands are reflected by the multiple policies from 2001 to 2015, indicating the need for a more robust approach to implementation to ensure that Nigerians do not continue to be energy poor. In addition, while various recent policies and plans have been instituted to address the need to embrace cleaner and cheaper energy, the starting cost is usually massive, which hampers the adoption, especially in rural economies where fuel is scarce.

It is essential to note that different policy interventions can influence the spread of low-carbon technologies in different ways, including enabling it, accelerating it, delaying the beginning or distribution, or having no impact. Hence, while formulating policies, appropriate measures should be taken to ensure that those policies do not hurt the economic and technical viability of their adoption. A single policy instrument frequently affects several technologies; it takes a combination of approaches to impact the dissemination of a single technology significantly.

To ensure the adoption and usage of low-carbon technologies, governments and technology developers should concentrate on the following factors:

1. **User-centered approach:** To create low-carbon solutions that satisfy consumers' needs and preferences, policymakers and technology developers should utilise a user-centred design and development strategy.
2. **Contextualization of technology:** To guarantee that the technology is adopted and used, policymakers and technology developers consider the institutional and cultural context. There is a need for significant investments, robust policies, and collaborations across all stakeholders, including governments, businesses, and individuals, to achieve this.



3. **Considerations of social norms:** The significance of social norms in influencing users' behaviour and practises is emphasised. Policymakers and technology developers should use social norms to encourage adopting and using low-carbon technologies, especially in rural communities
4. **Role of intermediaries:** This demonstrates the crucial function of intermediaries, such as community organisations and energy consultants, in promoting the adoption and use of low-carbon technologies, and it advises policymakers to encourage the development of intermediary services.

In general, implementing low-carbon technologies involves many different aspects and complexity. As a result, to encourage the adoption and use of low-carbon technologies, policymakers and technology developers should adopt a user-centred approach, take the institutional and cultural context into account, capitalise on social norms, and support the development of intermediary services.

5.1 Conclusion

Nigeria's energy transitions demand a thorough strategy considering various elements, such as institutional and cultural environment, social norms, and intermediary services. To promote the adoption and use of low-carbon technologies, policymakers and technology developers must concentrate on a user-centred design and development strategy that prioritises customers' requirements and preferences. In order to ensure that the technology is embraced and used, it is also critical to consider the cultural and institutional background. Social norms have a powerful impact on how users behave and conduct themselves. Furthermore, it is important to recognise the role of intermediaries in promoting the adoption and use of low-carbon technologies, including community organisations and energy consultants. Government officials should support the growth of intermediate services. In the end, putting low-carbon technologies into practice is difficult and necessitates various strategies to have a meaningful impact on the spread of a single technology. To encourage sustainable energy usage and advance a more environmentally friendly future, policymakers and technology developers in Nigeria must take a comprehensive approach to the country's energy transition.

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PRINCIPALS' MANAGEMENT STRATEGIES FOR EFFECTIVE TEACHERS' JOB PERFORMANCE IN SECONDARY SCHOOLS IN ANAMBRA STATE

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ABSTRACT

Effective principals' management strategies create an environment that can be conducive to both teaching and learning, while ineffective principals' management strategies often create chaos in the school system. This study empirically investigated principals' management strategies for effective teachers' performance in public senior secondary schools in Anambra State. A descriptive research design was adopted and the population of the study comprised 3395 teachers in public senior secondary schools in the six education zones identified in Anambra State. From the population, a sample of 263 respondents was randomly drawn from Onitsha and Awka education zones based on simple random sampling by balloting. The instrument for data collection was a researcher-designed questionnaire tagged; "Principals' Management Strategies for Teachers' Performance in Secondary Schools Questionnaire (PMSTPSSQ)." The instrument was validated by experts and the reliability coefficient of 0.87 was determined using the Cronbach Alpha method. Mean and standard deviation was used to answer the research questions while z-test statistics were used to test the null hypotheses at 0.05 level of significance. Findings revealed that principals' motivational, supervisory, staff training and development strategies influenced teachers' performance in public senior secondary schools in Anambra State. The study concluded that the principals' management strategies discussed have significantly contributed to teachers' job performance in the administration of public secondary schools in Anambra State. The study, therefore, recommended the following amongst others; that motivation is an integral part of teachers' job performance as such, principals should employ motivational strategies that will meet the needs of teachers to improve their job performance. Also, principals of public secondary schools should adopt appropriate supervisory techniques to continuously ensure effective administrative performance.

KEYWORDS: Administration, management strategies, job performance, teachers, secondary school, Anambra State.

INTRODUCTION

The growth and development of any educational sector depend to a large extent on the management of its resources. The basic ingredients to be attended to in the management activity are human resources. Human resources in a school system comprise the teaching and non-teaching staff. The teaching staff prominently referred to as teachers in a secondary school setting are saddled with the responsibility of transmitting knowledge, skills and competencies to learners. According to Clark (2006), teachers at all levels of education are the foundation and bedrock of quality education in society. In line with the above view, teachers are responsible for the management of both students and knowledge, monitoring of students' progress and providing guidance services under the guidance and supervisory role of the principal. To guard the above position, teachers engage in important activities to adequately equip themselves for effective service delivery. Therefore, teachers' roles and tasks are dependent on the kind of management strategies exhibited by school principals. Effective principals' management strategies create an environment that can be conducive to both teaching and learning, while ineffective principals' management strategies often create chaos and disorganization.

In Nigeria, principals are the chief custodian of all academic and extracurricular activities in secondary schools. They are the administrative heads who are at the helm of affairs in the school. As aptly opined by Odumodu (2011), principals occupy a central position in the management of secondary education as far as the education of the child is concerned. Principals by virtue of their positions are the managers and their quality of managerial functions determines to a large extent their success or failure. Principals should provide teachers and other personnel in the school with the needed management supports to effectively function on their jobs. Management in this instance is a term with nuances of meaning and defined in various ways. To Babalola (2006), management simply entails being in charge or being in control. Mgbodile (2003) and Duze (2003) saw management as leadership aimed at influencing



group activity toward goal accomplishment. It is thus the behaviour of the man in a leadership position when he is carrying out such vital functions of administration which include planning, organizing, directing, controlling, coordinating and evaluating activities, aimed at achieving the goals of the establishment or organization.

Mgbodile (2003) further opined that leadership style refers to management as a set of methods or behavioural approaches adopted by a leader in his effort to manipulate the important correlates of administration vis-a-vis the men, the job and the materials, toward goal achievement. Motivation is an integral part of teachers' performance and teachers look up to the principal who is the head of the school for their needs. Motivational strategies have always been regarded as the internalized drive that is more dominant in an individual at a given moment which is an integral and essential part of the secondary school administration. To this end, no meaningful development could be achieved in the school system without the appropriate strategies to stir up the commitment of teachers on the part of the school principal as regards their performance (Orodho, Waweru, & Getange, 2014). The principal as the head of the secondary school must play some important roles in moving the school forward and in assuring qualitative learning which is the goal of the school. One such role is the supervision of instruction. Adeyemi (2010) explains that supervision is the process of administration that involves the push to manage everyday activities of individuals or groups of people working in the school system. The principal is the leader, and as Adesina (2010) observes, the leader in any group is considered as having the best ideas, possessing the greatest understanding of situations and providing the best guidance. Staff training according to Yemmy (2010), is a process engaged in to improve the skills, attitude, and knowledge of the staff. It involves the responsibility to evaluate, preserve, create and transmit knowledge through continuous learning. Staff training has the element of promoting and conserving scholarly values, curiosity, and integrity to promote these values through inculcation. Chukwu (2009) states that the purpose of staff training is to improve quality of the teaching and learning and also improve the performance of people with teaching and management responsibilities. Thus, the concepts for academic improvement can be conceived from the organization's acknowledgment that efficiency and effectiveness to a large extent depend on training and retraining of the workforce.

Again, the principals in secondary schools control the day-to-day activities of the school for the achievement of educational objectives. Secondary education being the context of this study is the level of education made available for learners after primary education. Secondary education may also be seen as that level of education that prepares students to be productive members of society. In developed countries, secondary school is seen as the gateway to providing not only an educated citizenry but also a capable workforce.

Secondary education is crucial in both personal and national development. Secondary school level is the bridge between the primary and tertiary levels. It is the education children receive after primary education and before the tertiary stage within the range of 12 to 18 years (FRN, 2013). The broad goal of secondary education is to prepare the individual for useful living in society and for higher education (FRN, 2004). Specifically, the secondary school system is geared towards catering for the differences in talents, opportunities and future roles, to provide technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economic development (FRN, 2004). Secondary schools should be able to provide quality teaching and learning. The importance of secondary education cannot be over-emphasized since it has both consumer and producer status. This is because it consumes the product of primary schools and produces candidates for tertiary education. According to Etim (2006), secondary education is now being recognized as the cornerstone of the educational system in the 21st century. The foregoing buttresses the importance of the adequate administration of secondary education in Nigeria and Anambra State specifically by all stakeholders.

STATEMENT OF THE PROBLEM

Secondary education serves as a bridge between primary and tertiary education and occupies a central position in the education ladder. While it absorbs graduates from primary education, it prepares students for access to higher educational institutions. This gives secondary education its relevance. Again, secondary school is a formal organization that is established to achieve educational set goals through teaching and learning activities that underscore the value placed on this level of education. In recent times, there is growing fear in the minds of stakeholders in the Nigeria secondary education system, especially in Anambra State with regard to the negative signals coming from the secondary education system over the poor performance of teachers on instructional delivery. This negative development has resulted in students' truancy and absenteeism, dropout, indiscipline, lack of interest, and poor academic performance in the internal and external examinations. Low performance of teachers in secondary education will most definitely be reflected in low student output, such as lack of requisite skills, poor achievement, and dropout among others which have had adverse effects on society and students. The reason for these negative signals encountered in secondary education may vary but could be ascribed to principals' lack of management strategies or poor application of these strategies to propel teachers to high job performance. The quality of education at all levels is determined by the teacher, as he transmits the value of education to the student. Proper management of



teaching staff will invariably improve the job performance of teachers. This also improves the quality of secondary education and the achievement of set goals. It is against this backdrop, therefore, that this study strives to ascertain principals' management strategies for effective teachers' performance in public senior secondary schools in Anambra State.

AIM AND OBJECTIVES OF THE STUDY

This study aimed at investigating principals' management strategies for teachers' performance in public senior secondary schools in Anambra State. The study sought to:

1. Examine the influence of principals' motivational strategies on effective teachers' performance in public senior secondary schools in Anambra State.
2. Ascertain the influence of principals' supervisory strategies on effective teachers' performance in public senior secondary schools in Anambra State.
3. Determine the influence of principals' staff training and development strategies on effective teachers' performance in public senior secondary schools in Anambra State.

RESEARCH QUESTIONS

The following research questions guided the study:

1. To what extent do principals' motivational strategies influence effective teachers' performance in public senior secondary schools in Anambra State?
2. To what extent do principals' supervisory strategies influence effective teachers' performance in public senior secondary schools in Anambra State?
3. To what extent do principals' staff training and development strategies influence effective teachers' performance in public senior secondary schools in Anambra State?

HYPOTHESES

The following null hypotheses were formulated to guide the study and were tested at 0.05 level of significance:

H₀₁: There is no significant difference between the mean ratings of male and female teachers on principals' motivational strategies and effective teachers' performance in public senior secondary schools in Anambra State.

H₀₂: There is no significant difference between the mean ratings of male and female teachers on principals' supervisory strategies and effective teachers' performance in public senior secondary schools in Anambra State.

H₀₃: There is no significant difference between the mean ratings of male and female teachers on principals' staff training and development and effective teachers' performance in public senior secondary schools in Anambra State.

SIGNIFICANCE OF THE STUDY

The findings of this study may be practically significant to school principals, educational administrators and teachers. The findings of this study will acquaint school principals with the management strategies required in the educational system for teachers' productivity in Anambra State and also offer them credible strategies to restrain the trend of lack of adequate job performance and improve the quality of learning in the state. The findings of this study will unearth some administrative problems ravaging secondary school administration in Anambra State and suggest some possible strategies which can be adopted by school principals to abolish such problems. The study will further provide relevant information to educational administrators on the solutions to the problems of poor performance, especially, poor productivity of teachers. Just as teachers are the administrators of tomorrow, they stand in a better position to introduce these management strategies into the teaching profession. Teachers will benefit immensely from the findings of this study. This study will unveil some of the teachers' problems that lead to poor teaching and learning in various secondary schools in Anambra State. As the school principals adopt and implement some strategies suggested in this study in their bid to solve these problems, teachers will be favored. They will be motivated in order to exhibit high morale in their job.

METHODOLOGY

This study adopted a descriptive survey research design which used a population of 3395 teachers in public senior secondary schools in the six education zones identified in Anambra State. From the population, a sample of 263 respondents was randomly drawn from Onitsha and Awka education zones based on simple random sampling by balloting. 147 teachers were male while 116 were female. Convenient and individual consent was also employed as sampling techniques used to draw the teachers from six schools in each of the two education zones. The instrument for data collection was a researcher-structured questionnaire titled "Principals' Management Strategies for Teachers' Performance in Secondary Schools Questionnaire (PMSTPSSQ)". The questionnaire was structured in line



with the research questions and hypotheses that guided this research. The questionnaire was divided into three sections for the research questions which was termed section (A) and (B). Section (A) was structured to elicit information on the demographic characteristics of the respondents, while section B was structured to determine the various hypotheses. The instrument was designed using a modified 4-point Likert Scale format of; Very High Extent (VHE) = 4 points; High Extent (HE) = 3 points; Low Extent (LE) = 2 points and Very Low Extent (VLE) = 1 point for all research questions. The instrument was validated by subjecting the instrument to one research expert in Educational Foundations and another two experts in the Educational Measurement and Evaluation (EME) in the department of Educational Psychology, Guidance and Counselling in the faculty of education, Nnamdi Azikiwe University, AWKA. Their contributions were added to the final versions of the instrument prior to administration. The reliability of the instruments was done using the Cronbach Alpha method. The instrument was administered to 30 teachers who were not part of the target sample in Nnewi Education Zone of Anambra State. After the analysis, an alpha coefficient of 0.87 was obtained showing that the instrument was deemed suitable for the study. The instrument was administered to the respondents in their various schools. The researchers, with the help of two trained research assistants, visited the public senior secondary schools in Anambra State to administer the instrument. All the copies of the questionnaire were collected on the spot, indicating 100% retrieval rate. The data analysis was done using mean statistics and standard deviation while z-test was employed for the testing of the corresponding null hypotheses. 2.50 was used as the criterion mean. All analyses were done using IBM Statistical Package for the Social Sciences (SPSS) Version 25. The obtained results were presented as shown below.

RESULTS

Research Questions 1: To what extent do principals' motivational strategies influence effective teachers' performance in public senior secondary schools in Anambra State?

Table 1: Mean and standard deviation on the extent to which principals' motivational strategies influence effective teachers' performance in public senior secondary schools in Anambra State

SN	Items	\bar{X}	S.D.	Remark
1	Principals allowing teachers to participate in on-the-job training programmes enhance teachers' performance	3.96	0.19	VHE
2	Principals maintaining a high degree of relationship with teachers ensure teachers' performance	3.90	0.29	VHE
3	Giving of fringe benefits, allowances and bonuses enhances teachers' performance	3.74	0.43	VHE
4	Giving soft loans to staff enhances teachers' performance	3.61	0.48	VHE
5	Maintaining of a high degree of social welfare with teachers ensure teachers' performance	3.62	0.48	VHE
Grand mean		3.76	0.37	VHE

Criterion mean = 2.50. Guide: 0 - 1.49 = very low extent (VLE); 1.50 - 2.49 = low extent (LE); 2.50 - 3.49 = high extent (HE); 3.50 - 4.00 = very high extent (VHE)

Table 1 above revealed the extent to which principals' motivational strategies influence teachers' performance. The result indicated that to a very high extent, principals' motivational strategy influenced effective teachers' performance ($\bar{X} = 3.76 \pm 0.37$). The analysis revealed that, to a very high extent, principals always adopt motivational strategies to improve teachers' performance ($\bar{X} = 3.96 \pm 0.19$) and principals encourage the effective performance of their teachers ($\bar{X} = 3.90 \pm 0.29$). Thus, to a very high extent, principals' motivational strategies influenced teachers' performance in public senior secondary schools in Anambra State.

Research question 2: To what extent do principals' supervisory strategies influence effective teachers' performance in public senior secondary schools in Anambra State?

**Table 2: Mean and standard deviation on the extent to which principals' supervisory strategies influenced effective teachers' performance in public senior secondary schools in Anambra State**

SN	Items	\bar{X}	S.D.	Remark
6	Principals' pedagogical supervisory skill helps teachers prepare their lesson plans and lesson notes on daily bases	3.90	0.31	VHE
7	Assist teachers to develop curriculum according to the age and ability of learners.	3.96	0.20	VHE
8	Encourages teachers in the use of continuous assessment	3.59	0.49	VHE
9	It helps to ascertain teachers' lesson effectiveness	3.98	0.11	VHE
10	Principals ensures that teachers have functional instructional materials	3.78	0.41	VHE
Grand mean		3.84	0.30	VHE

Criterion mean = 2.50. Guide: 0 - 1.49 = very low extent (VLE); 1.50 - 2.49 = low extent (LE); 2.50 - 3.49 = high extent (HE); 3.50 - 4.00 = very high extent (VHE)

Table 2 above revealed the extent to which principals' supervisory strategies influence teachers' performance. The result indicated that to a very high extent principals' supervisory strategy influenced effective teachers performance ($\bar{X} = 3.84 \pm 0.30$). The analysis revealed that, to very high extent, when the principal adopt good supervisory strategy, the teacher will be effective in performing the prescribed duties ($\bar{X} = 3.98 \pm 0.49$) and principals can better understand teachers' strength and weaknesses and employ supervisory strategies that can improve on their output ($\bar{X} = 3.96 \pm 0.20$). Thus, to a very high extent, principals' supervisory strategy influenced teachers' performance in public senior secondary schools in Anambra State.

Research question 3: To what extent do principals' staff training and development strategies influence effective teachers' performance in public senior secondary schools in Anambra State?

Table 3: Mean and standard deviation on the extent to which principals' staff training and development strategies influenced effective teachers' performance in public senior secondary schools in Anambra State

SN	Items	\bar{X}	S.D.	Remark
11	Through conferences, teachers master their subjects and this improves their performance in class	3.74	0.43	VHE
12	Knowledge from conferences is applied by teachers in teaching and learning and this improves their performance.	3.75	0.42	VHE
13	Workshops help teachers to learn how to plan their lessons which enables them to perform better in class	3.50	0.50	HE
14	Through attending workshops teachers are exposed to new skills that they may not necessarily acquire in pre-service training	3.57	0.49	VHE
15	Through conferences, teachers learn how to control their classes during lesson delivery.	3.75	0.43	VHE
Grand mean		3.66	0.45	VHE

Criterion mean = 2.50. Guide: 0 - 1.49 = very low extent (VLE); 1.50 - 2.49 = low extent (LE); 2.50 - 3.49 = high extent (HE); 3.50 - 4.00 = very high extent (VHE)

Table 3 above revealed the extent to which principals' staff training and development strategies influence effective teachers' performance. The result indicated that to a very high extent principals' staff training and development strategy influenced effective teachers performance ($\bar{X} = 3.66 \pm 0.45$). The analysis revealed that, principal's staff management strategies contribute to the overall effectiveness and profitability of teachers ($\bar{X} = 3.75 \pm 0.43$) and principal's staff management strategies help in the training and development of teachers ($\bar{X} = 3.74 \pm 0.43$). Thus, to a very high extent principals' staff training and development strategy influenced teachers' performance in public senior secondary schools in Anambra State.

H0₁: There is no significant difference between the mean ratings of male and female teachers on principals' motivational strategies and effective teachers' performance in public senior secondary schools in Anambra State.

**Table 4: Z-test summary showing significant difference in the mean rating of male and female teachers on the extent principals' motivational strategies influenced teachers' performance in public senior secondary schools in Anambra State.**

Group	N	Mean	SD	df	z-cal	p-value	Decision
Male	147	3.76	0.18	261	3.02	0.08*	H ₀ Not rejected
Female	116	3.77	0.17				

*Not Significant; $p > 0.05$

The result in Table 4 showed that there was no statistically significant difference in the mean ratings of male and female teachers on the extent principals' motivational strategies influenced teachers' performance ($z\text{-cal} = 3.02$, $df = 261$, $p > 0.05$) as the $p\text{-value} = 0.08$ is greater than 0.05. Thus, the null hypothesis which stated that there is no significant difference in the mean ratings of male and female teachers on the extent principals' motivational strategies influenced teachers' performance in public senior secondary schools in Anambra State was not rejected.

Ho₂: There is no significant difference between the mean ratings of male and female teachers on principals' supervisory strategies and effective teachers' performance in public senior secondary schools in Anambra State

Table 5: Z-test summary of significant difference in the mean rating of male and female teachers on the extent principals' motivational strategy influenced teachers' performance in public senior secondary schools in Anambra State

Group	N	Mean	SD	df	z-cal	p-value	Decision
Male	147	3.84	0.18	261	0.38	0.53*	H ₀ Not rejected
Female	116	3.85	0.16				

*Not Significant; $p > 0.05$

The result in Table 5 showed that there was no statistically significant difference in the mean ratings of male and female teachers on the extent principals' supervisory strategies influenced teachers' performance ($z\text{-cal} = 0.38$, $df = 261$, $p > 0.05$) as the $p\text{-value} = 0.53$ is greater than 0.05. Thus, the null hypothesis which stated that there is no significant difference in the mean ratings of male and female teachers on the extent principals' supervisory strategies influenced teachers' performance in public senior secondary schools in Anambra State was not rejected.

Ho₃: There is no significant difference between the mean ratings of male and female teachers on principals' staff training and development and effective teachers' performance in public senior secondary schools in Anambra State.

Table 6: Z-test summary of significant difference in the mean rating of male and female teachers on the extent principals' staff training and development strategy influenced teachers' performance in public senior secondary schools in Anambra State

Group	N	Mean	SD	df	z-cal	p-value	Decision
Male	147	3.64	0.20	261	6.75	0.01*	H ₀ rejected
Female	116	3.67	0.21				

*Significant; $p < 0.05$

The result in Table 6 showed that there was a statistically significant difference in the mean ratings of male and female teachers on the extent principals' staff training and development strategies influenced teachers' performance ($z\text{-cal} = 6.75$, $df = 261$, $p < 0.05$) as the $p\text{-value} = 0.01$ is lesser than 0.05. Thus, the null hypothesis which stated that there is no significant difference in the mean ratings of male and female teachers on the extent principals' staff training and development strategies influenced teachers' performance in public senior secondary schools in Anambra State was rejected.

DISCUSSION OF FINDINGS

The evidence deduced from the study showed that respondents were in agreement that principals' motivational strategies influenced teachers' performance in public senior secondary schools in Anambra State to a very high extent. Again, findings also showed there is no significant difference between the mean rating of male and female teachers on the influence of principals' motivational strategies on teachers' performance in public senior secondary schools in Anambra State. Majority of the teachers have positive opinion on principals' motivational strategies. Motivation is an integral part of teachers' performance and teachers look up to the principal who is the head of the school for their needs. Motivational strategies have always been regarded as the internalized drive that is more dominant in an individual at a given moment which is integral and essential part of the secondary school administration. To this end, no meaningful development could be achieved in the school system without the appropriate strategies to stirrup the commitment of teachers on the part of the school principal as regards their performance (Orodho, Waweru, & Getange, 2014). To corroborate this finding, Getange (2016) further opined that the achievement of quality education rests squarely on the shoulders of teachers who need



appropriate motivation to produce the desired educational performance. Given the fact that education is one of the important factors that engenders rapid social and economic development in any given nation, the role of principals and teachers cannot be downplayed. However, concerted efforts are always made through effective and efficient motivational strategies by the school principals to ensure teachers' optimal performance in the school system.

Influence of principals' supervisory strategies on teachers' performance in public senior secondary schools in Anambra State

The evidence from the study showed that respondents agreed to a very high extent, that principals' supervisory strategies influenced teachers' performance in public senior secondary schools in Anambra State. Data further revealed that significant difference does not exist between the mean rating of male and female teachers on the influence principals' supervisory strategies on job performance in public secondary schools in Anambra State. Principals' supervisory strategies influence teachers' job performance in public secondary schools in Anambra State in form of providing assistance to instructional activities of teachers, discussing new trends in the school with teachers, ensuring that teachers have functional instructional materials and assisting teachers to develop curriculum according to the age of children. This finding is in line with Adeyemi (2010) who opined that supervision is the process of administration that involves the push to manage the everyday activities of individuals or groups of people working in the school system. The principal is the leader and as Adesina (2010) observed, the leader in any group is considered as having the best ideas and possessing the greatest understanding of situations and providing the best guidance. This finding is further corroborated by Nakpodia (2011) who opined that teachers' performance in secondary schools is significantly dependent on the aptitude of the principals to effectively conduct adequate and valuable supervision which validates the importance of discipline and teaching aids. Efanga (2001) further explained that adequate strategic supervision has the capacity of impacting significantly on the effectiveness of teachers. For instance, if an administrator sets up his strategies to supervise teachers' use of time, check how materials and supplies are utilized, coordinate student bodies to assist the teachers, make sure that teachers' notes of lessons and other records are up-to-date, there is a probability that teachers will be effective in the performance of their duties.

Influence principals' staff training and development strategies on teachers' performance in public senior secondary schools in Anambra State

The analysis of the data showed that respondents were of the opinion that to a very high extent, principals' staff training and development strategies influenced teachers' performance in public senior secondary schools in Anambra State. Again, results revealed a significant difference does exist between the mean rating of male and female teachers on the influence of principals' staff training and development strategies on job performance in public secondary schools in Anambra State. This view is in collaboration with Adeniyi (2015) who observed that one useful aspect in principal staff management strategies is the training and development of staff. Staff training and development increase productivity in teaching and learning, improve the quality of work, and improve skills, knowledge, understanding and attitude.

CONCLUSION

From the results and findings of the study presented and discussed, the study concluded that principals' motivational, supervisory and staff training and development management strategies influenced teachers' performance in public senior secondary schools in Anambra State. Again, these strategies discussed have significantly contributed to teachers' job performance in the administration of public secondary schools in Anambra State.

RECOMMENDATIONS

Based on the findings and conclusion of the study, the following recommendations were put forward:

1. Given that motivation is an integral part of teachers' job performance, principals should employ motivational strategies that will meet the needs of teacher to improve on their performance.
2. Principals' of public secondary schools should adopt appropriate supervisory technique to continuously ensure that their administrative performance is effective.
3. Principals should endeavour to improve on their management strategies as well as organize in-house seminars and workshops to train and retrain teachers on innovative teaching strategies to improve their job performance.

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A STUDY ON ROLE OF NABARD SCHEME WITH SPECIAL REFERENCE IN RURAL DEVELOPMENT IN INDIA

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ABSTRACT

Development with social justice has been the introductory ideal of development planning in post-independence India. Since the morning of planned development, the government has made significant strides in the development of pastoral India through the Five Year Plan. The National Bank for Agriculture and Rural Development was set up in July 1989. It becomes the apex institution to play a vital part in the sphere of policy planning and furnishing refinance installations to pastoral fiscal institutions and for accelerating their resource base. The paper analysis the part and function of NABARD in husbandry and pastoral development. It also throws a light on NABARD's history and present performance and its scheme for pastoral development.



NATIONAL BANK FOR AGRICULTURE AND RURAL DEVELOPMENT



INTRODUCTION

National Bank for Agriculture and Rural Development (NABARD) and it was set up in the time 12 July 1982 by the Act of the congress. NABARD, it substantially acts as a Development Bank, and it's helpful for furnishing loans and credit and other installations for the support of an development of husbandry, small scale diligence, cabin and vill, and oster colourful profitable conditioning in pastoral areas with a view to encouraging integrated pastoral development and knowledge of pastoral areas, and for matters connected to it. It aims for give fiscal support for the betterment of pastoral development to enable long term practices. Generally immolations fiscal services and points for the development and enhancement of pastoral in India. NABARD was established in terms of the Preamble to the Act, "for furnishing credit for the creation of husbandry, small scale diligence, cabin and vill diligence, crafts and other pastoral crafts and other confederated profitable conditioning in pastoral areas with a view to promoting IRDP and securing substance of pastoral areas and for matters connected therewith in incidental thereto." It's also accreditation to support all other confederated profitable conditioning promote integrated and sustainable pastoral development and secure substance of pastoral areas. The original capital was 100 crores and enhanced to 2000 crores by Government of India and Reserve Bank of India. It operate through its head office at Mumbai, 28 indigenous services positioned in state centrals and 391 quarter services at sections Agriculture credit is considered as one of the most introductory input for conducting all agrarian development programmes. As the profitable condition of Indian growers are veritably poor, there's a need for proper agrarian credit in India. plutocrat lenders have the main source of agrarian credit in India since the morning. After independence Government acceptable credit should be handed to growers at low interest by espousing a institutional credit approach through colorful agencies similar as cooperatives, marketable banks, indigenous pastoral banks etc. And with modernization in husbandry in the post-green revolution period, agrarian credit is demanded has increased further in recent times.

ROLE OF NABARD

- Furnishing reliance to advancing institutions in pastoral areas.
- Assessing, covering and examining the customer banks acts as a fellow in the operations of pastoral credit institutions.
- Extends assists to the Government, the Reserve bank of India and other organisations in matters relating to pastoral development.
- Offers training and exploration installations for bank, collaborative and associations working in the field of pastoral development.
- Helps the state Government in searching their targets of furnishing backing to eligible institutions in husbandry and pastoral development.
- Acts as a controller for collaborative banks and RRB's.
- Serves as an apex backing agency for the institutions furnishing investment and product credit for promoting the colourful experimental conditioning in pastoral areas.
- Takes measures towards institution structure for perfecting absorptive capacity of the credit delivery system, including monitoring, expression of recuperation schemes, restructuring of credit institutions, training of labor force etc.
- The bank refinances the fiscal institutions which finances the pastoral sector.
- It also keeps check on its customer institute.

HISTORY OF NABARD

- On the recommendation of B. Sivaraman commission, the NABARD was established on 12th July 1982 to execute or apply National bank for Agriculture and Rural Development Act 1981.
- It has set up with an original capital of Rs. 100 crores, its paid up capital stood at Rs. 17,080 crores as on 31 March 2022.
- It was devoted to the service of the nation by the late Prime Minister Smt. Indira Gandhi on 5 November 1982.
- NAB FOUNDATION has been set up by NABARD as a section 8 or Attachment Company, where the president of NABARD is also the president of NAB FOUNDATION.
- NABARD had replaced Agriculture Credit Department (ACD) and Rural Planning and Credit Cell (RPCC) of Reserve Bank of India and Agricultural Refinance and Development Corporation (ARDC).
- Headquarter of NABARD is at Mumbai and has 31 Regional services located in States and Union Territory.



- International associates of NABARD include World Bank- combined organisation and global experimental agencies working in the field of husbandry and pastoral development.
- These organisations help NABARD by advising and giving financial aid for the upliftment of the people in the pastoral areas and develop the agrarian process.

STATEMENT OF PROBLEM

NABARD is facing the problem of shy finance. They're dependent on NABARD to collect finance for their farther operations. Poor pastoral people are unfit to save anything due to poverty and low per capita income. The low position of saving of these client produce handicap for NABARD to collect sufficient deposits A major challenges facing NABARD is diving the problem of hunger and malnutrition affecting one- third of the population. There's also a need to constrict gap between patron cost and consumer price so that planter's perimeters are enhanced through effective marketing support

OBJECTIVE OF THE STUDY

1. To know about the NABARD.
2. To find out the part of NABARD in pastoral development in India.
3. To know in detail about the programs conducted by NABARD.

SCOPE OF THE STUDY

This study is grounded on the working of NABARD. It tells us about the challenges faced by NABARD. It guides about the colourful programs taken up by the NABARD in pastoral areas. It also shows us about the development of the NABARD.

NEED FOR THE STUDY

In India, the lesser number of the people in the pastoral areas. They're substantially related to the husbandry and colourful affiliated income sources from the husbandry only. It's the civic and suburban area for the development of the pastoral areas and it enhances the agrarian acquainted program will be to increase the profitable conditioning to encourage them to know the schemes to enhance road installations, road side light and water and public transport indeed though to help to construct water check levee addition of water tanks, drink water installations in pastoral areas. It promotes income generation conditioning for colourful tone help and provides microfinance system. The banking services are far out from the pastoral population. Hence fiscal addition has enforced by both the Government and RBI of the Indian Banking system. Substantially the Government like academy, library, scrap collection, drainage installations, may not be present and it helps to maintain and to have an control over the development in the pastoral areas. It substantially motivates to enhance the profitable conditioning and to have a attachment from the Government of India and as well as the State Government it helps to strengthen the profitable stability of the growers.

ORGANISATION STRUCTURE

NABARD FUNCTIONS THROUGH ITS Head Office at Mumbai and operates each over the country through its 28 Regional services and 1 Sub- office, located in the centrals of all the countries union homes. It has 391 quarter services across the country, and one special cell at Srinagar. It also has 3 training establishments in different corridor of the country for capacity structure and improvement of the chops of its man power and also of other associations similar as banks, NGOs, etc., who are equal mates in pastoral development.



FUNCTIONS OF NABARD

- NABARD works as an apex body and to refinance through a marketable banks, collaborative banks, and RRB and to check on it.
- To promote the colourful intertwined development schemes and other profitable conditioning.
- 3. To abate the imbalances which was made in it and to make an mileage if a finances
- It major motive is to introduce new invention which was introduced in the forthcoming schemes.
- furnishing finance and refinance for product and marketing in the pastoral areas
- Coordinating and advising the operations of institutions engaged in pastoral credit
- Promoting exploration in husbandry and pastoral development
- It provides short- time, medium- time and long- term to SCB's, LDB's, RRB's and approved fiscal institutions.
- It provides long term backing to State Government.

RESEARCH DESIGN

This is a descriptive study. The data and the other information required for the study were collected from secondary sources. The secondary data collected from various sources including libraries, journals, annual report magazines, articles and website

CREDIT FACILITIES OFFERED BY NABARD

1. RURAL INFRASTRUCTURE DEVELOPMENT FUND

This credit was introduced in the year 1995-1996. The initial corpus of Rs.2000 crore with allocation of Rs.40000 crore for 2021-2022. Cumulative allocation has reached Rs.418408.73 crore including Rs.18500 crore under Bharat Nirmani. RIDF is a fund to promote the investment in structure for husbandry. State Government, on-governmental organisation, tone help group etc., are eligible to adopt out of RIDF for their schemes like ongoing irrigation, flood tide protection, watershed operation design, pastoral road and ground systems etc.



S. No.	RIDF	Year of Sanction	No. of schemes	Cost Rs.in Lakh
1	XX	2014-15	59	26024.83
2	XXI	2015-16	86	32381.61
3	XXII	2016-17	107	35289.83
4	XXIII	2017-18	119	35036.85
5	XXIV	2018-19	28	8096.49
6	XXV	2019-20	84	23128.68
7	XXVI	2020-21	115	41867.52
8	XXVII	2021-22	400	1505307.96
		Total	998	360363.77

2. KISAN CREDIT CARDS

Kisan credit card was launched by Shripad Desso Naik (Ministry of Ayush) during the year 1998. NABARD has formulated a model scheme for issue of Kisan credit to growers on the base of their land effects for invariant relinquishment by banks, so that the growers may use them to readily purchase agrarian inputs similar as seeds, diseases, fungicides etc.

YEAR	ALLOCATED FUND
2020-2021	<i>Rs.3 lakhs per farmer (subject to maximum of Rs.2 lakhs per farmer for WC loan for AH&F activities)</i>
2021-2022	<i>Personal accidental insurance up to Rs.50000 for permanent disability and death and up to Rs.25000 for other risks. Farmers can avail collateral free loan up to Rs.1 lakh</i>

3. MICRO CREDIT INNOVATION SCHEME

This scheme was introduced in the year 1998 launched by Smt. Smriti Irani with the initial amount Rs.151051.30 crore. Under the MCIS, NABARD installations sustained access to fiscal services for the unreached poor in pastoral areas through colourful microfinance inventions in a cost effective and sustainable manner

2021-2022 – Rs.12.74 lakhs SHGs have been digitalised covering 146 lakh members

4. REFINANCE FOR PASTORAL CASING INSTALLATIONS

RRFHS provides credit to the individualities, collaborative casing societies, public bodies, casing boards, original bodies with NHB for finance extended by them to casing systems in the pastoral areas only

5. A EXPLORATION AND DEVELOPMENT FUND

It has been established by the bank with the ideal of acquiring new perceptivity into the problems of agrarian and pastoral development through in- depth studies and applied exploration and trying out innovative approaches backed up by specialized and provident studies

6. SWAROJGAR CREDIT CARD SCHEME

Swarojgar credit card scheme was introduced in the year 2003, September. It aims to give acceptable and timely credit to small crafters, handloom needlewomen, service sector, fishers, tone- employed, gharri scullers, other micro entrepreneurs, tone help groups etc., either working capital or block capital or both and cost effective system.

The loan amount provided by this scheme is Rs.25000 per borrowers. SCC is valid for 5 years period and cash credit limit should be renewed annually

7. FARMER'S CLUB PROGRAMME

It's a grassroots informal forum. Similar clubs are organized by the pastoral branches of the banks with the support and fiscal backing of NABARD Bank for the collective benefit of the concerned banks and the pastoral people. Integrate with wider operations banks to insure inflow of credit between its members and better bank borrower relationship affiliate with the subject.



CREDIT FUNCTIONS

- Framing policy and guidelines for pastoral fiscal institutions.
- Furnishing credit installations to issuing associations.
- Preparation of commensurable- linked credit plans annually for all sections for identification of credit eventuality.
- Monitoring the inflow of ground position pastoral credit.
- Direct loan to State Government from pastoral structure development fund.

CONCLUSION

NABARD scheme aims to give finances for India's pastoral structure to enable long term irrigation practices. Generally offering fiscal services and aid for the development and enhancement of pastoral India. It acts as a fiscal agency for the services rendered by NABARD and it is suitable to give crediting installation in the pastoral areas. It enhances the promoting of fiscal conditioning of those particular institutions and indeed in the field work, reaching the guests on time to apprehensive of the scheme for the development of the pastoral development in pastoral areas. Every time the fiscal backing entered by NABARD and the expenditure made out of it are adding. In short we can say that NABARD is furnishing pastoral India all round backing and proved to be an institution where growth with social justice exists. It's in brief, an institution for the purpose of refinance with the reciprocal work of commanding, examining and supervising the credit- overflows for agrarian and pastoral development. As the fiscal system has grown fleetly, NABARD has taken action that credit made available by small and borderline growers is productively employed. NABARD has played a veritably vital part in the development of Indian commodity request. It has a wide compass of services through which it has helped colourful sectors for its development.

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ENHANCEMENT IN MUSIC PLAYER SYSTEM USING ARTIFICIAL INTELLIGENCE

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ABSTRACT

This research paper presents a novel approach to designing a music player system using Alan AI, Firebase, and AWS cloud services. The proposed system aims to provide a seamless user experience by integrating various functionalities, including voice control, music streaming, and database management. Alan AI enables natural language processing, which enables voice-based controls for the music player system. The system's performance is evaluated by measuring various parameters, such as response time, scalability, and user satisfaction. The results are compared with traditional music player systems to determine the system's effectiveness and performance.

KEY WORDS: Alan AI, Voice Assistance, Music Player App, Natural language Processing, Flutter.

1. INTRODUCTION

The music industry has witnessed a significant transformation in recent years, with the emergence of new technologies that are changing the way people consume and interact with music. One such technology is Artificial Intelligence (AI), which has the potential to revolutionize the music player system by enabling personalized recommendations and voice-based controls. This research paper presents a novel approach to enhancing the music player system using AI and Alan AI for voice assistance, implemented using Flutter, AWS, and Firebase.

The proposed system aims to provide an improved user experience by integrating various functionalities, including personalized recommendations, voice-based controls, efficient music streaming, and database management. The system uses AI algorithms to analyse the user's listening history and preferences to provide personalized recommendations, enhancing the user's music listening experience. Alan AI enables natural language processing, enabling users to interact with the system using voice-based controls, making the system more accessible and user-friendly.

The system is implemented using Flutter, a mobile application development framework that enables the development of cross-platform applications. AWS cloud services are used for efficient music streaming, providing fast and reliable access to music content. Firebase is used as a scalable database management system for storing and retrieving music data.

The performance of the proposed system is evaluated by measuring various parameters, such as response time, scalability,

and user satisfaction. The results are compared with traditional music player systems to determine the effectiveness and performance of the proposed system.

2. RELATED STUDY

There have been several studies related to the integration of Alan AI, NLP, Flutter, AWS, and Firebase for developing efficient and scalable mobile applications.

One study proposed an approach for developing a voice-controlled chatbot using Alan AI and Flutter for a telemedicine application. The chatbot used NLP techniques to understand natural language and provide personalized recommendations. AWS and Firebase were used for database management and efficient content delivery, respectively. The study demonstrated the effectiveness of the proposed approach in improving the user experience and reducing the workload of healthcare professionals.

Another study focused on developing a personalized news application using Flutter and Firebase. The application used NLP techniques to analyse user preferences and provide personalized news recommendations. AWS cloud services were used for efficient content delivery, ensuring faster and reliable access to news content. The study demonstrated the effectiveness of the proposed system in providing an enhanced user experience and improving user engagement.

A recent study proposed an approach for developing a music streaming application using Flutter and Firebase. The application



used NLP techniques and AI algorithms to provide personalized recommendations and efficient music streaming services. AWS cloud services were used for faster and reliable content delivery. The study demonstrated the effectiveness of the proposed approach in improving the user experience and increasing user engagement.

3. PROPOSED METHODOLOGY

The proposed methodology for enhancing the music player system using AI and Alan AI for voice assistance using Flutter, AWS, and Firebase includes the following steps:

3.1 Requirement gathering:

The first step is to gather the requirements for the music player system. This involves understanding the user's needs, identifying the functionalities required, and defining the scope of the system.

3.2 System architecture design:

The next step is to design the system architecture, which includes defining the components and their interactions. The proposed system includes Flutter for the frontend, Firebase for database management, and AWS for music streaming.

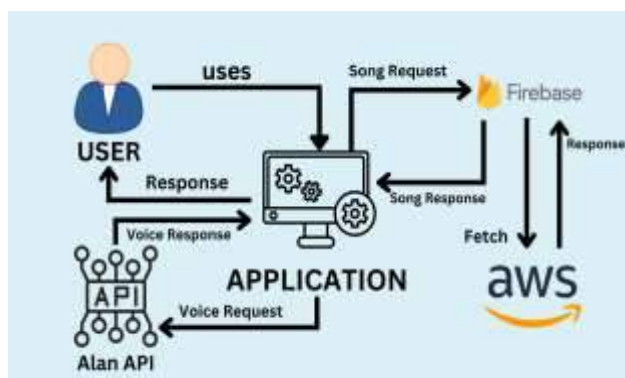


Fig-1: Architectural Diagram

3.3 Integration of Alan AI:

The third step involves integrating Alan AI into the system to enable natural language processing and voice-based controls. The integration involves setting up the necessary API keys and configuring the system to process voice-based commands.

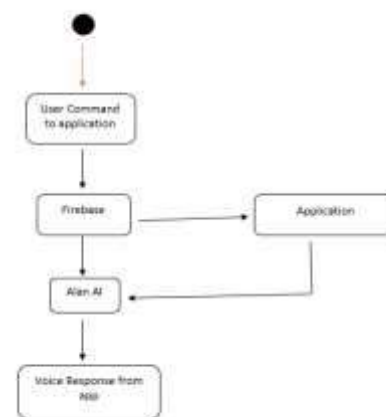


Fig-2: Working of Alan AI

3.4 Development of AI algorithms:

The next step is to develop AI algorithms for analysing the user's listening history and preferences to provide personalized recommendations. The AI algorithms can be developed using machine learning or deep learning techniques.



Fig-3: Sequence Diagram

3.5 Implementation of the system:

The next step is to implement the system using the proposed architecture and integrating the necessary components. This involves developing the frontend using Flutter, setting up the database using Firebase, and configuring the music streaming service using AWS.

3.6 Testing and evaluation:

The final step is to test and evaluate the system's performance by measuring various parameters such as response time, scalability, and user satisfaction. The evaluation includes comparing the results with traditional music player systems to determine the effectiveness and performance of the proposed system.



4. CONCLUSIONS AND FUTURE SCOPE

The integration of AI and Alan AI for voice assistance using Flutter, AWS, and Firebase has the potential to revolutionize the music player system, providing personalized recommendations, efficient music streaming services, and a user-friendly interface. The proposed approach has been designed to provide a scalable and efficient music player system, with the capability to analyse the user's listening history and preferences to provide personalized recommendations. The system architecture has been designed to include Flutter for the frontend, Firebase for database management, and AWS for music streaming, ensuring fast and reliable access to music content.

Future work can explore the integration of additional AI algorithms and natural language processing techniques to further enhance the system's functionality and user experience. This can include the integration of sentiment analysis techniques to analyse the user's emotional state and provide music recommendations accordingly.

Moreover, the proposed approach can be extended to include the integration of social media platforms to enable users to share their music listening experience and interact with other users. This can further enhance the user experience and increase user engagement.

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INSTRUCTIONAL COMPETENCIES OF TEACHERS TRANSITION FROM DISTANCE LEARNING TO IN-PERSON CLASSES

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ABSTRACT

The study aims to determine the level of instructional competencies of the teachers' transition from distance learning to in-person classes in terms of teachers' workload, training & support, learning resources, and school activities. This study was conducted at the Schools Division of Rizal, and fifty (50) elementary teachers were selected as respondents. The study used a descriptive design.

Using Frequency and percentage in a profile of the respondents it shows that most ($f=20$, 40.0 percent) of the teachers' age range are from 31-40 years old; while in years of service, a majority ($f=26$ or 52.0 percent) of the teachers are in the service for 11-20 years.

Using Weighted Mean for the level of instructional competencies of the teachers' transition from distance learning to in-person classes in terms of teachers' workload, the overall mean is 3.40 or "Very Ready"; for training and support, 3.22 or "Ready"; learning resources, 3.32 or "Very Ready; and lastly, for school activities the overall mean is 3.34 or "Very Ready".

Using Independent T-test Therefore, the demographic profile such as age, and years in service has no significant difference in all areas of Comparison of the level of Instructional competencies of the teachers transition from distance learning to in-person classes.

It can be concluded that Teachers in this age group belong to the middle-aged workforce and the majority there are in service the learners for more than ten years or more. While Teachers were given enough teaching load, time to prepare learning materials, and school activities to prepare them mentally, emotionally, and physically. participants believed the in-person progressive advancement will be positive effects and advantages.

KEYWORDS: *instructional competencies, teachers' workload, training, and support, learning resources, school activities, distance learning, in-person classes.*

I. INTRODUCTION

Education is fundamental to the development and preservation of humans. The evolution of social, political, scientific, and technical systems is always aided by education. It equips young people with the information and skills necessary to find gainful employment and make a significant contribution to the advancement of the country. Yet COVID-19 happened, and it was a global crisis, notably in the field of education. As schools all around the world were forced to close, they decided to adopt online and distance learning modes rather than continue to hold in-person classes for more than a year. The Department of Education (DepEd) has now publicly opened schools for in-person classes after imposing lockdowns and severe safety restrictions for the two preceding years to halt the spread of the COVID-19 virus. To overcome the significant educational disruption brought on by COVID-19, the school must take quick action. Dayagbil, Palompon, Garcia, and Olvido (2021) recommend that educational institutions at all levels create a resilient learning system that leverages data based on evidence and institutional needs to be responsive and proactive. To combat COVID-19, numerous stakeholders are required. It is advisable to consult the administration, which promotes teaching and learning, the faculty, or teachers, who play a variety of academic responsibilities, the community as well as outside partners who assist students in meeting educational needs, and the parents and guardians of students, who are jointly responsible for the continuity of the learning process. Due to these complicated identities, academia is accountable to numerous stakeholders. (Illanes et al., 2020; Smalley, 2020).

