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**Enhancing Teachers' ICT Competencies for Effective Teaching and Learning in Open and Distance Electronic Learning (ODEL) In Nigeria.**

**By**

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**Abstract**

This paper examines how enhancing teachers' ICT competencies can improve teaching and learning in open and distance electronic learning (ODEL) in Nigeria. The integration of information and communication technology (ICT) into educational teaching involves activities such as participation, interaction, assignments, examinations, and feedback. However, as these technologies rapidly evolve, teachers must continually update their skills to remain effective. Challenges in using ICT for teaching are varied, often linked to issues like poor internet access, inadequate electricity, insufficient government funding, lack of technical support, and poor maintenance of existing facilities. The study uses desk research, drawing on materials from journals, reports, periodicals, and other publicly available sources and is guided by Wedemeyer's independent study theory. This theory highlights the persistence of outdated educational methods, largely due to the continued use of traditional teaching practices. The findings underscore the need for teacher training to enhance ICT skills, suggesting that ongoing training and retraining are essential. The paper recommends that the Ministry of Education create a more supportive environment for teachers in ODEL, offering platforms to improve their ICT competencies. The paper concludes that it emphasizes that boosting teachers' ICT skills is essential for effective teaching and learning in ODEL.

**Keywords:** *Distance learning, teaching, learning, competencies, technology*

**Introduction**

The integration of information and communication technology (ICT) in education has revolutionized the teaching and learning process, particularly in open and distance electronic learning (ODEL). In Nigeria, the need to enhance teachers' ICT competencies is paramount to ensuring effective teaching and learning in ODEL environments, which will create equal opportunity for those who want to acquire high institution knowledge but are constraint to work place, space, time, and other social activities (McIsaac & Gunawardena 2003). Maphosa & Bhebhe (2019) added that to enhance teachers ICT competencies has to do with digital

literacy that drives the general ability to utilize information and communication technologies in teaching through the interest of teachers who are desire to learn and be relevant with the changing trends to contribute meaningfully in the production of knowledge that will impact his or her environment. Given this, Olakulehin (2007) argues that if necessary platforms are not created to promote ICT compliance, utilization of ICT comes with challenges because of a lack of affordability to acquire computers and inadequate ICT infrastructure policies that encourage hands-on practice for teachers to be competent to enhance teaching and learning in open and

distance electronic learning (ODEL). However, teaching and learning in ODEL exhibit high levels of ICT competencies in order to make use of available information and communication technologies in teaching and learning.

In Nigeria, ODEL has a rich yet relatively recent history spanning nearly a century. However, it wasn't until 2002, during President Obasanjo's tenure, that the Federal Government revived the singular mode of open and distance learning, epitomized by the National Open University of Nigeria (Ajadi, Salawu, & Adeoye, 2008). This resurgence was driven by a mission to democratize higher education, making it more accessible, flexible, affordable, and free from barriers or discrimination, thereby fostering social justice and national cohesion for developmental purposes (Ajadi et al., 2008). Thus, this resuscitation experienced by the integration of technology into teaching and learning processes marked a pivotal moment in the ODEL system of education. However, Gunawardena and McIsaac (2003) highlighted that stakeholders within higher education institutions perceived that ODEL lacks the resources, coupled with a deficiency in technical know-how among Nigerian teachers and learners, to adopt such technologies for teaching and learning not until the COVID-19 pandemic, which compelled traditional learning institutions to abruptly disrupt, fascinating them to embrace ODEL. As a result, this transition necessitated the simultaneous operation of both online and

traditional face-to-face learning modes, facilitated by the incorporation of information and communication technology. This strategic integration aimed to bridge geographical barriers, facilitate contact, and transcend time constraints, thereby mitigating the impact of future disruptive events (Bozkurt, 2019). While previous research by Anderson & Tron (2011) suggests that since the ODEL model has become permanent in several higher education institutions leveraging emerging technologies for teaching and learning, it necessitates the training and retraining of teachers to be competent and effective in the use of technology in ODEL operations to deliver and orient learners to appreciate the use of technology in teaching and learning through a virtual learning environment and personalized learning that can be of huge help to students in terms of effective time management, geographical space, flexibility, and work space.

Similarly, Ajadi et al. (2014) underscored the transformative impact of technology on ODEL, emphasizing the need to enhance teachers pedagogy and professionalism through hands-on training that will enhance teaching and learning to expand accessibility to education for diverse learners. Anderson & Tron (2011) found that technological advancement allows full-time workers to pursue further education at their own pace, accommodates students unsuitable for traditional schooling by offering a flexible learning environment, and provides opportunities for individuals with alternative lifestyles, such as those affected by illness or travel constraints, to

access education. Experts at the recent discourse held by the Regional Training and Research Institute for Distance and Open Learning (RETRIDOL) at the National Open University of Nigeria, on 18 September, 2023, concludes that the delivery of Open and Distance Electronic - Learning (ODEL) services has transit to digital learning that required an overhaul teachers pedagogy profession to equip themselves with multimedia technologies that enhance interactive computer based applications that allow teachers and learners communicate ideas and information with digital print element as well as monitors learning activities, ensuring support, progression, performance, and course satisfaction for learners that transcends temporal and spatial constraints that addresses economic, political, and social challenges within the educational landscape (Omotowo, Ndu & Agwu-Umahi, 2018) Given this digitalization, Anderson & Tron (2011) added that technology continues to be essential components of an ODEL framework, and in order for teachers to use these technologies effectively, it is through capacity building. However, capacity-building training and retraining have been constrained because of lack of political will, electricity, ICT infrastructure, poor network, and financial constraints, among others. Challenges that have hindered teachers competency and effectiveness to leverage technology for teaching and learning have become challenges that persist in ODEL operation (Anderson & Tron, 2011). Given the significance of ODEL and its reliance on emerging technologies, it becomes imperative

for teachers to continually enhance competencies for effective use of these technologies for teaching and learning through upskilling and leveraging hands-on training within the available technology. On this backdrop, the article intends to examine how to enhance teachers' ICT competencies for effective teaching and learning in open and distance electronic learning (ODEL) in Nigeria.

### **Objective of the Study**

The general objective of the study is to enhance teachers' ICT competencies for effective teaching and learning in open and distance electronic learning (ODEL) in Nigeria, while the specific objectives are to:

- ascertain types of information communication technology use in ODEL
- examine how teachers can leverage this technology and challenges they face for teaching and learning.
- suggest possible ways on how teachers can be competent and effective in using ICT for teaching and learning.

### **Theoretical Framework**

The cornerstone of this study lies within the framework of independent study theory, spearheaded by the esteemed American scholar Wedemeyer in 1971. This theory contends that obsolete educational paradigms are still prevalent, a phenomenon largely attributed to traditional teaching method-logies persisting within the country's educational landscape. These

methodologies, ill-equipped to accommodate the influx of aspiring young minds seeking higher education, are hindered by infrastructural limitations and insufficient personnel. The theory seminal vision aimed not only to bridge the educational gap for non-traditional adult learners, colloquially referred to as "back door learners," through the development of a systemic approach to distance education but also to pioneer an inclusive concept of "open" education spanning a lifetime. The theory advocated for leveraging technology to achieve the humanistic goals of education, centred on empowering students as independent learners. His 1971 definition of "independent study" delineated various teaching-learning arrangements wherein educators and learners conduct their respective tasks independently, fostering personalised learning experiences free from the constraints of traditional classroom settings. This concept, encompassing both internal and external modes of study, transcended conventional campus-based education to encompass non-traditional and distance learning programs. The theory principles underscored the imperative of cultivating lifelong learners equipped with the autonomy to pursue continual self-education. Furthermore, in the context of this paper's focus on enhancing teachers ICT competencies for effective teaching and learning of ODEL in Nigeria, it is evident that an adaptable educational framework is pivotal for fostering a culture of lifelong learning and as well as the growing global acceptance of distance education (DE) underscores its efficacy as an

alternative avenue for delivering quality education, particularly in addressing socioeconomic disparities. In Nigeria, where financial constraints often impede educational pursuits, the accessibility and flexibility offered by ODEL hold immense potential for empowering individuals, including those currently unemployed. Despite Nigeria's evolving acceptance of distance learning, there remains a need to align with global standards and leverage ODEL as a comprehensive educational strategy. The theory tenets for effective ODEL implementation serve as a roadmap for optimising its utilisation, emphasising flexibility, individualization, and the integration of diverse instructional modalities. Thus, the relevance of independent study theory lies in its elucidation of the transformative potential of ODEL as a modern educational paradigm, supplanting traditional methods and paving the way for inclusive, lifelong learning opportunities.