The results of the study by Darsini, Wana, and Supriyanto (2021) showed that: (1) Teacher preparedness in learning comprises making lesson plans before class, filling up the class list book according to student attendance, and finishing the learning diary book. Daily test results, mid-semester grades, and end-of-semester grades are first entered into the assessment book by the instructor per the teaching schedule and student readiness on the assessment list. (2) Techniques, techniques, teacher restrictions in learning, and outcomes following the learning process, when the instructor uses the lecture, discussion, question-and-answer, and



demonstration technique, implements the Scientific Approach and struggles to learn since there are not enough resources available. Teachers must adhere to health standards because of cell phones, financial and psychological problems, and rising teacher prices. The teacher's passion, focus, and learning capacity grow after engaging in online, offline, and in-person learning.

Thus, this paper focused on evaluating the instructional preparation of teachers when transitioning from distance learning to face-to-face teaching.

Statement of the Problem

The findings of the study served as an assessment of the instructional competencies of the teachers. Specifically, this study sought to answer the following sub-problems:

1. What is the profile of the respondents in terms of age, position title, and years in service?
Age; and 1.1
Years in Service? 1.2
2. What is the level of instructional competencies of the teachers to transition from distance learning to in-person classes as assessed by themselves in terms of:
2.1 Teachers' workload; 2.2
Training and Support; 2.3
Learning Resources, and 2.4
School Activities?
3. Is there a significant relationship between the level of instructional competencies of the teachers' transition from distance learning to in-person classes in terms of their profile?

II. METHODOLOGY

Research Design

This study employed the descriptive survey research design. According to Calmorin (2016), descriptive research is a design that aims to "describe the nature of the situation as it exists at a time of the study and to explore the causes of particular phenomena". To some, descriptive research seeks familiarity with the subjects accurately and provides the necessary background for the formulation of a more precise problem for a subsequent, more specific study and development and testing of the hypothesis. The primary purpose of the study is to assess the level of instructional competencies of the teachers' transition from distance learning to in-person classes as assessed by themselves in terms of teachers' workload, training & support, learning resources, and school activities

Population and Sampling Technique

The study was conducted in the Division of Rizal. A purposive sampling technique was used in selecting the respondents.

Participants

The researcher selects fifty (50) elementary teachers who have assessed the level of instructional competencies for the teachers' transition from distance learning to in-person classes as assessed by themselves in terms of teachers' workload, training & support, learning resources, and school activities.

Research Instrument

The instrument was digitally driven through the google form as the major tool of the study. The four (4) point scale below shows the range for the level of instructional competencies of the teachers' transition from distance learning to in-person classes as assessed by themselves in terms of teachers' workload, training & support, learning resources, and school activities.

Data Gathering Procedure

The researcher will follow the research process in collecting data: (1) Crafting the questions for the teacher-made questionnaire and the letter for the respondents; (2) Sending the letters and validated survey questionnaires to the respondents; and (3) Retrieve the questionnaires so the findings can be gathered, collated, and be treated of statistical tool.

Data Analysis

In this study, the data that were obtained in each phase were described and analyzed using the following framework or statistical treatment:

1. *Frequency and Percentage* - it will measure the distribution of respondents in terms of demographic profile.
2. *Weighted average* - the level of instructional competencies of the teachers' transitions from distance learning to in-person classes as assessed by themselves in terms of teachers' workload, training & support, learning resources, and school activities.



3. *Independent T-Test* - will be used to test the significant difference in the level of instructional competencies of the teachers' transition from distance learning to in-person classes as assessed by themselves in terms of teachers' workload, training & support, learning resources, and school activities when grouped according to their profile.

III. RESULTS AND DISCUSSION

This chapter presents the presentation, analysis, and interpretation of data based on the research problem presented.

1. Profile of the Respondents concerning Age, Years of Service, and Position Title

It can be surmised from the table that in terms of age of the respondents, most ($f=20$, 40.0 percent) of the teachers are age range from 31-40 years old; followed by several ($f=14$, 28.0 percent) are 41-50 years old; some ($f=8$, 16.0 percent) of the teachers' age range from 21-30 and 51-60 years old respectively. It may mean that most of the teachers are in the middle of their careers and are mostly committed to the teaching and development of the school. The findings were supported by the study of Osagbhem (2017) the study revealed that the academics' contentment with teaching, research, administration, and management—i.e., the main duties of their position—is substantially correlated with their age.

In terms of years in service of elementary teachers, the majority ($f=26$ or 52.0 percent) of the teachers are in the service for 11-20 years; followed by some ($f=17$ or 34.0 percent) below 1-10 years in service; some ($f=7$ or 14.0 percent) were 21 or more years in service. This conclusion is supported by Tang (2023) who revealed that the length of service had a significant effect on faculty perceptions regarding task orientation and how task influence teaching.

2. Level of Instructional Competencies of the teachers' transition from distance learning to in-person classes in terms of teachers' workload, training & support, learning resources, and school activities.

Table 1

Assessment of Teacher Respondents as regards their Assessment of Teachers' Workloads

Indicators	Mean	Verbal Interpretation
1. To teach a maximum of six (6) hrs. classroom teaching per day	3.44	Very Ready
2. prepare the Weekly Learning Plan to provide direction and guidance for the classroom- and home-based activities.	3.44	Very Ready
3. To devote the allotted instructional time to administer assessments	3.34	Very Ready
4. To monitor the learning progress using appropriate tools	3.40	Very Ready
5. To provide ongoing feedback on learners' outputs and performance	3.36	Very Ready
Overall Weighted Mean	3.40	Very Ready

Generally, it implies that the respondents are confident as they agree of being "*Very Ready*" in terms of teachers' workloads in their level of Instructional competencies for the teachers' transition from distance learning to in-person classes. Still, even though the teachers are very ready for the implementation of progressive in-person classes there must be a careful distribution of workload or the reduction of teaching load to make them more productive. This assumption is supported by the study of Rosanes (2020) mentioned that a reduced allocation of workload, assistance with meeting the initial professional registration requirements that teachers face in their early careers, and quality mentoring programs would likely help beginning teachers cope with the initial overload of demands they will experience.

Table 2

Assessment of Teacher Respondents as regards their Assessment of Training and Support

Indicators	Mean	Verbal Interpretation
1. For coaching and mentoring in the delivery of learning standards	3.22	Ready
2. To exhibit new techniques and strategies in teaching	3.18	Ready
3. To attend School Learning Action Cell (SLAC) based on my assessment needs	3.36	Very Ready
4. To be observed by my superiors	3.12	Ready
5. To provide ongoing feedback on learners' outputs and performance	3.24	Very Ready
Overall Weighted Mean	3.22	Ready



It implies that the respondents agreed to be “ready” in terms of training and support in their level of Instructional competencies for the teachers' transition from distance learning to in-person classes. Training and development programs are critical for enhancing teachers' performance. As mentioned the 2019 report published in *The International Journal of Business and Management Research* indicates that 90% of employees surveyed agreed or strongly agreed that training and development programs improved their job performance.

Table 3
Assessment of Teacher Respondents as regards their Assessment of Learning Resources

Indicators	Mean	Verbal Interpretation
1. To maximize the utilization of Most Essential Learning Competencies (MELCs) to confirm the design of the instruction	3.26	Very Ready
2. To utilize learning materials and other learning resources in the delivery of lesson	3.32	Very Ready
3. To prepare teacher-made teaching devices	3.30	Very Ready
4. To prepare Weekly instructional materials	3.38	Very Ready
5. To develop activity-based materials for mastery of learning	3.34	Very Ready
Overall Weighted Mean	3.32	Very Ready

It shows that the respondents agreed with being “Very Ready” in terms of learning resources in their level of Instructional competencies of the teachers' transition from distance learning to in-person classes. Supporting learning materials for students is quite difficult, if not attended carefully it will not create student-friendly classroom opportunities, and pupils end up with subpar experiences. These difficulties can make it difficult to enhance the implementation of in-person learning regarding learning materials. Still, if it is not addressed, it could develop into a serious issue and this is supported by the study of Okongo, Ngao, and Nyongesa (2015) recommends that adequate teaching and learning resources should be provided to ensure effective implementation of education and more funds to be allocated for procuring teaching and learning materials for learners.

Table 4
Assessment of Teacher Respondents as regards their Assessment of School Activities

Indicators	Mean	Verbal Interpretation
1. To implement minimum requirements for activities in the classroom under IATF protocols	3.32	Very Ready
2. To implement performance-based tasks and activities aligned with protocols	3.34	Very Ready
3. To prepare activities that will help in fostering health and safety practices	3.38	Very Ready
4. To participate in a large group activity of the school	3.34	Very Ready
5. To implement the systems and protocols/ guidelines for conducting/participating in the school Activities	3.34	Very Ready
Overall Weighted Mean	3.34	Very Ready

It indicates that the respondents agreed with being “Very Ready” in terms of school activities in their level of Instructional competencies of the teachers' transition from distance learning to in-person classes. Implementing minimum requirements for activities in the classroom under IATF protocols entails challenges from the preparation of instructional materials, activities, and execution of students' activities. Teachers must always need to consider the safety and health of the students and other personnel. Teachers are always very ready teachers are used to being always ready in instructional delivery. Silalahi and Hutaurok (2020) research corroborates this claim; they wrote that teachers benefit from active learning. A shift in perspective, such as adopting a cooperative learning paradigm, is required to redirect classroom efforts toward individual pupils. However, the next difficulty during this outbreak is how the cooperative process can happen after the disruption will arise again. The absence of a physical meetup is a challenge that can be mitigated to some extent if the educator is willing to adjust to the most effective methods of instruction.



3. When grouped according to their profile, is there a significant difference in the level of Instructional competencies of the teachers who transition from distance learning to in-person classes?

The demographic profile such as age, and years in service has no significant difference in all areas of Comparison of the level of Instructional competencies of the teachers' transition from distance learning to in-person classes.

IV. CONCLUSION

Based on the findings of the study the following conclusions were drawn:

1. Teachers in this age group belong to the middle-aged workforce. The sex is predominated by female teachers. It is aimed to gain knowledge to impart to their students which means that the higher the degree of the teachers, the more competent, knowledgeable, and skillful they are.
2. Teachers were given enough teaching load, time to prepare learning materials, and school activities to prepare them mentally, emotionally, and physically. Management must take into consideration enough training and support for teachers.
- 3 Teachers' negative feelings cannot be disregarded since viruses have potential health risks. On the other side, looking at the brighter perspective, participants believed the in-person progressive advancement will be positive effects and advantages.
4. The development of increasingly comprehensive in-person programs has provided the participants with increased opportunities for preparation in the areas of academe, health, and safety.

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TREND AND GROWTH OF OUTPUT AND EMPLOYMENT IN MANUFACTURING INDUSTRIES OF ODISHA

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ABSTRACT

The objective of the study is to analyse the trend, growth and performance of manufacturing industries in Odisha. The study is based on time series data of twenty five years i.e. from 1990-91 to 2014-2015 has been taken into account. The number of reporting units are increasing but at a slower rate. It was 1678 units in the year 2003-04 and in 2006-07 it was increased to 1906 units. But just after one year it was again reduced to 1745 units, though it was again increased to 1848 units in 2008-09. During 2013-14 it was increased to 2714 units. It is marked from the above table that both input and output are increasing and always output is greater than input. The correlation between total employment with number of registered factories and Fixed Capital is same as 0.84 but the correlation between employment and Working Capital is 0.77. From this we can say that, if we want to increase the total employment, we have to increase total number of factories and Fixed Capital not the Working Capital. Similarly in the case of value of output there is a high and positive correlation with that of Fixed Capital, which is equal to 0.98. So in order to increase total output, Fixed Capital should increase at a faster rate. The use of Fixed Capital and Working Capital increased but at a slower rate. The investment should be directed to those industries which not only help in achieve the objective of productivity and growth but also generates employment.

KEY WORDS- Employment, Growth, Industry, Output, Productivity

INTRODUCTION

Manufacturing Industries plays an important role in generating employment. But Manufacturing Industries in Odisha are not generating substantial growth and employment. Odisha is not only an eastern agricultural region but also a major alternative source of economic activity as well. With, growth of the industrial sector there lays a high degree of employment opportunities. As Odisha is a state of abundant natural resources and agriculture restructuring, that would relieve the agricultural sector of both the factors and techniques of production operating within a traditional socioeconomic framework, is surely the most sensible process for the development in the state.

As per 2011 Census, the population of Odisha is 41.97 million which is 3.47 per cent of India's population. The population density is 270 persons per sq. km as per 2011 census. The State contributes about 2.6 per cent of the national income. Its per capita income is 62.47 per cent of the average per capita income of the country as per NSDP estimated for 2013-2014. This implies that State has to continue with greater efforts to catch up with the rest of India. Irrespective of wide inter-district variations, the decadal population growth rate of Odisha which is 14 per cent in 2011 is lower than the national average. The pace of industrialisation in Odisha started after the year 1991. Actually in Odisha industrialisation started shortly after independence. The oldest industries in Odisha were Cole mines at Talcher, paper mill at Choudwar and textile mill also at Choudwar. The setting up of integrated still plant at Rourkela, during the second five year plan strengthened Odisha's place in the industrial map of the country. After this a lots of industrial development were seen like IDCOL cement at Bargarh, NALCO, the biggest aluminium smelter plant in the country, Oswal fertilisers and chemicals, the largest phosphate fertiliser plant in the country, thermal power plants, pulp and paper industries, Ferro alloy plants, cement plants etc. In the mean while certain development process were initiated by the Government of Odisha, which pushed the industrialisation process ahead in the state.

OBJECTIVE AND METHODOLOGY

The objective and methodology of the study are as follows.

1. To analyse the trend, growth and performance of manufacturing industries in Odisha.

The main data sources for this study are the Annual Survey of Industries (ASI) published by Ministry of Statistics and programme implementation, Central Statistics Office, Government of India and also Annual Survey of Industries,



Odisha, published by Directorate of Economics and Statistics, Government of Odisha. Another source of data are District Statistical handbook, Cuttack of different years, published by Directorate of Economics and Statistics, Govt of Odisha, different issues of Economic Survey of Odisha, published by Planning and Coordination Department, Govt of Odisha.

For the present study, a time series data of twenty five years i.e. from 1990-91 to 2014-2015 has been taken into account. The methods of analysis are related to measurement of productivity, measurement of output, measurement of input, measurement of other variable. Table and graph is the key instrument for the presentation of data. Statistical instruments like, mean, standard deviation, regression, correlation and time series analysis etc. has been used in this study. Methodologies like Total Factor Productivity, Cobb- Douglas production function for elasticity estimation, Compound Growth Rate, Correlation and Regression Analysis have been used.

REVIEW OF LITERATURE

Panchanan Das, Reetwika Bass, Abhishek Halder (2017) in study on “Employment, Wage and Productivity: Analysis of Trend and Causality in Indian Manufacturing Industries” have explored the relationship between labour productivity and wage rate and its implication for employment outcomes in registered manufacturing industries in India and have analysed the trend behaviour of the time series of employment, productivity and wage. This study finds out the differential effects on employment and wage through productivity growth across different industry groups and provides some serious policy implications in the context labour market flexibility.

Bishwanath Golder, Suresh Aggarwal, Deb Kusum Das, Abdul A Erumban and Pilu Chandra Das (2016), in study entitled “Productivity Growth and Levels - A Comparison of Formal and Informal Manufacturing in India” has analysed growth in total factor productivity (TFP) in the formal and informal segments of Indian manufacturing industries also difference in the level of TFP in the formal and informal segments of Indian manufacturing industries. The analysis of TFP growth reveals that the average growth rate in TFP in informal manufacturing during 1980-2011 was significantly lower than that in formal manufacturing (0.4 per cent per annum as against 4.2 per cent per annum). Both formal and informal manufacturing experienced a fall in the rate of TFP growth during 1994-2002 as compared to 1980-1993, and then achieved a marked acceleration in TFP growth during 2003-11.

Deb Kusum Das, Abdul Azeem Erumban and Pilu Chandra Das (2016) observed in the study “Productivity Dynamics in Indian Industries - Input Re-allocation and Structural Change” has analysed that at the average labour productivity growth in Indian economy was only 1 per cent during the period of 1951 to 2011. During 1981-1995 it grew marginally to 2 per cent while it grew significantly to 5 per cent in 1995 to 2011. Over all the growth rate of TFP was 1.12 per cent during 1980- 2011.

Panchanan Das and Anindita Sengupta (2015) in a study entitled “Wages, Productivity and Employment in Indian Manufacturing Industries: 1998-2010” have examine the regional variation in output, employment and productivity growth with data from registered manufacturing industries across major states in India. The higher rate of growth of manufacturing output leads to higher rate of productivity growth, but not a faster rate of employment growth. The structural change took place in favour of capital that increased profit rate by displacing workers in manufacturing industries in India. Workers were affected badly more as compared to other employees, i.e. office staff and supervisors by this kind of job destroying structural change in manufacturing industry in India. This study observes significant regional disparity in industrial growth in India although the incidence of unevenness declined at a very slow rate. The Western part of the country has been traditionally leading in industrial development and the Eastern part has been lagging further behind.

Radhicka Kapoor (2014) in study on “Creating Jobs in India’s Organised Manufacturing Sector” Using data from the Annual Survey of Industries, She examined that the factors holding back the growth of output and employment in this sector. She finds that there are heterogeneities in the performance of the manufacturing sector across industries and states. Recent economic growth has benefited industries which rely more on capital and skilled workers as opposed to unskilled or low skilled workers. This fact combined with the rising capital intensity of production over the decade partly explains the limited contribution of the manufacturing sector to employment generation.

Sangita Mishra and Anoop K Suresh (2014), in a published paper “Estimating Employment Elasticity of Growth for the Indian Economy” has estimated that the aggregate employment elasticity estimates for India have declined over the decades and vary from 0.18 (arc elasticity) to 0.20 (point elasticity) during the post reform period. Sector-wise, while agriculture has witnessed negative elasticity, services including construction have generally been employment intensive.

DATA ANALYSIS AND RESULTS

Given the composition of industrial sector in Odisha in terms of types of industries, the absence of diversification over time, the pattern of aggregate growth rate and its divergence from the national pattern observed all through only speaks about the gross injustice meted out to the state through the negative dynamics of a competitive federal set up and also the absence of state’s own perspective and prescience of a pertinent industrialisation strategy (Ahluwalia, 1985). The industrial sector contributes about 26 per cent share to Odisha’s gross state domestic product in real terms, where as the manufacturing industries contributes about 16 per cent. The industrial sector has been defined to include manufacturing, mining and quarrying and electricity-gas-water



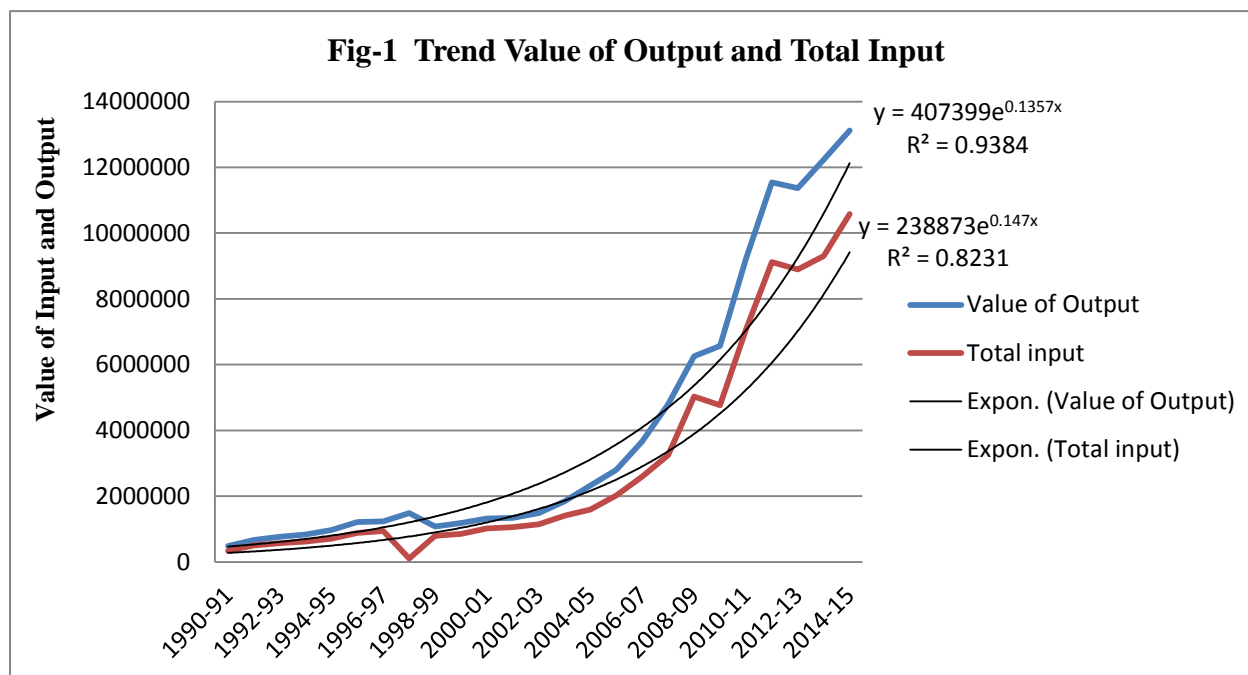
supply. In these studies we will take only the case of manufacturing industries. In this regard the following table may give a clear picture about the manufacturing sector of Odisha.

Table-1 Number of Registered Factories, Fixed and Working Capital, Employment, Net Value Added of Manufacturing Sector of Odisha (Value & Capital in Rs Lakh, & Employment in number)

Year	No of factories	Fixed Capital (FC)	Working Capital (WC)	Total employ ment	Value of Output	Total input	Net value added
1990-91	1465	474476	103813	154532	487019	339218	115270
1991-92	1566	614093	153715	171478	667906	500040	125081
1992-93	1554	756563	179011	180140	766321	574413	141132
1993-94	1611	877417	169022	185276	832536	621721	168439
1994-95	1774	1239931	172223	195004	970084	712336	206432
1995-96	1790	1484562	231766	197569	1211205	884439	257828
1996-97	1779	1936840	243129	184882	1235921	937896	222388
1997-98	1650	1523909	273323	180122	1491389	101667	375547
1998-99	1539	1089317	181855	142053	1083255	796622	207581
1999-00	1591	956551	109127	132058	1182658	851992	267446
2000-01	1665	1146938	126345	128662	1324267	1016324	235168
2001-02	1709	1178862	181861	115652	1342672	1063469	194639
2002-03	1679	1061308	180697	118187	1486235	1143312	265626
2003-04	1678	1611513	90966	124983	1850105	1408121	321492
2004-05	1749	1604281	126231	145747	2329400	1589922	604542
2005-06	1862	2361133	239524	144554	2797711	2023076	628749
2006-07	1906	2957210	333809	162558	3664160	2594387	902270
2007-08	1822	4337008	570718	184886	4801383	3250472	1351150
2008-09	1848	5468284	379627	213534	6253292	5033761	1667405
2009-10	2052	9272234	1246121	227525	6566234	4771268	1479974
2010-11	2536	12166281	587550	282860	9214154	7069789	1693137
2011-12	2678	16080526	990623	284637	11541915	9121209	1820476
2012-13	2854	16377525	624989	263651	11369603	8897360	1805725
2013-14	2714	21086599	1101487	260771	12237946	9303658	2133980
2014-15	2803	22947886	-297870	262817	13119797	10574792	1668493

Source: Annual Survey of Industries (1990-91 to 2014-15)

From the data it is clear that the manufacturing sector of Odisha is growing gradually. In 1990-91 the no of reporting industries increased at an increasing rate due to introduction of New Economic Policy till 1997-98. It was 1465 units in the year 1990-91, 1779 units in 1996-97 and 1650 units in 1997-98 respectively. Just after one year the no of reporting industries sharply declined to 1539 due to super cyclone occurred in Odisha. It may be noted that the number of reporting units are increasing but at a slower rate. It was 1678 units in the year 2003-04 and in 2006-07 it was increased to 1906 units. But just after one year it was again reduced to 1745 units, though it was again increased to 1848 units in 2008-09. During 2013-14 it was increased to 2714 units. It is marked from the above table that both input and output are increasing and always output is greater than input. So there is always a positive net value added. The use of Fixed Capital and variable capital is increasing but use of Fixed Capital is always much higher than the Working Capital. The trend of output and input throughout the study period can be represented graphically in the figure-1.



It is clear from the figure-1 that both input and output are decreasing and positive at the first half of the period i.e. from the period 1990-91 to 1997-98. In 1998-99 there is a sudden down fall in the value of input and output due to super cyclone in Odisha, after that though these two variables increase but at a very slow rate. But the value of output is always greater than the value of input. After obtaining the graphical trend, the Least Square trend was computed by using exponential function for value of output and total input. The coefficient in the equation is found to be $0.135x$ and $0.147x$ for output and input respectively and their R^2 values are 0.938 and 0.832 respectively. It implies that over the period both the output and input has increasing trend. The descriptive statistics of Fixed Capital, Working Capital, and total employee, value of output, total input and net value added is given in the table-2.

Table -2 Descriptive Statistics (Value in Rs. Lakh & Employment in number)

Statistical Measures	No of registered factories	Fixed Capital (FC)	Working Capital (WC)	Total employment	Value of Output	Total input	Net value added
Mean	1878	4486029	358231	182555	3612807	2730062	716312
Median	1762	1564096	206814	180131	1488813	1103391	294469
S.D	398	5928438	330025	50949	3820597	2971908	685581

Source- Computed by the author

The average Fixed Capital in industries of Odisha is Rs.4486029 lakhs but Working Capital is comparatively very less that is Rs.358231 lakhs. The average total employment is 182555 which is relatively less. The standard deviation is very high, which implies that there is fluctuation in Fixed Capital, Working Capital and value of output over the year. The average net value added is Rs.736312lakhs which is also relatively very less in Odisha. In order to understand the relationship among various given variables we would calculate correlation in table-3.

Table - 3 Correlation Matrix

	No of Registered Factories	Fixed Capital (FC)	Working Capital (WC)	Total employment	Value of Output	Total input	Net value added
No of registered factories	1.00						
Fixed Capital	0.96	1.00					
Working Capital	0.78	0.86	1.00				
Total employment	0.84	0.84	0.77	1.00			
Value of Output	0.96	0.98	0.85	0.84	1.00		
Total input	0.96	0.98	0.84	0.84	1.00	1.00	
Net value added	0.88	0.91	0.85	0.80	0.96	0.96	1.00

Sources- Computed by the author.



It is observed from the table-3 that the correlation between total employment with number of registered factories and Fixed Capital is same as 0.84 but the correlation between employment and Working Capital is 0.77. From this we can say that, if we want to increase the total employment, we have to increase total number of factories and Fixed Capital not the Working Capital. Similarly in the case of value of output there is a high and positive correlation with that of Fixed Capital, which is equal to 0.98. So in order to increase total output, Fixed Capital should increase at a faster rate.

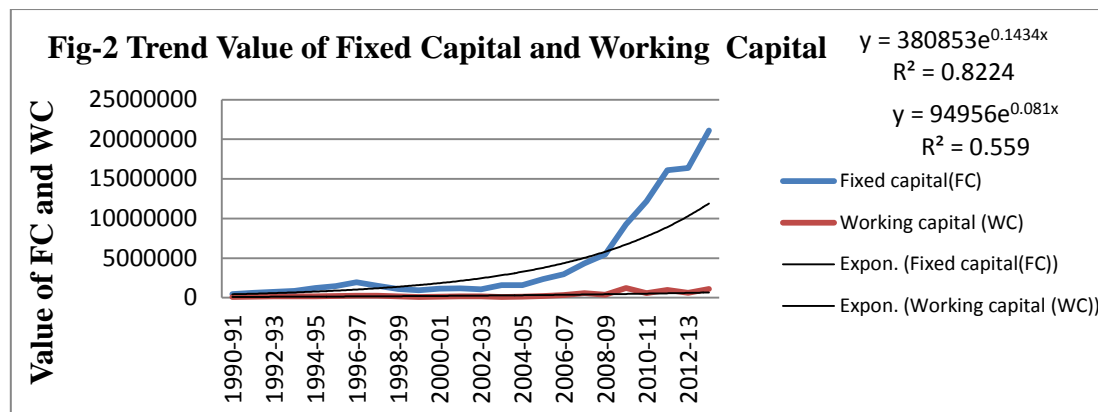
In a financial management, two important decisions are very vital and crucial. They are decision regarding Fixed Capital and decision regarding Working Capital. Both are important and a firm always analyzes their effect to final impact upon profitability and risk. For this researcher has calculated the percentage of Fixed Capital and Working Capital of total Productive Capital in table-4. It is observed that the percentage of contribution of Fixed Capital and Working Capital had always shown increasing trend but the use of Fixed Capital is always higher than the working capital. As the share of Working Capital in productive capital is lower, it shows that there is more investment in plant and machineries.

Table - 4 Fixed Capital and Working Capital as a Percentage of Productive Capital of Manufacturing Sector of Odisha.(Values in lakhs)

Year	Fixed Capital (FC)	FC as % of PC	Working Capital (WC)	WC as % of PC	Productive Capital
1990-91	474477	82.05	103814	17.95	578291
1991-92	614094	79.98	153715	20.02	767809
1992-93	756564	80.87	179011	19.13	935575
1993-94	877417	83.85	169022	16.15	1046439
1994-95	1239932	87.80	172224	12.20	1412156
1995-96	1484562	86.50	231767	13.50	1716329
1996-97	1936841	88.85	243130	11.15	2179971
1997-98	1523910	84.79	273324	15.21	1797234
1998-99	1089317	85.69	181855	14.31	1271172
1999-00	956551	89.76	109127	10.24	1065678
2000-01	1146938	90.08	126345	9.92	1273283
2001-02	1178862	86.63	181861	13.37	1360723
2002-03	1061308	85.45	180697	14.55	1242005
2003-04	1611513	94.66	90966	5.34	1702479
2004-05	1604281	92.71	126231	7.29	1730512
2005-06	2361133	90.79	239524	9.21	2600657
2006-07	2957210	89.86	333809	10.14	3291019
2007-08	4337008	88.37	570718	11.63	4907726
2008-09	5469614	93.51	379627	6.49	5849241
2009-10	9272234	88.15	1246121	11.85	10518355
2010-11	12166281	95.39	587550	4.61	12753831
2011-12	16080526	94.20	990623	5.80	17071149
2012-13	16377525	96.32	624989	3.68	17002514
2013-14	21086599	95.04	1101487	4.96	22188086
2014-15	22947886	101.32	-297870	-1.32	22650016

Source- Computed by the Author

It is observed from the table-4 that, the percentage of contribution of Fixed Capital and Working Capital had always shown increasing trend but the use of Fixed Capital is always higher than the variable capital. The use of Fixed Capital is highest as compared to Working Capital in the year 2014-15, and lowest in the year in the year 1990-91. It is also clear from the table that Fixed Capital and Working Capital has increased after the introduction of New Economic policy in 1990-91 till 1997-98. The use of Fixed Capital which was of Rs. 474477 in the year 1990-91 and increased to 1523910 in 1997-98, accordingly the use of Working Capital which was Rs.103814 in the year 1990-91 and increased to Rs. 273324, but during 1998-99 it sharply declined due to the hit of super cyclone in Odisha, after that, though the use of Fixed Capital and Working Capital increased but at a slower rate. The trend value of Fixed Capital, Working Capital and value of output is given in the figure -2.



From the figure 4.2 it is clear that Fixed Capital and Working Capital has increasing trend, though Fixed Capital is higher than Working Capital. After obtaining the graphical trend the Least Square trend was calculated using exponential function. The coefficient in exponential equation was found to be 0.143x, 0.081x and their R^2 values are 0.822, 0.559 for the value of Fixed Capital and Working Capital respectively. It implies that over the period from 1990 to 2014 both the Fixed Capital and Working Capital has increasing trend.

The ratio of Fixed Capital to employment implies, the more Fixed Capital is used per worker, the more productive the worker can be. Working Capital per employment displays the amount of capital that is necessary to generate one employment. As per the economic theory there is a positive relationship in between Working Capital and employment. Similarly the per capita output per employment is one of the primary indicators of an industry economic performance. So it is essential to calculate Fixed Capital, Working Capital and value of output per employment. This is represented in the table 4.5.

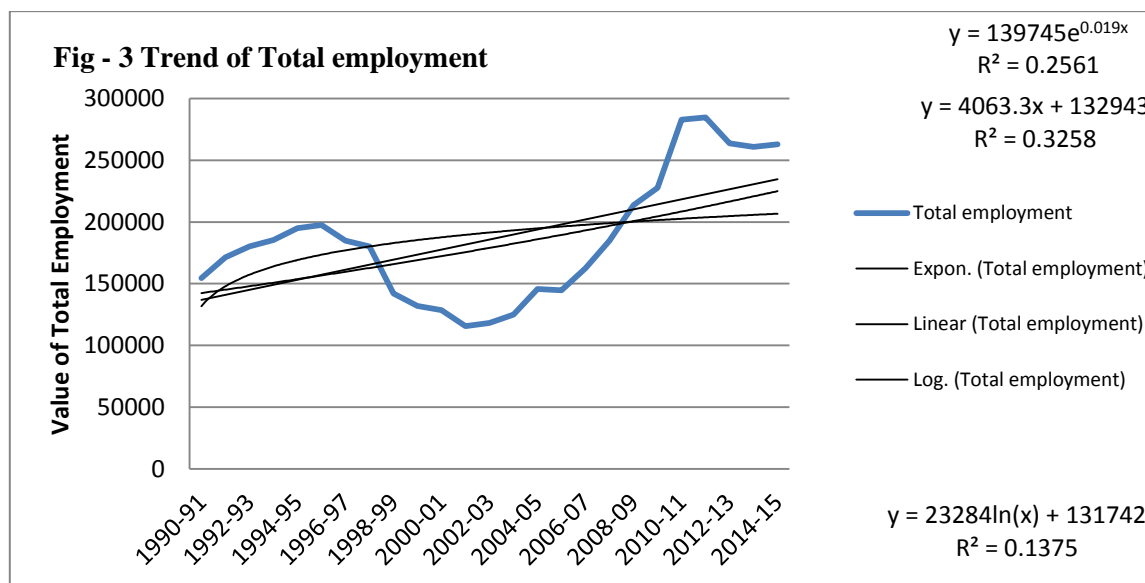
Table - 5 Fixed Capital, Working Capital and Output per Employment
(Value in Rs. Lakh & Employment in number)

Year	No of factories	Fixed Capital (FC)	Working Capital (WC)	Value of Output	Total employment	FC/ Employment	WC/ Employment	Value of output/ Employment
1990-91	1465	474476	103813	487019	154532	3.07	0.67	3.15
1991-92	1566	614093	153715	667906	171478	3.58	0.90	3.89
1992-93	1554	756563	179011	766321	180140	4.20	0.99	4.25
1993-94	1611	877417	169022	832536	185276	4.74	0.91	4.49
1994-95	1774	1239931	172223	970084	195004	6.36	0.88	4.97
1995-96	1790	1484562	231766	1211205	197569	7.51	1.17	6.13
1996-97	1779	1936840	243129	1235921	184882	10.48	1.32	6.68
1997-98	1650	1523909	273323	1491389	180122	8.46	1.52	8.28
1998-99	1539	1089317	181855	1083255	142053	7.67	1.28	7.63
1999-00	1591	956551	109127	1182658	132058	7.24	0.83	8.96
2000-01	1665	1146938	126345	1324267	128662	8.91	0.98	10.29
2001-02	1709	1178862	181861	1342672	115652	10.19	1.57	11.61
2002-03	1679	1061308	180697	1486235	118187	8.98	1.53	12.58
2003-04	1678	1611513	90966	1850105	124983	12.89	0.73	14.80
2004-05	1749	1604281	126231	2329400	145747	11.01	0.87	15.98
2005-06	1862	2361133	239524	2797711	144554	16.33	1.66	19.35
2006-07	1906	2957210	333809	3664160	162558	18.19	2.05	22.54
2007-08	1822	4337008	570718	4801383	184886	23.46	3.09	25.97
2008-09	1848	5468284	379627	6253292	213534	25.61	1.78	29.28
2009-10	2052	9272234	1246121	6566234	227525	40.75	5.48	28.86
2010-11	2536	12166281	587550	9214154	282860	43.01	2.08	32.57
2011-12	2678	16080526	990623	11541915	284637	56.49	3.48	40.55
2012-13	2854	16377525	624989	11369603	263651	62.12	2.37	43.12
2013-14	2714	21086599	1101487	12237946	260771	80.86	4.22	46.93
2014-15	2803	22947886	-297870	13119797	262817	87.32	-1.13	49.92

Source- Computed by the Author



It is observed from the table- 5 that the ratio of Fixed Capital to employment and the ratio of Working Capital to employment show an increasing trend till 1996-97. After that though the above said ratios increase but show a decreasing trend. The ratio of Fixed Capital to employment which was 3.07 in the year 1990-91 increased to 3.58 and 4.19 in the year 1991-92 and 1992-93 respectively. After that it increased and reached its highest point that is 10.48 in the year 1996-97. After that it starts declining till 2004-05 and after that though it is increasing but at a slower rate. If we take the case of Working Capital and employment it shows the same result as in the case of Fixed Capital and employment. But here the matter of concerned is that if we compare both the ratios, former is always higher than the later. This shows that the workers are more productive and utilising their capacity more efficiently. The trend of total employment is given in the figure -3.



From the figure -3 it is clear that employment has an increasing trend. After obtaining the graphical trend the Least Square trend was calculated using exponential, liner and logarithmic function. The coefficients in equation were found to be 0.019x, 4063x and 23284x and their R^2 values are 0.256, 0.325 and 0.137 for the value of employment respectively. It implies that over the period from 1990 to 2014 the employment has increasing trend.

From the above discussion we may concluded that the state has large potential for industrialisation. The role of manufacturing industries and small and medium scale industries is important for development of Odisha. The share of this Sector in Odisha's GSDP is around 15.4 per cent as per the advance estimate in 2014-15. This Sector provides employment, directly or indirectly, to more than 60 per cent of the population. However the sector suffers from frequent natural shocks like cyclones, droughts and flash floods affecting the growth trend. This followed by illiteracy and poverty. Odisha has historically witnessed higher incidence of poverty. In 2004-05 the poverty rate was 57.2 per cent, where as in 2011-12 it reduced to 32.6 per cent for such condition manufacturing sector is a best option which can absorb growing illiterate person from the agriculture sector. Besides this the productivity of labour is very low which subsequently lower their contribution to output. The most common cause behind the low productivity in Odisha is low wage and lack of technology. In recent year much interest has been shown by the private investors, by Indian large companies. As a result Odisha has emerged as one of the most preferred investment destinations in India. But for a state like Odisha investment in medium and small scale industries is more important than the investment in large industries like steel, iron, aluminium and oil refinery. So investment should be directed to those industries which not only help in achieve the objective of productivity and growth but also generates employment.

CONCLUSION

The state of Odisha has large potential for industrialisation. The role of manufacturing industries and small and medium scale industries is important for development of Odisha. Odisha is an agrarian state. The share of this Sector in Odisha's GSDP is around 15.4 per cent as per the advance estimate in 2014-15. This Sector provides employment, directly or indirectly, to more than 60 per cent of the population. However the sector suffers from frequent natural shocks like cyclones, droughts and flash floods affecting the growth trend. This followed by illiteracy and poverty. Odisha has historically witnessed higher incidence of poverty. In 2004-05 the poverty rate was 57.2 per cent, where as in 2011-12 it reduced to 32.6 per cent for such condition manufacturing sector is a best option which can absorb growing illiterate person from the agriculture sector. Besides this the productivity of labour is very low which subsequently lower their contribution to output. The most common cause behind the low productivity in Odisha is low wage and lack of technology. In recent year much interest has been shown by the private investors, by Indian large



companies. As a result Odisha has emerged as one of the most preferred investment destinations in India. But for a state like Odisha investment in medium and small scale industries is more important than the investment in large industries like steel, iron, aluminium and oil refinery. So investment should be directed to those industries which not only help in achieve the objective of productivity and growth but also generates employment.

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POLITICAL, ECONOMIC AND RELIGIOUS EMPOWERMENT OF MIZO WOMEN: AN ATTITUDINAL STUDY AMONG SECONDARY SCHOOL TEACHERS OF AIZAWL CITY

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ABSTRACT

This study was conducted to examine the attitude of secondary school teachers of Aizawl city towards women empowerment in various dimensions i.e., political, economic and religious dimensions. The findings of the study revealed that 97.33% of female teachers and 72% of male teachers have a positive attitude towards women empowerment. The findings also revealed that 92% of the female teachers and 69.33% of male teachers have a positive attitude towards political dimension. 96% of the female teachers and 74.67% of the male teachers have a positive attitude towards economic empowerment while 62.67% of female teachers and 41.33% of male teachers have a positive attitude towards religious empowerment. The findings also revealed that there is a significant difference between attitude of male and female teachers towards women empowerment.

KEYWORDS — *women empowerment, political, economic, religious, Mizo women, Aizawl city*

I. INTRODUCTION

Women's empowerment is basically the process of improving the status of traditionally disadvantaged women in society, economically, socially and politically. To protect children from all kinds of abuse. Building a social and political environment in which women can live free of oppression, exploitation, fear, discrimination and the general sense of persecution that accompanies being a woman in a historically male-dominated system is vital for women. A key element of empowerment. Empowerment leads to a growing intrinsic capability greater self-confidence, and an inner transformation of one's consciousness that enables one to overcome external barrier.

In order to create a bright future for families, society, and countries, women's active participation is essential. Women's empowerment means empowering women to become self-reliant, financially independent, have positive self-esteem, give them the confidence to face difficult situations, and encourage their active participation in a range of socio-political development efforts. Women empowerment becomes more important only when women are educated and is considered as a process that takes place over time, making women formulate choices, control resources and make strategic life choices.

II. LITERATURE REVIEW

Kusum (2016), in "Awareness of Women Empowerment among Pupil Teachers" found that there was no significant difference between male and female pupil teacher with respect to awareness on women empowerment. Additionally, it was found that there was no significant difference between rural and urban area pupil teachers with respect to awareness on women empowerment. The study also found that there was no significant difference between awareness of arts and science stream pupil teachers towards women empowerment.

Tripathi (2017), in "Awareness and Attitude on Gender Equality among men of Bharatpur" investigated the awareness and attitude on gender equality among men. She observed that most men had moderate awareness and more than half of the men held high gender equitable attitude. The study also revealed that there was a significant association between the level of attitude with the respondents' education and marital status.

Shameem (2012), in her study titled "A Study on Reflective Thinking and Attitude towards Empowerment of Women among Student Teachers of Tamil Nadu" observed that there is a significant difference between male and female Student teachers with respect to their dimensions of attitude towards empowerment of women. 13.8% of the female student teachers have favourable attitude towards empowerment of women while 9.2% of the male student teachers have favourable attitude towards empowerment of women. On the contrary, 11% of the female student teachers have unfavourable attitude towards empowerment of women while 19.4% of the male student teachers have unfavourable attitude towards empowerment of women. She also revealed that there is a significant difference among student teachers of government, aided and self-finance institutions with respect to their dimensions of attitude towards empowerment of women.



III. RESEARCH QUESTIONS

1. What is the attitude of female secondary school teachers towards women empowerment?
2. What is the attitude of female secondary school teachers towards political empowerment of women?
3. What is the attitude of female secondary school teachers towards economic empowerment of women?
4. What is the attitude of female secondary school teachers towards religious empowerment of women?
5. What is the attitude of male secondary school teachers towards different women empowerment?
6. What is the attitude of male secondary school teachers towards political empowerment of women?
7. What is the attitude of male secondary school teachers towards economic empowerment of women?
8. What is the attitude of male secondary school teachers towards religious empowerment of women?
9. Is there any significant difference between the attitude of male and female secondary school teachers towards women empowerment?

IV. RESEARCH OBJECTIVES

1. To find out the attitude of female secondary school teachers towards women empowerment.
2. To find out the attitude of female secondary school teachers towards political empowerment of women.
3. To find out the attitude of female secondary school teachers towards economic empowerment of women.
4. To find out the attitude of female secondary school teachers towards religious empowerment of women.
5. To find out the attitude of male secondary school teachers towards women empowerment.
6. To find out the attitude of male secondary school teachers towards political empowerment of women.
7. To find out the attitude of male secondary school teachers towards economic empowerment of women.
8. To find out the attitude of male secondary school teachers towards religious empowerment of women.
9. To compare the difference between attitude of male and female secondary school teachers towards women empowerment.

V. RESEARCH HYPOTHESES

1. There is no significant difference between the attitude of male and female secondary school teachers towards women empowerment.

VI. FINDINGS

1. Attitude of Female Secondary School Teachers towards Women Empowerment

Nature of Attitude	No. of Teachers	Percentage
Positive	73	97.33%
Neutral	2	2.67%
Negative	0	0

The above table shows that a large majority of female secondary school teachers have a positive attitude towards the different dimensions of women empowerment. Out of the 75 female secondary school teachers, 73 teachers have a positive attitude which represents 97.33% of the total female population. 2 teachers have a neutral attitude representing 2.67% of the total female population. Meanwhile, there are no female secondary school teachers who have a negative attitude in the different dimensions of women empowerment.

2. Attitude of Female Secondary School Teachers towards Political Empowerment of Women

Nature of Attitude	No. of Teachers	Percentage
Positive	69	92%
Neutral	6	8%
Negative	0	0

From the above table it can be perceived that out of all the 75 female respondents, there are as much as 69 teachers who have a positive attitude constituting 92% of the total female population. There are 6 teachers who have a neutral attitude which



represents 8% of the total female population. Meanwhile, there are no female secondary school teachers who have a negative attitude towards political empowerment of women.

3. Attitude of Female Secondary School Teachers towards Economic Empowerment of Women

Nature of Attitude	No. of Teachers	Percentage
Positive	72	96 %
Neutral	3	4%
Negative	0	0

As presented in the above table it is observed that out of all the 75 female secondary school teachers, 72 teachers have a positive attitude rendering as much as 96% of the total female population. There are 3 teachers with a neutral attitude constituting 4% of the total female population. Meanwhile, there are no female secondary school teachers who have a negative attitude towards economic empowerment of women.

4. Attitude of Female Secondary School Teachers towards Religious Empowerment of Women

Nature of Attitude	No. of Teachers	Percentage
Positive	47	62.67%
Neutral	27	36%
Negative	1	1.33%

In accordance with the above table, it is revealed that out of the 75 female secondary school teachers, 47 teachers have a positive attitude which represents 62.67% of the total female population. There are 3 teachers with a neutral attitude constituting 36% of the total female population. Meanwhile, there is 1 teacher who has a negative attitude towards religious empowerment of women representing 1.33% of the total female population.

5. Attitude of Male Secondary School Teachers towards Women Empowerment

Nature of Attitude	No. of Teachers	Percentage
Positive	54	72%
Neutral	21	28%
Negative	0	0

With reference to the above table, it can be viewed that majority of the male secondary school teachers have a positive attitude towards the different dimensions of women empowerment. Out of 75 male secondary school teachers, 54 teachers have a positive attitude which represents 72% of the total male population. 21 male secondary school teachers have a neutral attitude representing 28% of the total male population. Meanwhile, there are no male secondary school teachers who have a negative attitude in the different dimensions of women empowerment.

6. Attitude of Male Secondary School Teachers towards Political Empowerment of Women

Nature of Attitude	No. of Teachers	Percentage
Positive	52	69.33%
Neutral	22	29.33%
Negative	1	1.33%



The above table brings to light that out of 75 male secondary school teachers, 52 teachers have a positive attitude representing 69.33% of the total male population. 22 teachers have a neutral attitude constituting 29.33% of the total male population. Meanwhile, there is 1 teacher who has a negative attitude towards political empowerment of women which represents 1.33% of the total male population.