### **Conceptual Clarification**

#### **Information Communication Technology**

According to Hanaysha, Shriedeh & In'airat (2023), defined information communication technology (ICT) as a wide range of technological resources and techniques that are used to transmit, save, generate, share, and exchange information. Thus, Almufarreh & Arshad (2023), added that the term encompasses all communication technologies that allow users to access, retrieve, store, transmit, and manipulate digital information. Examples of these

technologies include the Internet, wireless networks, smartphones, computers, software, middleware, video conferencing, social networking, and other media applications. Furthermore, Modise & Zawacki-Richter (2022), argue that the term ICT can also refer to the merging of computer networks and media technology, such as telephone and video networks, through the use of a single link system or cabling system that manages and distributes signals.

### **Teaching and Learning**

Teaching is the practice conducted by a teacher aiming at imparting skills, information, know-how, and interpersonal skills while learning is a student, or any other audience in the setting of an educational institution Toshpulatova & Ilhomjonova, 2023). Teaching is the practice implemented by a teacher aimed at transmitting skills, knowledge, know-how and interpersonal skills, educational institution. Toshpulatova & Ilhomjonova, 2023. In addition, Sabarudin, M., Al Ayyubi, Rohmatulloh & Indriyani (2023), state that teaching is the process where an individual, often referred to as a teacher or educator, imparts knowledge, skills, values, or attitudes to others through several key components such as preparation of lesson plan, set objective, gathered materials, deliver content through various methods like lectures, discussion, demonstration or hands-on activities, evaluate the learners, understanding progress through test quizzes,

assignments or observation, and providing constructive feedback to help learners understand their strengths and areas for improvement. On the other hand, leaning is the process through which individuals acquire new knowledge, skills, behaviours, or attitudes through personal and active process that involves several stages that includes gaining new information or skills through study, experience, or being taught, understanding and making sense of the new information, using the acquired knowledge or skills in practical situations, breaking down information into parts to understand it better and combining different pieces of information to form a new whole as well as judging the value or effectiveness of the information learned (Toshpulatova & Ilhomjonova, 2023).

### **Open Distance Electronic Learning (ODEL)**

Open Distance Electronic Learning (ODEL) is a type of education delivery that makes use of modern technology to facilitate synchronous and asynchronous communication between teachers and students who are physically apart for all or part of the learning process (Gros & García-Peñalvo, 2023). Given this, Almufarreh & Arshad (2023), added that ODEL is a system of education where teachers and learners need not necessarily be present, with features such as flexibility where students have the freedom to choose what, when, and how they learn through integration of various digital tools such as computers, mobile devices, and online platforms to support learning. In addition, ODEL enables

students who occupy multiple roles and are affected by the barriers of distance, cost, and time an opportunity to pursue their studies through the knowledge of technology in teaching and learning.

### **Types of Information Communication Technology use for Teaching and Learning**

Open and distance electronic learning (ODEL) is described by Maphosa and Bhebhe (2019) as a system where teachers and students do not need to be in the same place or present at the same time. It offers flexibility in teaching methods, timing, and admission criteria without compromising the quality of education, largely due to the use of information and communication technology (ICT). However, the success of both teachers and students relies significantly on various approaches, particularly seamless communication between instructors and learners, whether in real-time or delayed interactions. These interactions are supported by various ICT tools, which include open broadcasts, closed-circuit systems, cable, microwave, broadband lines, fibre-optic satellite, or wireless communication devices, along with other computer connections, tele-conferencing systems, video cassettes, DVDs, CDs, and whiteboards (Maphosa & Bhebhe, 2019).

With the growing use of ICT in education, Learning Management Systems (LMS) have emerged as essential tools, allowing structured online learning pathways. They enable the creation of modular, reusable educational units,

often referred to as "learning objects," which are tailored to the specific learning needs of individuals (Aluko & Shonubi, 2014). Conole (2014) explains that ICTs used in ODEL can be broadly divided into two categories: hardware and software. Current hardware includes radio, television, telephones (landlines, mobile phones, fax machines, and Voice over Internet Protocol or VoIP), and computers. Technological infrastructure has improved with the introduction of fibre optic cables, satellites, and microwave transmission systems. On the other hand, software used for ODEL varies significantly and is often customised to suit specific needs. It depends on factors like the specific purpose of the application, the combination of hardware in use, and features required to meet the needs of users (Modise and Zawacki-Richter, 2022). Typically, LMS software is customised to simulate classroom environments and promote academic discussions or interactions. These systems are often integrated with other technologies, such as databases and digital libraries.

Agostinelli (2019) argues that the variety of ICTs currently used in ODEL to support the teaching and learning process is difficult to categorise. However, ICTs are commonly utilised in the following ways to enhance learning:

- Face-to-face meetings/tutorial sessions: ICT can make teaching more engaging through multimedia presentations that include images and sound.

- Student services: ICT provides a platform for sharing information, including study programmes, reminders of student obligations, and important dates, which are now common in most ODEL environments.
- Study materials: ICT also serves as a useful space where students can upload and download study materials from virtual libraries or their personal devices, such as computers or smartphones.

Towobola and Raimi (2011) point out that new trends in ICT, like Massive Open Online Courses (MOOCs), real-time and recorded seminars, live video classes, and micro-credentialing, are enabling students to learn more effectively.

### **Challenges in Teaching and Learning with ICT**

Davidson and Ezeh (2023) found that the challenges of teaching and learning with ICT are diverse, but they often stem from issues such as lack of internet access, inadequate electricity supply, and insufficient government funding. Similarly, Towobola and Raimi (2011) highlighted additional obstacles, including the lack of technical support for existing ICT facilities, inadequate security measures to protect these resources, and poor maintenance and repair practices. They also noted the need for regular in-service training for ODEL teachers and the absence of effective government monitoring of ICT usage in ODEL.

Hassan and Mirza (2020) pointed out that challenges in teaching and learning with ICT

encountered are the digital divide, which has created a significant gap between those who have reliable internet access and those who have little or no access. This remains a major issue worldwide, with many regions still struggling with poor internet services and insufficient equipment, poor ICT infrastructure in many ODEL institutions, and inadequate policies, which are often shaped by rigid administrative systems. Furthermore, there is a lack of collaboration between various stakeholders and agencies, which hinders the efficient use of resources, and effective collaboration is essential in modern education, but it remains a distant goal for many ODEL teachers. Another significant challenge is that many teachers, particularly in ODEL, are not fully equipped to use ICT in their teaching and are also reluctant among some teachers to embrace technology in the learning process, which limits the potential of ICT to enhance effective teaching and learning.

### **Possible ways on how teachers can be competent and effective in using ICT for teaching and learning.**

According to Towobola & Raimi (2011), one way to ensure teachers in Open and Distance Electronic Learning (ODEL) programmes are competent in ICT is for the Ministry of Education to leverage the National Policy for Open and Distance Learning. This policy, which replaced the 2003 National Distance/Open Learning Policy, aims to promote a culture of training and development if properly reactivating and monitoring this policy, the use of information and



communication technology (ICT) in teaching and learning can be enhanced. The policy also highlights the importance of using ICT to support teaching, learning, and managing the medium-term strategic plan for 2013–2017 and beyond. Additionally, the government should implement policies that engage stakeholders for technical and financial support from organisations like the Commonwealth of Learning (COL). This would help create a supportive framework for teachers to access affordable ICT-related programmes (Teemant, Smith, Pinnegar, & Egan, 2005). Selby (2015) also emphasised that ODEL institutions should provide a framework to improve and expand access to ICT training, following best practices, as part of a strategic plan to enhance teaching and learning. To further improve ICT competency in teaching and learning in ODEL, a strong enabling environment is essential that requires committed leadership from the government, teacher education bodies, and ODEL institution leaders (Ivanov, 2021). The Ministry of Education should also adapt the ICT competency framework for teachers to meet national and institutional goals through aligning digital competencies with these objectives and developing openly licensed educational resources (OER) for teacher training programmes based on ICT.

### **Methodology**

The paper employs a desk research method, relying exclusively on materials published in journals, reports, periodicals, and similar documents available in public libraries and

websites. Additionally, it incorporates data from previously conducted surveys to explore the pedagogy profession of teachers and their orientation towards learners in Open and Distance E-Learning (ODEL) in Nigeria.

### **Conclusion**

In conclusion, enhancing teachers Information Communication Technology (ICT) competencies for effective teaching and learning used in Open and Distance e-Learning (ODEL) ranges from learning management systems and video conferencing platforms to mobile applications and collaborative online tools, all of which support flexible, accessible, and interactive learning environments. Teachers can leverage these technologies to enhance teaching and learning. By using ICT, teachers can create more engaging lessons, provide real-time feedback, and tailor learning experiences to individual student needs. However, despite the potential of ICT, teachers face several challenges, including limited access to technology, inadequate infrastructure, lack of technical skills, and insufficient institutional support. These obstacles often hinder the effective integration of ICT into the teaching and learning process. Teachers are to ensure effective use of ICT in ODEL; it is critical to focus on building their competence and confidence in using these tools by engaging in ongoing professional development, and tailored training programs are vital in equipping teachers with the necessary skills. Moreover, institutional support, such as providing access to reliable technology, fostering a positive attitude towards

ICT use, and addressing infrastructure issues, is essential. By overcoming these challenges, teachers can fully harness the potential of ICT, leading to more dynamic, efficient, and effective teaching and learning experiences in ODEL. Also, teachers can leverage these technologies to improve both the delivery and accessibility of learning materials, offering students a more flexible and interactive learning experience. Ultimately, this will enhance student engagement, improve learning outcomes, and contribute to the overall success of the educational process.

### **Recommendation**

Recognising its capacity pedagogy profession of teachers and learners orientation to cater to the diverse educational requirements of a vast student demographic, the paper underscore the importance of the following recommendations:

1. Establishment of an Open and Distance Learning Commission by the ministry of Education endowed with regulatory authority over ODL activities. This commission would serve as a central governing body to oversee and streamline the operations of ODL institutions, ensuring adherence to quality standards and the effective implementation of educational policies.
2. Heightened training and retraining of teachers to acquire skills in new technologies for teaching to orient learners on how to use these technologies for learning.

3. The ministry of education should provide information and communication technology infrastructure with a 24-hour power supply in open and distance learning institutions aimed at enhancing the training and professional development of educators and learners.

4. Creation of an equitable environment conducive to free internet with connectivity for the promotion and advancement of teaching and learning.

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**Influence of Spousal Communication on Marital Stability among Married Couples in Lokoja Metropolis, Kogi State, Nigeria**

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**Abstract**

This study investigated the influence of spousal communication on marital stability among married couples in Lokoja metropolis, Kogi State, Nigeria. descriptive survey research method was adopted for the study. A total number of four hundred and fourteen (412) respondents were selected from Lokoja metropolis, using the proportionate stratified random sampling technique An instrument titled influence of Spousal Communication on Marital Stability Scale Questionnaires (ISCMSSQ) was used for data collection. To ensure the validity of the instrument, face and content was ensured by expert while the reliability of the instrument was done using split-half formula with a reliability coefficient of 0.98. four hypotheses were formulated to guide the study. The data collected were analysed using chi square analysis at 0.05 level of significance. of information from respondents, who participate in the study. The findings revealed that increase in Spousal Communication significantly increase Marital stability. There was a significant relationship between spousal communication on child bearing and rearing, financial management, and in-laws management among couples in Lokoja Metropolis. But there was no significant relationship between spousal communication and sexual satisfaction. Based on the findings of this study, it was recommended that family counsellors and clergymen should organize workshops, seminars and conferences whereby couples would be sensitized on how to consider communication very serious before and after marriage.

**Keywords:** *Spousal communication, marital stability, married couples*

**Introduction**

Marriage in Nigeria is defined as the union between a man and a woman as husband and wife (Nigeria Law Guru, 2023). Selecting a partner and committing to marriage requires strong communication skills, which are seen as significant personal achievements and developmental milestones. A successful marriage comprises various elements and evolves in ways that support the physical and emotional health of both adults and children (Awosan, Iroye, & Okolo, 2023). Deciding to marry is a major life decision, yet many individuals do not invest adequate time or effort in preparing for marriage beforehand. This lack of preparation has greatly

contributed to physical and emotional abuse in many households (Awosan & Ajeh, 2023). Marriage is a union that brings joy and happiness to the society and honour to those who are in it. Marriage is sacred to those involved and indispensable to the social order. It is absolutely necessary in the interest of the society. It is the only source of security to the man and woman's love. It is an institution meant for permanence and as long as life is concerned. It is a socially acknowledged and approved union between a man and woman for procreation (Egbo, et al. 2020), Marital communication refers to the verbal and nonverbal exchange of information between

spouses. It is the process of sending and receiving messages between husband and wife as they interact in the marriage relationship (Omeje et al. 2022).

A community-based study in Ilorin by Adegboyega (2021) found out that enhanced communication and mutual respect between spouses can help resolve marital conflicts, with the expert recommending couples focus on nonverbal aspects. Similarly, a study on the impact of verbal and non-verbal communication skills on marital stability among married lecturers at Federal University, Dutsin-ma, Katsina State, Nigeria, revealed that both types of communication skills significantly affected marital stability. Additionally, the duration of the couples' marriages was found to impact their communication practices. The authors suggested that couples should regularly discuss both positive and negative issues before bedtime and encouraged openness in using both verbal and non-verbal communication to strengthen marital stability (Adamu & Ali, 2022).

Effective communication is crucial for ensuring marital stability and healthy relationships, as it facilitates conflict resolution and serves as the lifeline of the marriage. This suggests that as long as the couples are talking with each other, there is a high chance that they will resolve conflicting issues between them. (Adamu, & Ali 2022)

A study examining the impact of marital communication on family stability among 455 randomly selected teachers from secondary schools in Nsukka education zone, Nigeria,

revealed a significant positive correlation ( $p < 0.05$ ) between marital communication and family stability among the participants (Omeje, Ugwu, & Ogidi, 2022). Additionally, the choice of a partner plays a crucial role in influencing the stability or instability of a marriage.

Marital stability is the orderly and steady state of a marriage, characterized by mutual dependence, trust, and friendship within a nuclear family. According to Kepler in Oyegunwa, Salami, and Gbadebo, (2019), marital stability is a measure of genuine romance displayed by a couple and involves the process of how they met. It also serves as an indicator of their mutual understanding and the sharing of responsibilities and commitments during the post-marital period. The following are some of the causes of marital instability among couples:

- I. Child-bearing or childlessness: the normal expectation is that married couple should be able to produce a child within a year of their marriage and that a great emphasis is placed on child-bearing. He further stressed that, a couple without a child is looked at as an unhappy family (Abdullahi, Mustapha & Solomon 2020).
- II. Financial status: Financial condition of the spouses always also contributes to the stability or otherwise of the marriage as maintained by many researchers. For instance, Grobbelaar and Alsemgeest (2016) asserted that the man is accepted as the head of the family and therefore, he is expected to shoulder the greatest financial responsibility

in providing food and shelter; the wife can support him morally and financially but failure to play their roles results to marital instability.

III. Parental Interference: Parental Interference is also referred to as interference of in-law and this, according to Abubakar in Abdullahi, Mustapha and Solomon (2020), is regarded as one vital source of marital breakdown and it is traced to undue interference of parents. To him, this is made more prominent where any of the two partners makes it habitual to resort to using parents as a means of settling family conflicts.