7. Attitude of Male Secondary School Teachers towards Economic Empowerment of Women

Nature of Attitude	No. of Teachers	Percentage
Positive	56	74.67%
Neutral	18	24%
Negative	1	1.33%

Out of 75 male secondary school teachers, there are 56 teachers who possess a positive attitude representing 74.67% of the total male population. 18 teachers hold a neutral attitude constituting 24% of the total male population. Meanwhile, 1 teacher has a negative attitude towards economic empowerment of women which represents 1.33% of the total male population.

8. Attitude of Male Secondary School Teachers towards Religious Empowerment of Women

Nature of Attitude	No. of Teachers	Percentage
Positive	31	41.33%
Neutral	43	57.33%
Negative	1	1.33%

The above table indicates that out of the 75 male secondary school teachers, 31 male secondary school teachers display a positive attitude representing 41.33% of the total male population. There are 43 teachers who possess neutral attitude which represents 57.33% of the total male population. Meanwhile, there is 1 teacher who has a negative attitude towards religious empowerment of women and constitutes 1.33% of the total male population.

9. Comparison between attitude of Male and Female Secondary School Teachers towards Women Empowerment

Gender	Number	Mean	SD	t-value	Level of Significance
Female	75	138.59	17.94	5.62	Significant at 0.01
Male	75	121.28	19.73		

The above table shows the comparison done between respondents based on their gender. The table reveals that out of the 75 female secondary school teachers, the mean score is 138.59 and the standard deviation is 21.93. Meanwhile, out of the 75 male secondary school teachers, the mean score is 121.28 and the standard deviation is 19.73.

Since the calculated t-value is 5.62 which is greater than the critical value at 0.01 i.e., 2.62, there is a significant difference in the attitude between male and female secondary school teachers towards women empowerment where the mean score of female secondary school teachers is higher than that of their male counterparts. The null hypothesis stating that "there is no significant difference between male and female secondary school teachers towards women empowerment" is rejected.

VII. CONCLUSION

Women empowerment refers to increasing the spiritual, political, social, educational, gender or economic strength of individuals and communities of women. Women empowerment in India is heavily dependent on many different variables that include geographical location (urban / rural) educational status social status (caste and class) and age. Policies on women's empowerment exist at the national, state and local (Panchayat) levels in many sectors, including health, education, economic opportunities, gender-based violence and political participation. The empowerment of women has become one of the most important concerns of 21st century not only at national level but also at the international level. Government initiatives alone would not be sufficient to achieve this goal. Society must take initiative to create a climate in which there is no gender discrimination and women have full



opportunities of self-decision making and participating in social, political and economic life of the country with a sense of equality.

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THE RELATIONSHIP BETWEEN PSYCHOANALYSIS AND LITERATURE

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ABSTRACT

Austrian physician and scientist Sigmund Freud's psychoanalytic concept, which emerged at the beginning of the XX century, greatly influenced the spiritual culture of the 20th century. Z. Freud's philosophical ideas based on the results obtained in the field of neurosis therapy and the study of the mental processes of the unconscious, as well as their openness to understanding and broad perspectives for explaining the mechanisms of social life, human behavior, the nature of scientific and artistic creativity psychoanalysis gained great importance not only in the eyes of scientists but also in creative intellectuals and the general public. This paper highlights the emergence of psychoanalysis as a field of science and its close relationship with literature by analyzing the works of well-known psychologist Sigmund Freud as well as his influence on the psychoanalytic approach to literature.

KEYWORDS: *psychoanalysis, literature, conscious, unconscious, writer, psychologist, research method, symbol, individual.*

INTRODUCTION

Freudianism approaches man as a literal biological being. For the same reason, he uses the term "individuum" for a person, not the traditional terms. According to the core philosophy of Freudianism, "humanity's activities are not controlled by the laws of social development, but by unconscious psychic forces. The mind does not reflect reality but acts as a masking tool for unconscious tendencies. More precisely, man (individual) and the social environment are in a state of constant, mysterious struggle [1]. The formation of such a concept is explained by the history of the origin of psychoanalysis, and methodological principles.

In the pre-Freud psychological interpretations of human activity, consciousness and processes related to it were the object of research. And Freud discovered that there is hidden activity behind these conscious processes and called it "subconscious psychology". Australian critic Stefan Zweig (1881-1942) writes: "Freud, without the slightest regard for the traditions of his time, firmly set before his contemporaries the problem of understanding the hidden and unconscious self." [10:172] Although these opinions of S. Zweig are not devoid of emotional elements, they represent the essence of psychoanalysis. In fact, psychoanalysis was born as a result of clinical research on subconscious psychology. While studying the psychology of the human subconscious during his clinical and therapeutic activities, Freud gradually systematized the rules of psychoanalysis. In this way, he justified his views and applied them to scientific circles and the public.

LITERATURE REVIEW

Psychoanalysis contributed to such sciences as cultural studies, ethnology, and sociology, and began to be applied in criminal law. Literary criticism has found new ways of interpreting the text with its help and attempts to map out the connections between psychoanalysis and politics are diverse. But psychoanalysis has not found its reflection anywhere, as in the works of writers and poets. It should be noted that the consideration of various aspects of Freud's concepts has a long tradition in both foreign and national research literature.

Philosophical aspects and components of psychoanalysis, as well as its practical importance for humanities (literary studies, cultural studies, ethics, aesthetics, etc.), were studied in the works of the following Uzbek and Russian authors: M.N. Afasiyev, M.M. Bakhtin, A.I. Belkin, Yu.M. Borodai, B.E. Bykhovsky, N.V. Vetrova, V.N. Voloshinov, A. Voronsky, L.S. Vygotsky, R.F. Dodeltsev,



V.M. Leibin, A.R. Luria, V.I. Ovcharenko, V. Polonsky, M.M. Reshetnikov, A. M. Rutkevich, A. V. Sokolov, V. Friche, M. G. Yaroshevskiy, U. Jurakulov, B. Karim, N. Eshonkul, N. Kobilova, and others.

ANALYSIS AND RESULTS

It is known that the range of aesthetic problems raised by Freud in his works of psychoanalysis is quite wide. Among them are the emergence and development of art, the concept of a creative person and his relationship to society, the nature of creative imagination, and the relationship between the form and content of artistic work. In the works of different years, one can observe Freud's constant desire to turn psychoanalysis into one of the main methodological tools of aesthetics, and even more widely - the entire humanities. It is now generally accepted that the spread of psychoanalysis to non-clinical areas was an integral part of the early development of this branch of psychology. On the other hand, for Freud, the approbation of psychoanalysis in the disciplines of sociology, literary studies, and cultural studies, apparently, means a kind of "debt repayment", since many of Freud's main ideas were taken from non-clinical sources.

Classical literature became the material for the foundation of innovative ideas along with anthropology, biology, and philosophy for psychoanalysis. Before psychoanalysis was used to interpret literature, literature was used to explain psychoanalysis. In the works of Freud, you can find references to the works of Sophocles, Shakespeare, Goethe, Hoffmann, Zola, Ibsen, Zweig, and Russian authors - Dostoevsky, Tolstoy, and Merezhkovsky. The tradition of involving literary characters and their authors in psychoanalytic experiments was continued by Freud's followers. The founder of psychoanalysis himself considered this approach to be effective and useful both for his education and for all humanitarian knowledge.

Sigmund Freud's works such as "Creative Writers and Day-Dreaming" (1908), and "Dostoevsky and Parricide" (1928) presented some examples of the application of psychoanalysis to literature and art. In these articles, Freud emphasized that psychoanalysis and literary studies should not be confused. If Z. Freud's psychoanalysis pays attention to the creative process, "self", and biographical information, psychoanalysis according to K. G. Jung studies national and universal aspects of inner consciousness, not individual cases. They are called an archetype formula ("sample") with an invariable image. "Archetype" - according to C. G. Jung, motives and their combinations, generally fixed psychological schemes (figures), traditions, myths, symbols, beliefs, mental activity (dreaming), as well as unconsciously arising in the creative process. [3:182]

Literary scientist U. Jurakulov emphasizes that literature serves as both an object and a subject in relation to psychoanalysis. When we look at literature as an object of psychoanalysis, psychoanalysis becomes a component of theoretical literary studies as a research method. On the contrary, psychoanalysis appears as an object of literary studies. [6:54]

Psychoanalysis can never do without thinking. In addition, the "Oedipus complex", which forms the basic concept of Freudian theory, is directly based on the pattern of figurative thinking. It can even be said that figurative thinking served as the initial basis for the development of the method of psychoanalysis before Freud.

When Freud tries to interpret and justify the subtle points of his theory, he certainly turns to a literary work. This aspect of his research method serves two functions at once. First of all, it serves as evidence for the idea that Freud wants to prove, and on the other hand, it shows the level of this work from the point of view of anthropology. [6:54]

Psychoanalysis in literary studies is a research method in which the work of art is interpreted together with the psychology of the unconscious. In psychoanalysis, artistic creativity is considered as a symbolic product of impulse, inertia taken from some unconscious, unconscious processes in the human psyche.

Psychoanalysis distinguishes a number of plot schemes in the history of literature, in which the author moves to a certain extent into the world of the hero; and the author describes his own personal desires or tragic conflicts with the social environment and moral standards. Psychoanalysts see the motif of father-killers in Sophocles' "Oedipus the King", Shakespeare's "Hamlet", and Dostoevsky's "The Brothers Karamazov" in connection with the "Oedipus complex". [3:181]

CONCLUSION

Thus, referring to the literary experiences of psychoanalysts, we determine whether they belong to one of two groups, depending on the topic of analysis chosen by the researcher. In the first, we include works where psychoanalysis is used not to interpret the text, but to explain the specific features of the personality of the writer who created this text. Freud's methodology for such an analysis is most fully described in "Wit and its Relation to the Unconscious" (New York: 1916). The other group includes works that reflect the interpretation of artistic images, characters, and hidden and clear motives of the text. The most obvious methodological source for such an analysis is primarily Freud's "The Interpretation of Dreams" (Macmillan: 1913). All in all, Austrian psychiatrist Sigmund Freud's contribution to psychoanalysis and psychoanalytic approach to literature is immense.



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ECOLOGICAL TOPONYMS AND THEIR TEACHING IN GEOGRAPHY LESSONS

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ABSTRACT

Issues such as the need for a socio-geographical approach to the study of ethnoecological culture, methods of socio-geographical research of the territorial aspects of ethnoecological culture, differentiation of the Fergana Valley area in the "nature-population-population" system, directions of using samples of ethnoecological culture for the purposes of social economic development of the territory are covered.

KEYWORDS: *Ethnoecological culture, socio-geographical approach, stratification in the system "Nature-population-population", "ecologically quiet areas"*

INTRODUCTION

As a result of the increase in the world's population and the rapid development of economic sectors, the scope of use of natural resources is expanding, and the amount of anthropogenic pressure on it is increasing. This situation causes socio-ecological problems in regions with high population density and intensively developed economic sectors. The issue of ensuring sustainable development in such regions is one of the main principles of saving humanity from impending socio-ecological catastrophes and transitioning to a sustainable path of development at a number of UN conferences (Rio de Janeiro, 1992, Johannesburg, 2002, New York, 2015). As - "traditional knowledge and values used by indigenous people, methods of using resources" is emphasized. The people's culture of traditional nature use requires the use of these issues in improving the socio-economic development of regions such as the Fergana Valley.

In order to ensure sustainable socio-economic development in our republic, special attention is paid to the use of available natural resources on a scientific basis, to the natural conditions and established traditions of each region, and to the creation of conditions for the effective use of their potential, as well as the settlement of the population. In the "Strategy of Actions for further development of the Republic of Uzbekistan in 2017-2021", important tasks are defined in the context of "preventing environmental problems that harm the environment, population health and gene pool". In this regard, scientific research aimed at the rational use of natural resources and the prevention of socio-ecological problems, based on the experiences of the local population in using nature, is of great importance.

- Analysis of literature on the topic (Literature review). The theoretical and methodological foundations of the study of the problems of researching socio-geographical aspects of ethno-ecological culture of the population from foreign scientists J.H. Steward, H.C. Conklin, from CIS scientists L.S. Berg, P.N. Savitsky, B.V. Andrianov, V.I. Kozlov, L.N. Gumilev, R.F. Its, S.M. Myagkov, A.G. It is cited in the works of Druzhinin, Yu.A. Vedenin, K.B. Klovov, K.P. Ivanov, I.Yu. Gladkiy, V.N. Kalutskov, M.V. Ragulina and others.

Socio-geographic aspects of the study of the traditions of the use of nature of our people A.F.Middendorf, D.N.Kashkarov, H.Kh.Khasanov, R.U.Rahimbekov, A.A.Rafikov, A.I.Jabborov, A.A.Ashirov, U.Abdullayev, A.A.Qayumov, R.Baliyeva, A.S.Soliyev, A.N.Nigmatov, F.H. Hikmatov, Yu.I. Ahmadaliyev and a number of other scientists.

- Research methodology. A complex approach is of particular importance in conducting ethnoecological research, because these studies have a natural and social nature at the same time. Although most of the problems waiting to be solved in the research are of a natural-ecological nature, the solution of socio-historical issues plays a major role in their solution. Therefore, in the research work, special attention is paid to the historical and ecosystem approaches that embody complex views.

- Analysis and results. Today, the main indicators of the scientific direction of geoecology are considered to be the main indicators of the scientific direction of geoecology, which has been constantly changing in human society for several thousand years, according to the concept of eliminating the ecological danger in front of human society and moving to a sustainable path of



development. There is a need to monitor changes in indicators such as the amount of use and production of products, the number of people, the scale of natural resource use, the amount of anthropogenic pressure on nature, the balance of the ecological and ethno-ecological landscape in space and time. In turn, it shows the necessity of historical approach along with innovative views to preserve ecological balance.

The principles, types and form of regional organization of the society in economic and social geography can change under the influence of various factors. The fact that this situation can be more clearly manifested in the process of using nature, including land resources, is based on the example of world countries by V.A. Pulyarkin. Based on these methodological principles and analysis, it is suggested by Yu.I. Ahmadaliyev to distinguish three types of territorial organization of the use of natural resources in regional conditions. Based on the purpose of using nature, these types are conventionally called natural-organizational, commodity-purpose and program-purpose.

We called the first type of nature use based on the use of the natural resources of the region, which existed in the Fergana Valley until the end of the 19th century and the beginning of the 20th century, because the organizational aspects of the issue were not so developed during this period. In this type of territorial organization of the use of nature, relief, climate, soil characteristics, closed place of the valley and national-ethnic characteristics, skills, skills and habits of the population are taken into account. This type, as a rule, was formed during a long historical period, and the accumulated skills, qualifications and experiences are based on a harmonious and proportionate relationship with nature. Therefore, from an ecological point of view, this species is the most durable, and it is worth studying for this purpose.

If the relations of the "Ethno-landscape-economy" system are placed in the form of "geotronics", then the main burden falls on the economy, and in the territorial organization of the economy, it should be adapted to the requirements of the landscape. It is shown that it is going. It is shown that only the indicators of husbandry that correspond to the landscape requirements of the ethnoses are preserved as "skills-competencies-traditions". With the development of "ethno-landscape-economy" relations, the amount of natural landscapes (biosphere) in any region decreases, and its place is taken by economic indicators (technosphere).

In science, it will be possible to achieve a positive result and create a complete and accurate database of any phenomenon or object using various methods. Based on the essence of this research work, regionalization, comparative typology, cartographic, toponomic methods are used.

In this work, 3 types of ethno-ecological culture are deeply analyzed in the selected ethno-ecological regions. Toponymic and religious territorial aspects of the ethno-ecological culture in the field of the culture of using natural resources (land and water), settlement of settlements and nature protection are studied within the regions.

At the first stage, the distribution of the land fund according to the branches of the national economy in the natural-historical type of nature use in the ethno-ecological regions is studied, and the changes in the indicators are observed within the regions. Attention is paid to the change of land types performing ecological functions in each region, for example, to the percentage change of areas occupied by "forest parks", reserves, gray lands, pastures.

In the second stage, the composition of agricultural land is analyzed, the amount of irrigated land, arable land, gardens, protected land is studied. Indicators can be studied by ethno-ecological regions, bekliks, volosts. Land types in each district are studied in what landscape region is allocated, the compatibility of the land type with this type of use.

In the third stage, the composition of cultivated areas is studied, based on the conditions of the landscape of the place, suitable crop types and trees are analyzed separately.

The result of such analyzes within the regions gives an opportunity to determine whether the same ethnic groups live in the above regions, but the land is used differently in the used areas, and the influence of the natural-landscape factor on the ethno-ecological culture formed here.

Using the comparative geographical method, as a result of the conducted research, it will be possible to reveal the role of the ethno-landscape factor in the emergence of another type of ethno-ecological culture of vital importance for the region - the culture of water use. By analyzing the peculiarities of water use in the eastern and western, northern and southern parts of the valley, it is possible to pay attention to the extent to which the natural-landscape factor affects this culture. The following aspects of the culture of water use in the region are studied:

- a) selection of irrigation methods;
- b) construction and maintenance of irrigation facilities;
- v) management of the irrigation system, irrigation system.
- g) management of irrigation by ethnic and religious-legal methods, etc.

The next type of ethnoecological culture that can be studied in the system of ethnoecological regions is the culture of organizing settlements. Issues such as the location of the settlement, the employment of the population, the configuration of the villages, and the specialization of the economy in each landscape zone are analyzed in a comparative-geographical way. Ecological and social aspects of settlements created by each ethnic group are studied.

In the analysis of settlements, attention is also paid to their naming. As a new direction in ethnocultural landscape studies, topos, which means unity of place and name, is studied separately. With the beginning of the use of a place within a certain cultural landscape, a topos is created by giving a name (toponym) that reflects its territorial, external appearance and meaning characteristics. The simple formula for a topos is topos=place+toponym. In such an approach, the place is the material basis of the topos, and the



toponym is the superstructure of its ideological basis. The combination of these two aspects creates a perfect, unique creation. Ecologically, only a systematic study of them together will give the expected result.

Comparative methods can also be used in the study of traditions used in nature protection, in which the location, area, protected object of each protected object (holy shrines, shrines) is mapped, and the regional area is mapped. will be compared and compared. Using such a comparative-geographical analysis, it is possible to study the manifestations of spiritual ethno-ecological culture. Territorial aspects of holidays, examples of folk art, signs of predicting the weather are also studied using this method. In addition, the spiritual directions of the ethno-ecological culture will be analyzed on the first of March with the help of system-analysis, cartographic, toponymic methods.

It is known from the socio-geographical historical studies that the highest manifestations of ethno-ecological culture in Central Asia were observed in Khorezm, Zarafshan, Tashkent oasis and Fergana valley in regions with irrigated agriculture. The period of the highest level of ethno-ecological culture in the Fergana valley corresponds to the end of the 19th century and the beginning of the 20th century. First of all, the skills, competences and traditions (i.e., ethno-ecological culture) for the use and protection of natural resources that have been historically formed in the valley by this time are the most advanced, economically useful, socially necessary, ecologically effective. Secondly, enough geographical, ethnographic, statistical, cartographic and fund materials were collected for the research of this period. Thirdly, during this period, a comprehensive system of economic management based on initial market relations was created in the Fergana valley. By the beginning of the 20th century, as in other colonial countries of the world, the situation in the Fergana Valley changed dramatically: one-sided, based on the production of goods and raw materials, the natural and geographical features of the place, the local economy of ethnic groups. unremarkable commodity production was developed.

- Conclusion and recommendations (Conclusion/Recommendations).

1. The need and demand for ethno-geographical and ethnoecological studies studying the traditional culture of the local peoples regarding the use of nature in order to stabilize the mutual relations between nature and society, and to solve emerging regional social-geographical problems was formed;

2. As an object of ethnoecological research in the direction of social geography, not all directions and elements of ethnoecological culture, but meeting the 3 methodological requirements of geography, that is, having a territorial content, there is a possibility of mapping, and its research is new for the geographical shell. directions that provide knowledge were selected. Accordingly, from the material direction of ethno-ecological culture, the use of land and water resources and the territorial organization of settlements, and from the spiritual direction, the culture of naming geographical objects, the organization of sacred shrines and pilgrimage sites, and ethno-ecological education. the study of territorial aspects of education was separated;

3. It was found that the drastic change in the culture of nature use, which was used by the local population, passed down from generation to generation, and preserved as a special value, based on harmony with the natural (nurturant) mother landscape, caused negative socio-geographical consequences in all historical periods. . In particular, in areas with a dry climate, not paying enough attention to the local population's land-water use culture has led to negative ecological consequences;

4. A historical-geographical and systematic approach was chosen to ensure the study of the natural and social geographical factors influencing the formation of ethno-ecological culture in their interconnectedness and integrity. 3 periods (before 1876, 1876-1991, and after 1991) were divided based on the historical-geographic characteristics of the use of natural resources in the Fergana Valley.

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ANTI- DERMATOPHYTIC ACTIVITY STUDY OF ESSENTIAL OIL PRESENT IN OCIMUM AMERICANUM LINN.

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ABSTRACT

The chemical composition of the essential oils of *Ocimum Americanum* growing wild in Nilgiris has been studied. The essential oils from the leaves of *Ocimum Americanum* obtained through steam distillation were characterized for its organoleptic properties and physicochemical constants. Freshly extracted essential oil was pale yellow or slightly greenish, soluble in common organic solvents and very slightly soluble in water. Its specific gravity was 0.9071; with 1.442 as refractive index; -21.31 as optical activity and chemical constants (in % w/v) viz, acid value 2.2, ester value of 151.86, aldehyde content 76, alcohol content 40.91 and phenolic content 15. The volatile constituents of essential oils were investigated by GC- MS. Twenty nine constituents were identified. The minimum inhibitory concentration (MIC) of the oil was determined using dilution method and antidermatophytic activity was tested by agar diffusion. The oil was found to have significant antidermatophytic activity against dermatophytes such as *Trichophyton rubrum* (ATCC 2818810), *Microsporum canis* (ATCC 118325) and *Microsporum gypseum* (ATCC 241025) with MIC values of: 500 µg/mL, 125 µg/mL and 62.50 µg/mL and the zones of growth inhibition were: 26 mm, 28 mm and 29 mm respectively.

KEYWORDS: Essential oil, Antidermatophytic activity, *Ocimum Americanum*, Nilgiris

INTRODUCTION

The plant's Cytotoxic attitudes are formulated them as an excellent antiseptic and antifungal agents¹⁰. There is growing attention in medicinal plants as an alternative source of synthetic molecules with inspiration in the existing marketplace¹¹. The *Ocimum Americanum* is an aromatic herbaceous plant with 30–60 cm long hairy stems and simple phyllotaxis green or purple leaves & caudiform floral segments that contain Oleanolic acid, linalool, Eugenol, β-elemene and β-caryophyllene as the major constituent of the essential oil. The *Ocimum tenuiflorum* oil can be used as possible pharmaceutical products with therapeutic, perfumery properties¹²⁻¹⁴. On the Basis of remedial activity of *Ocimum tenuiflorum*, in the present study the detailed¹. Various species of *Americanum* have been characterized for their biological activities. It is considered to produce most medicinally important secondary metabolites^{2,3}. Several interesting studies using *Americanum* spp. showed a series of antimicrobial and antioxidant activities⁴⁻⁸. The qualitative determination of various secondary metabolites like flavonoids, terpenoids, saponins and polysaccharides of *Americanum* spp. were detected by HPLC, GC-MS and NMR⁹. Few considerable secondary metabolites were successfully isolated and used in food industry as an alternative to synthetic antimicrobials^{10,11}. Furthermore, extracts of *Americanum* spp. were used as natural pesticide and also in the treatment of few human diseases¹²⁻¹⁵. Essential oils make a major contribution into the plant's biological activity as well. For that reason the chemical composition of worm wood oils has been investigated in several studies.

The frequency of life-threatening infections caused by pathogenic microorganisms has increased worldwide and is becoming an important cause of morbidity and mortality in immune compromised patients in developing countries. Although a large number of antimicrobial agents have been discovered, pathogenic microorganisms are constantly developing resistance to these agents¹⁶. There has been an increased interest in looking at antimicrobial properties of extracts from aromatic plants particularly essential oils. Essential oils have been shown to possess antibacterial, antifungal, antiviral insecticidal, antioxidant properties and traditionally used for treatment of infections and diseases all over the world for centuries¹⁷. In recent



years there has been extensive research to explore and determine the antimicrobial activity of essential oils. The aim of the present study was to explore the chemical composition of *O.Americanum* essential oils from Nilgiris and to determine its antidermatophytic activities.

Plant materials

Fresh leaves of *Ocimum Americanum* were collected from Nilgiri district, Tamil Nadu, India and authenticated by Dr. P. Jayaraman, Director, Plant Anatomy Research Center, (PARC) Tambaram, Chennai. A voucher specimen (138) has been deposited in the herbarium of the School of pharmaceutical sciences, Vels University.

Recovery of the essential oils

The collected leaves were washed, dried between filter papers and air-dried. The leaves were cut into small pieces for extraction using steam distillation for 3 h, using Clavenger-type apparatus. The distilled oils were dried over anhydrous sodium sulfate and stored in tightly closed dark vials at 4°C until the analysis and test.

GC-MS analysis

The isolated volatile oil was analysed using GC/MS (JEOL GC mate) with two fused silica capillary column DB-5 (30µm, 0.25 mm i.d, film thickness 0.25 µm) and a flame ionization detector (FID) which was operated in EI mode at 70 eV. Injector and detector temperatures were set at 220°C and 250°C, respectively. One microliter essential oil solution in hexane was injected and analyzed with the column held initially at 60°C for 2 min and then increased by 3°C/min up to 300°C. Helium was employed as carrier gas (1 ml/min).

The preliminary identification of the constituents was based on the computer matching of mass spectral data of the components against the standard WILEY275 and NIST library spectra constituted from spectra of pure substances and components of the known essential oils, and literature MS data. They were confirmed by their GC retention time comparison with those of reference compounds and with those reported in the literature¹⁸.

Physical analysis of the volatile Oil

Physical characterization of the isolated volatile oil consists of the description and determination of attributes.

Organoleptic properties

The volatile oil was placed in a transparent bottle over a white background and the color and clarity were observed; the characteristic odor was determined by sniffing; and to determine its characteristic feel to the touch, it was rubbed between fingers.

Solubility

The solubility of the volatile oil was determined by mixing increment volumes of the volatile oil in specified volumes of the following solvents: water, chloroform, alcohol, and petroleum ether.

Specific gravity

Specific gravity is an important criterion of the quality and purity of volatile oils. The actual weight or the tare of a vial or was determined accurately. The vial was filled with water and weighed. The procedure was repeated using the volatile oil in place of water. The specific gravity of the oil is expressed as the ratio of the weight of the volume of oil to that of an equal volume of pure water when both are determined at 25°C¹⁹.

Specific rotation

Both the degree of rotation and its direction are important criteria of purity. The extent of optical activity of oil was determined by a polarimeter which measured the degree of rotation. The zero point of the polarimeter was adjusted and determined. The previously cleaned and dried polarimeter tube was filled with 10% alcoholic solution of the volatile oil. The analyzer was rotated until equal illumination of light of the two halves of the visual field is achieved¹⁹.

The angles of rotation was determined and the specific rotation was calculated (USP 25, 2002).

$$[\alpha] = \frac{t}{\lambda} = \frac{100\alpha}{l \cdot c \cdot d}$$

Where:

$[\alpha]$ = Specific rotation at λ , t = temperature, α = observed rotation in degrees, c = concentration, L = path length in dm, λ = wavelength of light used in nm, d = specific gravity of the oil

**Refractive index**

The test plate was attached to the refracting prism of the Abbe refractometer provided with the test plate, by moistening the test plate with the liquid and pressing it against the refractive prism. The light was focused on the test plate. The instrument was adjusted until the borderline of the critical angle coincides with the cross hairs in the telescope, and the reading of the refractive index was taken. The test plate was removed, cleaned, and 2-3 drops of the volatile oil was placed on the prism and the prism was clamped together firmly. The light source was fixed so that the light is reflected through the prisms and the instrument adjusted until the borderline between the light and dark halves of the field of view exactly coincides with the cross hairs of the telescope. The refractive index was then read. The values should be between 1.46 and 1.61 at 25°C¹⁹. The results were depicted in Table 2 and 3.

Chemical analysis

Chemically volatile oil is a mixture of several constituents such as hydrocarbons, alcohols, acids, ethers, esters, aldehydes and ketones. These constituents can be determined in terms of the saponification value, acid value, alcohol value, aldehyde content and phenolic content serves to detect adulteration and to establish the quality and purity of valued oils.

Acid value

For the determination of acid number, 1.5 gm of absolute oil was weighed accurately into a 250-mL saponification flask to which 15 ml of neutral 95% alcohol and 3 drops of 1% phenolphthalein solution was added. Titration of the free acid with a standard 0.1 normal aqueous solution of NaOH was done by adding the alkali drop wise at a uniform rate. The contents of the flask were continuously agitated. The first appearance of red colour was considered as an end point and the acid value was calculated²⁰.

Ester content (Saponification Value)

About 1.5 to 2 grams of the oil, accurately weighed was placed in a 250-mL Erlenmeyer flask to which 10 mL of neutralized alcohol and 2 drops of phenolphthalein TS was added drop wise. Then 0.1N sodium hydroxide solution was added until a faint pink color appeared. After adding 25.0 mL of 0.5 N alcoholic potassium hydroxide, a reflux condenser was connected and was then heated on a boiling water bath for 1 hour. The mixture was allowed to cool, about 20 ml of water and 3 drops of phenolphthalein TS was then added and the excess alkali was titrated with 0.5 N hydrochloric acid²⁰. A blank test was performed and the total ester was calculated using the following formula

$$\frac{(\text{Titre value} - \text{blank}) \times 0.5N \text{ HCl} \times 56.11 \text{ mg/mEq}}{\text{Weight of sample}} \text{ Ester value} =$$

Alcohol value

About 5 ml of the dried oil was taken in a round bottom flask and 5ml of acetic anhydride and 1.0g fused sodium acetate was added. The mixture was refluxed on the sand bath for 3 hr, cooled and some water was added and warmed on the water bath for 1-2 hr. The content was transferred in to a separation funnel and the oil was washed free of acidic impurities, dried over anhydrous Na₂SO₄. Then the procedure was followed as for ester value. Alcohol value was calculated from the expression

$$\frac{\text{Alcohol Value} = 56.1 \times R \times}{\text{Normality}} \quad \text{Wt .of oil in g}$$

**Aldehyde content**

About 1g of oil was weighed accurately; 5ml of benzene, 3.5 percent alcoholic hydroxylamine hydrochloride was added and made up to 100 ml of water. The liberated hydrochloric acid was titrated against 0.5 N alcoholic potassium hydroxide using methyl orange as indicator until the yellow colour of the lower layer remains unchanged after 2 minutes of vigorous shaking.

Phenolic content

The content of total phenolics in the essential oil of *Americanum nilagirica* leaf was determined by using Folin –Denis reagent. About 1gram of the oil was heated in an ultrasonic wave bath with 80 ml of aqueous ethanol solution (70%v/v) for 2 hrs. After cooling the volume of the solution was adjusted to 100 ml. The final solution was centrifuged prior to the colorimetric determination. Tannic acid (10-110 µg/ ml) dissolved in 100 ml of aqueous ethanol solution (70%v/v) respectively was used as standard solution. About 10 ml of Folin-Denis reagent was added to 1ml of sample solution and 1ml of standard solution. After reacting for 3min, 10 ml of 35% sodium carbonate solution was added and the test solution was dilute to 100 ml with water after 45 min. An aliquot was centrifuged for 5 min. The absorption coefficient of the supernatant liquid was measured at 745 nm. The total phenolic content of the extract was calculated using the mean regression coefficient from the standard²¹. The results were presented in Table 4.

Evaluation of antidermatophytic activity

The dermatophytic activity of the volatile oil was evaluated by agar diffusion method using a paper disc.

Microorganisms

The standard strains were procured from the American type culture collection (ATCC), Rockville, USA, and the pathological strains were procured from the department of dermatology, Sri Ramachandra Medical College and Research Institute, Porur, Tamilnadu, India.

Fungi

Trichophyton rubrum

ATCC 2818810

Microsporum canis

ATCC 118325

Microsporum gypseum

ATCC 241025 **Agar**

Diffusion method

The sabouraud dextrose agar medium was sterilized at 121°C for 15 minutes and allowed to cool, transferred to petri dishes²². The plates were incubated within 15 minutes after inoculating the organisms and the plate was divided into sections according to the number of antibiotic test and control solutions to be used. The sterilized (autoclaved at 120°C for 30 mins) medium (40-50°C) was inoculated (1 ml/100 ml of medium) with the suspension of the microorganism. A disc containing only DMSO was used as the negative control. The sterile filter paper discs (6-mm diameter) impregnated with the volatile oil (50, 100 and 150 µg/disc) were placed on the solidified medium. The plates were pre incubated for 1 h at room temperature and incubated at 48 h. Terbinafine (20 µg / disc) was used as standard. After the incubation period, the zone of inhibition was measured with a calliper. Experiments were performed in triplicate, and the results are presented as the mean values of the diameters of the inhibitory zones from three runs. The observed zones of inhibition are presented in Table 5.

Determination of the MIC by dilution method

Thirteen screw-capped test tubes (13mm x 100 mm) were sterilized and numbered individually. One mL of Sabouraud glucose broth was introduced into tubes 2 to 11. To tube 12, 2.0 mL of Sabouraud broth was introduced; 1 mL of the volatile oil was pipetted into tube 1 and 2 and capped, it was vortexed for 5 seconds; 1.0 mL was withdrawn from the contents of tube 2 and transferred to tube 3, after capping the tube and mixing by shaking the contents, 1.0 mL from the contents of tube 3 was withdrawn and transferred to tube 4, the tube was capped, shaken and mixed well. This process was continued until 1.0 mL was withdrawn from tube 9 and subsequently added to tube 10, capped and shaken. One mL of the diluted inoculum was introduced into tubes 1 to 11 and to tube 13. To tube 13, 1.0 mL of the antibiotic standard was added. The tubes were incubated at 35°C for 18 to 24 hours. After incubation the tubes were examined for fungal growth. This can be visible as turbidity in the tube or as whitish pellet at the bottom of the tube. The tube with the lowest concentration of the volatile oil at which no growth or turbidity is observed was reported as the MIC against the organism²³.



The MIC values of volatile oil against the micro organisms were presented in the Table 6.

RESULTS AND DISCUSSIONS

Percentage yield of the volatile oil

The air dried leaves were subjected to steam distillation in order to extract the volatile oil. Two hundred fifty six (101) mL was obtained from about 20 kilograms of air dried leaves. The oil yields of *Ocimum Americanum* obtained were 0.50% (w/w).

Chemical analysis of *Ocimum Americanum* volatile oil

The *Ocimum Americanum* volatile oil was analysed in Indian Institute of Technology (IIT), Chennai, Tamilnadu, using Gas Chromatography-Mass Spectrometry to identify the different constituents of the volatile oil. GC-MS analysis of the oil resulted in the identification of 29 components (Fig 1). List of compounds identified in the oil are presented in Table 2. The table shows the peaks of the sample with their corresponding retention times and their possible identities. The oils represent mainly a mixture of monoterpenes and sesquiterpenes.

Physical properties and constants of *Ocimum Americanum* Volatile Oil

Organoleptic evaluation of the volatile oil was done and noted for color, odor, taste and feel to the touch. The solubility in different solvents such as water, ethyl alcohol, methanol, chloroform and petroleum ether were determined. Physical constants such as specific gravity, optical rotation and refractive index of the volatile oil were also determined.

Table 1 shows the physical properties of the volatile oil. Freshly extracted essential oil is pale yellow or slightly greenish, soluble in common organic solvents and very slightly soluble in water. It has a camphoraceous odour, pungent, bitter-sweet taste and greasy to touch.

Physical constants serve as a means of assessing the purity and quality of the volatile oil as well as for identification. The specific gravity, optical activity and refractive index were determined. Table 3 shows the values obtained from three determinations.

Table 1: Organoleptic evaluation of *Ocimum Americanum* volatile oil

Organoleptic property	Description
Color	Pale yellow to slightly greenish
Odour	Fresh-camphoraceous
Taste	Pungent, Bitter-sweet
Characteristic feel	Greasy

**Table 2: Chemical composition of *Ocimum Americanum* volatile oil**

S. No	Retention time (min)	Possible identity
1	22.03	1,8-cineol
2	18.27	bornyl acetate
3	17	terpinene-4-ol
4	16.16	Citronellal
5	15.28	α -campholene aldehyde
6	13.83	amyl alcohol
7	13.47	Limonene
8	13.03	γ -terpinene
9	12.82	2-methyl-6-methylene-oct-2-ene
10	12.39	geraniol
11	11.98	β -caryophyllene
12	11.55	β -terpineol
13	11.14	α -humulene
14	10.93	Sabinene
15	10.73	β -selinene
16	10.52	E-citral
17	10.04	Z-citral
18	9.49	Camphene
19	9	α -cadinene
20	8.82	caryophyllene oxide
21	8.68	β -terpineol
22	7.47	α -thujone
23	7.31	Linalool oxide
24	7.17	γ -terpinene
25	6.9	β -Ocimene
26	6.62	limonene
27	5.37	α -pinene
28	4.96	β -Myrcene
29	4.14	β -pinene



Chemical constants of *Ocimum Americanum* volatile oil

The constituents of volatile oil can be determined in terms of the saponification value, acid value, alcohol value, aldehyde content and phenolic content that serves to detect adulteration and to establish the quality and purity of valued oils. The values were presented in Table 4.

Anti-dermatophytic activity

Dermatophytosis is caused by fungi in the genera *Microsporum*, *Trichophyton* and *Epidermophyton* affect keratinous tissues of humans and of other vertebrates, causing superficial fungal infection²⁴. A survey of literature reveals that there are many essential oils which possesses antifungal activity²⁵. Agar-disc diffusion method was used to evaluate the antidermatophytic activity of the volatile oil. The diameter of the clear zone surrounding the well containing the volatile oil was measured. This indicated the extent of the inhibitory power of the *Ocimum Americanum* oil against the test organisms. The volatile oil exhibited antidermatophytic activity against all the tested dermatophytes. The results of all volatile oil were comparable with that of the standard terbinafine. The measured zones of growth inhibition and MIC of *Trichophyton rubrum* (ATCC 2818810), *Microsporum canis* (ATCC 118325) and *Microsporum gypseum* (ATCC 241025) were shown in the Table 5 and Fig 2-4. Minimum inhibitory concentration is the lowest concentration that kills 99.9% of bacteria and fungi. The MIC of the volatile oil was determined by micro dilution method using two-fold dilution for the dilution series. Table 6 shows the results of the MIC of the test organisms.

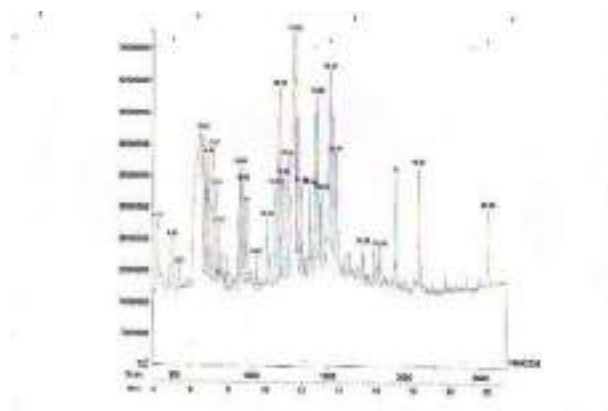


Fig. 1: GC-MS analysis of *Ocimum Americanum* volatile oil

Table 3: Physical constants of the *Ocimum Americanum* volatile oil at 25°C

S. No	Specific gravity	Optical activity	Refractive index
1	0.8786	- 13.25°	1.350
2	0.9164	-21.35 °	1.486
3	0.9265	- 29.35°	1.490
Average	0.9071	-21.31	1.442

Table 4: Chemical constants of the *Ocimum Americanum* volatile oil

S. No	Parameters	Value (% w/v)
1	Acid value	2.2
2	Ester value	151.86
3	Alcohol content	40.91
4	Aldehyde content	76
5	Phenolic content	15 µg/ml

**Table 5: Zone of Inhibition of *Ocimum Americanum* volatile oil**

S. No	Organism	Concentration ($\mu\text{g/ml}$)	Zone of inhibition (in mm)	
			Essential oil of <i>O.Americanum</i>	Standard 20 μl/disc
1.	<i>Trichophyton</i>	50 μl	15 mm	26 mm
	<i>Rubrum</i>	100 μl	19 mm	
		150 μl	22 mm	
2.	<i>Microsporum</i>	50 μl	16 mm	28 mm
	<i>Canis</i>	100 μl	18 mm	
		150 μl	23 mm	
3.	<i>Microsporum</i>	50 μl	17 mm	29 mm
	<i>Gypseum</i>	100 μl	21 mm	
		150 μl	25 mm	

Table 6: Minimum inhibitory concentration (MIC) results of *Ocimum Americanum* volatile oil for *T. rubrum*, *M. canis* and *M. gypseum*

Conc. ($\mu\text{g/mL}$)	Dilution level	Growth of test organisms		
		<i>T. rubrum</i>	<i>M. canis</i>	<i>M. gypseum</i>
1000	-	-	-	-
500	-	-	-	-
250	+	-	-	-
125	+	-	-	-
62.50	+	+	-	-
31.30	+	+	+	+
15.60	+	+	+	+
7.80	+	+	+	+
3.90	+	+	+	+
1.95	+	+	+	+

The minimum inhibitory concentration of *T. rubrum* is 500 $\mu\text{g/mL}$, *M. canis* is 125 $\mu\text{g/mL}$ and *M. gypseum* is 62.50 $\mu\text{g/mL}$. Some volatile oils containing plants are known to show qualitative and quantitative variations when they grow at different geographical location. So, the chemical composition of *Americanum nilagirica* oil, which grows wild in Niligiris Dt, Tamilnadu were studied, which showed the presence of 29 components. The ability to assure the physical and chemical properties of an active pharmaceutical ingredient in a drug product is critical for regulatory approval and therapeutic success. Physical constants such as specific gravity, refractive index, optical rotation obtained confirms that the *Ocimum Americanum* volatile oil is pure and possesses the characteristics of a volatile oil. The dilution method and the disc diffusion method/agar well diffusion are used to determine the antidermatophytic activity of the oil. Volatile oil exhibited high inhibitory potency against dermatophytes *Trichophyton rubrum*, *Microsporum canis* and *Microsporum gypseum* and showed maximum inhibition against *Microsporum gypseum*. Furthermore, the development of natural antimicrobials will help to decrease the negative effects of synthetic drugs.



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DESIGN AND DEVELOPMENT OF SURVEILLANCE ROVER FOR BORDER SECURITY

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ABSTRACT

Surveillance plays an important role in border areas to keep eye on enemies. In such situations, it is difficult to allow duty of surveillance to a soldier, which may cause danger to the life of one. Rather we can use a surveillance rover to keep eye on border areas. So in such cases this kind of rover is very useful they are small in size and provided with many abilities so they can perform the duty of surveillance and spying perfectly. In case if they found by the combatant, they have no identity to whom they belong. Military on border area are facing many problems so this kind of technology help them to aware about the opponent activities, so they can take further decisions The rover's capabilities include real-time video streaming, image capture allowing operators to quickly assess and respond to changing conditions. With its robust design and maneuverability, the surveillance rover provides a flexible and cost-effective solution for a wide range of surveillance applications, improving safety, and reducing the risks associated with manual inspection and monitoring.

KEYWORDS: Surveillance Rover, Image processing, Monitoring, GSM module.

1. INTRODUCTION

The development of advanced robotics and wireless communication technologies has led to the creation of highly capable surveillance rovers that can operate in harsh environments, providing real-time monitoring and surveillance capabilities that are crucial in a range of applications. In this paper, we present a surveillance rover system that is designed specifically for military surveillance applications [1,2]. The surveillance rover system consists of several key components, including the ESP32CAM camera module, the GSM SIM800L communication module, and the NEO6 GPS module. The ESP32CAM module provides high-quality imaging capabilities, which are critical for surveillance applications. The GSM SIM800L module provides a reliable and efficient means of wireless communication, allowing the rover to transmit data and images in real-time[3,4]. In addition to these components, the surveillance rover system also includes a metal detector sensor, which is used to detect metal objects. When the metal detector sensor detects metal, it sends an SMS message containing a live location Google Maps link to the operator, enabling the operator to quickly respond to potential threats. One of the key benefits of the surveillance rover system is its versatility. The system can be customized and adapted to meet the specific needs of different applications, making it an ideal solution for a range of industries beyond military surveillance [5]. Furthermore, the development of the surveillance rover system represents a significant step forward in the field of robotics and wireless communication technology. The integration of advanced technologies, such as the ESP32CAM camera module and the GSM SIM800L communication module, demonstrates the potential of combining multiple technologies to create highly capable and versatile solutions. In this paper, a surveillance rover system that utilizes advanced technologies to provide real-time monitoring and surveillance capabilities has been developed[6,7]. The system consists of several key components, including the ESP32CAM camera module, the GSM SIM800L communication module, the NEO6 GPS module, and the TB6612FNG motor driver. The ESP32CAM camera module is used to provide high-quality imaging capabilities, which are crucial for surveillance applications. Additionally, it is used to control the rover's movements using the TB6612FNG motor driver, allowing it to move and explore its surroundings. The GSM SIM800L module is used to transmit an SMS message to a registered mobile number when a metal object is detected using a metal detector sensor. This feature is critical in military surveillance applications, as it allows operators to respond quickly to potential threats. The NEO6 GPS module is used to provide accurate location tracking of the rover. When the metal detector sensor detects metal, it sends an SMS message containing a live location



Google Maps link to the registered mobile number. This feature enables operators to track the rover's movements and respond quickly to potential threats. Overall, the surveillance rover system represents a highly capable and versatile solution for military surveillance applications. The combination of advanced imaging capabilities, wireless communication, location tracking, and metal detection makes our system ideal for military surveillance, and we believe that our system has significant potential for future development and expansion. Moreover, the surveillance rover system can be operated remotely, which eliminates the need for human intervention in dangerous or inaccessible environments. This feature significantly reduces the risk of injury to personnel, and also allows for continuous surveillance of the area of interest. In addition to military applications, the surveillance rover system can be utilized in a variety of industries, including mining, construction, and search and rescue operations. The ability to detect metal objects and provide accurate location tracking makes it an ideal solution for these industries.

2. PROPOSED METHODOLOGY

The proposed methodology involves integrating several key components to develop a surveillance rover system that can be controlled remotely through a user-friendly web interface. The first part of the system involves using an Arduino Nano to interface with the GSM SIM800L module, the NEO6 GPS module, and the metal detector sensor. The metal detector sensor is used to detect metal objects and trigger an SMS message containing the location to the registered mobile number. The second part of the system involves using an ESP32CAM camera module to transmit live video and operate the rover through the TB6612FNG motor driver. The web interface allows the user to control the rover's movements and view the live video feed remotely through a laptop or mobile phone. The proposed methodology involves developing custom software to interface with the various components of the system and provide a user-friendly control interface. This will involve programming the Arduino Nano to communicate with the GSM and GPS modules and handle the metal detector sensor's input. The ESP32CAM module will be programmed to transmit the live video feed and receive commands from the web interface to control the rover's movements. Overall, the proposed methodology aims to integrate advanced technologies to develop a comprehensive surveillance rover system that can be controlled remotely through a user-friendly web interface. The system's ability to detect metal objects, provide accurate location tracking, and transmit live video makes it ideal for military surveillance applications and other scenarios where remote monitoring and surveillance are required. The figure 1 shows the block diagram of surveillance rover system.

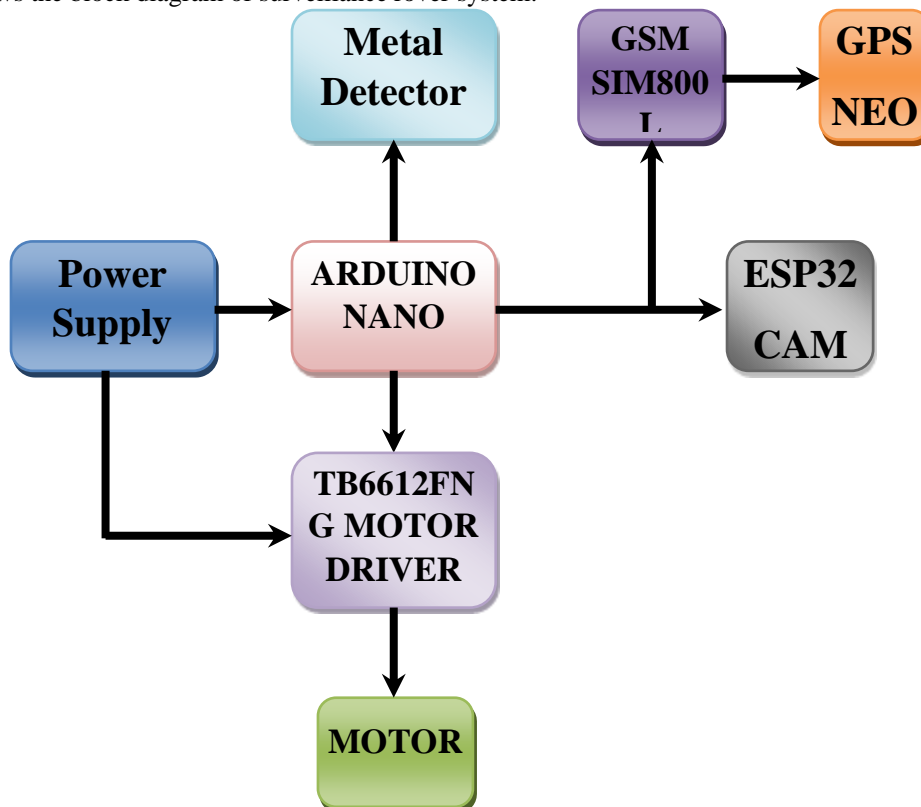


Figure 1: Block Diagram of Surveillance Rover



3. IMPLEMENTATION OF SURVEILLANCE ROVER

Arduino Microcontroller Module

The Arduino Nano is a small, versatile board based on the ATmega328P microcontroller. It is designed for easy integration into a wide range of projects and can be programmed using the Arduino Integrated Development Environment (IDE). The Nano is similar to the Arduino Uno in terms of functionality, but is much smaller in size and has fewer input/output pins. It measures just 18mm x 45mm and has 14 digital input/output pins, 8 analog inputs, and 6 pulse-width modulation (PWM) outputs. The Nano can be powered using a USB cable or an external power supply and can communicate with other devices using serial communication, I2C, or SPI protocols. The Arduino Nano is popular among hobbyists, students, and professionals for its compact size, ease of use, and affordability. It can be used for a wide range of applications, including robotics, home automation, and data logging, among others. Figure 2 shows the development module.



Figure 2: Arduino Nano Development module

Metal Detector Module

Metal detectors is shown in figure 3, can detect nearly all metallic objects. That means anything that contains elements like gold, silver, iron, nickel, copper, aluminum, tin and lead or mixtures and combinations like bronze and brass. Metal detectors cannot detect non-metal items such as wood, plastic, stones and bone. Some metal detectors are able to discriminate which means that they can differentiate between various types of metal. Like everything there is more than one way to detect metal and thus more than one way to make a metal detector.



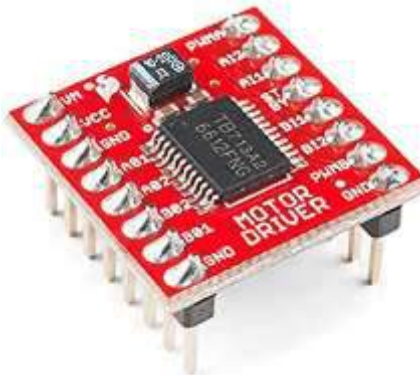
Figure 3: Metal detector module

ESP32-CAM Module

The ESP32-CAM is shown in figure 4, a small-sized, low-cost development board that combines an ESP32 microcontroller with a camera sensor. It is designed for building Internet of Things (IoT) projects that require wireless connectivity and image capturing capabilities. The ESP32-CAM features an OV2640 camera module with a resolution of 2 megapixels, which is capable of capturing JPEG and BMP images.

**Figure 4: ESP32-CAM module*****TB6612FNG Motor Driver Module***

The TB6612FNG is a dual motor driver IC that is commonly used in robotics and other projects that require motor control. It is designed to drive two DC motors or one stepper motor, and can provide up to 1.2A of continuous current per channel (3A peak). The TB6612FNG is a versatile motor driver that can be controlled using a variety of input signals, including PWM, analog voltage, and I2C. It also includes a built-in thermal shutdown circuit to protect the IC from overheating.

**Figure 5: TB6612FNG Motor Driver Module*****GSM SIM800L Module***

The SIM800L is shown in figure 6 is a small, low-cost, and easy-to-use GSM/GPRS module that allows devices to communicate over the cellular network. It is commonly used in IoT projects and other applications that require wireless communication, such as remote monitoring and control. The SIM800L module supports quad-band GSM/GPRS networks, which allows it to be used in almost any country. It can be controlled using AT commands, making it easy to integrate with microcontrollers and other devices.

**Figure 6: GSM SIM800L Module**



NEO6 GPS MODULE

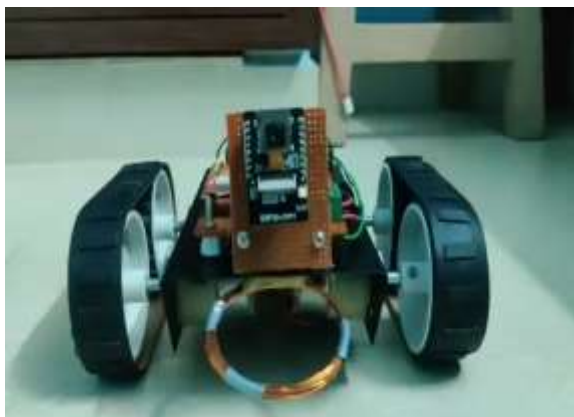
The NEO-6 GPS module is a small, low-cost GPS receiver that can be used to add location-tracking capabilities to a wide range of projects. It is designed to work with the Global Positioning System (GPS), which is a network of satellites that provide location and time information to GPS receivers around the world. The NEO-6 module features the u-blox NEO-6M GPS chip, which is capable of receiving signals from up to 22 GPS satellites simultaneously. It can provide accurate location and time information with a positional accuracy of up to 2.5 meters. The module communicates with a microcontroller or other device using serial communication, and can be controlled using standard AT commands.

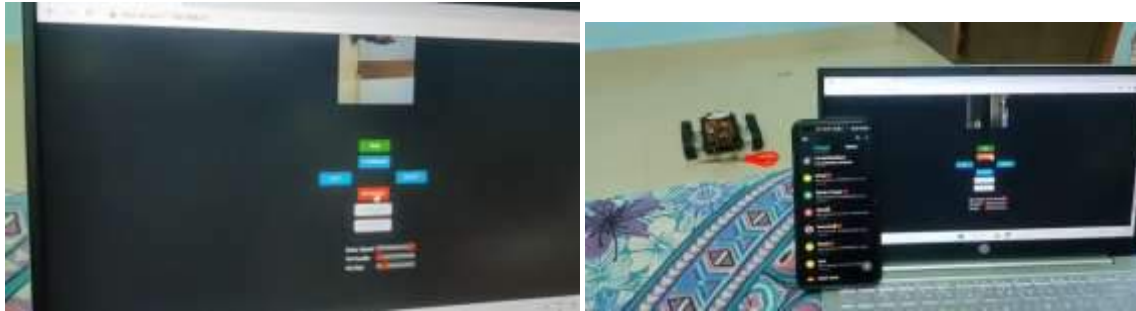


Figure 7: NEO6 GPS Module

4. RESULTS AND DISCUSSION

Programs written using Arduino Software (IDE) are called **sketches**. The Sketch IDE (Integrated Development Environment) is a special program running on your computer that allows you to write sketches for the Arduino board in a simple language modeled after the Processing language. The magic happens when you press the button that uploads the sketch to the board: the code that you have written is translated into the C language, and is passed to the AVR-GCC compiler, an important piece of open source software that makes the final translation into the language understood by the microcontroller. This last step is quite important, because it's where Arduino makes your life simple by hiding away as much as possible of the complexities of programming microcontrollers. The programming cycle on Arduino is basically as follows: Plug your board into a USB port on your computers. Write a sketch that will bring the board to life. Upload this sketch to the board through the USB connection and wait a couple of seconds for the board to restart. The board executes the sketch that you wrote. The idea of sketching in code is a way of thinking about writing code as a simple intuitive process, just like drawing in a sketchbook. In this way, an Arduino program is called a sketch and is saved in a folder called a sketchbook. Sketching means we can get our hands dirty and quickly try out a new idea. It is a skill available to all of us. Figure 8 shows the developed prototype module.



**Figure 8: Developed prototype module**

5. CONCLUSION

The surveillance rover system we have developed is a highly capable and versatile solution for military surveillance applications. It combines advanced imaging capabilities, wireless communication, location tracking, metal detection, and manual control through a web interface, making it an ideal solution for remote and dangerous environments. The integration of different technologies such as the ESP32CAM camera module, GSM SIM800L communication module, NEO6 GPS module, metal detector, and TB6612FNG motor driver has resulted in a comprehensive system that can operate efficiently and effectively. The proposed methodology for this project involves developing a user-friendly and cost-effective web-enabled control system for rovers. The system's specific objectives include controlling the rover over the internet, providing a simple user-friendly interface for controlling the robot, and having an integrated feedback system in the controlling software. The proposed methodology is expected to offer significant benefits over existing methods, such as improved control, ease of use, and a more cost-effective solution. Overall, we believe that our surveillance rover system represents a significant step forward in the development of advanced surveillance technologies, and we are confident that it has significant potential for future development and expansion. The system's ability to operate in extreme environments and provide real-time monitoring and surveillance capabilities will help military personnel carry out their tasks effectively and safely, ultimately enhancing national security.

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THE ROLE OF INFORMATION TECHNOLOGIES IN TRAINING FUTURE SPECIALISTS

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ABSTRACT

The use of information technologies in the educational process increases the activity and motivation of students in learning. The introduction of information technologies in medical institutions is a very effective and efficient technological method of training future doctors, allowing them to think independently, improve their level in the process of continuous training and evaluate their level of knowledge. The use of information technology in the learning process increases the activity of the student, increases motivation in learning, provides an opportunity for the teacher to improve their pedagogical skills. The introduction of information technology in medical institutes is a very effective and effective technological training method in the training of future doctors so that they can think independently and improve their level in the process of continuous training, to assess their level of knowledge.

KEY WORDS: *educational process, students, information technologies, activity, knowledge.*

In the Republic of Uzbekistan, special attention is paid to the training of highly qualified personnel. The main factor in the development of society is information technology. The quality of teaching has always been a topical issue. Students' learning, the achievement of a high level of specialization depends on the effective use of available information.

A student of a medical institute should not only know the curriculum, but also have the opportunity to independently learn the innovations in the educational process. This is especially important for medical professionals, who need to constantly update their skills in the course of their work, updating their level of professionalism along with innovations and technologies in medicine [1,5,9].

The introduction of information technology in medical institutes has proven its effectiveness by improving the quality of training of future doctors with the experience of foreign universities. - Improving the quality of training of future doctors.

The modular training system creates conditions for students to acquire knowledge and skills, as well as the formation of professional personal qualities necessary for future work as a doctor [3,6].

The modular teaching system provides for the student to independently study the curriculum, work with the database and achieve the set goals using methodological guidelines.

The training module is a structural unit of the learning process that forms the module program and integrates into groups. Modular technology allows students to develop thinking, creative approach and ability. The transition to modular technology will further increase the demand for teachers to perform information and control functions, as well as functions such as consultant and coordinator.

When evaluating modular teaching, it is important to emphasize its importance in increasing students' knowledge, learning activity and learning practical skills at a professional level in the learning process.

The use of a modular system that monitors students' knowledge helps to activate students' scope of thinking and attention. Planned knowledge is a key factor in module control and increases student engagement in learning subjects. Thus, the importance of this teaching system is that the students who study it use the learning process effectively and actively [2,8].



Independent work of students is an important element of the learning process. According to the researchers, the transition to a modular system will increase the student's independent work approach, creativity and social-professional activity in the learning process. It also develops the student's ability to receive help and advice, self-assessment, and group work [7,10].

In the modular system, based on the curriculum, the student independently assesses his / her level of knowledge by studying the sections of the curriculum and develops independent learning skills.

The difference between the modular training system and other teaching methods is that the training consists of a complete independent complex, ie modules; sets a goal for the student; the form of communication between student and teacher changes; the student learns the goal independently in the learning process and achieves the goal using the module, learns independent planning, self-shaping, self-monitoring and evaluation. The introduction of a modular system into the learning process allows the teacher to control the student's movement, while the student has the opportunity to work more independently and work with additional literature.

Information technologies create conditions for students to acquire knowledge and skills, as well as for the formation of professional personal characteristics necessary for working as doctors in the future [8,9].

According to the modular education system, it is envisaged that the student will independently study the curriculum, work with the database and achieve the goal by using methodical manuals [6].

The educational module is a structural unit of the educational process, which forms the module program and unites into groups. Modular technology creates conditions for students to develop their thinking, creative approach and abilities. The transition to modular technology will further increase the demand for the teacher, providing information and supervision functions, as well as consultant and coordinator functions.

Evaluating modular teaching, it is worth noting its importance in increasing students' knowledge, learning activity and learning practical skills at a professional level during the educational process. The application of the module system, which monitors the students' knowledge, helps to activate the students' thinking and attention. Planned knowledge is considered as the basis of module control and increases the student's activity in mastering subjects. Thus, the importance of this teaching system is that the students who receive education use the educational process effectively and actively.

Thus, the use of information technology in the learning process increases the activity of the student, increases motivation in learning, provides an opportunity for the teacher to improve their pedagogical skills. The introduction of information technology in medical institutes is a very effective and effective technological training method in the training of future doctors so that they can think independently and improve their level in the process of continuous training, to assess their level of knowledge.

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ROLE AND EFFICIENCY OF INFORMATION TECHNOLOGIES IN MEDICAL UNIVERSITY

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ABSTRACT

The use of information technologies in the educational process increases the activity and motivation of students in learning, and provides an opportunity for the teacher to improve his pedagogic skills. In the medical institute, information technology is considered to be a very convenient and effective technological training method for the training of future doctors, so that they can think independently and assess their level of knowledge in the continuous educational process.

KEY WORDS: *information technologies, teaching methods, pedagogical skills.*

INTRODUCTION

Information technology is considered the main factor of the development of society [2,4,11]. The quality of teaching has always been a pressing issue. Special attention is paid to the training of highly qualified personnel in the Republic of Uzbekistan. Human behavior, student learning, and achievement of high-level specialization depend on effective use of available information [7,10,12,15].

A student of a higher educational institution should not only know the curriculum, have knowledge and skills, but also have the opportunity to independently learn new things in the educational process. This is especially important for medical professionals, who need to constantly update their skills during their work, update and enrich their level of professionalism along with innovations and technologies in medicine [5,13].

The modular training system is an innovative technology, and this method of the training process has proven its effectiveness with the experiences of foreign higher education institutions. According to modern views, "modular education" is understood as technological education of students, and it is based on modules and module program. The main goal of introducing a modular education system in medical universities is to increase the quality of training of future doctors [1,3,14].

Information technologies create conditions for students to acquire knowledge and skills, as well as for the formation of professional personal characteristics necessary for working as doctors in the future [8,9].

According to the modular education system, it is envisaged that the student will independently study the curriculum, work with the database and achieve the goal by using methodical manuals [6].

The educational module is a structural unit of the educational process, which forms the module program and unites into groups. Modular technology creates conditions for students to develop their thinking, creative approach and abilities. The transition to modular technology will further increase the demand for the teacher, providing information and supervision functions, as well as consultant and coordinator functions.

Evaluating modular teaching, it is worth noting its importance in increasing students' knowledge, learning activity and learning practical skills at a professional level during the educational process. The application of the module system, which monitors the students' knowledge, helps to activate the students' thinking and attention. Planned knowledge is considered as the basis of module control and increases the student's activity in mastering subjects. Thus,



the importance of this teaching system is that the students who receive education use the educational process effectively and actively.

Independent work of students is considered an important element of the learning process. According to the researchers, the transition to the module system increases independent approach to work, creativity and social professional activity of the student during the learning process. It also develops the ability of the student to receive help and advice, to assess his own level of knowledge, to work with a group.

In the module system, based on the curriculum, the student independently studies the sections of the curriculum, evaluates his knowledge level and develops independent learning skills.

The difference of this teaching system from other teaching methods is as follows:

- complete independent complex, i.e. consists of modules;
- sets a goal for the student;
- the form of communication between the student and the teacher changes;
- the student independently learns the goal in the educational process and achieves the goal with the help of the module;
- learns independent planning, self-formation, self-control and evaluation.

The introduction of the module system into the educational process gives the teacher the opportunity to control the student's activity, and for the student, it creates the opportunity to work more independently and work with additional literature.

Thus, the use of information technologies in the educational process increases the student's activity and motivation in learning, and provides an opportunity for the teacher to improve his pedagogical skills. In particular, the introduction of information technologies in medical schools is considered to be a very convenient and effective technological educational method for training future doctors, so that they can think independently and improve their level, and evaluate their knowledge.

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CLINICAL AND DIAGNOSTIC ASPECTS OF REPRODUCTIVE FUNCTION DISTURBANCES IN WOMEN WITH INFERTILITY ON THE BACKGROUND OF HYPOTHYROIDISM

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SUMMARY

The state of the reproductive system was studied in women with infertility on the background of hypothyroidism and the most common violations of the reproductive function were identified. It has been established that a decrease in thyroid function affects the development of dyshormonal changes in the reproductive system by reducing the levels of ovarian steroids.

KEYWORDS : *infertility, reproductive system, hypothyroidism*

RELEVANCE

The problem of diagnosing and treating infertility in marriage remains one of the most complex and urgent tasks of modern reproductive medicine, and the difficult demographic situation in Uzbekistan dictates the need to improve and search for new methods for detecting and correcting reproductive dysfunctions [2,5]. It is known that the frequency of female infertility is 30%, male - 30%, combination - 30%, and unknown origin - 10%. At the same time, the structure of infertility in Uzbekistan is as follows: 79.4% - female, 20.6% - male [3,6]. In recent years, an increase in the frequency of thyroid pathology in the population has been recorded, and the problem of disorders of the pathology of the reproductive system in combination with thyroid disorders is becoming more and more urgent. When screening women with dyshormonal disorders in the reproductive system, thyroid pathology was found in 63.68% of patients [1,4].

PURPOSE OF THE STUDY

To assess the functional, clinical and clinical and biochemical changes in the reproductive system in women with infertility, patients with hypothyroidism.

MATERIALS AND METHODS

According to the goal, a clinical and laboratory examination of 73 women of childbearing age, registered at the Railway Station of Andijan, was carried out, among which 22 were diagnosed with primary infertility and concomitant subclinical hypothyroidism (Group 1), 18 infertile women with L-T4 compensated hypothyroidism, (Group 2) and 33 healthy women (Group 3). The reproductive function of the patients was studied by conventional methods for diagnosing gynecological pathology: the collection of an obstetric and gynecological anamnesis, the establishment of a thyroid disease, clinical and laboratory methods, hormonal and instrumental examinations. In order to study the hormonal status of the body of women, the levels of progesterone (PG), estradiol (E2), prolactin (Prl), follicle-stimulating (FSH) and luteinizing (LH) hormones in the blood were determined. To assess the functional state of the thyroid gland, the level of free thyroxine (vT₄) and thyroid stimulating hormone (TSH) was determined by chemiluminescence using standard test systems [+].



Table 1.
Distribution of women by duration of infertility in marriage

Duration of infertility, years	1 group		2 group	
	Abs .	%	Abs .	%
1	2	9.1	4	22.2
2-3	10	45.5	9	40.9
4-5	4	18.2	2	11.1
6-7	3	13.6	2	11.1
8-9	1	4.5	1	5.6
More than 10	2	9.1	0	0
Average duration, years	4, 3 ± 2,3		3.1 ± 1.5	

As can be seen from Table 1, the average duration of infertility in the group of women with subclinical hypothyroidism 4.3 ± 2.3 years did not significantly differ ($p > 0.05$) from the duration of infertility in the group of women with clinical hypothyroidism 3.1 ± 1.5 years, although it was almost 1 year more than the group of women with clinical manifestations (group 1). In our opinion, the lengthening of the duration of infertility in women with subclinical hypothyroidism indicates that the factor of moderate thyroid hormone deficiency and its influence on the development of infertility are underestimated. At the time of the examination, the majority of women had a history of infertility for more than 2 years, 20 (90.9%) - in the first group, and 14 (77.8%) - in the second group of subjects, which, in accordance with current standards, indicates the ineffectiveness of the examination and treatment for infertility.

In 9 women (49.9%) from group 1 (subclinical form of hypothyroidism) and 15 women (83.3%) from group 2 (with clinical hypothyroidism), biphasic cycles with luteal phase deficiency (LFP) and a duration of less than 10 days were detected, which indicates a more than twofold prevalence of NLF in women with infertility against the background of clinical hypothyroidism. Anovulation with monophasic basal temperature was observed in 13 women (59.9%) of the 1st group (subclinical forms of hypothyroidism) and 3 (16.6%) of the 2nd group (with clinical hypothyroidism). This fact indicates the predominance of anovulation in women with infertility on the background of subclinical hypothyroidism. It is possible that the predominance of anovulatory cycles in women with subclinical manifestations of hypothyroidism compared with the group of patients who received hormone replacement therapy is due to the absence of compensatory effects of thyroid hormones in the first group, as happened in the group of patients with clinical hypothyroidism, whose patients received L-thyroxine.

When conducting an ultrasound examination of the pelvic organs, it was found that an increase in the size of the uterus associated with the presence of leiomyomas in the group of infertile women with subclinical hypothyroidism occurred in one woman (4.5%), and in the group with clinical hypothyroidism - in 3 women (16.6%). On the other hand, a decrease in the size (hypoplasia) of the uterus was observed in 5 women of group 1 (22.7%) and 3 women of group 2 (16.6%). When analyzing and comparing the values of the length, width and thickness of the uterus and ovaries, no significant differences were found between these indicators both in the comparison groups and in the control group. The analysis of the thickness of the uterine mucosa deserves special attention (Table 2).

Table 2.
Ultrasonographic parameters in women with infertility due to hypothyroidism

Indicators	1 group n=22	2nd group n=18
M- exo I phase, mm	4.8 ± 0.7	5.1 ± 0.8
M- exo II phase, mm	11.3 ± 0.8	12.8 ± 0.5

According to these data, it was found that the thickness of the M-echo in the comparison groups was significantly lower than that of the control group both in the I and II phases of the cycle, which is obviously associated with a decrease in estrogen exposure in the I, phase of the cycle and insufficient proestrong stimulation in the secretory phase of the uterine cycle. The gonadotropic function of the pituitary gland in the examined women was assessed by the content of LH, FSH and prolactin in the blood. Taking into account the regulatory effect of TRH not only on TSH, but also on prolakin production [6], its content in the comparison groups



was studied and it was found that hyperprolactinemia accompanied 3 women (31.8%) from group 1 and 4 women (22.2%) from the 2nd comparison group, while in the control group, an increased level of prolactin in the blood was not found.

The level of LH in group 1 was 7.1 ± 2.1 IU/L, in group 2 - 11.7 IU/L, which corresponded to physiological parameters (normal - $2.3-15$ IU/L). When studying FSH concentrations, it was found that in group 1 this indicator was reduced and amounted to 2.3 ± 0.4 mIU / ml. In the 2nd group, the FSH level corresponded to the standard values - 5.04 ± 1.8 mIU / ml (the norm is $2.8-11.3$ mIU / ml). Accordingly, in the group of women with subclinical hypothyroidism, the level of FSH was significantly lower than in the comparison groups and in the control group, which explains the above disorders in the functional ability of the ovary.

As a result of studies of hormonal function, it was concluded that insufficient thyroid function, reduced levels of thyroid hormones also negatively affect the state of ovarian steroidogenesis. At the same time, in women with subclinical hypothyroidism, a significant decrease in estradiol (E2) to 92.5 ± 33.9 pmol / l was observed, against 145 ± 28.5 pmol / l in the comparison group and 280 ± 85 pmol / l in the group. to control. The decrease in progesterone levels (Pg) 1.84 ± 0.8 nmol / l for the first group was significant only in relation to the control group 3.08 ± 1.05 nmol / l. The tested parameters in the group of women with L-T4 compensated hypothyroidism did not differ significantly from those in the control group.

FINDINGS

1. In the presence of subclinical hypothyroidism in women of reproductive age with infertility, functional changes in the reproductive system are most often observed, accompanied by impaired ovulatory function of the ovaries, insufficient development of the uterus and endometrium, an increase in prolactin levels and reduced levels of pituitary hormones LH and FSH and, accordingly, ovarian steroids E2 and Pg. 2. Adequate compensation of L-T4 replacement therapy, clinical forms of hypothyroidism reduces the severity of dys hormonal disorders of the reproductive system in women with infertility, but does not eliminate them.

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IMPROVING THE PERSONAL GROWTH OF STUDENTS ON THE BASIS OF REFLEXIVE VIDEO TRAININGS

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ANNOTATION

In this article is discussed the process of optimizing the professional growth of students on the basis of reflexive video training, as well as the process of establishing reflexive activity as the basis of a reflexive educational environment created in the pedagogical process. Reflective activity is an activity associated with analytical thinking, analysis, consideration of events and events in relation to each other, on the basis of reliable and reasonable information and on the basis of data analysis, factors associated with certain events and phenomena and influencing their origin. secondary and have a direct impact, distinguishing from factors that cannot be shown, drawing conclusions based on the study and analysis of phenomena and their components.

KEY WORDS: student, pedagogical process, reflective activity, improvement, analysis, knowledge acquisition, competence, skill.

INTRODUCTION

In the modern process of development of our country comprehensively, it will not be an exaggeration to say that development is one of the priority tasks facing all sectors. Increasing the role of citizens in our public life depends on their personal initiative, independent problem solving and responsibility. It will not be a mistake to say that, at the initiative of the head of our state, human value is above all and that all organizations in our country should serve on the path of people's well-being, which is reflected in the changes taking place in our society. Thus, it is one of the topical issues of our day, especially for young people to gain knowledge, develop their skills, support them from all sides and help them achieve their goals, who are future heirs.

In this way, first of all, the role of quality education in achieving success is important. The key to successful learning is the ability to know the methods of learning activities, correctly assess one's own achievements and capabilities, and draw the necessary conclusions for self-improvement. Reflection is one of the mechanisms to help achieve these goals. The ability to reason allows a person to form the meaning of images, life and actions. The most important feature of thinking is the ability to manage one's activities in accordance with one's personal values and meanings, to form and implement new mechanisms in connection with changing conditions, goals and objectives of activity[1]. Reflection allows us to understand the past and anticipate the future. The more developed reflexive abilities, the more reflexive models (methods) a person has, the more opportunities he has for development and self-development. Reflection develops especially rapidly in adolescence and youth, which allows you to study your mental processes and personality traits, manifested in communication and behavior with people[3]. The solution of this problem will be a necessary condition for the formation of each person as an open, socially active person. After all, only a person with developed thinking can set socially significant goals and find individual ways to achieve them. In many ways, the level of development of a person's ability to understand the world around him and himself in it allows him to find socially valuable, personally significant and real ways of self-realization in communication and active life[2].

MAIN PART

During writing this article, is discussed the optimization of students' professional growth based on reflexive video trainings. First of all, we considered it permissible to touch on the concept of a reflex. Reflex - a form of theoretical activity, a way of thinking that reveals the goals, means, content and methods of one's activity and reflects the internal state of a person. Reflection - (lat. "reflexio" - return, reflection) - one of the types of acts of human consciousness, that is, the movement of consciousness, which is considered as a process of cognition by the subject of his own (internal) mental feelings and states. Reflection largely represents the ontological side of human life and is one of the unique characteristics of a person[1].

Currently, foreign (Yu.M. Orlov[7], T.N. Vasilyeva[4], S.N. Morozuk[3], A.Yu. Khilman[11]) and domestic scientists (S. Atakhanova[2]), Z.A. Abdirakhmonov[1]), and in these scientific studies, mainly theoretical-philosophical, social and psychological aspects of the problem were widely studied.

Reflection is a description of self-consciousness, in the process of communication, as a subject is perceived as an interlocutor, understanding of the problem and its causes is the ability to see, identify, learn and analyze. Feedback from the participants in the educational process through reflection, attitude to the activity, a coordinated and cooperative repetition of this activity in accordance



with the form and content of the activity, the organization is provided. Related to this are the following differences in reflex processes:[10]

- understanding yourself and others;
- self-esteem of oneself and others;
- descriptive analysis of self and others.

Typically, reflective skills include thinking, self-awareness, self-control, one's own personal behavior, and their behavior.

By optimizing the professional growth of students on the basis of reflective video trainings, the reflective educational environment, organized in the pedagogical process, serves as an environment that has a creative impact on the formation and development of critical and analytical thinking skills in students. Because in the course of a reflective approach, students draw conclusions based on independent analysis and an objective assessment of the essence of the subjects studied and their significance in the past and today. The pedagogical reflexive approach to the development of students interacts with various influencing factors in which the content and essence of behavior, purposefulness can realize the need for transformative activity, because the definition of one's place and identity as a result of deep self-awareness is proof, the use of one's own internal capabilities, abilities, self-government. Optimization of the professional growth of students on the basis of reflexive video trainings and a reflexive educational environment organized in the pedagogical processes of schoolchildren-students[6]:

- open and broad-minded, sensitive in accepting the existing reality intolerance to problems;
- analysis and objective assessment based on a comprehensive review;
- take into account their significance when studying new concepts, analyze and compare the positive and negative aspects of attitudes towards these concepts.
- the essence of concepts and their meaning today, its understanding
- understanding of the unity and interdependence of all views, customs, traditions, values and culture;
- an event that helps to expand the worldview and the study of tools, the development of those that they do not know;
- to overcome misconceptions, mistakes and difficulties, this also creates opportunities for the formation of a new worldview[6].

The formation and development of students' analytical and critical thinking skills is based on reflex processes, that is, the activity of students in a reflective educational environment, the creation of the necessary conditions for coordination and analytical activity, that is, reality and concepts of study, analysis and an objective assessment of existing relationships, the ability of students to draw conclusions on basis of performing important tasks such as creation will be increased.

While optimizing the professional growth of students on the basis of reflexive video trainings, one of the unique aspects of the reflexive approach is that the educational environment organized on the basis of this approach is aimed at organizing the analytical activity of students and the formation of critical thinking. ability to think. Encouraging students to objective analysis and evaluation, supporting their creativity in the process of analytical activities, encouraging their activity and objective conclusions means developing their worldview based on the results of analyzes[5].

In the pedagogical process, it is necessary to optimize the professional growth of students on the basis of reflexive video trainings, control the activity of students to ensure the effectiveness of their analytical activities in the process of a reflexive educational environment, analyze the analytical results of their activities, coordinate relationships between students and ensure their activities based on the organization of their reflexive activities.

Based on the introduction of a reflexive approach in the pedagogical process, the creation of a reflexive educational environment for students, forming a rich vision of the past and future, encourage them to analytical activity and develop reflection in it, the development of students' personal self-awareness, independence, its essence, significance and the need to form their historical memory through lighting serves to create a sense of confidence in the future.

In pedagogical processes, it is necessary to create such conditions in the formation of a reflective educational environment in which students learn about the past, our recent history, national traditions, customs, rituals, values, and native language. Independence, based on a critical understanding of existing relationships, to understand the essence, importance and necessity, an objective assessment of the conditions created at the heart of such an educational process and a reflexive approach lies[10].

Therefore, on the basis of reflexive video trainings, the optimization of the professional growth of students, the organization of pedagogical processes, these processes are based on the introduction of a reflexive approach, efficiency can be ensured. Organized in educational institutions in the pedagogical process, i.e. students on loyalty to their homeland, national pride, high morality and great ancestors - spiritual, spiritual and educational, aimed at educating in the spirit of respect for heritage, a rich spiritual and cultural heritage of our people in the process of educational work, a country, a nation based on heritage, oriental and universal values, advanced ideas that determine the future, international friendship, the importance of solidarity, peace and stability in our country to preserve, to help ensure that the roots of the cultural, educational and spiritual development of the peoples living in our region are common, the application of a reflective approach to the process of revealing to students the true nature of religious extremism and fundamentalism is of particular importance. The ideological gap in the minds of students does not allow them to manifest, their love and loyalty to the Motherland is perfect for educating in the spirit and serving the development of our country, to fulfill urgent tasks in the direction of bringing the generation to adulthood, pedagogy organized in higher educational institutions must cover all aspects of the processes. Pedagogical optimization of the professional growth of students on the basis of reflexive



video trainings in the processes, the creation of a reflexive educational environment based on the reflexive approach involves the organization of the reflexive activity of students. In the process of reflective activity, the student learns about the concepts being studied in the past and studies, analyzes and objectively evaluates today's relationships, evaluates them, as a result of which they have independence, their essence, and a firm understanding of the importance of service is formed.

Optimization of the professional growth of students on the basis of reflective video trainings and this activity serves to form a spiritually mature personality.

The optimization of students' professional growth was organized on the basis of reflective video trainings in the pedagogical process. The basis of the reflexive educational environment is the formation of reflective activity.

Reflective activity is an activity related to analytical thinking, to analyze, connect phenomena based on reliable and reasonable information related to certain events based on analysis and influence their origin, factors that are considered secondary and direct influences, distinguishing them from factors that cannot be events are shown, to study the interconnection and connection of components, to draw conclusions based on the analysis.

The effectiveness of improving the activities of an educational institution, introducing innovations in the pedagogical process, organizing and coordinating the activities of students on a scientific basis is based on the organization of the reflective activities of students, their spiritual development of the inner world, thinking, worldview, becoming a mature personality, that is, this process represents efficiency.

It is characterized by the fact that the main attention of the strategic tasks in the field of education, which is consistently carried out in our country, is given to the training of specialists who are able to be guided by common sense, clearly determine the development prospects that will be necessary in the interests of society and the state of the individual. In this regard, there is a need to develop students' skills of sanogenic thinking and develop its innovative pedagogical foundations. Therefore, the study of the problem of the development of sanogenic thinking of future teachers and the elucidation of the factors influencing the process under consideration were identified as the main goal of the study.

In the process of theoretical and practical study of the research problem, it became known that a reflexive approach is needed in the development of sanogenic thinking of future teachers. Optimization of students' professional growth on the basis of reflective video trainings is one of the main factors influencing the development of sanogenic thinking, reflective knowledge and personality skills.

Reflection is the most important, central phenomenon of human subjectivity, for which the following definition can be given: "... it allows a person to analyze and express his thoughts independently, and also reflects emotional situations, delays, behavior and attitudes of people, in general - special attention (analysis and assessment) and practical change (change and development) [6]. In the pedagogical literature, two traditions of interpretation of reflexive processes are distinguished: - reflexive analysis of consciousness, leading to an explanation of the essence of cognitive and emotional delays and their construction; - reflection of understanding human behavior and the content of interpersonal dialogue[6].

In the pedagogical literature, two traditions of interpretation of reflexive processes are distinguished: - a reflexive analysis of consciousness, leading to an explanation of the essence of cognitive and emotional delays and their construction; - reflection of understanding of human behavior and the content of interpersonal dialogue [6]. Reflection is a description of self-consciousness, awareness of how the subject is perceived in the process of communication as an interlocutor, the ability of the subject to see, define, study and analyze the problem and its causes. Through reflection, the attitude of the participants in the educational process to their activities will be coordinated and the reorganization of this activity will be ensured in accordance with the form and content of joint activities. In this regard, the following reflexive processes are distinguished:

- understand yourself and others;
- evaluate yourself and others;
- interpret yourself and others[6].

Optimization of students' professional growth based on reflective video trainings usually manifests itself as a form of activity aimed at thinking of reflective skills, self-awareness, self-control, understanding of one's personal actions and consequences. This conclusion defines reflective skills as the main indicator of the development of healthy thinking. If we consider the phenomenon of reflection as a method of complex reflection of a certain process, then it allows us to track and identify shortcomings and analyze this process. A person with such introspection achieves positive success. By this we will master the mechanism that allows revealing hidden ideas in connection with the development of sanogenic (healthy) thinking among future teachers, the following types and forms of reflection can be distinguished. Russian scientists S. Yu. Stepanov and I.N. Semenov[10] describe the following types of reflection, emphasizing that this mechanism is important for the formation of the image of "I" in a person.

1. Cooperative reflection belongs to pedagogy and psychology of management, and the possession of the necessary pedagogical psychological knowledge of this type of reflection ensures the project activity of the team and makes it possible for them to work together. At the same time, reflection is considered as the "liberation" of the subject from the processes of activity, his entry into a new position, both external and in relation to the previous completed activity. The purpose of this is to ensure understanding and coordination of common actions in joint activities. In these cases, attention is paid not to the processes of demonstrating the mechanism of the human psyche, but to the results of reflection[10].



2. Communicative reflection is considered in the study of socio-cultural relations related to the problems of social development and dialogue. It is an essential component of intellectual and developed dialogue, as well as interpersonal feelings [10].

3. Personal reflection, at the same time, examines the sequence of the subject and the person "I" from the point of view of his personal qualities. Such an analysis will be accompanied by the problems of development, decomposition and correction of personal consciousness and the mechanism for creating the personality of the subject "I" [10]. There are several stages in the implementation of personal reflection. This is the experience of overcoming contradictions and understanding the tasks set, understanding the unsolvable situations facing a person, revising personal stereotypes and problem situations. At the same time, stereotypes and circumstances of the conflict and problems are understood. In this situation, the person is fully aware of himself. In the process of rethinking, a person's attitude to himself and his "I" changes. This is done with appropriate actions. Secondly, there is a change in relations that the subject himself can and knows [10].

4. Intellectual reflection is characterized by knowledge about an object and ways of communicating with it. Intellectual reflection is considered together with the problems of organizing the processes of knowledge and thinking and information processing in pedagogical and psychological disciplines [10].

Based on reflexive video trainings, in the process of optimizing the professional growth of students, developing the sanogenic thinking of future teachers on the basis of a reflexive approach, conditions are created so that students can analyze and objectively evaluate their activities (act independently reflexively), and teachers timely analyze existing educational situations. and actively reflect on their own concepts and it should be noted that the personal and professional development of any person is closely related to the reflective process.

In addition, development is ensured not only from a professional point of view, but also physically and intellectually. Also, a high level of assimilation of reflective skills creates the conditions for understanding what we think about, what activities we are doing now and in what direction we need to move in order to develop.

CONCLUSION

In conclusion, let us say that on the basis of reflexive video trainings that optimize the professional growth of students, a separate organization of processes is possible to understand the ongoing phenomenon as an important mechanism for the development of reflex sanogenic thinking in the context of a broad system of behavior and directed activity to understand their consequences, a form of human thinking in order to optimize the professional growth of students based on reflective video training, it is necessary to create inner peace while creating a favorable environment for reflection. If reflection is consistent with the state of relaxation, the human mind gets rid of negative thoughts, delusions, logos, and their repetition in the mind does not create an uncomfortable state.

Under these conditions, a person adapts to the situation, even if negative emotions are repeated, a bad impression does not arise. A high level of mastery of reflexive skills is an important indicator that is necessary not only for the development of sanogenic thinking of students, but also so that they can achieve success, introspect, determine the level and shortcomings of their capabilities and correctly carry out future activities. The development of sanogenic thinking of future teachers is inextricably linked with the following series of pedagogical conditions

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THE EFFECTIVENESS OF MULLIGAN'S BENT LEG RAISE[BLR] VERSUS DYNAMIC SOFT TISSUE MOBILISATION[DSTM] IN SUBJECTS WITH HAMSTRING TIGHTNESS IN NON -SPECIFIC LOW BACK ACHE

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ABSTRACT

BACKGROUND- Nonspecific low back ache could be a pain, muscle tension, or stiffness localized between an adjunct related to rib margin and inferior gluteal folds, without sciatica. Only 10% of the cases have a specific case. One in every of the chance factors is poor hamstring flexibility.

PURPOSE- To compare the effectiveness of mulligan's bent leg raise versus dynamic soft tissue mobilization in subjects with hamstring tightness in non – specific low backache.

METHODOLOGY- forty eight subjects, mean age 34.27 ± 5.30 were enrolled. Group A (24 = fifteen male and Nine females) received Transcutaneous electrical nerve stimulation (TENS), Mulligan's bent leg raise and conventional exercises. Group B (24 = Twelve males and Twelve females) received TENS, DSTM and conventional exercises, which underwent a 4 weeks of training program. The outcome measures were taken before the treatment and after the end of 4 weeks treatment program.

OUTCOME MEASUREMENTS- The outcome was measured by using Numeric pain rating scale(NPRS) for pain, Quebec back pain disability scale and Goniometer for Active knee extension test.

RESULT- There is a statistically significant improvement in both the groups but compared to Group-B, Group – A shows highly significant values in all parameters. **CONCLUSION-** Mulligan's bent leg raise (BLR) is proved to be more effective treatment when compared with Dynamic soft tissue mobilization, but Dynamic soft tissue mobilization is also a less effective treatment in reducing non-specific low backache, reducing hamstring tightness & improving functional ability in individuals with hamstring tightness in non- specific low backache.

KEYWORDS – Mulligan's bent leg raise, Dynamic soft tissue mobilization, Hamstring tightness, Numeric pain rating scale, Quebec back pain disability scale, Non-specific low backache, Active knee extension test.

INTRODUCTION

Non specific low backache is not due to a recognizable, renowned specific pathology to a recognisable, known specific pathology (eg: infection, tumour, osteoporosis, lumbar spine fracture, structural deformity, inflammatory disorder, radicular syndrome or cauda equine syndrome). Non- specific low backache is described as pain localized between 12th thoracic vertebra and inferior gluteal folds, a symptomatic of leg pain. The risk factors of non-specific low back ache are poor hamstring flexibility. There was a possible an attainable relation between delicate mechanical LBA and hamstring tightness. Tight hamstrings could be at risk of strain or tearing. Low backache has a lifetime prevalence of 60% - 85%. At any given time, about 50% of adults have low backache. Epidemiology of low backache estimates that the first episode of low backache ranges between 1.5% and 36%.



In human anatomy a hamstring is any one of the four posterior thigh muscles in between the hip and the knee(from medial to lateral) semimembranous, semitendinosus, the long head of the biceps femoris and the ischial head of adductor magnus(HYBRID MUSCLE). Muscular flexibility is an important aspect of normal human function, limited flexibility has been shown to predispose a person to several musculoskeletal overuse injuries and significantly affects a person's level of function.



MULLIGAN'S BENT LEG RAISE

Mulligan's Bent Leg Raise is a technique used for improving range of straight leg raise in subjects with LBP and/or referred thigh pain and to increase the flexibility of hamstring in patients with non specific low back pain. It was an intermediate effect after a single intervention. This is a painless technique, when indicated, can be tried on any patient with low backache who has limited or painful straight leg raising. It stretches the lower extremity muscles in combination of hamstrings, adductors and rotators.

DYNAMIC SOFT TISSUE MOBILISATION

Dynamic soft tissue mobilization is a relatively recent development in manual therapy in which it combines with therapist delivered manual treatment a number of different features such as joint, soft tissue positioning and movements involving either concentric or eccentric movements. It is widely believed amongst athletes, coaches and therapists that massage is an effective treatment for increasing flexibility. It is an efficient, pain free intervention that appears to have an immediate effect on improving hamstring flexibility.

OUTCOME MEASUREMENT TOOLS

Quebec back pain disability scale:

It is a questionnaire about the way low backache is affecting daily life subjects with back problems may find it difficult to perform some of these daily activities. This questionnaire has 20 questions related to activities of daily living and a scale of 0 to 5 for each activity. The scoring is done by count every digit, circled by the patient. The end score will be between 0 (no limitation) and 100 (totally limited).

Numeric pain rating scale

It is a segmented numeric version of the VAS in which a respondent selects a whole number (0-10) that best reflects the intensity of his/her pain. It is an 11 point scale ranges from 0-10. 0 is no pain, 10 is the most intense pain imaginable. The subject marked a value on the scale with the intensity of pain that they had experienced in the last 24 hours.

Active knee extension test

It was done to assess the hamstring flexibility and the range of active knee extension in the position of hip flexion. It was measured by using the Goniometer. The subject was in a supine lying position, and hips and knees 90-90°. Then the subjects were asked to extend his knee actively. Knee extension (lag >20°) was measured for both the lower extremities.



MATERIALS AND METHODOLOGY

Study design : A pre and post experimental study.

Study setting : The study setting was conducted in cherran's college of physiotherapy, Coimbatore.

Study population : Hamstring tightness with non specific low back ache patients were selected in this study.

Sample size: The sample size of 48 subjects were divided into 2 groups. Group –A= 24 and Group –B= 24.

Study duration: The study was conducted for a period of 6 months.

Treatment duration: The treatment duration of this study was conducted for a period of 4 weeks.

Inclusion Criteria

Age group between 18 – 40 years , hamstring tightness with non specific low backache patients and AKET ($> 20^{\circ}$ of knee extension lag).

Exclusion Criteria

Previous surgeries of the lumbar spine, ankylosing spondylitis and recent (< 2 weeks) epidural steroid injection for pain.

PROCEDURE

Mulligan's bent leg raise for Group – A:

The patient was in supine lying at edge of the couch. Hip and knee in 90° flexion and heel off the plinth. Therapist was standing at the side of the subject. Subject holds the plinth from the one side and places the hand of the affected side under his head and neck. Therapist placed the patient's flexed knee over therapist shoulder. Therapist shoulder of inner hand was placed under the popliteal fossa. Therapist grasped the lower end of thigh (very close to the popliteal fossa) with both hands. Longitudinal traction was applied along the long axis of the femur and took the hip into flexion until the first resistance was felt. If the subject complained about the stretch pain, then contract-relax was applied 3-4 times by asking the subject to push the therapist's shoulder gently for 5 seconds. Then the leg could be taken to a new pain-free range. Hold the end position for about 20 seconds. The exercises were repeated for 3 times for 10 minutes. The whole treatment duration for Mulligan's bent leg raise is 10 minutes with 1 session per day [totally 24 days] for 4 weeks.

Dynamic soft tissue mobilization for Group –B

To assess the hamstring muscle group, the patient was in the prone position and deep longitudinal strokes were applied to this entire muscle group to specify the area of tightness. The patient was in supine with the hip and knee flexed to 90° . Therapist stand at the side of the patient.

TECHNIQUE 1

Therapist applied a deep longitudinal strokes in a distal to proximal direction to the area of hamstring tightness when the leg was passively moved to the hamstring lengthened position. Therapist applied 5 strokes and 20 seconds of shaking was performed at the completion of this technique. The specific area of hamstring tightness was reassessed to determine whether the surface area of site of muscle tightness was reduced. If this reduction will occur, then the next progressive dynamic technique will be applied. However, if the area of muscle tightness doesn't reduce the treatment will be stopped.

TECHNIQUE 2

Ask the patient to actively extend their leg, in order to achieve the reciprocal inhibition of hamstrings.