IV. Sex: the perception causes of marital instability among Married academic staff according to Hussain (2021), indicates that the cause of marital instability as perceived by most people is “marital sexual incompatibility in marriage and lack of proper communication about it which he ranked 1st and closely followed by Marital Infidelity/Unfaithfulness in Marriage.

In Lokoja, Cultural norms and religious landscape in Lokoja, including Christianity and Islam, often assign distinct roles to men and women in marriages, creating communication barriers and reinforcing traditional expectations, particularly in sensitive topics like finances or family planning. Extended families and community leaders significantly influence couples, leading to suppressed communication and fear of gossip, particularly regarding marital

conflicts. This is the situation in Lokoja metropolis, Kogi state.

### **Statement of the Problem**

Marriage requires cooperation, communication, and understanding between partners. Without these elements, the relationship may fail, leading to emotional or physical stagnation. Communication is crucial for a healthy marriage, as a lack of it can result in a lack of intimacy and connection. Marital instability is rising due to factors like domestic violence, infertility, cultural pressures, financial issues, poor sexual relationships, infidelity, and lack of trust. These issues can lead to anger, resentment, dissatisfaction, and frustration, potentially undermining societal values and negatively impacting children and communities.

Poor spousal communication negatively impacts marital stability in Lokoja metropolis, but the mechanisms are not well-defined, leaving couples, counsellors, and society with limited insight into effective strategies to mitigate its adverse effects. This study aims to address this gap by investigating the multifaceted relationship between spousal communication and marital stability among couples in Lokoja metropolis. By examining the various dimension of spousal communication in terms of child bearing, and training, sex, financial management, in-laws’ interferences and marital stability. This study seeks to provide a comprehensive understanding of the potential link and contributing factors. Additionally, the study analyzes the influence of

spousal communication on marital stability, whether spousal communication plays a significant role in marital stability in Lokoja metropolis Kogi State

### **Objectives of the Study**

Specifically, the objectives of the study are as follows:

1. To determine the influence of spousal communication on child bearing and training among couples in Lokoja metropolis.
2. To determine the influence of spousal communication on sex among couples in Lokoja metropolis
3. To determine the influence of spousal communication on financial management among couples in Lokoja metropolis
4. To determine the influence of spousal communication on in-law's interference among couple in Lokoja metropolis

### **Hypotheses**

The following hypotheses were generated for the study.

1. Spousal communication has no significant influence on child bearing and training among couples in Lokoja metropolis.
2. Spousal communication has no significant influence on sex among couples in Lokoja metropolis.
3. Spousal communication has no significant influence on financial management among couples in Lokoja metropolis.
4. Spousal communication has no significant influence on in-laws' management among couples in Lokoja metropolis.

### **Methodology**

The descriptive survey research method was used because of its efficiency in drawing out information, feelings and views from the subjects. The population for the study was 77,253 (37,590 males and 39,663 females) married couples (The estimated population in Lokoja metropolis was based on the projection of married persons between 2006 and 2016 from National Population Commission Office in Kogi State). The sample of the study consist of 412 (164 males and 248 female) selected from all the ten residential districts within Lokoja metropolis. The sample was selected using proportionate stratified random sampling techniques. The research instrument used for this study was a Questionnaire designed by the researchers titled "Influence of Spousal Communication on Marital Instability Assessment Questionnaire (ISCMSAQ)". To ensure the validity of the instrument, face and content validities were ensured by experts while the reliability of the instrument was established Cronbach Alpha method in which coefficient values of 0.988, and 0.985 were obtained for spousal communication and marital instability respectively at 5% (0.05) level of significance

### **Testing of Hypotheses**

**Hypothesis 1:** Spousal communication has no significant influence on child bearing and training among couples in Lokoja metropolis

This hypothesis examined the extent to which spousal communication influences child bearing and training among couples. The cluster mean values for the relevant spousal communication

and child bearing and training (SCEL) scale was used to compute Chi-square value of the

association between the variables. The analysis yielded the following results:

**Table 1: Chi-square Computation for Hypothesis one**

Responses	Observed	Expected	Residual	$\chi^2(\text{calc})$	$\chi^2(\text{tab})$	df	Decision
SA	37	103.0	-66.0	42.29	9.488	4	There is Significant influence
A	204	103.0	101.0	99.04			
D	72	103.0	-31.0	9.33			
SD	99	103.0	-4.0	0.16			
				150.82			

**p<0.05**

The Chi-square test results above revealed 150.82 as the computed chi-square value. The corresponding chi-square tabulated at 5-1 =4 degrees of freedom yields 9.488. Since the chi-square calculated is greater than the tabulated value (150.82>9.488), the null hypothesis is therefore reject at 5% level. It can therefore be concluded that there is a significant influence of spousal communication on child bearing and training among couples in Lokoja metropolis.

**Hypothesis 2:** Spousal communication has no significant influence on sex among couples in Lokoja metropolis

This hypothesis examined the extent to which spousal communication influences sex. The cluster value of spousal Communication and sexual relationship Scale (SCSR) was used to obtain Chi-square value. The analysis yielded the following results:

**Table 2: Chi-Square Computation for Hypothesis Two**

Responses	Observed	Expected	Residual	$\chi^2(\text{calc})$	$\chi^2(\text{tab})$	Df	Decision
SA	92	103.0	-10	0.97	9.488	4	There is no significant influence
A	117	103.0	24.0	5.59			
D	71	103.0	1.0	0.01			
SD	50	103.0	-15.0	2.18			
				8.76			

**p<0.05**

The Chi-square test result above revealed 8.76 as chi-square calculated value at 5% level of significant with 4 degrees of freedom. Since the

chi-square calculated value is less than the tabulated value (8.76<9.488), we accept the second null hypothesis. It can therefore be



concluded that Spousal communication does not significantly influence Sex among couples in Lokoja metropolis.

**Hypothesis 3:** Spousal communication has no significant influence on financial management among couples in Lokoja metropolis.

This hypothesis examines the extent to which Spousal communication influences couple’s financial management among couples in Lokoja metropolis. The cluster mean score of each respondent on Spousal Communication and Financial Management Scale (SCFM) was used to compute the associated Chi-square value. The relevant analysis yielded the following results:

Table 3: Chi-Square computation for Hypothesis Three

Responses	Observed	Expected	Residual	$\chi^2(\text{calc})$	$\chi^2(\text{tab})$	Df	Decision
SA	153	103.0	50.0	24.27	9.488	4	There is Significant influence
A	123	103.0	20.0	3.88			
D	57	103.0	-46.0	20.54			
SD	80	103.0	-23.0	5.14			
				53.83			

**p<0.05**

The results of Chi-square test computed above provides an indication of the extent to which Spousal Communication Influences Financial Management among couples in Lokoja metropolis. The computed value was estimated at 53.83at 5% level of significance, with 4 degrees of freedom. Since the calculated value is greater than the tabulated value (53.83>9.488), the third null hypothesis was rejected. It can therefore be concluded that spousal communication significantly influences financial management ability of couples in Lokoja metropolis.

**Hypothesis 4:** Spousal communication has no significant influence on in-laws’ management among couples in Lokoja metropolis.

This hypothesis examined the extent to which Spousal communication influences in-laws’ management among couple in Lokoja metropolis. The cluster mean score of each respondent on Spousal Communication and in-laws’ interference Scale (SCII) was used to obtain Chi-square value. The relevant analysis produced the following results.

Table 4: Chi-Square computation for Hypothesis Four

Responses	Observed	Expected	Residual	$\chi^2(\text{calc})$	$\chi^2(\text{tab})$	Df	Decision
SA	187	103.0	84.0	68.50	9.488	4	There is Significant influence
A	102	103.0	-1.0	0.01			
D	49	103.0	-54.0	28.31			
SD	74	103.0	-29.0	8.17			
				104.99			

**p<0.05**

The results of Chi-square test computed above provides an indication of the extent to which Spousal Communication influences in-law's management among couple in Lokoja metropolis. The computed value was estimated at 104.99 at 5% level of significance, with 4 degrees of freedom. Since the calculated value is greater than the tabulated value ( $104.99 > 9.488$ ), the fourth null hypothesis was rejected. It can therefore be concluded that spousal communication significantly influences in-law's management ability of couples in Lokoja metropolis.