TECHNIQUE 3

The patient were required to work the hamstring muscle group eccentrically by creating tension in the therapists hand as the muscle was elongated to the end ROM. Therapist performed five deep distal to proximal longitudinal strokes over the reduced hamstring area of muscle tightness. The whole treatment duration for Dynamic soft tissue mobilization is 20 minutes with 1 session per day [totally for 24 days] for 4 weeks.

**EXERCISES**

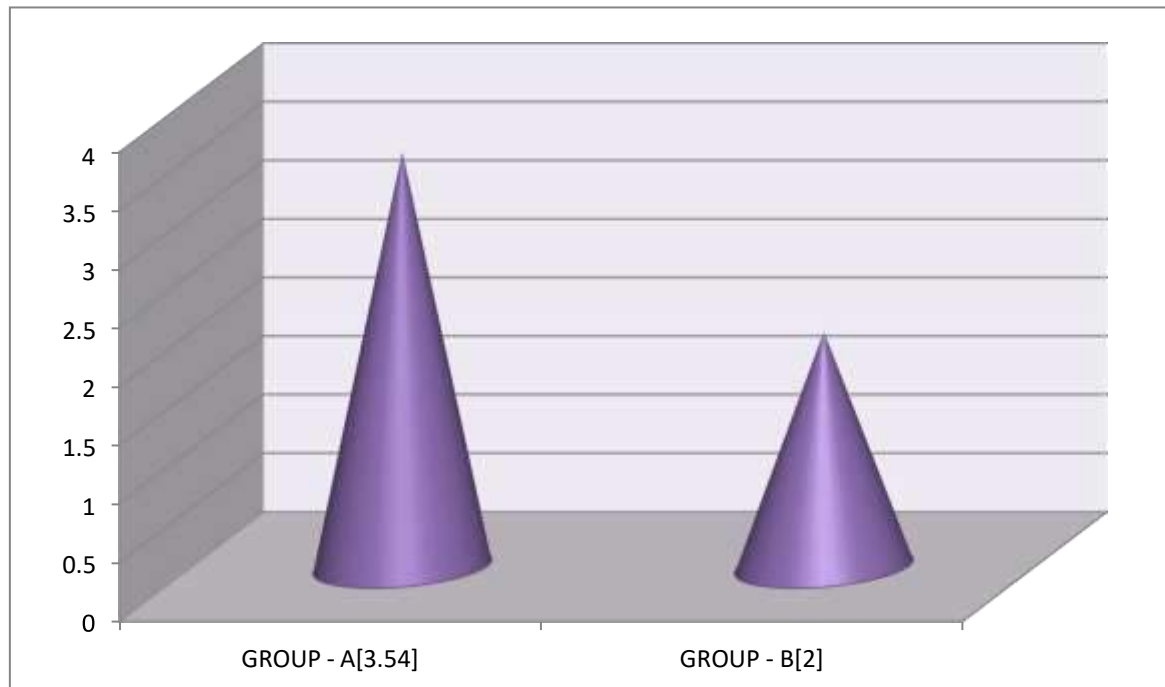
TENS and conventional exercises like isometric for lumbar muscles, bridging, trunk rotation, cat and camel exercises, partial curls, side planks, extension exercises like elbow press were taught. Ten repetitions were performed once with the treatment and were instructed to repeat the same exercises at home, as it should be done two times a day.

DATA ANALYSIS AND INTERPRETATION

Numeric pain rating scale, quebec back pain disability scale and active knee extension test pre and post treatment. Paired 't' test was performed to analyse the level of significance of the study. The statistical analysis used in this study was paired 't' test

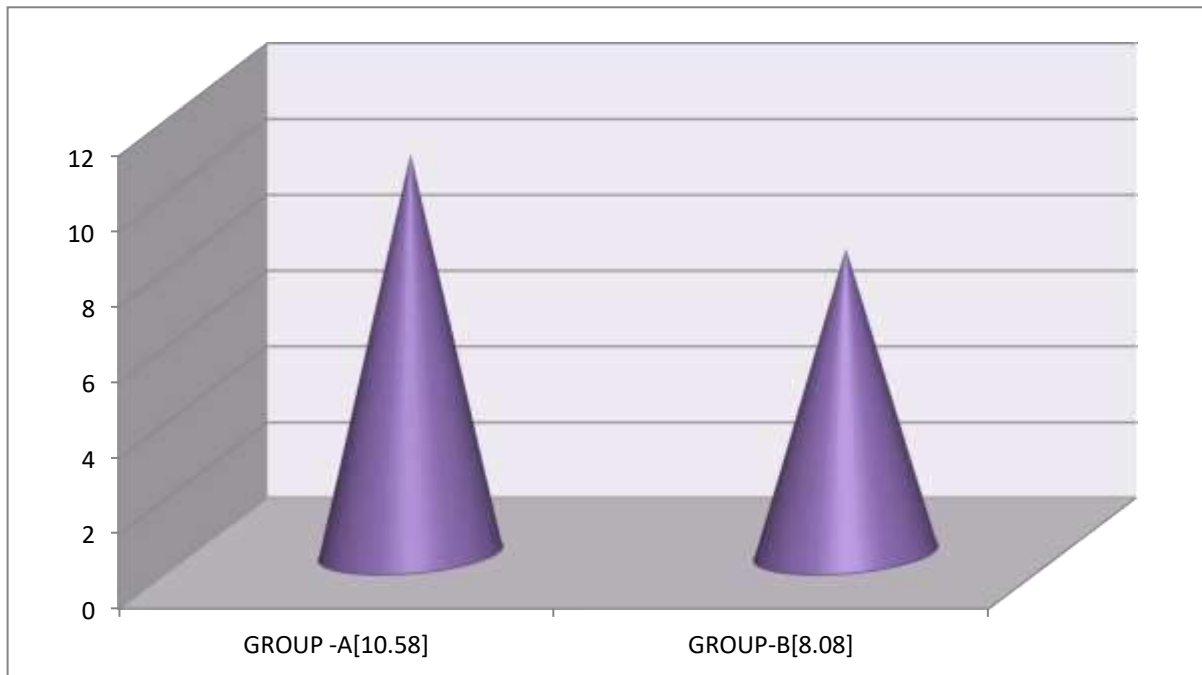
TABLE.1: Mean values of NPRS comparison between group –A & B:

GROUPS	Pre test	Post test	Mean difference	S.D	T value at 0.005
A	7.05	3.5	3.54	6.52	2.704
B	7.25	5.25	2		



**TABLE.2 : Mean values of goniometer for AKET [right side] comparison between group – A & B**

Groups	Mean values	Standard deviation	Unpaired t test	Table t value at 0.005
A	10.5	2.76	3.14	2.704
B	8.08			

**TABLE.3: Mean values of goniometer for AKET [left side] comparison between both the groups- A& B.**

Groups	Mean values	Standard deviation	Unpaired t test	Table t value at 0.005
A	10.58	2.16	4.58	2.704
B	7.83			

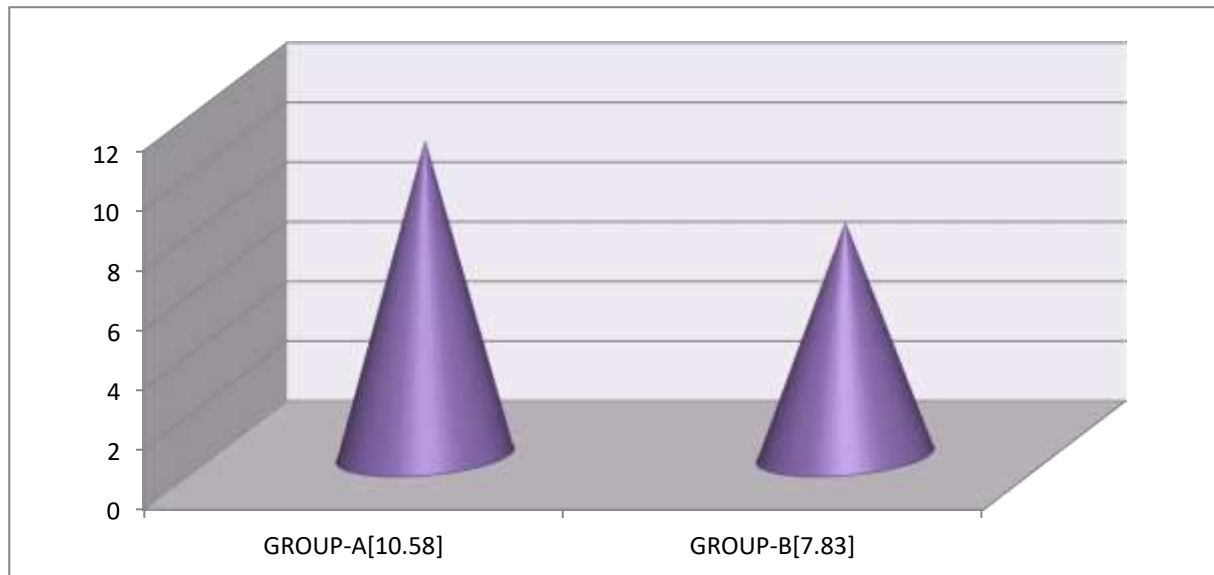
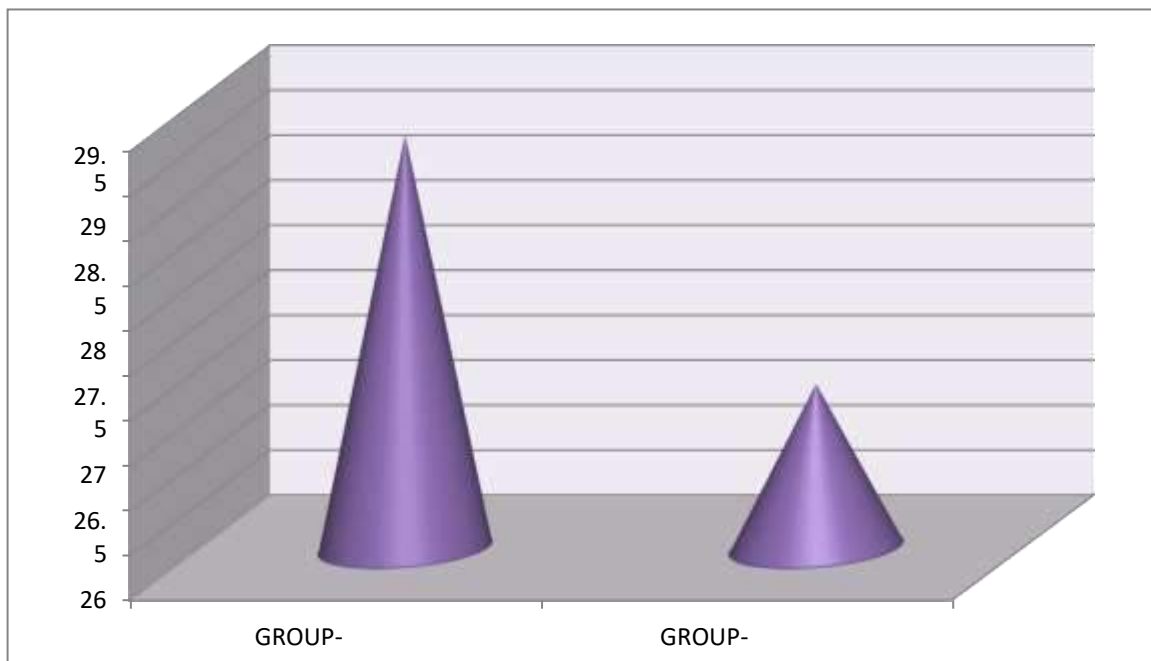


TABLE.4 : Mean values of quebec back pain disability scale comparison between group – A & B.

Groups	Mean value	Standard deviation	Unpaired ttest	Table t valueat 0.005
A	29.1	2.89	3.46	2.704
B	26.33			





RESULTS

The subjects of both the groups A & B are given treatment for a period of 4 weeks. Before the treatment the pre test values of NPRS(pain) , AKET and QBPDS are measured. After 4 weeksof treatment the post-test values of NPRS(pain), AKET and QBPDS are measured. The paired 't' test was used to compare the pre-test and post- test values of NPRS, AKET and QBPDS for both the groups. Based on the statistical analysis, the result of the present study shows that thereis a significant improvement in both the groups – A & B following the effects of Mulligan's bent leg raise with TENS and conventional exercises and Dynamic soft tissue mobilisation with TENSand conventional exercises. The results concludedthat group – A, who underwent Mulligan's bent leg raise with TENS and conventional exercises are more effective in reducing non specific low back pain and improving functional ability and reducing hamstring tightness than group –B.

DISCUSSION

Dr.Rabina sanjay nayak 2018 that after Mulligan's bent leg raise, there is a reduction of pain level by numeric pain rating scale and significant changes in ROM by goniometry with hamstring tightness in non – specific low backache. **Mohsin abbas 2017** concluded that after dynamic soft tissue mobilisation there is better results in improving the hamstring flexibility in cricket players. **Marchand S et al.(1993)** found out that TENS had significantly decreased the pain in comparison with placebo TENS and also TENS had an additive effect for a short term of 1 week. So adding TENS in the study might have contributed to the reduction of pain.

Our study also suggested that the combined effects of Dynamic soft tissue mobilisation with TENS and conventional exercises has significant reduction in non specific low back pain and significant changes in functional ability and significant reduction in hamstring tightness. The number of subjects selectedfor the study was 48. The paired 't' test was usedto compare the pre-test and post-test values of numeric pain rating scale , quebec back pain disability scale and active knee extension test for both the groups – A & B. Based on the statistical analysis the result of the present study shows that there is a significant improvement in both the groups – A & B following the effects of MBLR and DSTM.

On comparing group – A & B numeric pain rating scale, the calculated 't' value of group – A and B NPRS is 6.52 which is greater than the t-table value 2.704 is at 0.005 level significance. On comparing group – A & B for active knee extension test (right side) , the calculated t- value for group – A & B is 3.14 which is greater than the t – table value of 2.704 is at 0.005 level significance. On comparing t- value of group – A & B for active knee extension test (left side) is 4.58 which is greater than the t-table value of 2.704 is at 0.005 level significance. On comparing t – value of group – A & B for quebecback pain disability is 3.46 is greater than the t- table value of 2.704 is at 0.005 level significance.

CONCLUSION

In this study, we conclude that the subjects with hamstring tightness in non – specific low backache who underwent mulligan's bent leg raise [MBLR] with TENS and conventional exercises are more effective in reducing hamstring tightness and improving functional ability than the subjects with hamstring tightnessin non – specific low backache who underwent dynamic soft tissue mobilization [DSTM] with TENS and conventional exercises in reducing hamstring non – specific low backache, reducing hamstring tightness and improving functional ability.

LIMITATIONS AND RECOMMENDATIONS

The duration of the study is only 4 weeks.

The study was limited with the specific age group between 18 – 40 years of age.

This study had conducted to the subjects with hamstring tightness in non – specific low backache.

Similar study can be done using longerduration.

Similar study can be done with other agegroups.

Similar study can be done with morenumber of subjects.

Similar further studies can be conducted by comparing any manual therapy and electrotherapy modalities.

Acknowledgment

We would like to thank all the participants who participated in this study

Declarations

Conflicts of interest: Nil



Funding sources: Self

Ethical clearance: Verbal consent and written consent were taken from each subject who participated in the study and Ethical clearance from our Institutional Ethical committee (IEC)

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A STUDY ON IMPORTANCE OF RURAL ENTREPRENEURSHIP IN INDIA

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ABSTRACT

In India nearly 73% of the population live in rural areas where agriculture is being the major part of their life. The economic development of the country is mostly depends upon the development of rural areas. Rural entrepreneur is one of the most important inputs in the economic development of the country. The scarce resources are used efficiently by the rural entrepreneurs by increasing the profits and decreasing the cost. The main problems faced by the rural entrepreneurs are shortage of finance and raw materials. And the peculiar problems faced by the rural entrepreneurs are illiteracy, lack of training and experience, fear of loss, competition from urban entrepreneurs. Rural entrepreneurship can be considered as the solution for unemployment, migration, economic disparity, reduce poverty, development of rural areas and backward regions.



INTRODUCTION

In India majority of population live in villages. The economic development of our country largely depends on the standard of living of rural masses and progress of rural areas. In national economy the rural industry plays an important role and recognizes the opportunities available in rural areas and they accelerate a unique blend of resources in agriculture. By creating new methods of production, new markets, new products the rural entrepreneurship brings an economic value to the rural sector and it generates employment opportunities thereby ensuring continuous rural development. The person those who carry out entrepreneurial activities by establishing business and industrial units in the rural sector of the economy. Rural entrepreneurship reduce poverty and make many people employed and it controls the migration and economic disparity. The entrepreneurs does not only engage themselves with planning and organising but also they take risk in while doing it so. The entrepreneurs make their dreams into reality by setting their enormous goals for themselves and staying devoted for achieving regardless obstacles with the dedication and determination towards attaining their goals. The development of rural entrepreneurs will only solve the unemployment, poverty, poor infrastructure etc.

OBJECTIVES

- The main of the present study is to know the various types, importance and benefits of rural entrepreneurship
- To know the challenges faced by the rural entrepreneurs



TYPES OF RURAL ENTREPRENEURSHIP

- **Agro Based Enterprises:** It means the industries that have direct and indirect links with agriculture. Eg. Sugar industry
- **Forest Based Industries:** It means the industries that use forest raw materials. Eg. Match wood and sandal wood industry
- **Mineral Based Industry:** This industry use mineral ores as their raw materials. Eg. Iron and Steel industry
- **Textile industry:** It primarily concerned with design, production and distribution of textiles. Eg. Spinning mills
- **Handicrafts:** Activity involving the making of decorative domestic or other objects by hand. Eg. Woven bags

IMPORTANCE OF RURAL ENTREPRENEURSHIP

- **Employment generation:** In rural areas the people would mostly accompany or engage them with the hereditary work
- **Prevents rural exodus:** Though the rural entrepreneurship reduce the unemployment problem it mostly prevents the rural exodus
- **Fosters economic development:** Economic growth is driven oftentimes by consumer spending and business investment
- **Products goods of consumer's choice:** The rural entrepreneurs mostly prepare or organise or cultivate or manufacture the products according to the needs of the consumer
- **Entrepreneurial development:** Though the entrepreneurs have lot of business to engage there is an entrepreneurial development in the rural areas

MEASURES FOR DEVELOPMENT OF RURAL ENTREPRENEURS

- **Provision for credit facilities:** The private and public banks and financial institutions must come forward to provide credit facilities for rural industries with easy terms and conditions
- **Creation of strong raw-material base:** Though all the industries is in need of raw materials the rural industries face many problems in procuring and storing raw materials so for storing and strengthening the raw material the rural sector is on the priority basis
- **Provision for entrepreneurial training:** Training is very essential for all the fields for getting the efficiency in the output
- **Creation of awareness of various facilities amongst the rural people:** Most of the rural people are not aware of all the facilities which are all available in rural industries but it is very important to disseminate information about what is available under certain sections
- **Common production-cum-Marketing centre need be set up:** In order to solve various problems arising the marketing would help to solve all those misleading.

ROLE OF RURAL ENTREPRENEURSHIP

- **Reduction of poverty and unemployment:** The rural entrepreneurship solves the unemployment problem and it make them to set their lives above the poverty line
- **Increasing the foreign exchange:** Through exporting the goods or commodities to other countries the rural entrepreneurship has increased the foreign exchange
- **Check on migration of rural population:** It can control the population moving from rural to urban areas by checking the problems behind it
- **Check on social evils:** rural entrepreneurship controls the poverty, slum growth and it mostly decreases the pollution
- **Proper utilization of local resources:** It is very important for entrepreneurs to use and utilize all the resources which are available in rural industry

BENEFITS OF RURAL ENTREPRENEURSHIP

1. **Requires less capital and financial resources**
In rural areas agriculture and small scale business is being the profession for everyone so there is no need of much capital amount for investment or business
2. **Reduces the migration to urban areas**
Though there is no need of much investment and can earn more profit within a short period many people have stopped migrating to urban areas
3. **Reduces the unemployment**
The small scale industries, agriculture etc would require many workers and employees so the rural entrepreneurship has highly reduced the unemployment
4. **No promotion of artistic activities**
As there is no need of advertisements like banners, posters, media ads, etc for agriculture the amount is not being spent for artistic activities



5. Equitable distribution of income

In rural entrepreneurship the income would be equally distributed to all the workers and employees who work under same division

CHALLENGES FACED BY RURAL ENTREPRENEURS

Management problems

There are certain management problems which would affect the rural entrepreneurs and they are:

- a) Having lack of technical skills
- b) Lack of availability of skilled workers or labours
- c) Formalities which is to be performed legally
- d) Procurement of raw materials
- e) There are lack of training facilities and extension services
- f) The quality of products which are imported have a chance of getting poor quality

Human resources problems

- a) There are low skill of workers
- b) Many would have negative attitude

Other problems

- a) Political problems and political pressure
- b) Low purchasing power

1. Access to funding

The most important challenge for rural entrepreneurs is access to funding. Nearly 40% of rural business owners have trouble in accessing the capital, so many of them use personal savings. Many local banks provide loan for small entrepreneurs but many people are not aware of the schemes offered by the Government

2. Access to talent

Many people would be talented all over rural areas to explore their talents most of them would migrate to other states and other countries. People search for work in urban areas based on their educational qualification to prove their talent instead of using it in their hometown

SUGGESTIONS

For rural entrepreneurs the Government should provide separate financial fund. Special training should be provided for rural entrepreneurs. Government should felicitate top ranker rural entrepreneurs. For rural entrepreneurs an adequate infrastructure facility should be provided. The educated youth should come forward in the field entrepreneurship. The rural entrepreneurs should improve the quality of the products they manufacture in order to compete with similar units in the market

CONCLUSION

Rural entrepreneurship is one of the ways for converting developing country into developed nation. Rural entrepreneurship is the solution for removing the rural poverty in India. Most of the rural youth are not thinking the entrepreneurship as a career option. Those youth are needed to be motivated for taking up entrepreneurship as a career. Without the rural industrialization it is impossible to solve the unemployment completely. By this it is concluded that the rural entrepreneurship is the backbone of the nation to solve various problems of youth, women, small business owners etc.

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THE TEACHER OF THE MUHADDITH IN MOVARUNNAHR

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ANNOTATION

This article talks about the muhaddith who contributed to the development of the early hadith science in Movarunnahr. In fact, Ibn Mubarak achieved a great career in strengthening the Sunnah. It is said that this scholar: "If someone speaks inappropriately about Ibn Mubarak, he will throw a stone at the religion of Islam." He used to write hadiths and separate their sahihs from non-sahihs
KEY WORDS: *"Al-Muwatta", ashabur-rays, shari'i rulings, "Tarikh", subject, four thousand, narrators, jurisprudence.*

INTRODUCTION

Since the time when hadith science was established in Movarunnahr, muhaddith scholars traveled to other countries in search of knowledge, and this was the main reason for the development of hadith science in the lands between two rivers. According to historical sources, from the beginning of the eighth century to the fifteenth century, thousands of muhaddiths worked in many cities of Movarunnahr. A number of muhaddiths, including Abdullah ibn Mubarak, contributed greatly to the development of the school of hadith science.

MAIN PART

Abu Abdurrahman Abdullah ibn Mubarak ibn Wazih Marwazi al-Hanzali, known to the whole Islamic world by the name of this famous scholar, was born in the famous city of Marv in Movarunnahr in 118 AH. Scholars differed on Ibn Mubarak's date of birth. Abdon ibn Uthman says: "I heard Ibn Mubarak say, I was born in 119 Hijri". Imam Ahmad ibn Muhammad ibn Hanbal and Abu Hafs Amr ibn Ali Bohilis say: "Abdullah ibn Mubarak was born on the 118th day"¹.

His father, Mubarak, was a freed slave of a person from the Bani Hanzala tribe of Hamadan, one of the Turkic tribes. His mother was from Khorezm. According to the information about Abdullah bin Mubarak's parents, his father Mubarak was honest, handsome, extremely pious, and for this reason, the owner of the Bani Hanzala tribe married his pious daughter to him, and inherited his piety from them. It is said that his son Abdullah was born.

Ibn Mubarak also narrated a hadith from Muhammad ibn Thabit Abi of Basra, who was a judge in Marw for some time. It was necessary for Ibn Mubarak to travel to other Islamic countries in order to learn the Arabic language, jurisprudence and hadith from his subordinates and subordinates. About his departure from the city of Marv in the pursuit of knowledge, Abdon ibn Usman, a Khatib from Baghdad, says:

"Abdullah traveled to Iraq for the first time in 141 AH". According to this information, Ibn Mubarak was twenty-three years old when he started his journeys for learning. Abbas ibn Mus'ab narrates what Ibn Mubarak said in his work: "I learned from four thousand sheikhs. I narrated a hadith from a thousand of them".

Ibn Mubarak, who devoted most of his childhood to learning, never gave up his desire for knowledge. He performed Hajj many times, was continuously engaged in business and learning. He was a shaykhul-Islam in his time, a hafiz in the science of hadith, a sayyid of them in commerce, and one of those people who had courage and generosity in life. Abdullah ibn Mubarak was one of the greatest imams and scholars in various sciences, especially in the science of hadith.

¹ Imam Shamsiddin Zahabi. Siyaru a'lamini nubalo (a selected work in the book "The Tales of Famous Geniuses"). Translated from Arabic by Azizkhoja Inoyatov. "Hilal edition". T.: 2017. – B.157



When Abdullah ibn Mubarak went to Medina, he learned fiqh from Malik ibn Anas and narrated his famous book "Al-Muwatta". He also learned jurisprudence and hadith from Awza'i, who was a fiqh and muhaddith of the people of Syria, and he heard hadith from Mu'ammara ibn Rashid, a muhaddith of Yemen.

Ibn Mubarak, who became one of the leading scholars of his time in the science of fiqh and hadith, is considered one of the most famous jurists of the science of hadith, and in this field he ranks alongside Sufyan Sawri, Avza'i, Ayyub Sahtiyani, and Ibn Jurayj².

Until the time of Caliph Umar bin Abdulaziz, the subjects had difficulty writing the Sunnahs (Sharia rulings). At the beginning of the second half of the second century of the Hijri, the imams had different opinions on the issue of writing Shari'ah rulings, because the fear of mixing the Hadith of the Prophet with Kalomullah or mixing the thoughts of the followers with the Hadith caused great difficulty in writing the Sunnah. This scientific situation motivated Ibn Mubarak to work tirelessly in the field of collecting the Sunnah and cleaning it from all kinds of defects, writing it as a book or dividing it into separate chapters.

In fact, Ibn Mubarak achieved a great career in strengthening the Sunnah. They even said about that person: "If someone speaks inappropriately about Ibn Mubarak, he has slandered the religion of Islam". He used to write hadiths and separate their sahihs from non-sahihs.

Ibn Mubarak came to Baghdad several times in search of knowledge and in order to spread it. Then Abdullah Razi Taymi Hafiz, Hasan Marwazi, Ali ibn Ishaq Salmo Marwazi, Ibn Mubarak's close friends Darkini and Anbasa ibn Sa'id Umayyad Quraysh, among the progressive people of that land, used to hear hadith from him. During the time of Abdullah bin Mubarak, there was no one more eager for knowledge and more greedy than him. Despite his strong memory, he was unable to write hadiths and compile books. In 141 Hijri, he went on a journey for the first time in pursuit of knowledge, and he worked hard on this path.

Ibn Sa'd reports that he classified many books. Of course, many people used these books. About this, Abu Abdullah Zahabi Yahya ibn Adam says: "If I did not find a hadith in Mubarak's book, I would lose hope in it and would not look for it again". There were twenty thousand hadiths in his hadith books.

Even the greatest Muhaddiths of that time needed Ibn Mubarak's books. Imam Bukhari, the Sultan of hadith science, was a young boy when he first heard hadith and memorized Ibn Mubarak's classifications. He said: "When I was sixteen years old, I memorized the books of Abdullah ibn Mubarak Marwazi and Wake' ibn Jarrah ibn Mulayh Rawai, and learned the words of Ashabura-Ra'i. After that, I went on a blessed pilgrimage with my parents and my brother Ahmed".

Since Abdullah ibn Mubarak was in demand of knowledge all his life, he had many teachers. The narrators say that Ibn Mubarak collected hadith from four thousand sheikhs and narrated hadith from a thousand of them. In one place he says: "I wrote down hadiths from one thousand and one hundred sheikhs. Among them was one of the great Sufyan Savri. In fact, Ibn Mubarak met many subjects and narrated hadiths from them. Most of his teachers were among the nobles of his subjects.

Abdullah ibn Mubarak's first teacher was Rabi' ibn Anas Khorasani. When Khorasani was in prison, he was able to go to them and listen to about forty hadiths. According to the consensus of the Ahl al-Hadith, the hadiths of that person are taken as documents and in their entirety. Narrations are available in all the authoritative hadith books.

In addition to these, Ibn Mubarak had many teachers from among the great ones. Ibn Mubarak enjoyed the science of jurisprudence in the presence of Abu Hanifa, the imam of jurisprudence in Iraq. When Ibn Mubarak came to Madinah, he stayed with Malik ibn Anas and studied jurisprudence with him. Although Ibn Mubarak first learned jurisprudence from Abu Hanifa, later he enjoyed the knowledge of jurisprudence under Sufyan Sawri, Malik ibn Anas and Awza'i. Ibn Farhun mentions that Ibn Mubarak is one of the companions of Malik ibn Anas among the people of Ya'muri Maliki mashriq.

Like his teachers, Ibn Mubarak had many students. For example, Muhammad ibn Salam ibn Faraj Salmo in Bukhara, Ismail ibn Ibrahim ibn Mughira Jufi, the father of the great muhaddith Abu Abdullah Bukhari in Movarounnahr, as well as in Naysabur, Herat, Balkh, Kufa, Basra, Misr, Marv and many other places. his students learned from him.

Ibn Mubarak had so many students that it is difficult to count them. His students include not only his equals or contemporaries, but also his mentors, such as Sufyan Savri and other great scholars. In this regard, the famous historian Shamsiddin Zahabi said: "The reason for the large number of his students is that Ibn Mubarak traveled to many countries where scientific

² Imam Shamsiddin Zahabi. Siyaru a'lamin nubalo (a selected work in the book "Sirati of Famous Geniuses"). Translated from Arabic by Azizkhoja Inoyatov. "Hilal edition". T.: 2017 – B. 125



activity has developed since his youth, and in the towns and villages he visited, even in small spaces, he hadith among the public. He used to tell people. That is why he had many students in different climates³.

CONCLUSION

As well as in other fields of religious sciences, in the field of hadith, Abdullah ibn Mubarak was a leader of his time, a pious ascetic, a prominent jurist, and a poet whose poems contain the messages and works of the great ones of the past. , he was one of the leaders of hadith science, one of the great muhaddiths who was described as the leader of muhaddiths.

Ibn Mubarak was an imam, shaykhul-e-salam in science, and he was courageous as well as being a mentor, an ascetic, and a generous pious person for the ummah of his age. The scholar of the East and the Maghrib was a great believer in the science of hadith.

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³ Imom Shamsiddin Zahabi. Siyar a'lomin nubalo ("Mashhur daholar siyrati" kitobida n saylanma asar). Arabchadan Azizxo'ja Inoyatov tarjimasi. "Hilol nashr". T.: 2017. – B.123



QASIM AL-KHORAZMI, THE GREAT POET AND LITERARY SCHOLAR OF KHORAZM

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ABSTRACT

This article provides information about the life, behavior, sect, and scientific heritage of Qasim Ibn al-Husayn Ibn Ahmad al-Khorazmi, who was one of the masterpieces in Arabic language sciences of his period.

KEYWORDS: Khorezmi, Kasim, scholar, scientific position, behavior, source, region.

Khorezm is a land where many encyclopedic scientists came out who have made a great contribution to the development of the world science and its culture since ancient times. If you look at the pages of history of the city, you can come across a list of great scholars such as Muhammad ibn Musa al-Khorazmi, Abu Ali Ibn Sina, Abu Rayhan al-Biruni, Mahmud al-Zamahshari, Shamsul-aimma Abdusattar Kardari and Abul Khair ibn al-Hammar.

Another great scholar from Khorezm was Qasim Sadrul-Afozil, whose full name was Qasim ibn Husyan ibn Muhammad Abu Muhammad al-Khorazmi al-Nahwi¹ (in some sources it is given as ibn Ahmad, not Ibn Muhammad)². The scholar had nicknames such as Abu Muhammad and Abul Fazl, and these names are sometimes given before or after his name. Kasim Khorezmi was given such titles as "Sadrul-Afozil", "Majduddin", "at-Taraifi", and became famous with his first nickname. In the preface of the work "At-Tahmir" by scientist, the author is mentioned as Sheikhul-Imam Abu Muhammad Qasim ibn Husayn Sadru-l-Afazil al-Khorazmi.

It is clearly stated in the sources that Qasim al-Khorazmi was born on the 9th day of Sha'ban 555 Hijri (August 5, 1160)³. For instance, Yaqut Hamavi (1178-1229) cites the following information in his work "Mu'jam al-udabo" (Encyclopedia of Writers) as follows: "I asked him (Qasim Khorazmi) when he was born. He said: I was born in Khorezm on the 9th of Sha'ban 555 AH"⁴.

Although there are clear and reliable information about name, date of birth and year of death of Khorezmi, there are few reports about his childhood, family members, scientific trips, his teachers and students in sources. This information was transmitted from the Arabic historian and geographer Yaqut Hamawi, who visited Al-Khorazmi during his lifetime and listened to some of his scientific conversations. The historian visited Khorezm in 616/1219 and gave useful information about Al-Khorazmi in his work⁵.

¹ Ibn Abul-Wafa al-Qurashi al-Hanafi. Al-Jawahir al-Mudia fi Tabaqot al-Hanafiyya - Egypt: Maktabat al-Hijr, 1413/1993. -P. 704

² Salahiddin al-Safadi. Al-wafi bil-Wafayat. - Beirut: Dar al-Ihya al-Turos al-Arabi, 1420/2000. -P. 88

³ Muhammad Abdulhai al-Kanawi al-Hindi. Al-fawa'id al-Bahiyya fi Tarajim al-Hanafiyya. -Egypt: As-Saadat publishing house, 1324h. -P. 153.

⁴ Yakut al-Hamawi. Mo'jam al-udab' ("Encyclopedia of Writers"). - J.16. - Beirut-Lebanon.: Matbuaat Dor al-Ma'mun, 1355-1357/1936-1938. -P. 238.

⁵ Yakut Hamavi. From Mujamu-l-Bul. J.16. -Beirut: Dor al-Sadr, -P. 396



Al-Khwarazmi's commentary on the literary work which was entitled as "Saqt az-Zand" (Zandi's Legacy) also mentions the following sentences: "One of my laments about my son: 'I buried you between dirt and stones, if I were honest, I would keep you in my heart.'"⁶ It turns out that one of the scientist's sons died at a young age.

Since the name of scholar was not popular in foreign regions in his time, it can be said that the scientist hardly traveled outside Khorezm. Also, due to the period of the Mongol invasion, the information about the scientific activities of many scientists such as Kasim Khorezmi was lost.

Qasim al-Khwarazmi was killed by the Mongols in 617/1220 AH, and this period is remembered as a period of heavy losses in Islamic history⁷. The culture which had developed materially and spiritually for over ten centuries, was destroyed.

Yaqut al-Hamawi describes behavior and appearance of Khorezmi as follows: "He had a good-looking, well-aged, chubby body that had difficulty moving, and had a large lump in his throat."⁸ Yakut adds: "He had breasts that filled his chest, he was gracious, open-hearted, beautiful-mannered, open-faced, and eloquent."⁹ Khorezmi says: "Sadr Jaihan donated 70 dinars to me, if I didn't need it, I wouldn't have accepted it, may God curse the life of a foreigner"¹⁰. Yaqut: "When I asked about his livelihood, he answered: 'My father left me something worthless, I use it little by little, and I enjoy the people unnecessarily from it'"¹¹. This shows how chaste, contented, career, and aloof he was from sultans.

Yaqut describes scientific status of Khorezmi, intelligence and behavior as follows: "Sadru-l-Afodil was one of the only ones of his time who mastered the Arabic language. He was one of the great leaders of his time." "He is a person with a sharp and a sensitive mind, a sincere character with a critical one"¹².

Al-Khwarizmi's critical nature in science is evident from his critical discussion of the opinions of Nahw scholars. For example, while commenting on the commentary by Nahw scholars, he objected as follows: "The opinions expressed by grammarians on this issue are absurd, incomprehensible, and this is a point of view. The opinions of grammarians are nothing but laughable nonsense. The basis for this is clearly a mistake"¹³.

At that time, the Mu'tazilism sect was widespread in Khorezm and its surrounding regions. Despite this, al-Khorazmi remained steadfast in the Hanafi. When I asked about his sect, Yaqut said, "I am Hanafi." I am not a Khorezmian, I am not a Khorezmian¹⁴," he repeated. Yakut understood from this statement of Khorezmi that he was denying his moderateness¹⁵. Haji Khalifa (1609-1657/1068-1017) mentioned Khorazmi's name as "al-Khorazmi al-Nahvi al-Hanafi"¹⁶. Al-Suyuti (1445-1505/849-911) says about him: "Al-Khorazmi is Hanafi, Sunni. He is one of the Hanafi jurists"¹⁷.

Al-Khwarizmi did not aspire to wealthy and fame due to his calm and sensitive behavior. Satisfied with the small amount of money which was inherited from his father, he devoted his life to learning and writing works in various sphere. The scientist wrote his prolific work in Arabic. He wrote many works on lexicology, grammar, stylistics, literature, philosophy, jurisprudence, and Hadith. Yaqut al-Hamawi gave some information about Khorezmi's works in his book named "Mojam al-udab". Including the work "al-Mujammara" (a small commentary on Mahmud al-Zamahshari's work "Al-Mufassal"), as well as the work "al-Sabika" (a medium-sized commentary on Al-Mufassal),

⁶ Abul-Ala al-Maarri. Shuruh Sakt uz-Zand. -J. 2. - Al-Cairo. Matba' Dar al-Kutub al-Misrya, -B 937

⁷ Al-Sarjani Raghib. The story is Tatar. -Cairo-Egypt. Mussasati Iqro', -P 49

⁸ Yakut al-Hamawi. Mo'jam al-udab'. - Beirut-Lebanon.: Matbuaa't Dor al-Ma'mun, 1355-1357/1936-1938. -P. 238.

⁹ That source. -P. 238.

¹⁰ That source. -P. 251

¹¹ That source. -P. 251

¹² That source. -P. 238

¹³ Qasim Ibn al-Husayn Ibn Ahmad al-Khorazmi. At-Tahmir. -J. 1. - Beirut-Lebanon.: Dor al-gharb al-Islamiy, 1990. -P. 248-281-325-496

¹⁴ Yakut al-Hamawi. Mo'jam al-udab'. -J.16. -Egypt: Matba't Dor al-Ma'mun, 1355-1357/ 1936-1938. -P. 239

¹⁵ That source. -P. 252

¹⁶ Haji Khalifa. Kashfu-z-Zunun, - J. 1. - Beirut: Dor Ihya' at-Turos al-Arabi, 1999. - B 230

¹⁷ As-suyutii. Bughyatu-l-Wia'a, - Beirut: al-Maktabtu-l-Asriyya, 1384/1964. -P. 252



“At-Takhmiyr” is one of the many commentaries written on this work, which consists of three volumes. “Sharhi al-Mufrad wa Muallaf fi-n-Nahvi”, this is a commentary on Zamakhshari's work “al-Mufrad wa-l-muallaf fi-n-Nakhvi”, commentary “al-Unmuzaj fi-n-nakhdī”, “Diram- us-Saqt fiy review Sakt uz-Zand” Abu A'la al-Mari's commentary which was dedicated to the work “Saqt uz-Zand”, “At-Tawdih (“Explanation”) fi sharhu al-maqamati al-Hariri” a commentary on the work “Maqamat-lar”, by Al-Hariri, “Lahjat-i-Shar’ fi sharh alfaz-ul-Fiqh” a commentary on jurisprudential terms in Sharia, “As-sir fi-l-e'rab” (Secrets in the E'rob), “Sharh al-abniyya” a book explaining the invariability of grammatical forms, “Az-zawaya wal-l khabaya fi-n-Nahv” a book about the hidden things in Nahv, “Muhassil li-l mukhsila” (“The book about the derivation of what is learned”), “Ujala-safar fi-sh-shi'r” (A quick trip to poetry), “Badoi'-al-milkh”, (The book of rare eloquent phrases)¹⁸ all that were cited in such works.

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¹⁸ Yakut al-Hamawi. Mo'jam al-udab'. -J.16. -Egypt: Matba't Dor al-Ma'mun, 1355-1357/ 1936-1938. -P. 253



BURHANUDDIN MAHMUD AL-BUKHARI - A WELL-KNOWN REPRESENTATIVE OF THE MOZA FAMILY OF FAQIHS

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ABSTRACT

In this article, the ancestors of Mahmud Bukhari, their researches from Margilan to Bukhara, and their important place in social, scientific and political life are covered based on reliable sources.

KEYWORDS: *Mahmud Bukhari, knowledge, work, "Muhit", "As-Sadr", Bukhara, Marginon, Oli Moza, "Zakhiratul-burhaniyya".*

Although the spiritual legacy of Burhanuddin Mahmud Bukhari is reported in many sources, the information about his personality and his family, who became famous in the East as Oli Moza, is almost unexplored. Although Burhanuddin Mahmud Bukhari lived and worked in Bukhara and Samarkand throughout his life, based on the information given in his works, it was determined that he was born in 551/1156 in the present city of Margilan. For example, the following opinion written by calligraphers in the preface of the Egyptian manuscript copies of the work "al-Muhit" was taken as a basis: "Marginan is the birthplace of Imam Burhanu-sh-shari'a Mahmud ibn Ahmad al-Sadr al-Sa'id, and many virtuous people came from this city"¹.

Calligrapher Abul-Fath Abdul Qahir ibn Abi Bakr ibn Ali Marginani Burhanuddin Mahmud Bukhari's full name, adds the nisba "Marginani"².

However, in tabaqat works that provide information about Alloma, different opinions are given about his birthplace. A group of researchers and scholars who wrote tabaqat give the full name of the jurist as Burhanuddin Mahmud ibn al-Sadr al-Sa'id Tajuddin Ahmed ibn al-Sadr al-Kabir Abdul Aziz ibn Umar ibn Moza Bukhari Marginani³.

Another group of researchers is satisfied with the name of Burhanuddin Mahmud ibn al-Sadr al-Sa'id Tajuddin Ahmad ibn al-Sadr al-Kabir Abdul Aziz ibn Umar ibn Moza al-Bukhari⁴. Also, in the jurisprudential works of the later period, which mention the Allama, he is also mentioned under the name "Sahibi Muhit". One of the issues that cause serious problems for researchers is the naming of a jurist according to his place of birth.

Considering the above, it can be concluded that the grandfather of Burhanuddin Mahmud Bukhari, the founder of the Oli Moza family, came to Bukhara as a result of accompanying Burhanul-Kabir Sultan Sanjar in his military campaigns to Movarounnahr. The connection of Alloma's birth with the city of Margilan is connected to these military

¹ Arabic texts were translated into Uzbek by the author of the study.

² Mahmud ibn Tojuddin Ahmad ibn Moza. Al-Muhitu-l-burhoniyy. O'zR FA SHI // Manuscript № 3102. – V. 1a.

³ Al-A'lom. – J.8. – P.161; Ismo'il Posho al-Bag'dodiy. Hadya al-'orifin. 2 bound. – Qohira: Dor al-kutub al-'ilmiyya, 1981. J.2. – P. 404 (After that: Hadya al-'orifin.); At-Tamimiy. J.2. – P. 85; Toho. "Al-Muhit". – P. 7; Ma'sumiy. "Al-Muhit". – P. 67.

⁴ Brockelmann, GAL. J.1. – P. 642., J.3. – P. 953., J.3. – P. 228-302; Kashf az-zunun. J.2. – P. 823, 1619; Al-Ansob. J.3. – P. 123; Toj at-Tarajim. – P. 70; Al-Qurashiy. J.3. – P. 284; Al-Kafaviy. – V. 98 p. – 155 p.; Zahabiy Muhammad ibn Ahmad ibn Usmon ibn Qoymoz (673-748). Siyar a'lom an-nubalo. 23 bound / Shu'ayb al-Arnout va Muhammad Na'im al-Arqsusiyy tahriri ostida. – Beirut: Mavsu'a ar-risola, 1992. J.12. – P. 322 - 323.



campaigns. Sadrs and jurists, including Burhanuddin Mahmud Bukhari, who came from the family of Oli Moza, originally from Marv, had their main activities in Bukhara, so it is appropriate to add the nisba Bukhari to the name of the scholar, and Marghinani when called in full.

About the exact name of the author, some inaccuracies were found in the sources studying the history of Hanafi jurists.

The authors of “Tabaqat-ul-Hanafiyya” Qurashi and Lucknowi gave the name of Burhanuddin Mahmud Bukhari as Muhammad ibn Ahmad ibn Abdul Aziz Abul Ma'ali or Muhammad ibn as-Sadr al-Kabir Tajuddin Ahmad ibn Burhanul-Akhima Abdul Aziz⁵. The German orientalist Brockelmann mentions his name in the style of Mahmud ibn Ahmad ibn al-Sadr al-Shahid Bukhari ibn Moza in his research.

This may cause confusion in further research on the scholar's spiritual heritage.

In the copies of the work “Zakhirat al-Burhaniyya” created by Burhanuddin Mahmud Bukhari, copied near the time of the author's life, his name is given as Mahmud: the book “Fatawa az-Zakhirat” is the book of our Sayyid and Mawlam Burhanuddin Mahmud ibn Ahmad ibn Abdul Aziz ibn Umar ibn Moza Bukhari, and this book “It is known as “Burhaniyya”.

In the information given in Tashkent, Cairo, Pakistan, Istanbul copies of “Al-Muhit” work, the name of the jurist is mentioned as Mahmud. Therefore, the opinions expressed by Qurashi and Laknavite regarding the original name of the scientist are unclear. The al-Sadr al-Shahid nisab used by Brockelman belongs to Husamuddin al-Sadr al-Shahid, the uncle of Burhanuddin Mahmud Bukhari, and in fact it would be correct to call the jurist Burhanuddin Mahmud ibn Ahmad al-Sadr al-Sa'id ibn Moza Bukhari Marginani.

Therefore, it is appropriate that later researchers give the name of Allama as Mahmud.

There are also different opinions about the date of birth of Burhanuddin Mahmud Bukhari, while Brockelman says that the jurist was born in 570/1174, Egyptian and Pakistani researchers Taha Ahmed al-Maghazi and Muhammad Sagir Hasan al-Masumi based on Abdul Qadir Tamimi's work “at-Tabaqotus-saniyya fi tarajimul-hanafiyya” and the Indian and Pakistani copies of “al-Muhit”, the date of birth of Burhanuddin Mahmud Bukhari was 551/ 1156 and the date of his death is 616/1219. The date of the scholar's birth is not given in the Tabaqat works, whose names have been mentioned above, covering the activities of the Hanafi jurists. Brockelman's work also does not specify the name of the source relied upon to give his date of birth. Therefore, taking into account that the researches of Egyptian and Pakistani researchers Taha Ahmed Maghazi and Muhammad Sagir Hasan al-Masumi have been studied and received positively by the scientific community, it is appropriate to give the date of birth of the jurist as 551/1156. Burhanuddin Mahmud Bukhari is mentioned under the names of Burhanuddin, Burhanul-Islam, Sadrul-Islam, Sadrudin, Burhanush-shari'a in fiqh works related to the Hanafi sect. These titles show that the author of the work had a high scientific potential⁶.