Table 4 above reports the Chi-square test statistic that provides an indication of the extent to which Spousal Communication influences in-laws interference among couples in Lokoja metropolis. The Parsons's Chi-Square value that was estimated at 814.000 forms the basis for the evaluation of the fourth null hypothesis. Judging by the two sided p-value of the estimate,  $p\text{-value} = 0.000 < 0.01$ , the fourth null hypothesis was rejected at 5% level. It can therefore be concluded that spousal communication significantly influences in-laws' interference among couples in Lokoja metropolis.

### **Discussion of Findings**

Findings of the present study are in line with the objectives of the study as well as the formulated hypotheses.

The hypothesis one found a strong positive relationship between spousal communication and childbearing and training among couples in Lokoja metropolist, despite hypothesis one (1)

suggesting communication doesn't determine child rearing. Some parents use authoritative communication, causing marital quarrel. The finding is in agreement with (Abdullahi, Mustapha and Solomon 2020) who found that there is a significant relationship between child rearing and communication/happiness in a family, it can therefore be concluded that there is a significant influence of spousal communication on child bearing and rearing among marriage couples in Lokoja metropolis.

The second hypothesis stated that there is no significant influence of spousal communication on sexual relationship among couples in Lokoja metropolis. The finding reveals no relationship between Spousal Communication and sexual satisfaction among married couples in Lokoja metropolis, suggesting that understanding spouses' needs and increasing Spousal Communication may not significantly improve marriage satisfaction. The finding is in disagreement with Hussain (2021), who found in his work that the relationship between open sexual communication and overall satisfaction was stronger for couples who have lived longer together in marriage. This finding shows that lack of effective communication reduces love and understanding.

The third hypothesis suggests a strong positive relationship between spousal communication and financial management among couples in Lokoja metropolis, suggesting increased understanding and communication can enhance financial management. The finding is in agreement with

Shittu, Atunwa, and Olapegba (2023)) who conducted a study which indicated that lack of spousal communication influences the frequency of arguments between spouses regarding their finances, indicating a definite lack in communication about money. An increase in spousal communication on finances can lead to less stress about finances and thus will result to fewer arguments about finances. This means that poor financial communication among married couples can lead to marital instability and conflicts. Good spousal communication increases financial responses, while lack of open communication negatively affects credibility and can cause misunderstandings, highlighting the importance of financial communication in marriages.

The forth hypothesis found a significant relationship between spousal communication and in-law management in Lokoja metropolis. Some in-laws control children, leading to problems in marriages. Respect towards in-laws reduces these issues. Submission and communication between couples can bring stability, while bareness can cause in-laws to accuse women for not having children. The finding is in agreement with Abubakar in Abdullahi, Mustapha and Solomon (2020), found that one vital source of marital breakdown and it is traced to undue interference of parents. To him, this is made more prominent where any of the two partners makes it habitual to resort to using parents as a means of settling family conflicts. It can therefore be concluded that spousal communication significantly

influences in-law's management among couples in Lokoja metropolis.

### **Conclusion**

The study found that spousal communication on child bearing and training improves marital stability in Lokoja metropolis couples. It also revealed that communication doesn't determine sexual satisfaction, financial management reduces marital crises, and in-laws' management increases stability.

### **Recommendations**

On the basis of the findings of this study, it is recommended that:

1. Family counselors and clergymen should organize workshops, seminars, and conferences to educate couples on serious communication, child training, and marital discussions for stability in marriages.
2. Couples should openly discuss their sexual needs, including style, preferences, time, and limitations, to ensure a mutual understanding and consensus.
3. Counselors should enhance financial communication and transparency among couples to stabilize many marriages by promoting better understanding and understanding of their financial transactions.
4. Couples should avoid discussing marital issues with in-laws, especially mothers, to prevent their control over their homes and should instead communicate about issues related to in-law management.

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## **Achieving Gender Equity in Conflict Management for Sustainable Development through Non-Formal Education Programmes**

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### **Abstract**

The study focused on achieving gender equity in conflict management for sustainable development through non-formal education programs. Achieving gender equity in conflict management requires different approaches that address underlying structural inequalities and empower individuals, particularly women and girls, to participate fully in decision-making processes and contribute to sustainable development initiative. Non-formal education (NFE) programmes have been identified as utility tools to achieve this goal. NFE programmes encompass a wide range of learning opportunities that occur outside of formal schooling structures. They include community-based initiatives, vocational training, adult literacy programs, and life skills education. These programmes can play a crucial role in promoting gender equality through gender sensitization and awareness, conflict resolution skills, women's empowerment, inclusive education and participation, environmental sustainability, and partnerships. Based on the author's position and counter argument, some suggestions were made among which are initiatives within NFE programs that empower women and girls through skills training and development, leadership development, and access to resources and opportunities; to address this critical issue.

**Keyword:** *Gender Equity, Conflict Management, Sustainable Development, Non-Formal Education Programme.*

### **Introduction**

Gender equity is a fundamental principle of human rights essential for sustainable development, yet it remains a significant challenge in conflict management efforts worldwide. Conflicts often exacerbate gender-based violence, including sexual violence and forced marriage (Office of the High Commissioner for Human Rights [OHCHR], 2019). Achieving gender equity in the context of violence against women and girls in conflict management requires multifaceted approaches that address the underlying structural inequalities. This is done by empowering individuals, particularly women and girls, to engage fully in decision-making processes is crucial. This

contributes to sustainable development initiatives.

In this context, the author examines Non-Formal Education (NFE) programs as a promising strategy to promote gender equity. These programs provide vital opportunities for skill development, capacity building, and empowerment, helping to combat the structural inequalities faced by individuals, women and girls in conflict situations. By fostering these skills which are core components of NFE, greater participation and influence will be fostered in conflict resolution and address structural inequalities in gender inequalities for sustainable development efforts.

Despite the potential of NFE programs to advance gender equity in conflict management and sustainable development, gaps remain in implementation and access, limited funding, inadequate infrastructure, cultural barriers, and persistent gender inequalities within the education systems that continue to hinder the effectiveness and reach of these programs, particularly in conflict-affected and resource-constrained contexts (UNESCO, 2018). Gender equity in the context of this work refers to the principle of fairness and justice in the distribution of resources, opportunities, and responsibilities between men and women, ensuring that both genders have equal access to rights, benefits, and privileges. It involves the recognition of the inherent dignity and worth of all individuals, regardless of gender, and the promotion of policies and practices that eliminate discrimination and create conditions for gender equality (United Nations, 2015). The indicators of gender equity include Gender Pay Gap, Educational Attainment, Labor Force Participation Rate, Political Representation, Access to Healthcare, Ownership and Control of Assets, Gender-Based Violence, Decision-Making Power, Access to Technology and Resources, and Gender Norms and Stereotypes. Anchoring on the transformative learning theory (Mezirow, 1997), this study will sought to address how NFE can help to achieve gender equity in conflict management and sustainable development by promoting Gender Sensitization and Awareness, Conflict Resolution Skills, Women's Empowerment, Inclusive Educa-

tion and Participation, Environmental Sustainability, Partnerships and Collaboration. Transformative theory by Mezirow explains how NFE programs can help shift from gender inequity to gender equity by focusing on resolving conflicts sustainably.

### **Theoretical framework**

This study is grounded in Transformative Learning Theory, developed by Jack Mezirow in 1997. This theory emphasizes that adult learning goes beyond merely acquiring information; it involves profound shifts in perspectives, beliefs, and behaviors through a transformative process that challenges fundamental assumptions and worldviews. Key principles of this theory include critical reflection, disorienting dilemmas, perspective transformation, and engaging in critical discourse leading to action. Transformative Learning Theory is particularly relevant to NFE programs as it encourages participants to confront gender disparities, inequities, and conflicts within their communities. By integrating real-life scenarios and case studies, participants can better understand the obstacles faced by individuals, women and girls in accessing education and resources. These scenarios can prompt critical reflection and encourage new perspectives on gender roles and rights. Furthermore, NFE programs can foster inclusive learning environments that promote open dialogue on gender equity and conflict resolution, allowing participants to share experiences, explore diverse viewpoints, and devise strategies for advancing gender equality and peace building.

## **Conceptual Framework**

### **Gender equity**

Gender equity is the principle of fairness and justice in the distribution of wealth, opportunities, and rights across different genders, addressing discrimination and structural inequalities (World Bank [WB], 2018). It ensures that individuals are treated fairly based on their specific needs, which may involve equal treatment or differentiated treatment that provides equivalent rights, benefits, and opportunities (UNDP, 2021). By promoting equality in education, employment, health, politics, and decision-making, gender equity aims to create conditions for all genders to participate fully in social, economic, and political development. Ultimately, it fosters fair sharing and harmony within families, communities, and nations, helping to prevent conflicts.

### **Conflict**

Conflict is a struggle between individuals or groups arising from opposing needs, beliefs, or values, often perceived as a threat to one's interests (UNDP, 2017). This dynamics of this definition highlights how disagreements can escalate into various forms of conflict, including verbal disputes, interpersonal tensions, ethnic or religious conflicts, political strife, and armed confrontations. Each type of conflict has unique causes and consequences, reflecting competing interests that lead to tension and hostility (United Nations, [UN] 2015). The Oxford Dictionary of Politics describes conflict as a situation where opposing parties pursue incompatible objectives, resulting in attempts to neutralize each other (McLean, 2016). This underscores the diverse

manifestations of conflict, from personal disputes to large-scale violence.

### **Conflict Management**

Conflict Management involves addressing and resolving conflicts constructively to minimize negative impacts while promoting positive outcomes for all involved (Deutsch, Coleman, & Marcus, 2015). It focuses on reducing harmful aspects of conflict while leveraging its potential for constructive change (Rahim, 2017). This approach emphasizes that conflict management is not merely about resolution but also about harnessing conflict's inherent potential for growth. Effective conflict management employs various strategies and approaches, ensuring that disagreements lead to constructive solutions for individuals, groups, and organizations alike. Thus, conflict management is a vital process for fostering understanding and cooperation in a world where conflicts are inevitable.

### **Sustainable Development**

Sustainable development is defined as meeting the needs of the present without compromising future generations' ability to meet their own (UN, 2015). This concept emphasizes the importance of considering environmental and social impacts while promoting inter-generational equity and stewardship. It highlights the holistic approach to sustainable development, integrating economic, social, and environmental factors to achieve balanced and inclusive progress that serves both current and future needs.

**Non-Formal Education Programs for achieving gender equity in conflict management for sustainable development**

Non-formal education programs are structured learning activities that occur outside the traditional school system, designed to meet the specific learning needs of targeted groups. These programs are characterized by flexibility, learner-centered approaches, and tailored curricula (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2016). According to UNESCO, NFE encompasses organized educational activities aimed at particular subgroups, such as adults, adolescents, and out-of-school children. Activities may include literacy classes, vocational training, life skills education, and community-based initiatives, often targeting marginalized populations facing barriers to formal education. Defined broadly, NFE includes any organized educational activity outside the established formal system, focusing on specific learning objectives for various groups (UN, 2015). This highlights the inclusive nature of NFE, which complements formal education by providing opportunities for individuals who may not benefit from traditional schooling. While explicit definitions may vary, the concept of NFE is well understood, especially within adult education especially in the Global Education Monitoring Report 2016 by UNESCO which describes NFE as organized activities serving identifiable learning objectives for specific clienteles (UNESCO, 2016). Additionally, the World Education Forum 2015's Incheon Declaration emphasizes the role of NFE in reaching out-of-

school children, youth, and adults, equipping them with essential skills and competencies to improve their lives.

To achieve gender equity in conflict management and sustainable development, NFE programs adopt approaches that address the root causes of gender disparities. These programs can significantly promote gender equality through initiatives focusing on gender sensitization, conflict resolution skills, women's empowerment, inclusive education, environmental sustainability, and collaborative partnerships. By empowering individuals and fostering inclusive communities, NFE plays a critical role in creating peaceful and equitable societies as expatiated under various NFE programs below.

**Gender Sensitization and Awareness**

This NFE program can effectively create gender sensitization activities to raise awareness about the effects of gender stereotypes, discrimination, and inequality on conflict dynamics and sustainable development. By fostering dialogue and reflection on gender roles and norms, this program challenges traditional attitudes and empower participants to advocate for gender equity within their communities. Gender sensitization is crucial for achieving gender equity in conflict management and sustainable development, as it addresses deep-rooted stereotypes and biases. These initiatives aim to educate individuals and communities about the gendered dimensions of conflict, including how conflicts deferentially impact men, women, and gender-diverse individuals. The Programs



emphasize that gender norms and power dynamics often contribute to violence, discrimination, and marginalization during conflicts (United Nations Women [UNW], 2019). Additionally, gender sensitization efforts challenge harmful stereotypes that perpetuate inequality. By encouraging critical reflection and dialogue, these programs inspire individuals to question traditional gender roles and expectations, fostering a more inclusive understanding of gender identities (UNDP, 2019). Moreover, gender sensitization initiatives promote the use of gender-inclusive language and communication strategies, creating a safe environment for all genders to participate in discussions about conflict management and sustainable development (World Health Organization [WHO], 2016). These programs empower individual women and girls by equipping them with the knowledge and skills to confront gender-based discrimination and advocate for their rights, thereby supporting their leadership development and decision-making autonomy in peace building and development initiatives (UNW, 2019).

Importantly, gender sensitization engages men and boys as allies in promoting gender equality and addressing harmful masculinity norms. By fostering positive masculinity and equitable attitudes, these programs help build more peaceful communities (UNDP, 2019). They also advocate for policy reforms that promote gender equality, creating an enabling environment for gender equity in conflict management and sustainable development (WHO, 2016). Overall,

gender sensitization and awareness are essential components in the pursuit of gender equity.

#### **Conflict Resolution Skills Development.**

This NFE program is pivotal in empowering individuals, women and girls through skills training, leadership development, and entrepreneurship initiatives. By enhancing women's agency, the program enable greater participation in conflict resolution and sustainable development, giving them a vital platform to voice their opinions. Through training, mentorship, and support networks, women's empowerment initiatives aim to strengthen leadership skills and encourage involvement in conflict management and development processes (UNDP, 2019). Economic empowerment is a key focus, in providing women access to resources, opportunities, and markets to bolster their independence and contribute to poverty alleviation. Initiatives like financial services, vocational training, and entrepreneurship support are crucial in promoting women's economic agency and resilience, especially in conflict-affected and marginalized communities (WB, 2016).

Moreover, these programs prioritize improving women's access to education and skill development, fostering the knowledge and confidence necessary for effective decision-making and livelihood opportunities. Promoting girls' education, adult literacy programs, and vocational training empowers women to challenge gender norms and engage in sustainable development (UNW, 2019).

Additionally, these initiatives tackle gender-based violence by providing support services, legal assistance, and advocacy for survivors, while promoting gender-equitable norms. This approach empowers women to assert their rights and access justice, creating safer environments (UNW, 2019). Women's empowerment also enhances political participation and representation in decision-making bodies, facilitating the advocacy for gender-responsive policies and contributing to inclusive governance (UNDP, 2019). By addressing healthcare access and reproductive rights through gender-responsive services, women can make informed health choices (UNW, 2019). Ultimately, women's empowerment is crucial for achieving gender equity, fostering inclusive, peaceful, and sustainable societies.

### **Women's Empowerment Programs.**

Women's Empowerment Programs is another NFE program focusing on empowering individuals, women and girls through skills training, leadership development, and entrepreneurship initiatives. These programs enhance women's agency and participation in conflict resolution and sustainable development efforts, providing them with a platform for their voices to be heard. Women's empowerment initiatives aim to boost leadership skills and increase participation in conflict management and development processes through training, mentorship, and support networks (UNDP, 2019). Economic empowerment is emphasized, enabling women to access resources, opportunities, and markets to enhance their

independence and contribute to poverty reduction. Initiatives such as financial services, vocational training, and entrepreneurship support promote women's economic agency and resilience, particularly in conflict-affected and marginalized communities (WB, 2016).