It is known that the grandfather of Burhanuddin Mahmud Bukhari studied jurisprudence from Shamsul-A'imma and Shamsul-A'imma Bakr ibn Muhammad ibn Ali ibn Fazl ibn Hasan Zaranjari (d. VI/XII) in Burhanul-Kabir Sarakhs, and then in Uzgand⁷.

⁵ Al-Favo'id. – P. 215; Al-Qurashiy. J.3. – P. 42.

⁶ Kashf az-zunun. J.2. – P. 823; Al-Ansob. J. 3. – P. 123; Toj at-tarajim. – P. 70; Hadya al-'orifin. J.2. – P. 404; Al-Favo'id. – P. 205; Toshkubrizoda. – P. 252.

⁷ Hadya al-'orifin. J.2. – P. 404; At-Tamimiy. J.2. – P. 85; Toj at-tarajim. – P. 86; Al-A'lom. – P. 36; Brockelmann, GAL. J.1. – P. 642, J.2. – P. 953; Muhammad Sa'id 'Abdulquddus Hoshimiy. Risola fikr an-nazar. – Islomobod: al-Hidoya, 1970. – P. 901-913; Faqir Muhammad Jiloniy. Hadoiq al-hanafiya. – Laknov: Al-Ittihod, 1326/1908. – P. 241; Al-Favo'id. – B. 206; Al-Qurashiy. J.3 – P. 284; Zaki Muhammad Hasan Bek. Al-Osor al-hakiyima. – Qohira: Dor as-salom, 1413/1993. – P. 319; Sa'id al-Hoshim An-Nadviy. Tazkira an-navodir. – Baghdad: Dor al-'arab, 1350/1931-32. –P. 60; Al-Kafaviy. – V. 98b-155b; Toshkubrizoda. J.1. – B. 272, 273, 283; Kahhola 'Umar Rizo. Mo'jam al-muallifin. 15 bound. – Beirut: Dor ihyo at-turoso al-'arabiyy, 1980. J.13-14. – P. 365, 795 (After that: Rizo. Mo'jam.); Az-Zahabiy. J.12. – P. 323.



Also, his family, known as Oli Moza or Sadrs in Bukhara and Samarkand, played an important role in Burhanuddin Mahmud Bukhari's growing up and becoming famous in the field of jurisprudence. The following opinions of the scholar can be cited as proof of this:

"Knowledge has always been inherited from the previous generations, continued to be transmitted from the elders, and finally it reached my martyred and Sa'id Sadrs and ancestors (may God bless them with His mercy and pleasure). Each of them (may Allah be pleased with them) commented on the unclear places in fiqh and revealed the closed places. The books written by them are widely distributed among the people and are referred to in issuing the perfect fatwa. An idea arose in my mind to write a great resource, which contains the main issues of Shariah, judicial events, and make myself like them. So that this thing will help me in my current life and become a beautiful legacy after my death.

Before Burhanuddin Mahmud Bukhari's family moved to Bukhara, they were known as "Oli Moza" and "Bani Umar ibn Marwan"⁸. It can be seen that the dynasty goes back to Umayyad Umar ibn Abdul Aziz ibn Marwan (d. 101/719-20), who was recognized as the 5th caliph⁹.

Burhanuddin Mahmud Bukhari's work in Samarkand is important for his recognition as a jurist. In Bukhara, the tension between the family of Oli Moza and the local scholars and Qilich Arslan Khan Usman (599/609-1202/1212), who was considered the khan of the last Karakhanids, caused the family to settle in Samarkand¹⁰. For example, in the work "Zakhiratul-burhaniyya" the author gave the following opinions on this issue:

"When I started issuing fatwas in the prime of my life, I started collecting the daily issues that were asked of me. I added related events to them. I also collected other fatwas that were requested during my stay in Samarkand."

How sharp the conflicts between Oli Moza and the local rulers were can be seen in the fact that the name or kunya of a single scientist from the cedars was not reflected in the coins or currency units minted at that time and in various seal documents¹¹.

Therefore, it is natural that Oli Moza's family strengthened relations with the scientists and political environment of Samarkand in order to protect themselves from conflicts in Bukhara. Burhanuddin Mahmud Bukhari also ran away from internal conflicts in Bukhara and worked as a judge and mufti in Samarkand for a long time. As a result, he was able to summarize the differences between the Samarkand and Bukhara fiqh schools.

Sources confirm that his works were mainly published in Samarkand, and the first copies of the work "Muhit" were copied by the calligraphers of this city. For example, in the years 660-663/1262-65, the calligrapher Abu-l-Fath Abdulqahir ibn Abi Bakr ibn Ali Marginani made "Muhit" in the form of a book in al-Amiriyya madrasa in Samarkand¹².

Burhanuddin Mahmud Bukhari's teachers were mostly jurists from his own family. Alloma received the basic knowledge from his father Sadr Sa'id¹³. For example, Burhanuddin Mahmud Bukhari, commenting on his teachers: "... I also collected the issues of Mabsut, two "Jomi", two "Siyar" and "Ziyadot" works. I have included rare issues ("Nawadir"), fatwas, and issues from al-waqeat. "I also added to my work what I used from my father Buzurkvor, my father (may God bless him with mercy) and the precise matters memorized by my contemporary sheikhs," he says.

Historian Tamimi mentions his son Mahmud and Burhanuddin Marginani, the author of the famous work "Hidaya", among the great students of Sadr al-Sa'id, the father of Alloma¹⁴.

In tabaqats, the series of teachers of Burhanuddin Mahmud Bukhari is given in the following order: Burhanuddin Mahmud al-Bukhari from his father Sadr al-Sa'id, his uncle Sadr al-Shahid, he from Burhanul-Kabir, he from Shamsul-

⁸ Abu Ja'far Muhammad ibn Jarir at-Tabariy. Tarix al-umam va-l-muluk. – Beirut: Dor al-fikr, 1399/1979. – P. 347; Al-Husayniy, 1985. – P. 67.

⁹ Al-Husayniy, 1985. – P. 69.

¹⁰ Ömer Soner Hunkan (Karahanlılar). – P. 389; Муминов, 2003. – P. 199.

¹¹ Ömer Soner Hunkan (Karahanlılar). – P. 390.

¹² This manuscript is in the fund of the UzR FA SHI № 3102 stored under no.

¹³ Ma'sumiy. "Al-Muhit". – P. 68; Al-Kafaviy. – V. 105a; Kashf az-zunun. J. 2. – P. 1620.

¹⁴ At-Tamimi. J. 2. – P. 107.



A'imma Zaranjari, she from Shamsul-A'imma, she from Shamsul-A'imma Halwani, it is from Abu Ali al-Nasafi, it is from Abu Bakr Muhammad ibn Fazl, it is from Abdullah al-Subazmuni, it is from Abu Hafs al-Saghir, it is from his father Abu Hafs al-Kabir, it is from Muhammad ibn Hasan, it is from Abu Hanifa, it is from Hammad ibn Abi Sulaiman, he from Ibrahim Nakha'i, he from Shurayh ibn al-Harith, he from Ali ibn Abi Talib and Abdullah ibn Mas'ud, they learned knowledge from Muhammad (s.a.v.)¹⁵.

Burhanuddin Mahmud Bukhari was martyred in 616/1219 at the age of 63 in the battle with the Mongols for the protection of Bukhara¹⁶. Despite the fact that he had many students, only his son Tahir ibn Mahmud's name is mentioned in tabaqats. In the information provided by Haji Khalifa, the birth date of Tahir ibn Mahmud is indicated as 503/1109-10¹⁷. But this opinion of the historian is far from the truth. Because based on his information, there is a discrepancy between the dates of birth of Burhanuddin Mahmud Bukhari and his son. That is, Burhanuddin Mahmud al-Bukhari was born 47 years after his son. In the work "Al-Kataib" the date of birth of Tahir ibn Mahmud is given as 1187¹⁸. This is more realistic and accurate information.

Therefore, it is appropriate to indicate the date of birth of Tahir ibn Mahmud as 1187.

The German researcher Omelyan Pritsak, based on the work "Kitobi Mullazoda"¹⁹, which provides information about the history of Bukhara in the XI-XIII centuries, gives the following thoughts about the Oli Moza family:

"The founder of the Ali Burhan or Ali Moza family and the first head of Bukhara, Sadrul-Kabir al-Muqaddam wal Mujtahid al-Mu'azzam Burhanul-Milla wad-din No'man as-sani Bahrul-Ma'ani Abdul Aziz ibn Moza Marviy Bukhari (d. 517/1123- 1124) is After that, his son Husamuddin Sadrush-Shahid ibn Burhanul-Kabir Abdul Aziz ibn Umar ibn Moza (483-536/1090-1141 AD) became a Sadr and was martyred in the Qatawan War".

In 1238, Mahmud Tarabi took the title of Sadr from the family of Oli Moza and gave it to Shamsuddin Mahmud ibn Ahmad Mahbubi (d. 630/1232-33), son of Ahmad ibn Ubaidullah ibn Ibrahim Mahbubi. In this way, the activity of the Oli Moza family as a religious-political ruling class in Bukhara came to an end.

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¹⁵ Hadya al-'orifin. J. 2. – P. 404; At-Tamimiy. J.2. – B. 85; Toj at-tarajim. – P. 86; Al-A'lom. J. 7. – P. 36; Brockelmann. GAL. J. 1. – P. 642, J.2. – P. 953; Al-Favo'id. – P. 206; Al-Qurashiy. J.2. – P. 283; An-Nadviy. – P. 60; Al-Kafaviy. – V. 98b-155 p.; Toshkubrizoda. – P. 272–283; Rizo. Mo'jam. J.2. – P. 365, 795; Az-Zahabiy. J. 17. – P. 322.

¹⁶ Hadya al-'orifin. – J.2. – P. 404; Al-A'lom. J.7. – P. 161; Az-Zahabiy. T. XVII. – P. 322; Rizo. Mo'jam. J.2. – P. 147; Al-Ansob. J.3. – P. 123; At-Tamimiy. J.2. – P. 85; Toho. "al-Muhit" – P. 36, 41; Ma'sumiy. "Al-Muhit". – P. 67.

¹⁷ Kashf az-zunun. J.2 – P. 1637.

¹⁸ Al-Kafaviy – V. 192 a.



THE ETYMOLOGY OF THE WORDS NASIKH AND MANSUKH, ITS INFLUENCE ON TERMINOLOGICAL DEFINITIONS

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ABSTRACT

The article describes the opinions of scholars regarding the abrogated verses of the Holy Qur'an and the dictionary and etymological meanings of the word naskh are given in detail.

KEYWORDS: *naskh, nasikh, mansukh, judgment, rise of judgment, truth of naskh word, metaphor in naskh .*

Allah has sent down His Shari'ah to His servants at various times through His Prophets to guide them to the right path and, as a result, to gain the approval of their Lord. Although those Shari'ahs were revealed to many peoples and at different times, they promoted a single creed, a single belief.

وَمَا أَرْسَلْنَا مِنْ قَبْلِكَ مِنْ رَسُولٍ إِلَّا نُوحِي إِلَيْهِ أَنَّهُ لَا إِلَهَ إِلَّا أَنَا فَاعْبُدُونِ

(Ya Muhammad) **And to every messenger whom We have sent before you: "There is no god but Me, so worship Me". We may have sent a revelation¹ (Surat al-Anbiya, 25).**

This doctrine is combined with the issues of prayer and behavior encountered in daily life, forming a general Shari'ah that ultimately determines how the slaves should behave. At the same time, the issues of prayer and treatment vary according to time and space. The rulings imposed on one ummah are forbidden to other ummahs, and the deprived rules are more widely accepted.

In this way, the annulment of one sentence or its change to another is called naskh.² The main reason for this is, first of all, that it is up to Allah to whom and what is revealed. Because Allah controls His property as He wills:

لَا يُسْأَلُ عَمَّا يَفْعَلُ وَهُمْ يُسْأَلُونَ

He is not responsible for what he does, but they are (Slaves before Allah) responsible³. (Surat al-Anbiya, 23)

In addition, our scholars have tried to justify the following:

The goals required of some ummah are different from the goals required of other ummahs. The rulings revealed to the ummah at one time may not apply to another ummah at another time. In the first period of the Shari'ah, the transmission of the message differs from the situation after the complete transmission of the religion. Because as time and space change, so does the proportion of judgments⁴.

Let us begin to conduct research in this regard in order to study the science of naskh and mansukh in detail.

We will first study the lexical and then the terminological meanings of naskh

¹ Sheikh Abdulaziz Mansur. Translation and Interpretation of the Meanings of the Holy Quran, – Tashkent: "Tashkent Islamic University" Publishing House, 2014.

² Note: In the following places, we will discuss the terminological meaning of naskh in detail.

³ Sheikh Abdulaziz Mansur. Translation and Interpretation of the Meanings of the Holy Quran, – Tashkent: "Tashkent Islamic University" Publishing House, 2014.

⁴ Manno al-Qotton. Mabahis fi ulumil-Qur'an. Riyadh: Maktabatul-ma'arif lin-nashri wat-tawziy, 2000.



Ancient scribes used the word ‘naskh’ in a very broad sense. They used the word in an absolute way - both to denote an unregistered meaning and to characterize a common meaning, as well as to express a vague and ambiguous meaning. Their use of the word also involved the invalidation of a particular Shari'ah ruling by a Shari'ah evidence that came later.

The use of the word ‘naskh’ in the same final sense may have meant its “removal and erasure”⁵.

Dictionary and word scribes can find a lot of information about the meanings of the word naskh, the places of its use. In particular, Abu Ja'far Nahhas ⁶states in his book “An-nasih wal-mansuh fil-Quranil-karim”:

“Naskh comes from two things: the first is that if the sun removes the shadow, the sun has removed the shadow (which is derived from the meaning of removal). And second, you say I copied the book, if you copy it. Naskh and mansukh are based on these two⁷. ”

Muhammad Ali Sabuni, may Allah be pleased with him, stated that naskh is used in three different senses⁸. Other scholars have also expressed their views on the subject.

Based on all the sources and materials, we have generalized the meanings of the word naskh:

In the Arabic dictionary, the word "naskh" is used in the following senses:

1. Removing something with something that follows it: It is said that “نَسَخَ الشَّمْسُ الظِّلَّ” removed the shadow of the sun. Or conversely it is said that the “shadow removes sunlight⁹. It is also said that old age destroys youth¹⁰. In either case, the removal comes after the thing is gone.

2. Naskh means absolute transmission, deletion, and it is said that something else is fixed instead of what is naskh. The difference from the previous type is that what is given here may be something other than that which does not follow what is naskh. Allah says about this in Surat al-Hajj:

وَمَا أَرْسَلْنَا مِنْ قَبْلِكَ مِنْ رَسُولٍ وَلَا نَبِيٍّ إِلَّا إِذَا تَمَنَّى أَلْقَى الشَّيْطَانُ فِي أُمْنِيَّتِهِ فَيَنْسَخُ اللَّهُ مَا يُلْقِي الشَّيْطَانُ ثُمَّ يُحْكِمُ اللَّهُ آيَاتِهِ وَاللَّهُ عَلِيمٌ حَكِيمٌ

(Ya Muhammad) Whenever any messenger or prophet We have sent before you recites, Satan casts them into his recitation. So Allah will nullify what Satan casts, and then Allah will establish His revelations. God is All-Knowing and All-Wise¹¹. (Surat al-Hajj, 52)

In other words, Allah states that He will remove the suspicion that Satan intends to cast off, leaving no trace of it, and that He will strengthen His revelations with something else.

In another verse, Allah states that He can replace one verse with another:

وَإِذَا بَدَّلْنَا آيَةً مَكَانَ آيَةٍ وَاللَّهُ أَعْلَمُ بِمَا يُنْزِلُ قَالُوا إِنَّمَا أَنْتَ مُفْتَرٍ بَلْ أَكْثَرُهُمْ لَا يَعْلَمُونَ

When We substitute one verse for another, and Allah is Aware of what He sends down, they say (to Prophet): "You are forgeries." No! Most of them do not know (the wisdom of it). (Surat an-Nahl, 101)

That is, "If we repeal the ruling of the first verse and replace it with another verse ..."

3. It is said that something is absolutely absent. This means ‘Remove and Delete’¹². In this case, the obsolete item is destroyed at once. His example is given in the following verse

مَا نَنْسَخْ مِنْ آيَةٍ أَوْ نُنسِهَا نَأْتِ بِخَيْرٍ مِنْهَا أَوْ مِثْلَهَا أَلَمْ تَعْلَمْ أَنَّ اللَّهَ عَلَى كُلِّ شَيْءٍ قَدِيرٌ

⁵ Sheikh Muhammad Sadiq Muhammad Yusuf. Ulumul-Quran. – Tashkent: “Hilal-Nashr” publishing house, 2013.

⁶ Abu Ja'far Ahmad ibn Muhammad ibn Ismail ibn Yunus Al-Murodi, An-Nahhos an-Nahvi, al-Misri. Born in Fustat. He learned grammar and elementary sciences from the same local scholars. He then traveled to Baghdad in search of knowledge. He became a disciple of such great scholars as Imam Zajjoj, Imam Ahfash al-Asghar, Imam Mubarrad. He died in Egypt in 950 AD.

⁷ Abu Ja'far An-Nahhos, “An-nasix wal-mansukh fil-Quranil-karim”, page 9, “Al-maktabatul-alamiiyya”.

⁸ See: Muhammad Ali Sabuni, “Rovai'ul-bayan tafsiyru ayatil-ahkam” 1-juz, “At-tibyan fi ulumul-Qur'an” ...

⁹ Muhammad Ali Sabuni. Rovai'ul-bayan tafsiyru ayatil-ahkam. – Beirut: “al-maktabatul-asriyya”, 2017.

¹⁰ Rogib Asfahoni. Mufradatu alfazil-Quran. – Beirut: “Dorul-kalam”, 2014. P. 801.

¹¹ Sheikh Abdulaziz Mansur. Translation and Interpretation of the Meanings of the Holy Quran, – Tashkent: “Tashkent Islamic University” Publishing House, 2014.

¹² Sheikh Muhammad Sadiq Muhammad Yusuf. Ulumul-Quran. – Tashkent: “Hilal-Nashr” publishing house, 2013.



(Ya Muhammad) If We nullify a verse, or cause it to be forgotten, We can bring one better than it, or its equivalent. Do you not know that Allah has

power over all things? (Surat al-Baqara, 106)

It means "we will abolish it, remove it, or erase it from the hearts of men."¹³

4. Used in the sense of copying, making copy. It is desirable to copy from one picture to another, that is, to keep a copy of what is being copied, as well as to keep a copy of it from one place to another. "نسخ الكتاب" It is understood that nothing has disappeared or even diminished from the first.

5. Copying is used in the sense of transferring to another image. In this case, the image is transferred from one image to another. The difference from the previous case is that the original of what is naskh disappears. When "نسخ الإنسان قراداً" means "man was born to an ape", it means that he became an ape.

6. The shape taken from the core of the naskh and made in the form of an exception. This form is also used in the sense of writing as before, or requiring writing. The same meaning is found in the following verse in Surat al-Jasiah:

إِنَّا كُنَّا نَسْتَنْسِخُ مَا كُنْتُمْ تَعْمَلُونَ (29)

"Verily, We have recorded what you used to do" (v. 29).

We wrote down exactly what you did in that world in a timely manner. That is, We commanded the angels to record your deeds as they are. They would record these deeds in their deeds¹⁴.

7. A form taken from the core of the naskh and made in the form of "naasaho-mutunaxa". This is used in the sense of helping other copyists.

8. Naskh is taken from the core and made in the form of "intasaxo-intisox". This form also means deleting and copying as in the original kernel¹⁵.

9. The shape taken from the core of the naskh and made in the form of tanosux.

a) "Tanosaha shayani" refers to two things trying to destroy each other, one of which results in the destruction of the other.

b) "تناسخ الأيام" means continuous, continued.

c) The phrase "تناسخ الأرواح" is used in the sense that souls moved from their bodies to other bodies after death.

d) Is used as "تناسخ القوم الشيء" and "تناسخ الخاضعون الموقف". The phrases "people changed something" and "those who came changed places" meant exchange.

e) "تناسخ الورثة" It is said that the heirs die one after another and are left without an heir¹⁶.

Let us now turn to the words naskh, nasikh and mansukh and look at what they mean.

Nasx is a key word in the sense of naskh, to do naskh work, and it is understood that the word naskh means whatever happens, regardless of what it means. The removal of light by the sun, the copying of a book, and so on.

Nosix is understood to be a naskh maker, a performer of naskh work. For example, the sun, the person who copies the book, and in another sense, those who do the same work depending on their location.

Mansukh is understood as something that has been done, the work of naskh has been done on it. For example, a shadow cast by the sun, something copied from a book, and so on.

For example, in the rulings or verses of the Shari'ah:

¹³ Rogib Asfahoni, "Mufradatu alfazil-Quran", page 801, "Dorul-kalam", Beirut 2014. At this point, we have to admit that there is no detailed information about naskh in the Uzbek language in sources other than the book "Ulumul-Qur'an" by Sheikh Muhammad Sadiq Muhammad Yusuf. However, this book was divided according to other sources as it was not a book specific to the science of naskh and mansukh and there was an opportunity to add to their opinions in books about naskh. See: "An-nasx fiy dirosatil-usuliyin", "an-Nasix val-mansukh fil-Qur'an", "mufradot", "al-ma'oni", "qomus"

¹⁴ Sheikh Muhammad Sadiq Muhammad Yusuf. Ulumul-Quran. – Tashkent: "Hilal-Nashr" publishing house, 2013.

¹⁵ See al-qomus al-arabi, alma'aniy.com

¹⁶ See al-qomus al-arabi, alma'aniy.com



A verse or judgment that invalidates a judgment is nasih, a verse or judgment that is annulled is nasih, and the practice of that act is nasih.

We learned about the lexical meanings of Naskh. Based on this information, it can be said that the meanings of removal and displacement of the naskh are equally indicative of the same force. Or one of the two may have a real meaning and the other a figurative meaning. Scholars have advanced four different views on what is the basic meaning of the word naskh¹⁷. We will learn more about them below:

1. The word Nasx is true in both senses, and has equal power in both meanings. These are the views of Abu Bakr al-Baqillani and al-Ghazali¹⁸.

First thought analysis. Proponents of this view say that words have two meanings in the sense of removal and transfer, but that one word has equal power in two senses, and that one is not superior to the other. It will then be necessary to judge the two as joint as they are used. The original rule in the use of the word in one sense must be true¹⁹

..

2. The word naskh is true in the sense of copying, conveying. This is the word of Qaffol Shoshi²⁰.

Second opinion analysis. The owners of this idea are based on two types of views that are true in the sense of nasx - carrying:

1) When you say "I copied the book", if the copying is true, that will be our goal. If you look at it as a metaphor, it cannot be a metaphor for the meaning of removal. Because what is copied is neither deleted, nor is it something like deleted. So it is derived from that meaning because it is similar to the meaning of transfer. If it is used in the sense of moving, then it is true in the same sense. In order to repel the partnership in one sense, it becomes a metaphor in another sense.

2) The use of the word Nasx in the sense of moving is much more, and in the sense of removing is less than before. Therefore, the more it is used, the more true it becomes, and the less it is used, the more figurative it becomes. Because truth is more than a metaphor in terms of usage. Therefore, it is not permissible to make the truth in the places where it is rarely used²¹.

3) **The word naskh means truth in the sense of removal, loss, and metaphor in the sense of transfer.** This is the opinion of Imam al-Razi²², which was followed by Abul-Husayn al-Basri.

Third opinion analysis. From this point of view, it is emphasized in two different ways that it is true in the sense of removing the word naskh.

First, the word is only commonly used in these two senses. so it cannot be true in the sense of transference. Because when you say I copied a book, it can't really show that the book itself is genuine, but it's similar to it. Therefore, it is determined to be true in the sense of removing even without mentioning the abundance of the metaphor.

Second, the meaning of relocation is more specific, while the meaning of removal is more general. The reason for this is that the transfer is the disappearance of the quality of something, the emergence of the quality of the bull. Dismissal means absolute loss. It is preferable for a word to be made true in the general sense by placing the word hosni, which rotates between the general and the specific word. Because there will be more benefits in general.

¹⁷ Annasx 'indal-usulliyyin

¹⁸ Abu Hamid Muhammad ibn Muhammad al-Ghazali, a well-known Islamic scholar, was born in 450 AH in the city of Tus in Khorasan and died in 505 AH. He has advanced knowledge in almost all Islamic sciences and has written more than 200 works.

¹⁹ Commentary Usul-Pazdavi, 3/875.

²⁰ Abu Bakr Muhammad ibn Ali ibn Ismail Qaffal Shashi was born in 291 in Shosh (Tashkent). They traveled to Iraq, Damascus, and the Hijaz in search of knowledge. He was a scholar of creed, jurisprudence, method, vocabulary and literature. He died in 365. Famous works: "Kitab fi usulil-fiqh", daloilun-nubuvvat, mahosinush-sharia ...

²¹ An-nasx'indal-usulliyyin, p.25

²² The Imam of the Mutakallimun, Abulfazl Muhammad Fakhriddin ibn Ziyouddin Taymi Shafi'i, was born in 543 in the city of Ray and died in 606. The product is a work of elephant-method



4) The word naskh is spiritually common in both senses. Shawqani, may Allah have mercy on him, said²³ in the book of Burhan that it belongs to Ibn Munir.

Fourth thought analysis. The word naskh means spiritually common in the sense of **moving and removing:**

In fact, there is a certain amount of commonality between the sun removing shadows and copying from a book. This is actually a judgment of elevation, which becomes clear when in the shadows. Because here the shadow went away using something contrary to the shadow. But **the point of raising** it when it comes to copying a book remains an excuse. After all, the words copied from the book with the help of writing can be expressed only in the original. The expression was typical of the original. Hence, as a result of that original copying, the specificity of the expression in which only it is contained has increased.

As a result, the rise of the shadow and the rise of the individual became equal in the sense of the so-called "rise."

Some have said that "*a certain amount of commonality*" between the two is a change. Thus the naskh becomes semantically common between the two meanings²⁴.

According to the study, almost all the scholars agreed that the word naskh was used in the sense of removal, copying, and modification, and that it did not really matter in what sense it was true and in what sense it was figurative, resulting in great differences and no scientific purpose.

The reason we cite here was to point out that there are similar debates. There are also scholars who say that there is a scientific purpose to this debate.

Examining these views, it is clear from the scholars' comparative information about them that the idea that **"the word Naskh is true in the sense of removal, loss, and metaphorical in the sense of transfer"** is preferable. This is because it is more apparent that it is a metaphor in the sense of copying rather than being used in terms of vocabulary.

Because by copying a book, what is in it remains as it is. The word "copied" was used figuratively from the word "copy". So if there is a metaphor in the sense of copying, there will be truth in another word. This is true in the sense of self-abnegation²⁵.

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²³ Shavkoni, *irshodul-fuhul*, 183 pages.

²⁴ Shavkoni, *irshodul-fuhul*, 183 pages.

²⁵ Abu Husayn Basri, "Mu'tamad", 1/395.



MUSHAF RASMI KHAT AND ITS SPECIAL ASPECTS

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ABSTRACT

Mushaf rasmi khat refers to the spelling style of the Mushafs copied under the leadership of Caliph Uthman ibn Affan. The importance of the official letter is that since ancient times all Muslim scholars have emphasized that it is obligatory to write the Holy Qur'an only in this spelling. However, scholars differed on whether this spelling was recorded through revelation or based on the knowledge of the Companions. Many argue that the spelling of the Qur'an was created on the basis of the knowledge and experience of the Companions, and at the same time under the control of revelation. This opinion has a scientific basis.

There are aspects of rasmi khat that are different from the current spelling, and this difference has been interpreted by researchers in different ways:

- 1. Some scholars, including many orientalists, claimed that the characteristics of rasmi khat were created because the companions did not know the letter well. This opinion has no scientific value.*
- 2. A group of scholars connected the characteristics of the letter to divine mysteries and tried to explain them internally and went deep into this issue. This opinion also has no scientific basis and does not correspond to the rule.*
- 3. The features observed in the official letter were the requirements of the spelling rules and skills of that time. Ancient expert scientists and modern researchers supported this idea. Scientific research also proves this.*

KEYWORDS: *Mushafs of Uthman, Holy Qur'an, revelation, hazf, ziyada, badal, hamza, fasl and wasl.*

Uthman mushafs are written in a picture free of movement and dots. A group of scholars suggests that the picture of the Companions was done so that it would match the recitations of the letter. However, it is known from the history of Arabic writing that at that time, the use of dots and movements in Arabic writing itself was not in circulation. At the same time, this statement does not deny that the Mushaf script was written according to the recitations. In other words, both cases are combined - the formal letter conforms to the spelling rules of that time and observes the discrepancies in the recitations.

Today, whether it is a handwritten manuscript or a printed one, the picture of Uthman in the manuscript is published according to the letter. Only when placing the signs, work is done according to a certain recitation. For example, in most mushafs in our country, as well as in the world, points, movements and other symbols are written according to Haf's recitation from Asim. It is possible to find copies of other recitations.

It is known that the Holy Qur'an was clearly revealed in Arabic. There are a number of verses about this, there are enough mental and metaphorical evidences. However, since there are different dialects of the Arabic language since ancient times, it is natural to ask in which dialect of the Arabic language the Qur'an was revealed. Some scholars answer this question by saying, "The Qur'an was revealed only in the Quraysh dialect, because the Messenger of God, may God's prayers and peace be upon him, was from this tribe," while others emphasize that the Qur'an included other dialects as well.



In the statements of a number of great Companions, it is openly stated that the Qur'an was revealed in the Quraysh dialect. But it is true that other dialects are also reflected in the Qur'an. For example, the Quraysh dialect does not have hamza between words, but there is hamza in recitations. Therefore, the scholars say that the words of the Companions, "The Qur'an was revealed in the Quraysh dialect", should be understood as meaning "most of it, the main part" or "initially". However, this does not deny that the Mushaf was written according to the Quraysh dictionary.

Abu Amr Daniy says: "However, most of rasmi khat was written in Tahfif (that is, without Hamza). The reason for this is that during the time of Uthman, the people who were responsible for moving the mushafs were Quraysh. That is why many hamzas are written with tashil - expressing the hamza with a vowel. After all, this is what was established in their natural skills, and their language was used to it."¹

To conclude from the above, the Noble Qur'an was revealed in the Quraysh dialect, and accordingly it was written in a letter, and it was also recited in other Arabic dialects by allowing seven letters. Of course, it was within the scope of those seven letters that were taught, and not everyone read it independently based on their own dialect.

There is no saying that the Holy Qur'an was written in seven letters during the time of the Holy Prophet. However, a group of Salaf scholars pointed out that seven letters were taken into account in the pages of Abu Bakr.

Abu Amr Daniy openly stated this in Muqni², and Imam Shatibi, who composed this work, also supported this opinion.³ However, Jabari Shatibi's commentary on that verse says: "But this meaning was not clearly stated in the words of Abu Bakr and Zayd, may God be pleased with them, but it was understood from the flow of their words."⁴

Regarding the fact that the Mushafs of Uthman contain seven letters, a group of scholars say that these Mushafs are written in only one letter, and the other six letters are left out, while most scholars say that all seven letters or the image of a letter have been expressed in them. Scientific research scientists support the latter opinion. In this case, the term "picture letter" refers to a manuscript written in the presence of the Messenger of Allah, peace and blessings be upon him.

From the time of the Companions until today, public scholars have agreed on the obligation to write the Holy Qur'an according to the letter of Mushafi Ottoman painting. Based on this, a group of prominent scholars also put forward the opinion that rasmi khat is tawqif. The scientist Abdulaziz Dabbagh was the first to speak openly about this, and his student Ahmed ibn Mubarak quoted his words in the book "Al-Ibriz" which he wrote to summarize what he heard from his teacher.⁵

Dr. Ayman Rushdi Suwaid, one of the most prominent scientists of our time in the science of recitation, an academic teacher of Quranic sciences, also says that rasmi khat is tawqifi.⁶

¹ Abu Amr Usman ibn Sa'id Daniy. Al-Muqni'. Dōrut-tadbūriya – 2010. – S. 115–121.

² Abu Amr Usman ibn Sa'id Daniy. Al-Muqni'. Dōrut-tadbūriya – 2010. – S. 115–120.

³ Abu Qasim Muhammad ibn Firrukh ibn Khalaf Shatibi. Akilatu atrōbil-qasaid fī asnal-maqōsid. – Damascus, Darul-Gavsani – 2015. – S. 3.

⁴ Burkhaniddin Ibrahim ibn Umar Jabari. Jamīlatu arbōbil-marōsid fī review aqilatu atrobil-qasōid. M. 2. Madina Munavvara, Jami'atu Tayyiba – 2017. J.1. – S. 342.

⁵ Sayyidi Ahmad ibn Mubarak Sijilmasi. Beirut, Al-Ibriz – 2002. – S. 87.

⁶ Dr. Ayman Rushdi Suwayd. Abu Qasim Muhammad ibn Firrukh ibn Khalaf Shatibi. Introduction to the work Aqilatu atrōbil-qasōid fī asnal-maqōsid. – Damascus, Darul-Ghavsani – 2015.



However, this is a controversial issue, and many experts believe that the picture is *ijtihid* rather than *tawqif*. They cite a number of arguments for this statement. For example, the difference in the personal *mushafs* of some companions, in particular, the difference between the *mushafs* of the imam, is also considered a document that the letter was written on the basis of *ijtihad*. The opposite side answers this argument by saying that those differences are *tawqif* and were narrated from the Messenger of Allah, may God bless him and grant him peace. However, a student of the history of the *Mushaf* manuscripts cannot find any clear evidence from earlier sources that indicates that the picture is a *tawqif* letter, and none of the ancient scholars have said this.⁷

In our opinion, these two ideas can be combined to the following point: although the *Mushaf Rasmi* letter is not *tawqifi*, that is, the Prophet, may God bless him and grant him peace, did not teach the words to be written letter by letter in the same way as he taught pronunciation, it is of great importance that they were written in the presence of the owner of the revelation, under the supervision of the revelation. is enough. The news that the Messenger of God, may God bless him and grant him peace, reread the written verses to the scribe and corrected them strengthens our words. In other words, it can be said that *Rasmi Khat* is strengthened by *Sunnah*. That is why the Companions copied the *Mushaf* from the letters written in the presence of the Prophet and tried not to change this letter as much as possible. At the same time, when necessary, they may have worked with *ijtihad* in problematic areas.

It is considered that the scribe of the *Mushaf* should follow it, regardless of whether it is *tawqif* or *ijtihad*, so the scholars studied and researched it very carefully. Some words were written in a special form in the *Mushaf* picture letter, which differed from the usual spelling. In particular, as linguists corrected and developed the spelling, the difference between the *Mushaf* writing and the spelling in use increased. In an effort to keep the words of the *Mushaf* unchanged, the scholars copied them into the *Mushaf* exactly as they were in the letter, studied those differences with great accuracy, narrated them, and started creating works on this topic. The words of Hamza ibn Habib Zayyat: "I was afraid that I would lose my eyesight because I cared so much about *Mushaf*" is an example of how much research scientists have done in this regard. As a result of research on this topic, a new science with its own sources and scientific works - the science of *Mushaf* painting - was born in the field of Islamic sciences.

It is possible to get an idea of how the science of official letters was formed and developed by studying the history of its sources.

Since a letter is a written expression of speech, it should be consistent with oral speech. Although the *Mushaf* picture letter is also built on this rule, some words are written contrary to the comparative rule. It also had its own reasons and goals, of course. Therefore, the scholars not only studied the letter of the *Mushaf* image, but also tried to explain its characteristics. The original authors were limited to conveying the image of the letter. Maybe this is because they know the reasons why some words in the *Mushaf* are written in a unique way. Or they may have put forward the opinion that "There is no need to open this topic, the painting of *Mushaf* is not comparative, it is followed and copied as much as possible, without spending time on explaining it, it is necessary to deal with other more necessary sciences". However, by the fifth-sixth centuries of Hijri, scholars began to pay attention to the interpretation of the features of *mushaf* painting. After the Hijri Middle Ages, some authors focused more on this topic and conducted lengthy debates. In general, views on this matter can be divided into three groups:

⁷ Ghonim Qadduri Hamad. *Al-Muyassar fī ilmi rosmil-mushafī and dobtih.* – Jeddah, Ma'had al-imām ash-Shatibi – 2016 – S. 13.



1. The scribes of Mushaf wrote some words wrongly because they did not know the rules of letters well, because there were few literate people in their time, and spelling rules were not yet well formed. Therefore, the same word was written in two different ways.

According to the owners of this opinion, the companions made spelling mistakes when copying the Qur'an because they did not know the letter well. Some words in the Mushaf are the result of this situation. However, since the Qur'an was mainly based on oral teaching, even if there was a mistake in the writing, it was read correctly based on the teacher's teaching.

Among the linguists, Yahya ibn Ziyad Farro (d. 207 h), later Ibn Qutayba (d. 276 h), Ibn Khaldun (d. 808 h) and others put forward this opinion. But the research scientists point out that this opinion was unfounded and one-sided, given without proper study of the subject. Ghonim Qadduri concludes about this as follows:

"To sum up, this view on the image of rasmi khat comes from a limited understanding of the history of Arabic writing, a lack of knowledge of the nature of the letter and its foundations. A researcher should stay away from this school of thought while studying a mushaf picture letter. Because the views of this sect prevent the correct understanding of the image of the letter and lead to attributing the guilt that the Companions wrote the Qur'an in the presence of the Holy Prophet, may God bless him and grant him peace, and wrote it wrongly when they compiled the pages and copied the manuscripts. However, in their writings, they were extremely accurate, and in their oral speech, they fulfilled the requirements of wasl and waqf without allowing any excesses or defects."⁸

Ghonim Qadduri substantiates this statement with very strong documents and physical evidence in the next pages of the book. Interested persons may refer to that resource.

In fact, the Companions first wrote down the entire Holy Qur'an in the presence of the Messenger of Allah, may God bless him and grant him peace. During the time of Abu Bakr, may Allah be pleased with him, he made a great scientific effort in compiling the Qur'an into ordered pages. When writing Mushafs of Uthman, each word was copied more accurately, with special attention and advice, and repeated inspection and comparison work was carried out on the Mushafs. Under such a scientific approach, as Ibn Qutayba said, mistakes cannot pass. Their opinions do not correspond not only to the characteristics of the letter, but also to the reports regarding the process of writing the mushafs.

2. There are hidden secrets in the writings that are not visible according to the speech of the official letter, which the minds are unable to fully understand. Illa, only open-minded people, only those whom God has revealed can know the inner meanings of the letter, or only by divine revelation.

Perhaps the reason for the emergence of this sect was that the people of the previous sect attributed the fault of mistakes and illiteracy to the Companions, thereby casting a shadow on the belief in the protection of the Holy Qur'an in some sense.

⁸ Ghonim Qadduri Hamad. *Al-Muyassar fī ilmi rosmil-mushafī and dobtih.* – Jeddah, Ma'had al-Imām ash-Shatibi – 2016. – S. 190.



In any case, representatives of this sect tried to provide a number of arguments to support their opinions, and wrote separate works on this topic. The greatest leader of this school is Ibn Banno Moroccan (d. 721 h). Badriddin Zarkashi (d. 794 H) narrated the spiritual interpretation of some words in "Burhan", Jalaliddin Suyuti (d. 923 H) in "Itqon".

In his book "Unwōnud-dalīl fī marsūmi hottit-tanzīl" Ibn Banno Marokashii tried to provide certain rules regarding the spiritual interpretation of the letter. However, most of them are not based on clear evidence. Sometimes the speech went very deep and went away from the goal. But the belief that the characteristics of the picture letter are not in vain, but based on certain foundations, and the scientific efforts to study them prompted new researches, encouraged scientists to interpret the picture letter from the point of view of linguistics.

3. The Mushafi Sharif was written based on the spelling rules of that time, and the Companions used the existing rules to the maximum extent in writing the Mushafi. In the Mushaf, the writing of some words in a special way, as an exception to the general rule, is based on ignorance, carelessness, or not just, but on specific goals. Therefore, the view that the Companions made a mistake in writing the Mushaf is nothing but ignorance. It is clear that a person who has studied the official features in depth will come to this conclusion.

To understand the features of a formal letter, it is necessary to study the spelling of that period. After all, the scribes of the Qur'an wrote it based on the spelling rules of their time. Spelling rules that many people know were formed in the second-third Hijri ars.

To understand the features of a formal letter, it is necessary to study the spelling of that period. After all, the scribes of the Qur'an wrote it based on the spelling rules of their time. Spelling rules that many people know were formed in the second-third Hijri ars.

The Companions mobilized all their knowledge and writing abilities to express the Holy Qur'an in the Mushaf as they received it from the Messenger of Allah, may God bless him and grant him peace. They sometimes deviated from the usual spelling rules in order to express more precision in some words based on their taste and understanding. At the same time, they significantly reformed and developed the letter. These words are not just opinions, but conclusions based on spelling.

The members of this sect explain the characteristics of the picture letter from the point of view of linguistics, using spelling rules. In fact, this view is the oldest, earliest view of letter characteristics, and has been advanced by many experts in the field. However, in the middle ages of the Hijri, the views of the two earlier sects were more widespread. And modern research supports the opinion of this third sect, and with the unprecedented scientific achievements achieved through fossils found in recent years, the issue is further clarified.

In conclusion, the following can be said:

1. Neither in ancient times, nor now, writing has fully expressed speech. That is, both in ancient letters and in modern alphabets, speech and writing do not coincide completely. Some letters are written but cannot be read, and in some places one letter is written and another speech sound is pronounced. This situation exists in the spelling of all languages. In particular, there are countless examples of this in English and Russian. But no one calls it a mistake or a fault, but it is accepted that this is the only possibility of writing.



This phenomenon is also present in Mushaf spelling, although the writing possibilities of that period were used to a high degree. But reading skills and education have filled this gap. Indeed, the Holy Qur'an was first taught and learned on the basis of oral transmission.

2. The difference in writing some words is not considered a mistake. In Mushaf, sometimes one type of word is written differently in one place and another in another place, as mentioned above, some scholars considered it a mistake. In fact, writing the same word or letter two or three different ways is not a mistake, but a normal situation, it exists in all spellings. Today's modern writings also have this rule. For example, currently the word "faith" is written in the works both with y and without the letter y in the form of "faith". A similar situation existed in the spelling written by the Companions. However, the Companions were very precise in choosing one of the two views at such a time. For example, they wrote some words according to wasl, some according to waqf, and mainly they tried to preserve the picture of the presence of the Prophet, may God bless him and grant him peace.

3. If the process of writing Mushafs is studied, it becomes clear that the Companions of the Holy Qur'an and its recitations used all the possibilities of Arabic writing at the highest level in writing. Imam Daniy says about this: "The predecessors - may God be pleased with them - relied on a correct basis in every form, every point in the Mushaf and used language and analogy. Indeed, their knowledge and status in eloquence require this. Those who know it know it, those who don't know it don't. Grace is in Allah's hand, He gives it to whom He wills. God is the owner of great grace."⁹

Letters represent speech sounds, speech sounds represent word meanings. Therefore, in reality, letters and speech sounds should have a common number. However, the ancient Arabs tried to make the writing as concise as possible in the spelling, just as they tried to make the sentence short for the sake of maturity and eloquence. Therefore, they did not represent short vowels, even the points that distinguish letters. In some places, long vowels were dropped. At the same time, they tried to fully express oral speech in writing according to their feelings and pleasures.

Uthman's Mushafi picture is called "Istilahi picture letter" and most of the comparative pictures correspond to the spelling of the letter. Only some places have their own characteristics, which are described by scholars of art and calligraphy in their works.

The Companions wrote the Holy Qur'an in the script they used. In addition to the Qur'an, they wrote contracts, letters and some hadiths in the same letter. In those letters too, there were cases where some letters were omitted or added, as in the manuscript. After the Companions, the followers and those after them also used this style of letter in all their dealings. By the second Hijri century, when the linguists of Basra and Kufa improved the spelling according to the rules of the language, the current science of literature was born and it was called the science of comparative letters.

As the works on the comparative letter were finished, books on the mushaf picture letter began to be written side by side with it. It was intended to preserve the cover letter in its original state.

Ibn Duruswayh (d. 346 H) says: "We have found that the letters of the book of Allah, the Most High, cannot be compared to any other and cannot be contradicted." They are accepted as they are placed in the Mushaf.¹⁰

Even though the spelling changed, the scholars insisted on keeping the mushaf letter unchanged. Imam Malik asked: "Is it possible to write Mushaf in a new spelling?" When asked, he answered: "No, it should be written in the first letter."¹¹

⁹ Abu Amr Usman ibn Sa'id Daniy. *Al-Muhkam fi nuqatil-Masohif*. – Damascus, Darul-fikr – 1997. – S. 196.

¹⁰ Abu Muhammad Abdullah ibn Ja'far. *Kitabul-kuttab*. – Beirut, Al-Ab Lawis Sheikhul-Yasu' – 1921. – S. 5.

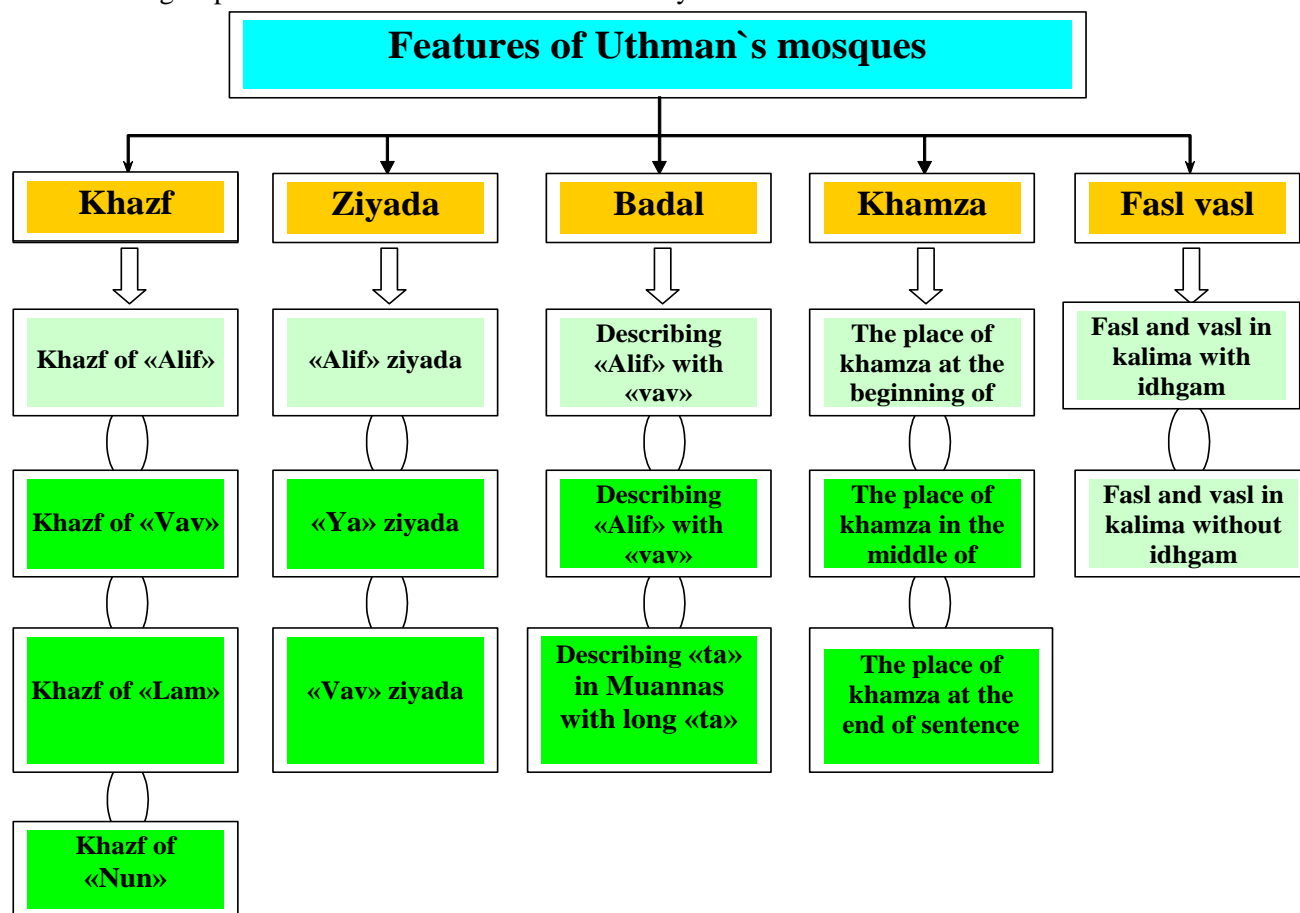


Abu Hayon said: "There are three types of literary istilah: aruz itilah, mushaf istilah, and other than these two, the istilah accepted by the scribes in letters." That's why they said: "Two writings cannot be compared - a mushaf and an aruz letter." The characteristics of Ottoman Mushafs are divided into five groups:

1. Hazf - omitting a letter.
2. Addition of letter – in addition.
3. Badal - replacing one letter with another.
4. Judgments about Hamza.
5. Fasl and wasl – separate or divide the words.