Furthermore, these efforts prioritize improving women's access to education and skill development, enabling them to acquire the knowledge and confidence needed for decision-making and livelihood opportunities. Promoting girls' education, adult literacy programs, and vocational training empowers women to challenge gender norms and contribute to sustainable development (UNW, 2019). Women's empowerment also addresses gender-based violence by providing support services, legal assistance, and advocacy for survivors while promoting gender-equitable norms. This approach helps women assert their rights and access justice, fostering safer environments. Additionally, empowering women aims to increase their political participation and representation in decision-making bodies, facilitating the advocacy for gender-responsive policies and contributing to inclusive governance (UNDP, 2019). Health and well-being are also prioritized, addressing disparities in healthcare access and reproductive rights. By offering gender-responsive healthcare services and reproductive rights education, women are empowered to make informed health choices (UNW, 2019). Overall, women's empowerment is essential for achieving gender equity in conflict management and sustainable development,

fostering more inclusive, peaceful, and sustainable societies for all.

### **Inclusive Education and Participation**

NFE programs prioritize inclusivity and accessibility for all individuals, regardless of gender, ethnicity, or socioeconomic status, creating flexible and safe learning environments that enable marginalized groups, especially women and girls, to engage in educational activities and decision-making. Inclusive education is vital for challenging gender stereotypes, promoting social cohesion, and empowering individuals to contribute to peaceful, sustainable societies ([UNESCO, 2015). These initiatives focus on ensuring equal access to quality education by removing barriers such as gender-based biases and discriminatory policies, which facilitates enrollment and participation of girls and women, thereby promoting gender equity and empowerment. Again, inclusive education incorporates gender-sensitive curricula and teaching methods that challenge stereotypes and address diverse learning needs. This approach fosters critical thinking, empathy, and respect for diversity, enabling all learners to actively participate in educational activities (United Nations Children's Fund [UNICEF], 2018).

Creating safe learning environments free from discrimination and violence is also essential, including the implementation of anti-bullying policies and providing psycho social support. These measures ensure that all learners, particularly girls and marginalized groups, can fully engage in educational opportunities

(UNESCO, 2015). Efforts to empower girls specifically address barriers such as child marriage and early pregnancy through initiatives like scholarships and menstrual hygiene management facilities, enabling them to stay in school and participate in decision-making (UNICEF, 2018). Additionally, engaging communities and stakeholders in promoting gender equity and inclusive practices is crucial. Raising awareness about the importance of girls' education fosters collective action and ownership. Finally, promoting women's leadership in educational roles enhances their representation in decision-making, challenging stereotypes and fostering gender equity (UNICEF, 2018). Achieving gender equity in conflict management and sustainable development through inclusive education requires addressing systemic barriers, promoting gender-sensitive environments, and empowering all genders to participate actively in educational processes.

### **Environmental Sustainability Education**

These NFE programs play a significant role in integrating environmental education and sustainability practices, emphasizing the links between gender equity, conflict management, and environmental sustainability. By promoting eco-friendly practices and raising awareness about the gender impacts of environmental degradation, these programs help build sustainable and resilient communities. Efforts focused on environmental sustainability that prioritize gender equity can address root causes of conflict, promote social justice, and foster inclusive

communities (United Nations Environment Programme [UNEP], 2016). These initiatives recognize that environmental degradation disproportionately affects women, men, and gender-diverse individuals. Women often bear a greater burden due to their roles in resource management, food production, and care giving. Addressing these gendered impacts not only promotes gender equity but also empowers women (UNW, 2017). Furthermore, environmental sustainability initiatives prioritize women's participation in decision-making related to natural resource management and climate change adaptation, ensuring equity voices are represented in environmental governance.

Additionally, these initiatives encourage women's leadership in conservation efforts, including biodiversity conservation and renewable energy projects, empowering them as environmental stewards. Integrating gender perspectives into climate change adaptation strategies recognizes women's unique vulnerabilities and capacities for resilience. This involves mainstreaming gender in disaster risk reduction and sustainable livelihoods, contributing to more resilient and equitable communities (UNEP, 2016). Furthermore, environmental sustainability efforts promote gender-sensitive approaches to natural resource management, ensuring equal access to land, water, and forest resources for all. Addressing discriminatory policies and promoting women's land rights empower them to engage in sustainable resource management (UNW, 2017). By supporting community-based projects that

involve local stakeholders, especially women and marginalized groups, these initiatives foster gender equity, community resilience, and sustainable development (UNEP, 2016). Ultimately, achieving gender equity in conflict management and sustainable development requires recognizing and addressing the gender dimensions of environmental challenges while promoting women's active participation and land ownership.

### **Conclusion**

In conclusion, NFE programs are crucial for achieving gender equity in conflict management and sustainable development by tackling the root causes of gender disparities. They empower individuals with essential skills and promote inclusive education, reaching marginalized groups, women, and youth with limited access to formal education. These programs foster skills development and critical thinking, enabling participants to challenge gender norms and advocate for their rights. Additionally, they facilitate partnerships among governments, civil society, and stakeholders, fostering collective action for gender equity initiatives. Expanding and enhancing these programs is vital for advancing gender equality and social justice worldwide and specifically in Nigeria.

### **Suggestions**

To achieve gender equity in conflict management and sustainable development through NFE, several strategies are recommended.

1. First, organizers should create curricula that incorporate gender perspectives and promote inclusive environments.

2. Second, initiatives should focus on empowering vulnerable individuals, women and girls via skills training and leadership development.
3. Third, programs must include modules on preventing and responding to gender-based violence.
4. forth, there should be opportunities for the meaningful participation of women, girls, and marginalized groups in decision-making.
5. Lastly, collaboration with governments, NGOs, and community organizations is essential to enhance the effectiveness of non-formal education programs for diverse populations.

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**Influence of Parental Stress on the Academic Achievement of Special Needs Children in Ilorin Metropolis, Kwara State, Nigeria**

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**Abstract**

The academic achievement of special needs children often lags behind that of their peers due to various challenges they face, including cognitive, emotional, and physical disabilities. Despite efforts to provide inclusive education and tailored support, many special needs children still struggle to meet academic benchmarks. Based on this, the study therefore, examined the influence of parental stress on the academic achievement of special needs children. Descriptive survey research design was used for the study, the respondents were one hundred and twenty (120) of parent of student with special needs, they were randomly selected. One research question was stated, and two hypotheses were formulated and tested at 0.05 significant level. One research instrument was used ( $r=0.91$ ). Regression and T test were used to analysis data. The finding of this study revealed that influence of parental stress on the academic achievement of special needs children in Ilorin metropolis is low (mean=2.4), parental stress has no significant influence on the academic achievement of special needs children in Ilorin metropolis ( $p>0.05$ ) and that there is no significant difference on the influence of parental stress on academic achievement of special needs children in Ilorin Metropolis based on gender ( $p>0.05$ ). It was concluded that parental stress does not influence the academic performance of special needs children, it was therefore recommended that schools and other support systems should provide resources and support for parents of special needs children to help manage stress and improve academic outcomes for their children.

**Keywords:** *Parental stress, academic achievement and special needs children*

**Introduction**

Children with special needs are those who require additional support or accommodation to participate in daily life activities and meet other developmental milestones. They are those whose conditions range from physical disabilities, developmental disabilities and learning disabilities and so on, because of the peculiarity of their disabilities, they face unique challenges in school which have a significant influence on their academic achievement. Research have

shown that children with special needs struggle on academic areas like reading, writing, arithmetic, speaking and overall classroom engagement.