Scholars also add a sixth group, which is words written in one of two different recitations. However, this group of words is very small, and since they do not have a certain rule, they are studied separately from these groups and are not considered related to spelling.

Each of these five groups is divided into several branches. They can be seen in the table below.



In the works dedicated to the letter of the Mushaf picture, the differences are explained verbatim, and it is shown how which word is written in which Mushaf. Since our goal is to compare the musafs, we think that the above information is enough to understand the topic.

¹¹ Abdurrahman ibn Abu Bakr Suyuti. Al-Itqōn fī ulūmil-Quran. M. 4. – Cairo, Al-Hay'atul-mirsiya – 1974. – J.1. – S. 379.



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THE IMPACT OF "NEW METHOD SCHOOLS "BY JADIDS ON SOCIO-ECONOMIC AND CULTURAL DEVELOPMENT OF THE SOCIETY

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ANNOTATION

In this article, the philosophical views of the jadids of "new method schools "on the socio-economic and cultural development of society and their importance in the education of our youth are depicted.

KEY WORDS: *jadids, "new method schools", Ismail Gaspirali, russification, Holy Qur'an, hadith, press, Turkish newsletter.*

ВЛИЯНИЕ "ШКОЛ НОВОГО МЕТОДА" ДЖАДИДОВ НА СОЦИАЛЬНО-ЭКОНОМИЧЕСКОЕ И КУЛЬТУРНОЕ РАЗВИТИЕ ОБЩЕСТВА

Аннотация: В этой статье изложены философские взгляды о влиянии "школ нового метода" джадидов на социально-экономическое и культурное развитие общества, а также размышления о важности их в образовании и воспитании нашей молодежи.

Ключевые слова: "джадидизм", "школы нового метода", Исмаилбек Гаспринский, "русификация", Коран, хадис, пресса, "Туркестанские ведомости".

INTRODUCTION

Those who recognized that the central problem of modern enlightenment is the ability to keep pace with developed countries and peoples with the national literacy of the people. In this sense, the "schools of the new method" became an innovation of socio-economic and cultural improvement of the society in the social reform of the modern times. Because it was the intellectuals who realized that salvation in education and training is the way to lead world civilization with attention to worldly knowledge in national traditional schools.

LITERATURE REVIEW

The colonialism of Tsarist Russia, along with ruthless looting of the national wealth of the country's people, had the goal of enslaving the local population by eroding the nation's thousand-year-old national and religious traditions and values. In addition, "the desire to remove the indigenous peoples from the state management, to take away the right to self-determination caused various forms of social protest" [1]. As a result, popularization of other customs and alienation from nationality began in the country under the policy of "Russification". Restricting the activities of madrassas and schools, they valued the attitude to the lifestyle of the local population contrary to the national-religious values. In particular, vices such as drunkenness, theft, and adultery among local peoples began after the Russian occupation of Turkestan. In this sense, the Jadidism movement was formed as a priority independence movement of the original children of the nation to preserve the national identity, freedom and freedom of the nation.



In the socio-political situation that arose at the end of the 19th century, scholars were formed who contributed to the innovative reform of the national lifestyle and life with the examples of the high sophistication of the national intellectuals' school-education, national educational press, fiction, and works of art. Their historical service was persecuted by the tsarist government, and the Soviet system ended tragically with their repression. In this sense, the need for independence and national enlightenment is an important issue in social philosophy. We agree with the opinion that Jadid enlighteners should be evaluated at the level of national heroism due to their contribution to national development and the sufferings of repression[2].

1896 - 1904 Ismail Gaspirali Bey's trip to Turkestan along with the development of new method schools in Bukhara, Joraboy, in Samarkand A. Shakuri, S. Azizi, A. Munzim, Mulla Qilich, in Tashkent Munavvar Qori Abdurashidkhanov, Abdulla Avloni, Hamza, Salahiddin in Kok. teacher, Shamsuddin teacher in Andijon [3], Ibrat in Namanganda, Sofizoda had a positive effect on the activities of modern schools [4]. M. Behbudi's Crimean meeting with Ismail Gaspirali Bey, followed by mutual enlightening conversations during his visit to Bukhara, gave him new spiritual strength for national liberation, and he became a modern leader.

Modern figures who saw the reason for the development of Turkestan in the reformation of the people's culture and education, the organization of new method schools, the training for students to master modern science and technology with advanced techniques and technology-based education. in order to create conditions, they prepared new textbooks, study guides, educational resources suitable for students from natural sciences. The need for the promotion of advanced Western science, technology and technology, the use of their cultural and educational achievements while preserving the national identity, that is, the gradual formation of worldly knowledge in the national environment, the renewal and development of cultural lifestyle , who believed that national consciousness and national independence create a basis for the growth of ideological views.

RESEARCH METHODOLOGY

Research methods such as comparative analysis based on the principles of rationality, historicity, comparability, observation, systematic interrelationship of scientific research were used in conducting the research.

ANALYSIS AND RESULTS

In the course of our research, we were convinced that the schools of the new method, without denying the activity of the national traditional schools, tried to fundamentally reform and update them. At the heart of these actions, attention was paid to the reform of national traditional schools, which aim to bring our nation and people out of ignorance and backwardness, instill in their thinking the ideas of national liberation, strive for national unity in achieving independence, and integrate the Islamic religion with worldly knowledge. About this, Ismail Gaspirali Bey said, "The method of reforming the national schools left over from the days of our forefathers is old." "The modern method will show more and more perfect ways to teach and study in due time, it is nothing else," he said [5].

A remarkable aspect of the movement of modern progressives to reform national schools is that almost all of them did not deny the importance of religious education in education. They have not separated Islamic education from modern education, taking a deep approach to this process even in the new method schools they have established. The appearance of education in this form created opportunities for students to acquire modern and secular knowledge, created conditions for the education of national and religious faith. As a result, they were able to convince the people of their ideas and gain national feeling and trust. The Enlightenment paid attention to the equality of religious knowledge with worldly knowledge in the organization of new educational schools. They explained that secular education and training of modern mature personnel is a must for their era. Jadid's views were tried to be proved by the texts mentioned in the holy book of Muslims, the Qur'an-Karim and hadiths.

Jadids deeply understood the essence of religious knowledge on the basis of historicity. In order to confirm their views on modern knowledge, progressives attributed the achievements in the science and culture of the Renaissance



period in the Middle Ages to Islam. At the same time, they were able to combine worldly knowledge and religious education in new method schools. They hoped that the development of the Renaissance in Central Asia would reappear [6].

The next stage that greatly contributed to the development of the "philosophy of Jadidchik" was the process of creating the national press [7]. This period was gradually prepared in 1905-1914 with the attention of the Jadidist movement to the educational system and the large-scale work of the press [8]. The printing press of the progressives, publishing newspapers and magazines, informing the public about world events and news, faced serious opposition. Because the Tsar Empire knew that the press of each nation serves to perfect the national traditions and values, language, and national ideological views of that nation, and harmonizes with the people's dreams and aspirations. Therefore, they were not interested in the development of the press in the development of Muslim peoples living in Russia. Turkistan was worried about the spread of the national press among the masses, and was even afraid of the Uzbek national press of the progressives. Therefore, the colonialists were able to control the modern press through "censorship" of newspapers and magazines [9]. In this case, the national progressives had to overcome a number of difficulties and obstacles in publishing newspapers and magazines.

Since 1906, the devotees of the Jadid movement started their first press in the early days of colonialism: "Turkestansky Vedomosti" (1870) and "Turkestan Region's Gazette" (1883) in Uzbek language. But these newspapers have never published materials reflecting Uzbek national culture. On the contrary, the newspaper praised the Russian culture and knowledge, put the local population above the Russians, and called for the adoption of foreign mentality and traditions. The national intellectuals did not agree with the idea of "Russification" of the national population of Turkestan as the main slogan of the media.

Conclusions and recommendations (Conclusion/Recommendations). In short, Jadidlik accomplished the task of bringing the theoretical and practical development of national enlightenment to a new stage. As a result, they combined religiosity and secularism based on a new innovative approach to traditional education. Modern education has advanced an innovative approach to our social lifestyle with the acquisition of concrete sciences by young people, finding solutions to the complex problems of social life, literacy of boys as well as girls. They identified talented and gifted young people and organized funds for their education in developed countries, and carried out an enlightening mission in the true sense of the word;

secondly, modernism, by its very essence, emphasized the printing press as a means of propaganda and propaganda among the masses, and in a difficult situation, they formed a new philosophical worldview by printing newspapers and magazines and spiritually connecting the local population to the world civilization. With the development of the political thinking of the national intellectuals, the new generation laid the foundation for the stage of national-liberation development.

Suggestions

1. A deeper study of the works and activities of the representatives of the "New Method" school movement
2. To include the activity of new method schools as a new subject in higher education institutions

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9. Цензура- Лотинча “рўйҳатга оламан” деган маънони билдиради, яъни мавжуд ҳокимият сиёсатида зид бўлган гоялар ва маълумотларни тарқалишига йўл қўймаслик ёки уни чеклаш мақсадида матбуот устидан ўрнатилган давлат ҳокимияти.



COURSE SYLLABUS DESIGN: LANGUAGE TEACHING BASED SYLLABI TYPES

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ABSTRACT

It is well known that in the tertiary educational setting, instructors and students have and use a separate set of resources and documents. While instructors use registers, grading sheets, and reports to perform their professional duties, students use textbooks, library borrowings, and software databases to build knowledge. The syllabus is the single official document that serves as a contract between instructors and students. This article outlines course syllabus design and syllabi types that based on language teaching.

KEY WORDS: syllabus, "multi-strand", product-oriented, process-oriented, analytic syllabus, synthetic syllabus.

I. INTRODUCTION

Some people may be unaware that syllabi serve a variety of important functions for various groups within an institution, including communication, planning tools for instructors, course plans for students, a teaching tool or resource, an artifact for teacher evaluation, and evidence for accreditation. Some people may be unaware that syllabi serve a variety of important functions for various groups within an institution, including communication, planning tools for instructors, course plans for students, a teaching tool or resource, an artifact for teacher evaluation, and evidence for accreditation. A literature review revealed eight major themes for the purpose or use of syllabi in higher education: a communication mechanism; an instructor's planning tool; a course plan for students; a teaching or pedagogical tool (resource for student learning); an artifact for teacher evaluations/record keeping tool; a contract of policies and procedures to be followed; a socialization process for students to the academic environment; and a scholarship opportunity for instructors. The simple function of a syllabus as a communication device that lists the course objectives and outcomes on the syllabus helps students understand what is expected, making it a teaching tool as well (Albers, 2003).

The purpose of a syllabus as a planning and development tool may initially benefit the instructor, but the students may benefit from the instructor devoting extra time to course and syllabus planning. Furthermore, the more complete and informative the syllabus is for the student, the more likely it will be beneficial for administrators and accreditation organizations to review. For some instructors, designing or planning a course and writing the syllabus for the course can be intertwined activities. Writing the syllabus can help with course design and development. "Construction represents a critical moment in instructors' curriculum/course development thought process," according to the syllabus. As a planning tool, the syllabus design process is logistical in nature, such as assigning periods or days to the content structure. The instructor must plan for scheduling issues such as holidays or term breaks, as well as when to schedule assessment exercises and allow adequate time to complete homework or assignments.

II. METHODS

Designing a syllabus entails deciding what is taught and in what order. In essence, each type of syllabus provides different answers to the question: What does a learner of a new language need to know, and what should a learner be able to do with this knowledge? Throughout the literature, scholars have distinguished six different types of syllabi.



Almost all language-teaching syllabi are a combination of two or more of the types defined below: grammar syllabus, situational syllabus, notional syllabus, task-based syllabus, skill-based syllabus, and content-based syllabus.

Grammar or structural syllabus. For centuries, grammar syllabus has dominated language teaching, focusing on grammar rules and structures. The language teaching content is a collection of the forms and structures of the language being taught.

A theoretical or functional syllabus. Language teaching content is a collection of the functions or notions that are performed when the language is used.

Situational or topical syllabus. The contents of this syllabus are organized according to the situations in which students learn.

A skill-based syllabus. The focus of this syllabus is on the development of language skills (listening, reading, writing, and speaking) in the target language. Reading for the main idea, writing good paragraphs, and listening for the main idea are all examples of target language skills.

A task-based syllabus. Language teaching content includes a series of purposeful tasks that language learners must complete; tasks are defined as activities required when using the target language.

A content-based syllabus. The primary goal of instruction is to teach some content or information using the language that the students are also learning; in other words, the students use the foreign language to study other subjects such as Science, Math, Biology, and so on, and in this way, they learn not only the subject but also improve their language use. This principle is used in immersion education in countries such as Canada, where children of English-speaking parents are sent to French language schools for primary education.

III. RESULTS AND DISCUSSIONS

Syllabi can be synthetic or analytic, grammatical, lexical, grammatical-lexical, situational, topic-based, notional, functional-notional, mixed or "multi-strand," procedural or process, based on goals and objectives, competencies, standards, tasks, and take a comprehensive approach, among other things. According to Nunan (1988), product-oriented syllabuses are those in which the emphasis is on the knowledge and skills that learners should gain as a result of instruction (the product or the end), whereas process-oriented syllabuses are those in which the emphasis is on the learning experiences themselves (the processes toward the end).

Product-oriented	Process-oriented
Structural/Formal	Task-based
Situational	Procedural
Lexical	Negotiated
Notional-Functional	Proportional
	Content-based

Table 1. product/process oriented syllabi

In connection with this, Wilkins (1976) distinguishes between synthetic and analytic syllabuses. A synthetic language teaching strategy involves teaching the various parts of language separately and gradually. In this case, acquisition is a process of accumulating parts until the entire structure of language is constructed. Analytic syllabuses, on the other hand, are organized around the purposes for which people intend to learn the language and the types of language performance required to achieve those goals.

Analytic syllabuses	Synthetic syllabuses
Tasked-based	Structural
Notional-Functional [According to Wilkins (1976)]	Notional-Functional [According to Long & Crooks(1992)]
Content-based	
Negotiated	

Table 2. Analytic/Synthetic-oriented syllabi



Another scientist White (1988) distinguishes two types of syllabuses: Type A and Type B. Type A syllabi, he claims, are concerned with what should be learned. They determine a series of objectives and 'pre-package' the language by dividing it into small, discrete units without considering who the learners are or how languages are acquired. They are product-oriented, so they evaluate the outcomes in terms of language mastery. Type A syllabi include all synthetic syllabi. Type B syllabi, on the other hand, are concerned with how the language is learned and how it is integrated into the experiences of the learners. Various elements of the syllabus emerge from a negotiation process between learners and teachers; they are oriented toward the process; and the learners themselves set evaluation criteria. Despite their differences, procedural, process, and task-based syllabi are all considered Type B syllabi.

IV. CONCLUSION

All of these syllabi go through the evolution of English language methodology, and their comprehension is very useful when deciding what to do. The primary goal of teaching-learning from this perspective is learner empowerment to obtain information, develop cognitive and strategic competencies, and form a critical attitude. A course syllabus outlines the relationships between learning outcomes and content, as well as pedagogical practice to help students learn. To accomplish this, the stages of the learning process using this approach are limited.

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PROBLEMS OF IMPROVING THE TERRITORIAL COMPOSITION OF INDUSTRY DEVELOPMENT

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ABSTRACT

In the article It was revealed that it is necessary to give priority to the development of scientific and technical development and industrial sectors that produce consumer goods, as well as to strengthen the influence of the sectors that determine scientific and technical and innovative development, which are the foundation of the national economy.

KEY WORDS: *Science and technology, innovative development, diversification, leading industries, production.*

Uzbekistan's industry is regional and branch-specific. This situation is connected with the characteristics of their historical formation, the influence of scientific and technical progress, demographic, environmental and other reasons. At the moment, the stability of the following directions attracts attention:

1. Development of heavy industry in the first place.
2. Rapid growth of industries that provide scientific and technical progress.
3. Relative expansion of the production of consumer goods in all branches of industry.

The main industries determining scientific-technical and innovative development - electric power, mechanical engineering (electrical engineering, electronics, tool making, etc.), chemical industry (organic synthesis, mineral fertilizers, pharmaceuticals, etc.) develop at the highest speed.

It is necessary to improve the organizational structure of management of industrial development in the regions. Management is carried out by branches in a new way, that is, by adding production branches and regions.

Priority is given to the development of scientific and technical development and industrial sectors producing consumer goods. It is necessary to strengthen the influence of the industries that determine the scientific-technical and innovative development, which is the foundation of the national economy.

In accordance with the main principles of the new investment policy, funds will be concentrated in the most important leading directions, where economic efficiency can be achieved the fastest. This applies primarily to mechanical engineering. After all, mechanical engineering plays a decisive role in the re-equipment of all industries. It is connected with intensification of production in the industry, as well as comprehensive saving of material resources.

Diversification - expansion of activities of enterprises and industries, increase in the type of manufactured products.

is the implementation of deep structural changes and diversification in the industry based on ¹the modernization of enterprises and production, technical and technological renewal.

Providing modern equipment and technology to the leading sectors of electric power, non-ferrous metallurgy, mechanical engineering, and chemical industry, rational use of existing production capacities, improvement of their composition, and timely renewal of the main production funds are priority tasks. Changes in industrial production are carried out with the introduction of new equipment, materials and advanced technologies.

¹ A scientific-methodical brochure on the study of the State Program on the implementation of the Strategy of Actions on the five priority directions of the development of the Republic of Uzbekistan in the "Year of Communication with the People and Human Interests" in 2017-2021. - T.: Spirituality, 2017. - B. 206.



The following principles are taken into account in the territorial organization of Uzbekistan's industry: proportionate placement of industrial production throughout the country in order to make the most effective use of natural, material and labor resources; establishment of industrial enterprises in raw materials, fuel and energy sources, infrastructure facilities, areas where labor force and consumers are concentrated; formation of effective regional industrial complexes; specialization of economic geographical regions and industrial enterprises in the production of a certain product. Thus, the efficiency of industrial production is closely related to its placement in economic regions. Efficiency is formed on the basis of the integration of raw materials, infrastructure, finance and labor resources of enterprises.

It is natural that the global financial and economic crisis affects the economy of Uzbekistan, which is considered an integral part of the international community. Therefore, in accordance with the program of anti-crisis measures aimed at reducing the negative consequences of the global financial and economic crisis, ensuring the stability of the growth rates of the economy of Uzbekistan during the crisis was set as a priority task.

Structural changes were made in the republic's economy in a short period of time. Modernization of industry and technical re equipment works momentum with take is going Big property owners class formation , entrepreneurship and small business to develop separately attention is being directed . Country including in the economy in industry done being increased composition y changes modernization of industry , modern technology and _ _ technologies current reach economic of reforms important strategic task is considered Of them intended the ultimate goal is economic to grow provide and population well-being is to increase .

Gross today internal including the product industry product work release growth provide the most current matter is considered This while new industry policy work exit just like that is enough In this policy the following aspects account taken required : implementation of deep structural changes ; priority development of core and modern branches of industry; transition to a complete cycle in industries and production of commodity products; supply of competitive products to the world market; increase and encourage the export of industrial products; establishment of industries that process agricultural raw materials in large settlements and thereby ensure employment of the population; directing foreign investments to advanced industries; consideration of local conditions in ensuring industrial development; support of small business and private entrepreneurship in industrial production; rational organization of cooperation of large and small enterprises; taking into account regional differences in the economic and social development of economic regions and eliminating existing imbalances; improvement of the territorial composition of the labor networks of the industry; support and stimulation of rationalization works based on scientific and technical achievements in industrial production; it is necessary to take into account the specific characteristics of regional geoecosystems and introduce waste-free technologies.

The structural changes taking place in the republic's industry affect the increase in production efficiency, economic and social development, and the well-being of the population. Based on the analysis of the structure of the industrial sectors, it can be said that the newest branches of industry in the republic need to be developed on a priority level, first of all, the machinery industry, and especially the automobile industry, light and food industry. Industrial development reduces the fund, energy and water capacity of the gross domestic product, and serves to ensure the stability of the demographic capacity.

Based on the principles of market economy, due to the presence of qualified labor resources, convenient infrastructural system, mineral and agricultural raw materials, it is desirable to bring the automotive, electrical engineering, irrigation machinery, aviation and textile industries to new levels in the regions of the republic. Because the development of these sectors has a positive effect on solving the problems of regions with high demographic capacity and limited land and water resources.

Placement of industrial enterprises on a scientific basis is carried out in connection with the regional organization of industries. Although this idea was originally created by the German scientist A. Weber , this idea has not lost its importance even today. In 1909, in his work on industrial placement and industrial standards, he emphasized the need



to pay great attention to raw materials and fuel, labor force, and transportation factors in the placement of industrial enterprises.

The above-mentioned factors still have a strong influence on the development of the industry, especially on its location. In this regard, there are the following shortcomings and problems in the network and territorial structure of the republic's industrial production: machine-building, metalworking enterprises are very unevenly located, and thus the production relations between them are not well established, taking into account the fact that automobile engineering and electrical engineering enterprises are a promising field, they are similar it is necessary to increase enterprises and increase their production capacity; the relatively underdevelopment of modern and advanced branches of mechanical engineering, such as electrical engineering, instrument engineering, electronic and radio engineering, which produce consumer goods that require a lot of labor and consume little metal in the republic's industry; industrial enterprises processing agricultural products (hair factories, canneries, dairies and other factories) are unable to provide processing of agricultural raw materials due to lack of power reserves and improper location, which creates the need to transport raw materials and finished products over long distances ; in some cases, it is observed that they cannot fulfill the tasks of increasing the production of the gross product. This situation is mainly explained by the late capital construction, slow start-up of new production capacities, and partly due to the delivery of low-quality equipment; non-efficient use of existing production enterprises, slow specialization of morally obsolete enterprises to other fields; Indifference to the spread of small business and private entrepreneurship.

The rapid development of industry affects the ecological environment. Therefore, the problem of environmental protection and rational use of natural resources is of great importance at present. It is known that the main sources of environmental pollution are chemical and petrochemical, energy, light industry and building materials enterprises. They account for 90 percent of harmful substances released into the atmosphere. In recent years, there has been a slight decrease in the emission of harmful substances. Because, as in the whole country, attention has increased in the region to improve the ecological situation. Many enterprises have been provided with modern treatment facilities, and funds are being allocated for this work. However, environmental pollution has not been completely eradicated.

In our opinion, the following measures should be taken to prevent further pollution of the environment: equipping all sources of production with effective gas-dust trapping equipment to the highest level, wide spread of low and wasteful technologies and, where it is not possible, some extremely dangerous trades and moving production out of densely populated and prosperous zones; In order to provide the rapidly growing population with clean drinking water, it is necessary to establish an "Ecologically clean water zone" in the districts where water supply is organized. In them, it is necessary to carry out measures to remove waste water, limit the location and development of highly polluting industrial production enterprises, complete neutralization of industrial and communal household waste and use it at a profitable rate ; it is necessary to establish drinking water supply in all cities, district centers and settlements and to expand the sewage network.

The establishment of the traditional cotton ginning industry system, which has a high contribution to the positive solution of the above problems, also makes a significant contribution. Labor-intensive sectors, especially processing industries - sewing, textiles, fruit and vegetable processing, electrical engineering, building materials industry and a number of other sectors are sufficiently developed. All this creates the need to improve the network and regional system of the industry. In order to increase the role of industry in socio-economic development, it creates the need to identify its important directions. Availability of raw materials and labor resources, rapid development and further improvement of industrial production systems in the process of elimination of deficiencies become the main issue on the agenda.

Joint and private enterprises play an important role in the development of the republic's industry, the elimination of socio-economic problems in the future, and the implementation of fundamental quality changes in this regard. When establishing joint ventures, attracting foreign investments to the economy, it is important to consider the following features: b , firstly, the change in the demographic situation, i.e. the increase in natural reproduction and migratory movements; secondly , _ natural resources and of them work in release use level _ he really _ case of a the need satisfy



and socio-ecological problems eliminate reach _ t fourthly , z amouniy from science and technology achievements efficient use _ fifthly , internal and external in the market position increase _ sixth, national economy complex intensive complex development of the road ; seventhly , small business and private entrepreneurship development and support .

This features in the republic industry of enterprises development directed forecasting done increase requirement is enough Also 20 30 per year intended industry enterprises development indicators determination , fundamental changes in the economy national economy of the complex material and technical base again construction , economy networks efficient content and to manage modern forms create here so important events is considered

Country scale industry enterprises more development for , eng first of all , above of possibilities in full to use importance to give necessary _ With that together with the republic's industry development for the following some opportunities and amenities available : " Great " of the republic Silk on the way from the location come came out in case convenient transport- geographic place _ of "GM Uzbekistan " enterprise effect account get _ to each other near is located small and medium of cities abundance ; of the energy base availability ; work of resources abundance and of the population density ; mineral, natural and village economy raw to their belongings wealth and others _

In the Republic worker strength a lot demand which textile , machinery , food and in ASM industry networks main importance focus need _ Also machine building , food and textiles industry networks kindred spirit enterprises increase too to the goal according to In the Republic of industry territorial and networks structure more improvement today's of the day main issues one be counted necessary _ It is known that the market in the economy conditions all industry networks and industry nodes at the same level development possible not _ That's why for networks and territorial units between the most important , necessary and priorities choose taken and on this basis to the main goal step by step reach it is necessary In the Republic some networks relatively high level developed _ Theirs all of them together of industry many networks fast to upgrade basis being service does _ This while high level grow up coming population and _ the need to satisfy , plus worker forces work with to provide the ground creates _ Reported this economic issues with together social problems too solution by doing go , big to efficiency have has been work places to create requirement does _ Of course it is in the situation industry networks priority importance give them _ right territorial organize to do big importance occupation is enough

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WAYS OF DEVELOPING AND ENCOURAGING INNOVATIVE COMPETENCE IN INDUSTRIAL ENTERPRISES

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ABSTRACT

In the article Special priority tasks have been revealed to the scientific researches and researches carried out in industrial enterprises regarding the development of innovative activities and the improvement of effective mechanisms for stimulating innovative potential.

KEY WORDS: *industrial enterprises, innovative activity, high technology, industrial sectors, innovative potential, stimulation, commercialization.*

In the conditions of globalization in the world, reduction of industrial resources of countries, increasing competition in world markets, modernization of existing techniques, development and introduction of new technologies, as well as promotion of effective use of innovative processes in enterprises of the world industry and production complex are becoming increasingly important in order to ensure effective innovative development of the economy. . The analysis of the innovative development of the industrial complex of the countries of the world shows that countries such as the PRC, Germany, the USA and Japan are leaders in the development and implementation of various innovative technologies. Almost 6.3% of the total volume of capital investments in the industrial sector in China, 5.1% in Germany, 4.5% in the USA, and 3.5% in Japan are directed to the introduction and development of innovations in the industrial complex. This indicates the efficiency of the mechanisms of stimulation of these processes.

Today, special priority is given to the scientific researches and researches carried out in industrial enterprises regarding the development of innovative activities and the improvement of effective mechanisms for stimulating innovative potential. In this regard, the researches carried out on the modernization of production in industrial sectors and the support of innovative technologies, targeted development of the market of innovative products, and improvement of the mechanisms of stimulation occupy an important place. In these current scientific researches, the issue of effective application of the mechanisms for stimulating the implementation of innovative activities is considered as a priority topic.

In recent years, fundamental reforms have been implemented in Uzbekistan in order to develop the oil and gas industry, which is one of the important branches of the economy, based on modern requirements, and to increase its competitiveness in the world market. "...one of the most important priority tasks is to increase the share of industry in the structure of the national economy, to rapidly develop, modernize and diversify high-tech industries, to ensure comprehensive and effective use of the industrial potential of each region ¹. " In this regard, improving the theoretical and methodological foundations of stimulating the innovative potential of industrial production enterprises on the basis of an interdisciplinary approach, prioritizing the development of innovative potential on the basis of human capital,

¹Decree of the President of the Republic of Uzbekistan dated February 7, 2017 No. PF-4947 "On the Strategy of Actions for Further Development of the Republic of Uzbekistan", clause 3.2 \ lex.uz



using non-traditional solutions in stimulating innovative potential, activating innovative activities in the distribution and redistribution of profits from commercialization, scientific- it is desirable to further deepen the research.

In our opinion, the main components that make up the innovative potential are personnel potential, financial-economical, scientific-technical potential, production -technological and organizational-management potential.

The analysis of the innovative potential of oil and gas production enterprises can be carried out according to the components that determine the success of its innovative activity. In the general case, the innovative "power", personnel situation, material and technical base, financing, use of intellectual property objects are analyzed. Each of the listed components and each production and economic system is an important and integral part of the innovative potential, and the greater or lesser importance of the material-technical, scientific-technical, personnel supply of the innovative activity can only be spoken about the innovative potential of the entire system when all the listed elements are present. .

In our opinion, the assessment of innovative potential based on the above provides an opportunity to correctly assess the direction and possibilities of innovative development based on the financial and modern situation of the oil and gas production enterprise. The absence or lack of any component of the innovative potential requires its revision and development. The innovative potential of an industrial enterprise can be realized only through the development of its components. Because the level of innovative potential of the enterprise is in a certain dynamic, changes in it can lead not only to growth, but also to decrease.

Ensuring the sustainable innovative development of the country's economy requires the availability of an appropriate amount of scientific research and innovative developments, as well as encouraging their practical application. The lack of communication between the industrial and scientific sectors of the economy, the low level of assimilation of the results of fundamental and applied research by industrial enterprises, the lack of motivational factors in the use of scientific achievements, the incompatibility of innovative ideas with the needs of the market are the reasons for the low efficiency of the development of innovative processes in the national economy.

The main goal of evaluating the innovative potential is to choose and implement an innovative strategy that allows the enterprise to strengthen its position in the market. Determining the composition of evaluation indicators and their benchmark values is an important issue in the development of methods of stimulating the innovative potential of the enterprise.

In our opinion, in order to increase the innovative activity of oil and gas industry enterprises, it is necessary to form and stimulate all components and links of the innovation cycle. One of these directions is the creation of incentives mechanisms for subjects directly participating in the innovative process in the conditions of modernization of compression compressor stations and gas driving units in the republic's mines. Incentives will influence the development of production, education and science in the future. The innovative development of the enterprise will be improved due to the introduction of sufficient funds in these areas, and its innovative potential will increase with their effective use. All this has a positive effect on the company's activity.

Today, in the fields of the republic, the obsolescence of compression compressor stations, gas driving units, primary gas preparation and oil preparation devices, the need to use and introduce innovations in their modernization creates the need to develop and stimulate innovative potential.

Stimulation of innovative potential is a process that activates the forces that encourage, stimulate and awaken the needs of the interests of its internal and external environments, to ensure the achievement of its goals, by the economic entity or consumer that implements the innovation in the process of creating, purchasing, or mastering the innovation. Stimulation methods are a set of motivational factors and levers to encourage the entities implementing innovative activities to take purposeful action in the application of innovation .

At each stage of the implementation of the innovation process, it is necessary to systematize 4 grouped main indicators of innovative potential and indicators reflecting the effect of certain components in them, to calculate them, to compare the planned and actual results, to clarify the reason for the differences according to the results, to correctly evaluate and encourage the innovative potential need _



In order to increase efficiency in the production of liquid hydrocarbons and natural gas in gas and gas condensate fields in our republic, the need to stimulate innovative potential based on the correct use and distribution of personnel, financial, material, intellectual and infrastructure resources was justified. Therefore, it is necessary to determine the possibilities of stimulating innovative potential based on the benefits obtained from the application and commercialization of innovations in oil and gas production fields.

In conclusion, in order to increase the innovative activity of oil and gas industry enterprises, it is necessary to improve the existing incentive mechanisms of all components and links of the innovation cycle. One of these directions is the creation of incentive mechanisms for subjects directly involved in the innovation process. Incentives influence the development of education and science in the future. The innovative development of the region will be improved due to the introduction of sufficient funds into these areas, and the scientific and innovative potential of the region will increase with their effective use. All this has a positive effect on the economy.

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METHODOLOGICAL FOUNDATIONS OF INVESTMENT RESEARCH

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ABSTRACT

In the article there is a systematic and methodological approach to investments methods of empirical assessment of the impact of research factors on investments are revealed. Four major research classes were also analyzed.

Methodological investment most authors were engaged in empirical assessment of the impact of economic and institutional factors on investments. Among these studies, we distinguish four major classes of research: 1) Q -Tobin's research aimed at substantiating the hypothesis that ¹investments are related to the q -coefficient ; 2) studies related to the consideration of the influence of financial and institutional factors on investments in fixed capital; 3) studies related to the assessment of the impact of risks on investments; 4) studies aimed at determining the optimal investment strategy of the company. A detailed overview of these studies is presented in the table.

Researchers attempted to empirically test the hypothesis of Q -Tobin's effect on the volume of investments in fixed capital [Tobin , 1969] (the first class of research and one of the main directions of modern research on investment activity), and part of this hypothesis was empirically confirmed for foreign companies [Oulton, 1982 ; Schiantarelli and Devereux, 1989; Schaller, 1990; Bond, 1992; Googler, 2004; Gehringer, 2015; Verona, 2015].

For UK companies, Stephen Bond found that the Q -Tobin index is important in investment modeling , but it is also surrounded by the weakness of its influence in the short term of six months to a year. While Oulton draws the same conclusions based on aggregate data, Bond used selective data to reach this conclusion. In Schaller's 30 years of research on US company data , he was able to confirm the Q -Tobin theory, but the author could not observe the existence of the Q -Tobin theory in the aggregated data on industries. The author explains this by the problem of data collection and the lack of pure competition in the market. Fabio Verona, analyzing the American economy for 55 years, comes to similar conclusions. In another study, Schiantarelli groups UK industrial enterprises by size and concludes that Tobin's Q -variable is significant for large enterprises and in general for all enterprises studied in a selective method. In addition, Q -Tobin's theory can be used to study not only the volume of investments, but also the number of mergers or acquisitions of enterprises in the economy, from the point of view of competition, as stated by Geringer. Thus, it was concluded that enterprises do not need to invest to increase the fixed capital, for this it is enough to acquire a competing company.

the studies reviewed above , the authors found that investments depend on the average value of the Q-Tobin coefficient , which requires the use of a number of limiting assumptions (equal to the average level of the marginal product of capital , homogeneity of the production function) . , which often does not allow determining the dependence of investments on the Q - Tobin coefficient . This problem was solved by another author (Googler), who is the Q of investments - Tobin showed a relationship with co - efficient .

¹ Tobin JA A General Equilibrium Approach to Monetary Theory // Journal of Money, Credit and Banking, No. 1, 1969.



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The Author	Title of the work	Research period	country	Selection level	Data type	Type of assessment	Evaluation object
Q - Confirmation of Tobin's theory							
Outlon N.	Aggregate investment and Tobin's Q	1962-1977	England	1 network in 60 quarters	Macro	OLS	Correlation of Q - Tobin's indicator with the volume of investments and the development of industrial enterprises in England
Shiantarel Lee F.	Investment, Financial Factors, and Cash Row: Evidence from UK Panel Data	1969-1986	England	720 industrial enterprises for 17 years	Micro	Instrumental x- variables method	Q - Tobin's rate of investment volume and impact on different types of UK businesses
Schaller H.	A re-examination of the Q-theory of investment using US firm data	1951-1985	USA	35 years during 188 one in the network q big enterprises	Micro/ macro o	OLS, GLS	Q - Tobin 's theory on investments within a network and a single organization
Bond S.	Investment and Tobin's Q	1975-1986	England	532 enterprises for 11 years	Micro	GMM	Q - The effect of Tobin's theory on the volume of investment of industrial enterprises in England
Googler K.	Marginal q, Tobin's q, Cash Flow, and Investment	1977-1996	USA	560 enterprises for 19 years	Micro	OLS	Marginal Q- the impact of the Tobin indicator on the volume of investments



Manevich E.	Analysis of the Russian economy and Tobin 's m onetar - dynamic model	2003-2008	Russia	Economy of the country	Macro	OLS	Q- of the Tobin index impact on the volume of investments
Gehring A.	M&A waves, capital investment and Tobin's Q	1995-2015	USA	The country's economy for 40 quarters	Macro	There is	Q- tobin on investments and mergers and acquisitions of enterprises and organizations
Verona F.	The Q theory of investment: new evidence from a time-frequency analysis	1952-2007	USA	The country's economy for 220 quarters	Macro	BWA	Q- of the Tobin index impact on the volume of investments
Assessment of the impact of financial factors on investment							
Chappell H.	Expectations, Tobin's q, and investment	1965-1976	USA	287 enterprises for 11 years	Micro	OLS	Changes in the production volume of industrial enterprises
Fazzari S.	Financing constraints and corporate investment	1970-1984	USA	437 enterprises for 14 years	Micro	GMM	The effect of cash flow on investments
Hayashi F.	The Relationship Between Firm Growth and Q with Multiple Capital Goods: Theory and Evidence from Panel Data on Japanese	1962-1986	Japan	687 enterprises for 24 years	Micro	GMM	The effect of cash flow on investments



Salinger M.	Tax Reform and Corporate Investment: A Microeconometric Simulation Study	1959-1978	USA	30 major industrial enterprises for 19 years	Micro	GMM	Taxes and Cash Flow Effects on Investments
Moyen N.	Investment-cash Flow Sensitivities: Constrained vs Unconstrained Firms	1987-2001	USA	2000 _ organization	Micro	GMM	The relationship between investment and cash flows under different dividend policies
Tybout J.	Credit Rationing and Investment Behavior in a Developing Country	1973-1976	Colombia	Enterprises consisting of 10 employees	Micro	MLE	The impact of debt and cash flow on investment for small and large businesses
Kaplan S. and Zingales L.	Do investment-cash flow sensitivities provided useful measures of financing constraints ?	1970-1984	USA	49 _ organization	Micro	GLS	Correlation of investments with cash flows in the period of financial constraints



Hoshi T.	Corporate structure, liquidity and investment: evidence from Japanese industrial groups	1965-1986	Japan	87 _ organization	Micro	OLS	Impact of bank loans on investments
Heaton J.	Managerial optimism and corporate finance	1994-1996	USA	100 organizations	Micro	GMM	Impact of banking activity on investments
Bond S.	Financial factors and investment in Belgium, France, Germany and the UK: A comparison using company panel data	1978-1989	Belgium, France, Germany, Great Britain	2500 industrial production and processing organizations	Micro	GMM	The effect of cash flow on the profit of the enterprise
Buccellato T.	Ownership Structure, Cash Consistency and Investment Behavior in Russian Firms	2000-2004	Russia	8637 organizations	Micro	GLS	The effect of liquidity restrictions on the volume of investments
Assessment of the impact of risks on investment							



Ghosal V.	Product market competition and the impact of price uncertainty on investment: Some evidence from US Manufacturing	1958-1989	USA	254 organizations	Micro	OLS	Impact of price risks on investments
Ferderer J.	The impact of uncertainty on aggregate investment spending: an empirical analysis	1969-1989	USA	1 network for 30 years	Macro	OLS	Impact of price risks on investments
Leahy J.	The effect of uncertainty on investment: Some stylized factors	1981-1987	USA	772 _ organization	Micro	GLS	Impact of market risks (price changes on the stock exchange) on investments
Goel R.	Irreversibility of R&D investment and the adverse effect of uncertainty: Evidence from the OECD countries	1981-1992	Organization for Economic Co-operation and Developm	500 organizations	Micro	GLS	Impact of inflation risks on investments



Sterken E.	Investment, cash flow and uncertainty: evidence for the Netherlands	1985-2000	Netherlands	112 organizations for 15 years	Micro	GMM	Impact of risks associated with changes in demand on investments
Fuss C.	Firms investment decisions in response to demand and price uncertainty	1987-2000	Developed European countries	851 organizations over 13 years	Micro	GLS	The impact of the risks associated with price changes on investments
Determining the optimal investment strategy							
Novy - Marx R.	An Equilibrium Model of Investment Under Uncertainty	2006	USA	150 industrial enterprises	Micro	I'm afraid calculus	Choosing the optimal investment strategy
Leahy J.	Investment in Competitive Equilibrium: The Optimality of Myopic Behavior	1992	USA	200 industrial enterprises	Micro	Simulation model	Effect of optimal investment policy on investment volume
Satining	Option exercise games: An application to the Equilibrium Investment strategies of firms	2001	USA	100 industrial enterprises	Micro	I'm afraid calculus	Effect of optimal investment policy on investment volume



Reynolds S.	Strategic capital investment in the american aluminum industry	1950-1970	USA	All aluminum producing enterprises	Micro	Simulation model	The impact of competition on investment volume
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In short, Q - Tobin's theory was confirmed at the micro level, but with the use of limiting factors , under conditions of pure competition and taking into account the homogeneity of the production function .

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DEVELOPMENT OF LABOR RESOURCES IS THE LEADING FACTOR OF SUSTAINABLE ECONOMIC GROWTH

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ABSTRACT

The article reveals the need to develop professional training programs, participate in the activities of educational institutions' boards of trustees, and involve personnel in the formation of a corporate training system.

KEY WORDS: *Education system, priority quality, higher education system, skills, personnel training, labor market.*

One of the important problems in building a competitive economy is the spiritual-ethical, general education and professional level of citizens - the quality of human resources, because progress in the current competitive struggle depends not on the geographical size of the country, but on the amount of natural resources and the development of labor resources. Development of the education system is one of the important directions of the state policy of the Republic of Uzbekistan. This priority is reflected in improving the quality and relevance of educational content and curricula, stimulating the work of pedagogues.

Currently, the process of reforming the field of higher education in Uzbekistan is characterized by modernization and the continuation of the implementation of the national program of personnel training in the future. In doing so, the accumulated experiences are analyzed and summarized, specific socio-economic conditions and the development of the labor market are taken into account. The necessary legal, professional, scientific-methodical, material-technical and financial conditions will be created to ensure the reform of the higher education system. Modernization of the structure of higher education and systematic reform are ongoing.

Today, it can be said with confidence that higher education is primarily a means of social needs. The main focus of today's youth is determining their life status, therefore, the social mission of modern higher education is a priority in their minds. Today, in order to avoid the retraining of specialists with high knowledge, but weak practical experience and skills, there is a need for maximum convergence of educational institutions of all levels with the requirements of the labor market. The lack of a mechanism for taking into account the needs of the labor market in the training of personnel, a strategy based on the placement and development of production forces may not allow the formation of the state system for the training of specialists to slow down and adapt it to market conditions.

Higher professional educational institutions should have a strong relationship with employers, involve them in the development of professional education programs, participation in the activities of educational institutions' boards of trustees, and the formation of the corporate training system of personnel. Improving the quality of education can be ensured by the introduction of new educational technologies that can imitate modern educational programs, the development of interactive forms of education, and the wide use of project methods and tools. The training of qualified engineers for industries depends primarily on the quality of educational processes taking into account the requirements of the labor market. This is primarily determined by the compatibility of the requirements of the vocational education system with the needs of employers.

Currently, the issue of involving public and industrial organizations in the processes of formation and implementation of educational activities that ensure the necessary level of educational quality is at the initial stage. Based on it, it is necessary to develop mechanisms for identifying, supporting and distributing the best examples of



innovative educational activities and independent forms of educational quality assessment. Solving the priority issues of ensuring the quality of education is achieved by implementing measures in the following directions: independent collective management of educational programs of higher educational institutions, taking into account factors including the issues of attestation of educational programs, state accreditation, obtaining a license, information and methodical provision, in order to develop a modern system of education. - performing a professional assessment; development of new forms and mechanisms of evaluation and control of the quality of the activities of higher educational institutions in order to ensure the openness, fairness and objectivity of the evaluation of the activities of educational institutions; improving the academic training of teachers and students, improving the mechanisms of recognition of the equivalence of educational documents for the development of cooperation in the field of educational services, which helps the process of integration of the educational system of Uzbekistan into the world educational system; To increase the competitiveness of professional education, to experience the training of personnel according to the new generation educational standards developed with the participation of public and industrial associations, employers, as well as to the leading vocational training centers that have passed the expertise of educational programs in the direction of collective and professional accreditation, and to direct qualified specialists of industrial enterprises to qualified personnel training institutions. attraction; creation of mechanisms aimed not only at the internal collective and economic needs of the state, but also at ensuring the competitiveness of Uzbekistan in the world labor market; creation of a collective-professional accreditation system for the training of specialists that allows identifying higher educational institutions with a high level of training in a specific field that meets the requirements of the labor market.

The main consumers of graduates of higher educational institutions are various enterprises and institutions, which want graduates to have a set of professional competences that meet the requirements of the development of the innovative model of society and economy.

Currently, employers emphasize the low level of special training of graduates and their narrow professional scope.

In this case, the main claim made to OO'Us is that the graduates are not connected with practice and knowledge, they cannot work with modern, innovative high technologies. In order to eliminate these, it is necessary to deepen the content of production practice, to involve company specialists in conducting trainings, and to adapt the sciences to real life. In the opinion of employers, it is necessary to organize practice in certain conditions in order to improve the quality of personnel training.

The problem of high-quality training of specialists is related to effective cooperation of OO'Us with employers. The participation of employers in the training of qualified personnel is the main condition for the training of qualified graduates who meet the requirements of employers.

In order to solve this task, new forms of social cooperation, legal norms and contracts are required, which help in the training of specialists in OO'Us, and in satisfying the need for personnel in enterprises.

Cooperation between HEIs and employers is a key component of students' educational programs, and the various internships are inextricably linked during the transition process. Practice is one of the forms of organizing professional-practical training of students in the conditions of professional activity, and at the same time it appears as "a leading scientist who effectively forms a high level of professional competence of future specialists."

Educational, production and other internship programs provided for by the relevant state standards should be aimed at continuous improvement of students' professional development through theoretical, professional-practical and scientific-research integration. However, the experience of many educational institutions shows that the level of organization of internships today is not enough for students to acquire certain work experience, professional-practical knowledge, production skills and advanced work methods. The reason for this is not a mutually convenient cooperation in the direction of national and regional innovative education development, but simply formal relations of OO'Us with employers.

Higher education institutions and employers should be interested in creating a system to integrate the efforts of students to develop their professional skills. However, although employers are ready to establish relations with HEIs for



convenience related to the components of educational programs, they expect certain proposals from the higher educational institutions themselves on the forms of cooperation. This situation dramatically increases the role of specialist training departments, which organize certain types of practice in areas (specialties) and carry out educational and methodological management, in the implementation of social cooperation of higher education institutions with employers. It is they who become catalysts of social communication with external consumers of OO'Yu educational services, and ensure the formation and strengthening of cooperative relations.

In order to increase the effectiveness of the interaction between the specialized training departments of the educational institutions and the employing enterprises, it is desirable to develop cooperation programs and conclude relevant contracts.

In our opinion, cooperative relations between OO'Us and employers are a practical tool for improving the quality of higher professional education, creating additional conditions for the formation of abilities and skills included in educational programs, expanding and deepening the practical knowledge of students, but they will benefit the subjects of cooperation only when integrated processes are put into cooperative processes.

It should be recognized that in improving the quality of training of qualified personnel, the efficiency of the cooperation between the EO's and employers will increase when the EO's turn their employer strategic partners from passive consumers of educational services, external observers into interested participants in the educational and innovative processes that help students acquire a set of professional skills suitable for the requirements of the modern labor market. .

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ELDERLY WOMEN'S EXPERIENCES OF HEALTH PROBLEMS IN KASHMIR: A QUALITATIVE STUDY OF DISTRICT ANANTNAG

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ABSTRACT

Ageing is an irrevocable biological process and is defined as the survival of the increasing number of individuals, who have completed their adult roles. Ageing is stated as the inevitable consequence of decline in productiveness. Globally, number of old age population is increasing with advancement of biomedical technology. Ageing is population is a multifaceted process involving biological, psychological and socio-cultural changes which affects the elderly with different health related problems. The focus of the present study is to explore the effects of aging and Health-related problems experienced by elderly women in Kashmir. The present study is qualitative and explanatory in nature. The data were collected from 30 elderly women living in the district Anantnag of Jammu and Kashmir. In this study, snowball sampling is used to rectify the elderly women from different settings. The findings revealed that the major health problems (Diabetes, hypertension, cardiac illness) and psychological problems (loneliness, elderly abuse, depression, and negligence) were faced by elderly people in Kashmir.

KEY WORDS: Elderly women, Health problems, Experiences, Phenomenology, Kashmir

INTRODUCTION

The Global Report on Aging confirms that in the 21st Century older people in India, especially older women, face multiple forms of discrimination, such as limited access to jobs and health care, abuse, being denied the right to own and inherit property, and not having a basic income and social security. Many older women say their health is poor, and their mental health isn't much better. One out of every five older women said their health was severe. Subjective well-being measures indicate that over half of all older women show signs of mental distress. They also have a higher rate of both short-term and long-term illnesses than men (UNFPA, 2017).

In the demographic transition of Indian society, the proportion of elderly women over the age of sixty is growing faster than that of men. According to the census of 2011, there are 1,022 older women for every 1,000 older men who are 60 years old. At 65, 70, 75, and 80 years old, there are indeed 1,310, 1,590, 1,758, and 1,980 older women for every 1,000 older men (Shankardass, 2020). These figures indicate that ageing is becoming a more feminine trend, provided that the elderly. Women are disproportionately burdened with caregiving tasks and have lower levels of educational attainment, labour force involvement, economic security, and child care responsibilities than men. In terms of demographic, cultural, and economic considerations, women face more difficulties due to gender inequality. The effects of prejudice and missed chances on children extend far into adulthood, leaving them dependent on others not just in their youth but also in their old age. (Raju, 2014). As women get older, although they take on major responsibilities in the family support system (i.e., childcare and socialization), they feel more prone to neglect, exploitation, and abuse, and their families consider them a burden. Because of the rise in the average lifespan, women live longer than men, but for the same reason, they are at a greater risk of experiencing a variety of health issues. (Kaur & Kaur, 2019; Sameena, 2019) The situation for women is most dire in widowhood, as they are totally dependent on others. Losing a spouse in old age makes living much more difficult; almost three out of five older women who are single are very poor, and about two-third of them depend on their significant others for all of their wealth. The health problems and financial difficulties of the elderly are different compared to the rest of the population (Rafiq, 2018). As people get older, they are more likely to have health problems. These include problems with physical weakness, hearing and visual impairments, speech impairments, arthritis, high or low blood pressure, diabetes,



anaemia, digestive and gut problems, and other diseases. Older people may live longer, but they may be more likely to have disease and illness (Kapur, 2018). In addition to physical illness, older people are more likely to suffer from mental illness. Alzheimer's disease, dementia, and other forms of mental decline are strongly linked to getting older. Their decline in mental ability makes them dependent. The ageing process includes a painful separation from friends and family. They are losing faith in their own abilities and judgement but are determined to maintain control over the younger generations. They wish to intervene in all domestic and business problems. Young people today aren't open to hearing advice from older people because of the age divide. Instead of showing compassion for the elderly, they begin to aggressively demand their rights and control. This may create a feeling of depression and a loss of self-worth among elderly (Prasad, 2017). The cultural context of aging is no less important, as it can have significance on women's aging experiences and their associated health problems. Having access to health care is often expensive and challenging for women in underdeveloped countries like India who have spent their whole lives in the domestic or informal sector (WHO, 1998). Because of the patriarchal social structure, women are often denied basic necessities including enough food and medical treatment. Much of the research on women has concentrated on reproductive health but has largely disregarded the wellbeing of women as they age. The World Health Organization agrees that not only is current information on how gender influences "health in older age inadequate," but that in relation to "research and knowledge development," older women face "a double jeopardy" (ageism and sexism) of being excluded (Tuohy & Cooney, 2019). In the backdrop of the aforementioned trends, this paper attempts to explore the effects of aging and health-related problems pertinent to the elderly women in Kashmir.

METHODOLOGY

Approach and Participants

The focus of this research was to understand the lived experiences of health of elderly women in Kashmir. The study was carried during the academic year 2020–2021 as part of the research project entitled as 'Socio-economic and health status of elderly women: A sociological study'. An interpretative phenomenology approach was used as it emphasizes subjectivity (Titchen and Hobson as cited in Haralambos & Holborn 2013; Smith et al., 2009) and is mainly helpful in gaining invaluable information about the everyday life people with old age.

In this study, participants are drawn from district Anantnag of Jammu and Kashmir. Given the lack of access to official data about the population of elderly in the district, snowball sampling procedure was applied as it suited most appropriate to fulfil the sample size. Through this process, a sample of 30 elderly women was recruited as the final sample who openly reported their willingness to participate and answer about the experiences of their health problems. All the participants were informed about the purpose of the study and were reassured about the anonymity and confidentiality of the data. To keep this word, pseudonyms are used throughout the article in reference to participants.

Research Methods, Procedure and Analysis

Keeping in view the qualitative nature of the study, a semi-structured interview schedule was adopted to collect in-depth data for the study based on the scholarly works of (Curtin and Clark, 2005). Questions framed were in line with the findings of previous studies with major focus on health problems and illnesses among elderly people. All the interviews were carried out in local language (Kashmiri). Moreover, the interviews were recorder using a tape recorder. To supplement the data with more reliable analysis other research methods such as observation was incorporated. The interview schedule used in the study was designed to address questions related to the following themes: the socio-demographic information of the participants, experiences towards physical health problems and socio-psychological problems among elderly women in Kashmir.

In analysis, all the data set including interviews, narratives and field notes were analysed using atlas.ti software, and codes (attributed to larger meaning categories) were developed. In the final stage, these codes were grouped in thematic designs, comprising a set of three final themes that integrated the content with the subthemes developed before (Miles & Huberman, 1994). These themes were finalized after a gradual cyclic process of checking, revising and re-checking the categories of codes to see similarities between different content, which also helped the researchers to understand the participants experiences in a much better way

Research Findings

After the careful analysis of the data reflecting the participant's experiences of health, the results of the present study are categorised into following major sub themes: Socio-demographic profile of the participants, health problems of elderly (physical health and psychological health).

Socio-demographic profile

In the present study all the respondents fall in the age group of 60-85 years. among the total respondents studied, 18 were married and living in joint families with their husbands, 11 were widows and only 1 respondent were unmarried. In case of employment, majority of the respondents (28) were unemployed and the rest 2 respondents were retired government employers. With respect to the literacy level of the respondents, it was found that 20 respondents were illiterate and remaining 10 were having education of multiple levels. The results of the study found that 22 respondents were living in rural areas and the remaining 8 belonged to urban



areas. Table 1 indicates the demographics of the participants in terms of their age-group, marital status, occupation, literacy and area of living.

Table: Overview of the Participants

S. No	Variable	Response	Frequency	Percentage
1	Age Group		60-85 Years	100
2	Marital Status	Married	18	60
		Unmarried	1	3.3
		Widow	11	36.7
3	Occupation	Employed	2	6.7
		Unemployed	28	93.3
4	Literacy	Literate	10	33.3
		Illiterate	20	66.7
5.	Area of Living	Urban	8	26.7
		Rural	22	73.3

Experiences of Health Problems

Consistent with the previous literature on health and aging in India, the present study found two reasons as the main cause problems of health among elderly. In other words, the health problems experiences by elderly women in Kashmir are mainly due to either biological conditions or environmental conditions (Balamurugan, & Ramathiratham, 2012). In this study, the major health problems experienced by elderly women were multimorbidity, chronic illness, isolation, loneliness, cognitive impairment, and abuse.

Multi Morbidities

On the aspect of physical health problems, majority of the participants were of the view that they were experiencing multiple health problems in their old age. People experiencing multiple health related issues are grouped as “multimorbidities”. Out of total participants, almost half of the the elderly women (14/30) were experiencing multiple health problems such as diabetes, high blood pressure, thyroid and cardiac problems. They expressed that living with multiple health problems in this age has made their life more painful and full of grief. This is what one respondent suffering from multimorbidity has to say:

From last five years, I am suffering from diabetes and cardiac arrest. Sometimes the sugar level gets too high that I feel like I am about to die. In these years I suffered from multiple strokes of heart. I use to take lot of medicine that has indirectly affected the other parts of my body. Recently, the doctor told me that you are going through the gastrointestinal complications that need an immediate action.

In addition to the above mentioned problems, about one-fourth (4/14) of these participants mentioned experiences of other health problems such as asthma, joint pain, regular fatigue and thyroid. As one participant stated that, ‘I am scared of thinking that for how long I could survive with these health complications that have occurred to me’.

Cardiac problem

Cardiovascular problem is the leading cause of morbidity among elderly women. Patients experiencing exertional dyspnoea, progressive fatigue, palpitation or very slow heartbeat, and dizziness. In this study seven of the participants were suffering from cardiac problems, one participant said that

Since I lost my younger son, I got affected with the heart problem. It has been now ten years living with heart complication. Many a times I faced heart attacks. As per the doctor, I had to take a medicine regularly until my last breath inorder to survive with the days remaining in my life

The study also found that elderly women living with the cardiac illness lack the taste for proper diet and nutrition, causing an effect to their proper sleep which immediately results in the decline in their health conditions. Sharing her experience of the above problem, one respondent said

Look at me, you will see that how I had been effected with these fainting attacks of heart. I am now scared of having risk of getting disabled because last time I faced a stroke and my left body portion went on paralysis for two days. I am not having any taste for my day to day activities including my diet. The only thing which I need to remember regularly for my better health is medicine.



Diabetes

Diabetes is a hormonal problem characterized by an elevated blood sugar level in the blood serum, which causes chronic disease conditions. In this study, diabetes was seen as a common problem to most of the elderly women we interviewed. Most of the elderly women who suffered from diabetes reported that due to diabetes they had suffered from the loss of a tooth, nerve pain, and a fear of getting immobilized. One of the participants said that:

"I have had diabetes symptoms for past 8 years. When my blood sugar level rises, I sometimes feel weak, my hands and feet burn, and my mouth begins to feel dry. I am taking daily medicine before lunch and dinner to keep my blood sugar level at the normal range. As per my doctors' advice I am going on a regular checkup, and as of now, it's under control."

Likewise another respondent with the complications of diabetes aged 70 years mentioned that:

For the past 17 years, I have had disabilities. The participant is on insulin, which she takes just before her lunch and dinner. She even shared that my blood sugar level increased whenever I was stressed. My mouth becomes dry, and I have the urge to urinate frequently, causing dizziness. She had also gained weight. The doctor had advised her to take a daily walk as she was not able to do her daily routine. (P07, 80 years)

"My heart rate started increasing, and I feel more hungry than usual, and most of the time I feel weakness in my body, and I have lost my teeth as well". She even mentioned that she is taking an allopathic medicine suggested by her relative that helps her control her blood sugar level, but at the same time, she said that after taking this medicine she feels weakness in her body. (P11, 76 Years)

High Blood Pressure

The findings of this study found that nearly seventy percent (21/30) of elderly women suffered from the problem of high blood pressure. Among these, majority of the participants reported of having complications of hypertension from past few years. Moreover, these participants reported the experiences of facing symptoms of headache, dizziness and loss of eyesight. Two participants with the problem of high blood pressure revealed that:

I am having blood pressure problems." I have been taking my required medication every morning for the last 20 years. I am also on a low-salt, low-carbohydrate diet. I sometimes feel symptoms of other illnesses such as a headache and dizziness. I have been facing this problem from a long time and for that reason I am surviving because of the daily based medication as directed by my consultant. In spite of this the doctor has advised me to have a regular medical examination of the blood pressure.

I mostly have blood pressure problems. Occasionally, I used to have headache and pain in my body. But, from last one year my blood pressure level has been regularly coming beyond normal limits and because of that I am having cardiac complications from past few months. I am scared of thinking that it might have affected the other bodily parts as such.

Gastro intestinal problem

Issues related to stomach lining and digestion was quite commonly found among the elderly. In our study, fifty-six percent (17/30) respondents revealed that they were suffering from inflammation in stomach resulting in the issues of indigestion, pain in belly, and sometimes nausea. The results show that the problem of Gastritis among elderly results mainly due to the lack of hygienic food, stress and excessive use of medications. One participant of 83 years said:

I told you earlier that I am a diabetic patient from the last 10 years. You must be aware that diabetes is something which needs regular medication. These medicines had affected my stomach and caused pain in abdomen. Even though I shared this problem with my consultant. He was of the view that you have to bear the pain of stomach but you can't stop the medication required for diabetics. (P13, 83 years)

Among the participants facing gastro intestinal problems, the prevalence of known as constipation was reported by five women (29.4%) of the total population. The respondents reported changes in food and dietary habits that indirectly resulted in the weakness of their intestinal push; hence they are more prone to the problem of constipation as one participant said

I have problem of gastro intestinal infection. Indeed, I used to take medicines for this, however, it has affected the abdominal function of my body and from which I am facing now the problem of constipation.



Another respondent of 75 age told that, she has to take medicine for the safety of her stomach the moment she wakes up in the morning. She said, I start my day with two digestive enzyme supplements to reduce the problems of acidity, bloating and gases.

Extremity pain or joint pain

One of the most common problems faced by elderly women is the joint pain. There are indeed several causes that triggered the problems of joint pain among old people. Weakness and pain in the various types of arthritis, and other complaints such as body weight are the cause of a person's aching joints. In this study, almost ninety percent (26/30) were seen as going with the complaints of joint pain. Besides physical reasons related to women's body, the major reason behind joint pain among elderly women in Kashmir was found to be the gradual shifts of climate and geographical location. In addition, the culture of disengagement and/or inactivity among old women was also found to be the reason for the joint pain among elderly. For example, the views of two respondents justifies the above facts as

I usually have pain in the lower limb. It gets severe in winters as my legs get swollen due to harsh climate. I need to keep my body warm in order to get rid of the inflammation and pain in my legs. (P24, 75 years)

I had weakness that affected the strength of my bones and joints. Even though I took a lot of calcium and multivitamin supplements but all in vain. I usually feel pain in joints and it gets increased whenever I took walk. (P4, 80 years)

Vision problem

Among the commonly found illness among elderly is the problem of gradual impairment or low vision. This is commonly found among old people with systematic illnesses such as diabetes mellitus. Side effect of various drugs also leads to the symptoms of cataract among elderly people. In the present study, elderly women of old age mostly with the complications of diabetes and hypertension were found experiencing the problems of vision loss and more specially the vision cataract. For example, one respondent of 80 years old reported

Initially, I suffered from the problem of low vision soon after coming into contact with the problem of diabetes. Now, it has been ten years and the diabetics had affected my eyes badly. Recently, I go through the cataract surgery but the results seemed not so successful as it should be

Another respondent shared her experiences of vision problems. She said

I had a vision problem for the past 6 years and I am using spectacles since then. At first, my right eye lens got affected more by the problem of dimmed vision but, from last year I lost my eye sight. It is difficult for me to walk alone. I went for the treatment in private hospital but the doctor suggested having surgery and unfortunately the expanses are quite expensive. (P22, 76 years)

Psychological problems

Elderly people have mental health problems because they are lonely, isolated, helpless, and don't feel like they have a purpose in life. People experience mental health changes when they live alone and/or when other people don't notice them, and when their contributions or roles in society are being condoned by other people (Kapur, 2018). In context to elderly people, the physiological imbalance emerges from loneliness, isolation, powerlessness and meaninglessness. This means that people with old age experience psychological distress only if they are kept isolated and when the functions they perform for the society are proved meaningless.

With regard to the experiences of psychological problems, participants brought into light a number of reasons that had affected their mental health and created imbalance in the psychological behaviour and which in turn initiates serious chronic illnesses in their elderly. Among different psychological problems loneliness, anxiety, depression were experienced by some of the respondents of the study.

Loneliness

In literature, loneliness is used to describe the persistently depressing emotional state that has negative effects on people's outlooks. It has negative consequences on people's physical and emotional health. There are various indicators of loneliness among elderly. These include family isolation, inadequate support, uneven attitude from family members and illnesses. As a result of loneliness elderly people are seen commonly observing the issues of emotional distress and depression.

With respect to the problem of loneliness, twelve participants expressed their experiences of having loneliness in their life. For example, one of the respondents who lives alone in her in-laws house said



Soon after the death of my husband my daughter in law starts fighting with me on issues related to property and protection. My son who is married sees his family and gave little attention to me. I finally decided to live separately. (P16, 75 years)

Another participant shared her experience of isolation and grief by saying that

How strange this is to tell that, I have a son who lives in a separate place with his family. He never bothers to visit me once by saying that it is difficult for him to allow me to live with his family. I feel sad with his attitude towards me. Living with a husband who is near to his death kept me feels worried and thinking about who will look after me after his death. (P14, 75 years)

Besides this, some participants revealed their experiences of loneliness as a result of the negative attitude from family members. For example, one participant said

After the death of my husband, I realised that I had no one to talk in my family with whom I feel free to share my emotions. My son who remains busy with his work and my daughter in law who always avoids me with the reason of family chores, even my grandchildren's do not have time to talk or sit along with me... I remained confined within a single room alone (P22, 70 years)

Anxiety and Depression

Anxiety in elderly people is quite common. Previous research has found that the nature of anxiety among elderly population is mainly due to lack of proper health, finance and life episodes. Stress is another factor that results in both the psychological and physical symptoms of health among elderly. Although, it is normal to experience anxiety at any stage of life, however, research has found that unduly severe episodes of pessimism among elderly could lead to the cause of depression.

Research questions about the relationship of elderly women with their families helped us to understand the level of anxiety among participants. In most of the cases, participants reported instances of dissatisfaction with their family. Throughout the interviews, participants mentioned ill-treatment, hostile attitude and low level of physical intimacy of family members towards them. The findings revealed that lack of social support from family increases the depression among elderly women. Increase in the problems of health and illness with little expectations of medical care had also triggered the symptoms of anxiety and depression among elderly women in Kashmir. Other than the above factors, participants revealed emotional factors such as loss of interest, helplessness, negative mood, and hopelessness as the reasons for their depression.

Dementia

Dementia is a specific diseases generally attributed to the decline in memory or other mental activities. Through dementia, old people are mostly affected and the symptoms among elderly mostly remain about memory loss, loss of understanding and judgment, decreased ability to think and understand, and changes in person's expressions and attitudes. In this study respondents above the age of 65 were found affected with this problem. Upon interviewing, we found cases of women who have difficulty in doing menial tasks, remembering the tasks and loss of mental consciousness. Participants aged above 80 were found experiencing the complete loss of their memory. The members of their families revealed that they even find difficulty to recognise their family members. In some cases, this problem imposed harmful effects upon individuals as one participants said, "I sometimes get unconscious and began to beat my grandchildren's in front of their parents. I feel sad for me".

CONCLUSION

In conclusion this can be concluded from the above analysis that the problems of aged people in Kashmir are diverse in nature. The study result major health problems such as chronic illness (diabetes, hypertension, cardiac illness), physiological and abuse related as such, however, there are many other health problems which remained unexplored. Concerning the miscellaneous health problems most of them were found due to the lack of health facilities, lack of financial assistance, innovative techniques, unawareness, individual negligence and knowledge. With respect to psychological problems for example old people experiencing loneliness, boredom, family negligence and abuse, it was found that there is a dire need of proper assistance, interaction and awareness programs in Kashmir valley. Also, health promotional activities needs to be endorsed regulated in order to decrease level of morbidity among elderly in Kashmir valley.

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SOCIAL PARTNERSHIP AS A FACTOR IN THE DEVELOPMENT OF STATE-RELIGIOUS RELATIONS

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ABSTRACT

This article is devoted to the analysis of the relationship between the state and religious relations in the context of improving the social foundations of civil society in the context of guaranteeing human rights and freedoms in Uzbekistan. In this regard, the author examines the Law of the Republic of Uzbekistan "On Freedom of Conscience and Religious Organizations", which was amended and supplemented in the process of developing the democratization of social norms under the requirements of international law adopted by the UN in the Covenants and agreements. The determinant of the improvement of normative acts was religious fundamentalism and extremism. In order to reform the traditional stereotypes of the past, the author focuses on social partnership as the most important condition for regulating relations between the state, religion and believers on the highest values and traditions of a democratic society.

KEY WORDS: *social partnership, conscience, freedom of conscience, religious associations.*

СОЦИАЛЬНОЕ ПАРТНЕРСТВО КАК ФАКТОР РАЗВИТИЯ ГОСУДАРСТВЕННО-РЕЛИГИОЗНЫХ ОТНОШЕНИЙ.

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Аннотация. Данная статья посвящается анализу взаимоотношений государства и религиозных отношений в условиях совершенствования социальных основ гражданского общества в контексте гарантии прав и свобод человека Узбекистана. В этой связи автор рассматривает Закон Республики Узбекистана «О свободе совести и религиозных организации», который был изменен и дополнен в процессе развития демократизации социальных норм в условиях требований международного право, принятого ООН в Пактах, соглашений. Детерминантом совершенствования нормативных актов было религиозный фундаментализм и экстремизм. В целях реформирования традиционных стереотипов прошлого автор делает акцент на социальное партнерство как важнейшее условие регулирования взаимоотношений государство с религией и верующими на самых высших ценностях и традициях демократического общества.

Ключевые слова: социальное партнерство, совесть, свобода совести, религиозные объединение.



1. Введение

Страны СНГ, в том числе Узбекистан идет по пути построения социального государство, в котором создаются все необходимые социально-экономические и политические условия для самореализации каждого гражданина. В этой связи испокон веков были проблемы налаживания государственно-церковных отношений в управлении обществом, воспитании духовно-нравственных идеалах социального прогресса. Таким образом, взаимоотношения государственно-церковных отношений сложились на определенных политических и экономических нормах социальной жизни народов и государств. В существующей литературе взаимоотношения государства с религией рассматривается на основе свободы совести, т. е. отделением государства от религиозных организаций, свободой вероисповедания [2; 4; 7; 12; 13]. Однако, данная проблема было обсуждена и в конференциях, международных научных семинарах, посвященной демократизации общественной жизни и религиозной жизни населения [11;21]. Анализ литературы свидетельствует, что возникла острой потребности налаживании социальных основ партнерство государство с религией в укреплении взаимоотношений для повышения духовно-нравственной культуры общества. Тем самым автор ставит перед собой цели выявления роли религиозности в развитии основ гражданского общества.

2. Социальное партнерство: понятие и проблема социального анализа. Онтологический подход предметного мира еще раз доказывает о взаимосвязи и развитии всех явлений мира, что диалектика есть основа основ социальных взаимосвязях природы и общества. В этой связи, социальное партнерство - есть взаимодействия все явлений и событий объективного мира. Исходя из этих диалектических принципов, можно утверждать о закономерности социальной обусловленности движений, изменений и формирований естественных образований. Мы склонны к выводу, что социальное партнерство – есть естественный отбор взаимодействия социальных субъектов ради блага перспектив всего сущего. Крупнейший идеолог XIX века Джон Стюарт Милль был одним из первых, кто использовал термин «социальное партнерство» для социальных отношений. Таким образом, термин социальное партнерство стало популярным среди экономистов, и в других сферах материального и духовного производства, включая семейно-брачных отношений. Партнер по своей сущности человек, который заинтересован совместного выполнения определенных профессиональных и социальных функций для получения определенных финансовых и социальных выгод. Партнерство проявляется в социально-политической жизни как партийные или общественные соратники, стремящиеся за реализации единство политических целей общественного блага. В последние годы термин социальные партнеры стали популярными в отношениях мужчин и женщин, избегая законных брачных отношений на основе традиций и ценностей, а так же совместной жизни без обязательств.

Данное явление имеет политико-правовой характер, что отражается в нормативных актах правительства. Согласно закону, принятый правительством Узбекистана социальное партнерства характеризуется как "...взаимодействие государственных органов с не государственными некоммерческими организациями и другими институтами гражданского общества в разработке и реализации программ социально-экономического развития страны, в том числе отраслевых, территориальных программ, а также нормативно-правовых актов и иных решений, затрагивающих права и законные интересы граждан" [5].

Социальное партнерство как нам предполагается, является важнейшим показателем совершенности общественных отношений, связанных с духовно-нравственным уровнем социально-экономического и политического единство народа для общественного благосостояния. Исходя из подобного подхода, мы склонны определить партнерство как результат историко-культурного богатство этноконфессиональной культуры наций. В этой связи, мы совершенно согласны, с российскими авторами, которые утверждают, что социальное партнерство является основой обеспечения занятости населения, органами власти с одной стороны, коллективного соглашения работодателем и сотрудниками, в которых регулируются интересы субъектов права [12, с.5; 3, с. 8; 13, с.82; 9, с.64]. Данная интерпретация авторов, прежде всего, акцентируется на социальной занятости населения, совместная усилия реализации государственной политики в области трудовых отношений.

Партнерские отношения - это, прежде всего сфера социальных отношений. Как система согласования интересов, он охватывает широкий спектр общественной жизни, оказывая влияние на все уровни взаимодействия социальных сил, и выступает составной частью общего стратегического направления модернизации страны. Сущность социального партнёрства обусловлена национальной особенностью; спецификой политического состояния; государственно-правовой позицией общества; взаимными интересами и



диалогом действующих сторон-субъектов социального партнёрства. Социальное сотрудничество предполагает осуществление совместной деятельности с учетом принципов равноправности, открытости, прозрачности, доступности, взаимном уважении, учета интересов, что обеспечивает демократичность правовых основ политического устройства.

Социальное партнерство активно и целенаправленно содействует воплощению согласованной социально ориентированной политики: претворяет в жизнь гуманистические идеи и принципов регулирования общественных отношений; регулированию социальных конфликтов, преодолению кризисных явлений; в совершенствовании законодательной базы развития политических, социально-экономических и религиозных отношений; в повышении благосостояния народа разработку, принятие и реализацию определенных решений. Оно способствует формированию основ гражданского общества, в котором различные социальные группы, слои и классы, имеющие общие интересы, образуют устойчивую социальную общность, обеспечивающую социальную и политическую стабильность в обществе.

Тем самым мы убеждены, что социальное партнерство является важнейшим фактором формирования более эффективной системы взаимодействия с институтами гражданского общества, направляющей усилия правительств, бизнеса, профсоюзов и других партнеров в гражданском обществе на достижения поставленных целей во имя общественного блага.

3. Правовое налаживание государственно-религиозных отношений

В современных условиях становления социального государства и трансформации общества, реализация оптимальной модели правового регулирования государственно-церковных отношений, в том числе вопросов свободы совести, деятельность религиозных институтов обусловлен усилением религиозного фактора в обществе с учетом поликонфессиональности страны. В частности, за последние годы принято более 50 законов и 40 постановлений в сфере государственного строительства, межнационального согласия, свободы совести и убеждений. Большинство этих правовых документов направлены на расширение прав и свобод граждан, независимо от их религиозных убеждений или национальности, в том числе на активное участие в управлении обществом и государственными делами.

Государственно-религиозные отношения регулируются нормативно-правовыми нормами, среди которых верховенство принадлежит Конституции Республики Узбекистан. В статьях 31, 57 и 61 Основного Закона определены основные направления взаимодействия государства и религии в стране. За годы независимости была сформирована законодательная база, направленная на совершенствование деятельности в религиозной сфере. Основные положения государственной политики в области религиозных отношений представлены в ряде нормативно-правовых актов, имеющих отношение к правам и свободам человека и гражданина в религиозной сфере, к правовому статусу религиозных объединений в этой сфере. Закон «О свободе совести и религиозных организациях», «О негосударственных некоммерческих организациях», «О гарантиях деятельности негосударственных некоммерческих организаций», Постановление Президента Республики Узбекистан «О мерах по совершенствованию деятельности Комитета по делам религий при Кабинете Министров Республики Узбекистан», «О дополнительных мерах по совершенствованию деятельности религиозно-просветительской сферы», указ «О мерах по коренному совершенствованию деятельности в религиозно-просветительской сфере», также других законодательных и нормативных актах, так или иначе касающихся существования и деятельности религиозных объединений, групп, конфессий, верующих и неверующих граждан в целом на территории Республики Узбекистан.

Кардинальные изменения в сфере свободы вероисповедания связаны с деятельностью Президента Республики Узбекистан Шавката Мирзиёева. В результате реформирования государственно-религиозные отношения вышли на самые высшие идеалы гражданского общества. С первых дней на посту главы правительства он продолжил последовательную политику либерализации в сфере религии, развития культуры толерантности и гуманности, укрепления межконфессионального согласия, создания необходимых условий для удовлетворения религиозных потребностей населения. В частности, в Стратегии действий по дальнейшему развитию Республики Узбекистан на 2017-2021 годы особое место отведено вопросам обеспечения межнационального согласия и религиозной толерантности, формирования обстановки безопасности, стабильности и гармоничного соседства вокруг нас, укрепления международного авторитета нашей страны. Следующим шагом по укреплению религиозного плюрализма, толерантности и межконфессионального диалога стал принятие Национальной стратегии Республики Узбекистан по противодействию экстремизму и



терроризму на 2021-2026 годы, где не только предусмотрено реализация стратегии по противодействию экстремизму и терроризму, но и закреплены основные приоритеты государственной политики Республики Узбекистан в религиозной сфере.

Принятие специальной резолюции «Просвещение и религиозная толерантность» от 12 декабря 2018 года Генеральной Ассамблеи ООН на своей пленарной сессии резолюция явилось практической реализацией инициативы Президента Шавката Мирзиёева, выдвинутой с трибуны 72-й сессии в сентябре 2017 года. В документе подчеркивается важность установления терпимости и взаимного уважения, обеспечения свободы вероисповедания, защиты прав верующих и предотвращения дискриминации в их отношении.

С учетом традиций, обычаев и ценностей, исторически сложившихся в нашей стране и социально-политических процессов в условиях демократизации был разработан и принят правительством новая редакция Закона «О свободе совести и религиозных организациях». Данный документ можно отнести к особо значимым в процессе совершенствования правовой базы в данном направлении. Так как были внесены ряд важных нововведений. Эти нововведения отражаются в следующем:

1. Упрощается порядок регистрации и прекращения деятельности религиозных организаций.
2. Официально признается профессиональный статус религиозного образования, гарантируется право граждан Республики Узбекистан на светское образование, независимо от их отношения к религии.
3. Внедряется оказание услуг, связанных с государственной регистрацией религиозной организации, полностью в электронной форме без человеческого фактора.
3. Из-за отсутствия в действующих актах законодательства правового определения понятия «культовое одеяние» из законодательства исключается запрет на появление в общественных местах в культовых одеяниях.
4. Отменяется порядок получения согласия сходов граждан махалли, требуемый для создания религиозной организации. Тем самым инициаторы создания религиозной организации освобождаются от сбора лишних документов.
5. В законе установлен порядок изготовления, ввоза и распространения материалов религиозного содержания.
6. Также основные приоритеты в сфере обеспечения свободы совести, определенные Законом, предусматривают укрепление мира и согласия между конфессиями, гарантирование светского государственного устройства, а также противодействие посредством просвещения насаждению в сознание и сердца людей чуждых идей. [6]

В них, в соответствии с международными правовыми стандартами определяется, что каждый человек имеет право на свободу мысли, совести и религии; регламентируется механизм реализации этого права; сформированы принципы взаимоотношений светского государства с религиозными объединениями.

Такая правовая база закрепляет права и свободы граждан: единолично или на групповой основе исповедовать ту или иную веру, совершать богослужения, религиозные обряды и ритуалы, создавать религиозные общества, учебные заведения, мечети, церкви, синагоги, монастыри, совершать паломничества в святые места и многое другое.

Современная политика в сфере государственно-религиозных отношений олицетворяет новые подходы и принципы государственной религиозной политики в стране по обеспечению главных достижений нашей независимости - мира, общественного согласия и стабильности.

Отсутствие конфликтов на конфессиональной почве позволяет сделать вывод об эффективности разработанной политики государства, результативности его законодательных инициатив. Государственная политика в сфере религии, направленная на укрепление в обществе межконфессионального диалога и религиозной толерантности, является важным залогом стабильности и процветания общества и государства.

4. Дискуссия

Как известно, длительная социально-экономическая зависимость Узбекского народа от колониального и тоталитарного режима не прошли бесследно в становлении этноконфессиональной культуры. Духовно-культурное развитие общества находилось под жестким идеологическим прессингом коммунистической идеологии. Советское руководство начало атеистическую пропаганду под лозунгом “Религия - опиум для народа” [17] В этой связи духовная культура подверглось серьезной гонения и административного запрета на религию, а духовенство и верующие были объявлены вне закона, что было тяжелой испытанием для мусульман. “.....Были забыты национальные культурные ценности, богатое духовное наследие узбекского народа, его



древние багородные традиции и обычаи. Ислам и его ценности были растоптаны....» [17]. В 80-е годы XX века коммунисты усилили антирелигиозную пропаганду, начались массовые репрессии против традиции и религиозных ценностей ислама. Борьба против ислама смешивалась с борьбой против национальных традиций, обрядов, празднеств, которые ничего общего с религией не имели. Мировоззренческое противостояние религии и атеизма заменилось политическим. Верх взяла концепция, согласно которой "при социализме нет места религии, она чужда ему". Таким образом, негативное отношение к религии превратилось в антирелигиозное насилие. Данная политика оказала существенное влияние на сознание и культуру людей, порождая социально-негативные явления в общественной жизни.

С первых дней независимости на уровень государственной политики в Узбекистане была поставлена задача возрождения тысячелетнего духовно-культурного наследия народа, в том числе усиления роли религиозного фактора в жизни общества. При этом особое значение придавалось установлению цивилизованных взаимоотношений между государством и религией. В связи с этим, государство взяло курс на организацию взаимодействия и плодотворного сотрудничества с религиозными объединениями в различных сферах общественной жизни, особенно тех, где большое значение имеет духовно-нравственный фактор. Вопросы защиты прав и свобод исповедания человека, безопасности, межрелигиозного и межконфессионального согласия стали главным содержанием политического курса.

Религиозные процессы в обществе способствовали формированию новых социальных отношений между государством и религией. Гарантом баланса интересов в общественных отношениях стал активный диалог государства и ведущих религиозных институтов, основанный на взаимном уважении и партнерстве.

На сегодняшний день проблемы взаимодействия государства и церкви, в контексте социального партнерства является малоизученной темой и научно неразработанной в отечественной литературе. При исследовании данной темы, нами были использованы научные работы российских ученых. Среди научных работ можно выделить специальное исследование феномена социального партнерства в сфере государственно-религиозных отношений (Н. Зимовой, Н. Филиной, О. Шиманской, В.И. Якунина, А. Ю. Григоренко, А. В. Громовой, Е.В. Тумбаевой и т.д.

Особое внимание заслуживает работа О. К. Шиманской «Социальное партнерство государство и религиозных организаций в современной России: методология, подходы, правовой аспект», где автор отмечает, что «социальное партнерство как модель предполагает идеальное воплощение принципов государственно-конфессиональных отношений. Поскольку объединение усилий государств и религиозных структур необходимо для поддержания межкультурного диалога и противодействия новым вызовам глобальной и региональной безопасности» [19].

Определенный вклад в исследуемую проблематику внесла Н. С. Зимова в своей научной работе «Социальное партнерство как форма взаимодействия Церкви государства и светского общества в России», считает, что «применение концепции социального партнерства в практике взаимодействия Церкви государства и светского общества способно обеспечить достижение баланса интересов всех участников, способствуя стабилизации религиозной ситуации в целом» [7]. Изучая концептуальные, нормативно-правовые, организационные основы взаимодействия государственных институтов и церкви, другой исследователь Е. В.Тумбаева выделяет несколько направлений социального взаимодействия государства и церкви: «1. Партнерство государства и церкви в области социальной защиты и помощи. 2. Вторая область взаимодействия – политическая включает легитимацию власти со стороны церкви, а также реализацию последней функции социального контроля. 3. Третья область взаимодействия – реализация функции социальной интеграции общества. По мнению, автора, интеграционные процессы помимо формирования единой системы ценностей предполагают сеть организованных и самостоятельных объединений граждан, позволяющих реализовать их коллективные интересы» [16].

Некоторые аспекты социальных отношений государства и религии рассматривается Лобазовой О. Ф в статье «Религиозность как ресурс оптимизации социальных отношений», где исследователь утверждает, что «партнерские отношения между разными религиозными организациями возможно рассматривать только как идеал общественного развития, но, реальными же партнерами могут стать при известных условиях органы власти и руководство религиозных организаций, когда вопросы деятельности религиозных организаций безукоризненно определены юридически, а общественный авторитет закреплён официальной государственной идеологией» [10]. Как полагает Филина Н. В., «партнёрство является ступенью на пути к развитию новой модели государственно-конфессиональных отношений, способной удовлетворить интересы государственных



органов власти, религиозных организаций, общества, человека. Разработка и внедрение положения о статусе партнёра в отношении религиозных организаций позволят эффективно функционировать механизму реализации государственной политики в сфере свободы совести и вероисповеданий; обеспечат достижение поставленных целей и задач; гарантируют защиту конституционных прав и свобод, будут оказывать помощь в развитии государственно-конфессиональных отношений и устойчивости в обществе»[18].

В целом, мы солидарны с вышеприведенными выводами исследователей. На сегодняшний день конструктивно-позитивное сотрудничество государства и религиозных институтов является оптимальной моделью в религиозной сфере. Равноправное партнерство позволяет учитывать интересы всех участников в социальном взаимодействии путем реализации компромиссного решения, осуществления совместной деятельности и является немаловажным фактором в сохранении межнационального согласия, обеспечении гармонии национальных и общечеловеческих ценностей, а также дальнейшей стабилизации атмосферы религиозной толерантности. Бесспорно, реализация вышеперечисленных гарантий и развитие партнерских отношений присуще лишь высокоразвитому демократическому правовому государству и гражданскому обществу.

5. Выводы.

За последние годы в Узбекистане реализованы широкомасштабные реформы в сфере религии, которые олицетворяют новые подходы и принципы государственной религиозной политики в стране. Была проделана значительная работа по сохранению межрелигиозной и межконфессиональной гармонии, повышению правосознания и правовой культуры в обществе.

Государственно-религиозные отношения на современном этапе трансформируются, выходя на новую ступень развития, где государственные органы власти активно сотрудничают с религиозными организациями в вопросах национальной безопасности, культуры, образования, социума. Пристальное внимание уделено правительством формированию действенной нормативно-правовой базы, регулирующей вопросы свободы совести и деятельности религиозных организаций. Но, при этом стоит отметить, что в нашей стране не разработаны механизмы социального партнерства органов государственной власти и религии для решения актуальных задач в сфере религии и укрепления принципов религиозного великодушия в обществе. На наш взгляд, сегодня общество нуждается в эффективном сотрудничестве государственных органов власти и религиозных организаций, направленных на достижение общих целей и реализацию интересов. Учитывая интересы и духовные потребности, государство следует быть более гибким в проведении религиозной политики и строить партнерские отношения с религиозными объединениями на равноправных условиях. Так как религиозные объединения являются неотъемлемым институтом гражданского общества в социально-политических процессах, то, однозначно они имеют достаточный потенциал в регулировании общественных отношений и в решении сложных социальных проблем, таких как этно-религиозные конфликты, социальная напряженность, наркомания, разрушение института семьи, социальное сиротство, преступность. Подобное сотрудничество должно стать духовно-нравственной основой для демократизации общества и построения социального государства, где высшей ценностью является человек, общечеловеческая мораль, нравственность, религиозные ценности.

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PARADIGM SHIFT IN TEACHING-LEARNING TO ACCOMMODATE GENERATION Z LEARNERS

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ABSTRACT

In view of modern technologies among all field of human activity, the modus operandi has undergone tremendous change, education sector is not exceptional. At global level, there have been evolutionary changes in teaching-learning methods due to Augmented reality, Virtual reality and hybrid learning. Modern teachers are forced to adapt new teaching methodologies to accommodate the present generation of learners. The new millennial have new learning expectations, self proclaimed style, different needs from the past generations of learners. This paper is an analytical study on modern teaching-learning in the changed environment accommodating next generation learners. In this article, author seeks to discuss acceptable teaching-learning ethos in favor of present generation or Z generation learners. It provides an insight how these learners are engaged in higher education, their perspectives, styles, preferences and concerns

Objective of Study-*The aim of this study is to analyses the trends and nature of Z generation learners and changing educational environment in Higher Educational Institutions. This study can help many institutions with valuable information to design effective policies and practices.*

Methodology of Study-*This article is based on descriptive qualitative method. Information has been collected from available resources on websites like blogs, articles, surveys, research papers.*

Research Gap-*There are fewer studies that focus on a specific country to know about them and have a proper understanding of Gen zeds living in the particular nation.*

Limitation of Study-*It is important to keep in mind, as the Z generation grows, trends and behavior changes due to shift in their outlook and experiences.*

KEYWORDS- *Z generation, modern teachers, learners, higher education.*

INTRODUCTION

“If we teach today’s learners as we taught yesterday, we rob them of tomorrow”, John Dewey

Technology plays vital role in all walks of life including education sector. We are living in the era of Industry 4.0 which is dominated by usage of internet and necessitates education system to equally respond to educate the present generation of learners. Modern teaching involves more extensive usage of Information and communication Technology. In the new paradigm of learning, the role of both teacher and learner needs critical analysis. The results and outcomes of using modern teaching techniques based on technology in higher educational system need to be explored. There are certain skills and capabilities of using modern teaching technologies for students and teachers. Thus it’s necessary to train and prepare them for the new millennium age of modern teaching technology. Any teaching method, traditional or modern, is considered the best, if it’s communicated well to the learners with an aim of improving the education and achieve the holistic development.

DIFFERENT GENERATIONS OF LEARNERS

According to Roberts, 2012-“A generation consists of particular age group with similar values, communities and sense of identity”. For effective teaching, it’s essential to understand the nature of learners to accommodate different generation of learners entering into higher educational institution. There are generational differences due to socioeconomic conditions and technical changes



Following are the different types of learners based on the labels of generation

- **Traditionalists.**
They use real world examples. They are born between 1900 and 1945. They are disciplined and loyal. They follow traditional way of teaching-learning
- **Boomers-be the friendly expert.**
They are born between 1946 and 1964. They are hard workers. They have authority issues but are competitive, goal-oriented, work-centric and independent. Today, they are called as sandwich generation, as they are sandwiched between caring for their elderly parents and their dependent children
- **Gen X-be the guide, not the expert.**
They are born between 1965 and 1982. They delineate goals and outcomes. They prefer to work independently. They are efficient and embrace changes. They are judgmental.
- **Millennial or generation Y-be a collaborative guide.**
They are born between 1982-2000. They are tech savvy and frequently use digital technology like computers, internet, and mobile phones in their daily life. They learn and behave differently. They are more social and confident but less independent and more community oriented. They are tech-centric generation ex Mark Zuckerberg. They exemplify work flexibility, entrepreneurship and believe that anything is possible.
- **Generation Z or Zoomers**



Image source-www.eduswami.com

Generation Z is children of Generation x, born between 1996-2014. They are viewed as Digital Natives, to have grown up with access to the internet and digital technology from quiet young age. They entered college -14 to till date. They are global generation. They are known by many other names Zs, i-generation, gen tech, Net Gen, Gen Wii, Gen next, Post Gen and plurals. They are considered to be revolutionary generation due to their innovative ideas and beliefs in investing in services like travelling, shows. They are expected to outshine and outperform their predecessor generation as they are unique and more realistic. In today's digital era, the learners and facilitators have easy access to information through their Smartphone. Need of the hour is to incorporate pedagogical innovations in teaching for holistic development of learners. The main features are-

- Net generations are more concerned with their academic performance and very career minded.
- They spend more time on usage of electronic device of digital technology than books. They don't care where the lessons are being taught. They follow the right people on social media like YouTube or Instagram. They have their own laptop/desktop and social media account. They use search engine like Google to search required information.
- They are ambitious. The icons of this generation are founders of startups like Vijay Sharma of Paytm, digital payments platform or Ritesh Agarwal, founder of India's largest hotel network OYO. They embrace multiculturalism.
- They are more vocal and are change makers.
- They are advanced and privileged than compared to previous generation.
- Though they are focused but lead a slower life than comparative to other generations.
- They are more concerned about career development and academic performance
- They crave regular and technology enhanced training opportunities. They learn by trial and error method.
- They are technology savvy. They are interested in multimedia and create internet content.
- They prefer to work in teams and collaboration.



- They have learned to embrace privacy in use of technology as they are aware of identity theft, cyber bullying and phishing.
- They have grown up witnessing crumbling economy, public shootings and ongoing terrorism in the world.
- They strive for equal human rights.
- They want to work for themselves in their life. They are more interested in innovation and entrepreneurship.
- They plan to work for an organization or entrepreneurs after college. They believe internships are important in college education.

Generation alpha-the first to be born in 21 century from 2010 the world saw the start of this generation. They will be almost two billion globally from 2012-2024. They have seen the COVID-19 pandemic.

Generation Z and education –challenging role of teachers

There is evident gulf between expectations of Gen Z and the availability of infrastructure in HEIs. Indian HEIs don't have supportive physical infrastructure to meet needs of millions of new students. The digital platforms and portal have inherent constraints and loopholes. Digital native students need digital stimulus to learn.

Following are few teaching strategies for gen z

- Digital thinking in activities, assignments, assessments.
- Segmentation of content
- Graphical information
- Relevance
- Adaptive learning-individualized instruction
- Approach social media
- Educating and preparing students for a career
- Provide access to resources
- See them as smart, creative and hardworking.

India has highest population of young people in the world. Thus, the country's ability to provide inclusive, innovative and quality education will be detrimental. There are many technical changes in the global economy, which requires skilled workforce with multidisciplinary abilities across the sciences, social science and humanities. There is a need for new skilled labour. In view of epidemics and pandemics, besides the political disturbance in different parts of world, there is urging for collaborative research in different field of sciences and social sciences

In view of changing nature of employment, it is critical for the learners to shift towards new ways of learning, critical thinking and problem solving. They must be creative, innovative, adapt and absorb new. Accordingly, the curriculum also must incorporate such changes to develop all aspects and enhance capabilities of learners. The education system must prepare them for gainful employment besides building character of learners. It is important to bridge the gap between the market requirements at global level and present state of learning outcomes. Aim of the education system must be cognitive development, character building. Teaching-learning must be interactive. Classroom management must be creative, collaborative and exploratory activities for learner's deeper and experiential learning

CONCLUSION

In new paradigm of teaching-learning, the concept of modern classroom has emerged with paperless and pen less learning as an alternative to the traditional method of teaching. The changing roles are inevitable with introduction of technology-savvy-generation of youth. Educating gen z requires paradigm shift in approach that recognizes their interest and learning styles. This generation has profound potential to make positive impact on the education system and the world. Education is moving into the direction of more learner-centric environment.

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