Academic achievement of a child could be defined as the learning outcomes of the child, which includes the knowledge, skills and ideas, acquired and obtained through their course of study within and outside the classroom situation (Epunam, 2009). It is the outcome of

determination, hard work, of student in academic pursuit. Pandney, (2008) defined academic achievement as the performance of the pupils in the subjects they study in the school. This determines the pupils' status in the class. This gives children an opportunity to develop their talents, improve their grades and prepare for future academic challenges. Academic achievement refers to a person's performance in a given academic area (e.g. reading or language arts, mathematics, science and other areas of human learning. Academic achievement relates to academic subjects a child studies in school and the skills the child is expected to master in each (Kathryn, 2015). Academic achievement refers to excellence in all academic discipline, in a class as well as extracurricular activities. It includes excellence in sporting behaviour, it includes excellence in sporting behaviour, confidence, communication skills, and others.

Steinberger (2015) posited that academic achievement encompasses students' ability and performance; it is multidimensional; it is intricately related to human growth and cognitive, emotional and social physical development; it reflects the whole child; it is not related to a single instance, but occurs across time and levels, through a student's life in public school and into post-secondary years and

working life. Mokwena (2023), stated that Academic achievement refers to how well a student is accomplishing his tasks and studies. Academic achievement in school is evaluated in several ways. For regular grading student students demonstrate their knowledge by taking written and oral tests, performing presentations, submission of homework and participating in class activities and discussion. Teachers evaluate in the form of assignment, test and examination to describe how well a student has done.

It has been observed by various researchers that students without disabilities as well as those with disabilities experience low or poor academic achievement. Low or poor academic performance has been adjusted by the examiner as falling below expected standard (Adesemowo, 2015). A lot of factors have been attributed or influenced academic achievement of students with special needs and those without Izundu, (2015) pointed out that some environmental variables in a home influence the learning capabilities of a child either positively or negatively and thus affect their academic performances. Some of the variables include parental socioeconomic status, level of parental supervision of children, location home, library books etc. Acato (2017), stated that academic achievement is affected by a number of factors



including ineffective teaching, bad study habit, parental stress, family social economic status and school background. According to Graetz (2015), one's educational success depends very strongly on social economic status of the parents.

Parents are always concerned about the upbringing and care of their children. Parents change their lifestyle and make appropriate arrangements while raising their children. The emotional, physical, and behavioral problems of children are likely to increase parental stress and fatigue that potentially impacts the life and behavior of parents. Parental stress, therefore, becomes an inevitable factor of parents while meeting these challenges. Parental stress is amplified by challenging life situations including poverty, single parenting, and parental separation (Louie et al., 2018). Parental stress in this study refers to the emotional problems and difficulties parents go through while giving care to their children with learning disabilities and other with special needs. These include undue energy dissipation, obnoxious expenditures, worry anxiety, grief, shame and guilt, blame, resentment from neighbors and extended family members, marital discords, and so on (Logsdon, 2018). It is a persistent emotional condition that occurs when the demands of the child-rearing cycle are perceived to be greater than personal

and social resources (Be-Lue et al., 2015), which could have many negative consequences for both parents and their children's functioning (Hartley, et al., 2011). Dyson (2018) defines parental stress as the unfavorable and overwhelming feedback suffered by the parents from the inability to cope with the special demands for care, leading to negative consequences while raising a child with special needs.

In a study conducted by Park and Turn Bull (2002) examined the relationship between parental stress and academic achievement of children with disabilities, the researchers found that parental stress was negatively associated with the academic achievement with children with disabilities, and that this relationship was mediated by the quality of parent- child interaction. they suggest that intervention to improve the quality of parent-child interaction may be an effective way to reduce parental stress and support academic achievement for these children. Another research conducted by Kersh and Hedvat (2006). The study found that high level of parental stress was associated with lower academic achievement among special needs children. Specifically, this study found that parental stress was negatively correlated with children's reading and math achievement scores. the researchers suggested that this may be due to

the facts that parental stress can lead to less effective parenting practices, such as less engagement in children's academic activities and less positive reinforcement for academic achievement.

Gender will be the moderating variable that will be use in this study. Gender differences on parental stress of academic achievement of special needs children has become a matter of considerable details among parents, teachers, and researchers in the field of education. According to World Health Organization gender (1998) refers to the characteristics of woman, man, girls and boys as well as relationship with each other. As a social construct, gender varies from society and can change over time.

Gender is a social system that shapes and maintains distinctions between men and women, while also structuring their relationships within society. It also refers to a kind of persistent impersonation that passes as the real, therefore, Gender refers to the roles, behaviors, and expectations that are socially constructed and deemed appropriate for men and women by a particular society.

Wehmeyer, Shogren, and Little (2008) conducted a study examining gender differences in academic achievement for students with disabilities. The researcher found that overall,

girls with disabilities across all year of study. However, the gender differences were smaller for student with disabilities. The researchers also found that gender differences in GPA was smaller with milder disabilities than for those with more severe disabilities. Wood and Polloway (2005) conducted a study examining gender differences on academic achievement on children with disabilities, the researcher found out that overall, girls with disabilities had GPAs than boys with disabilities. They found that girls with disabilities were more likely to honors and advanced placement courses than boys with disabilities. Diamond (2006) conducted a meta-analysis examining gender differences on academic achievement on student with disabilities. she found out that over all boys were more likely to be identified as having disabilities and to be placed in special education than girls. the researcher found that boys have disabilities had lower academic achievement than girls with disabilities.

A study conducted by Kalyanpur and Harry (2012) found that the relationship between gender and academic achievement among special need children is also influenced by a child's race and ethnicity. The study found that girls with special needs, tend to have lower academic achievement than boys with special need, the

study suggest that interventions aimed at improving the academic achievement of girls with special needs should consider the complex inter play between gender, race, and disability. According to the findings, it has been concluded that female children with special needs are more likely to have lower academic achievement more than male children with special needs. Based on this, the present study examined the influence of parental stress on the academic achievement of special needs children in Ilorin Metropolis, Kwara State Nigeria.

### **Statement of the Problem**

Children with special needs require additional support, services, or accommodations to help them succeed in school and life. This group includes children with physical, cognitive, sensory, or emotional disabilities, as well as those with developmental delays or behavioral challenges. The specific needs of each child vary widely and may require a range of interventions to help them reach their full potential. Special needs children face challenges that can impact their physical, emotional, and social well-being, such as difficulty with communication, sensory issues, learning difficulties, behavioral issues, and social isolation. They also encounter educational challenges, including struggles with academic skills, social skills, and communication, as well as stigma and a lack of

support from peers, teachers, and sometimes even parents and caregivers. These challenges often result in negative outcomes, such as low academic performance, social isolation, low self-esteem, and poor mental health. Without appropriate supports and services during their school years, special needs children may face barriers to employment and other opportunities later in life.

It has been observed that parental stress can adversely affect the academic achievement of special needs children. Parents of these children often experience high levels of stress due to the additional responsibilities of caregiving, which can negatively impact their children's academic outcomes. While previous research has explored the general influence of parental stress on children's academic performance, there is a gap in understanding its specific impact on the academic achievement of special needs children, a gap that the current research aims to address.

### **Research Question**

1. What is the influence of parental stress on the academic achievement of special needs children in Ilorin Metropolis?

### **Hypotheses**

H01: There is no significant influence of parental stress on the academic achievement of special needs children in Ilorin Metropolis

H02: There is no significant difference on the influence of parental stress on the academic achievement of children with special needs based on gender.

**Methodology**

Descriptive survey research design was adopted for the study; reason for this is to provide an accurate description of phenomenon. The respondents for this study were one hundred and twenty (120) parents and teachers of students with intellectual disabilities in Ilorin metropolis. They were purposefully selected from all special schools in Ilorin metropolis. Influence of parental stress on the academic achievement of special needs children questionnaire was the instrument used for the study. The influence of parental stress on academic achievement questionnaire

was constructed by the researcher, and it contains 10 items with response choice of 4 - point scale: Strongly Disagree (SD), Agree (A), Disagree (D) and Strongly Agree (SA). The reliability coefficient is 0.81 was obtained using test-re-test method, which indicated that the instrument was reliable. The researcher administered the questionnaires and collected them back on the spot. The data collected were analyzed using regression and t-test.

**Results**

Research Question One: what is the influence of parental stress on the academic achievement of special needs children in Ilorin metropolis?

Table 1: Table showing the influence of parental stress on the academic achievement of special needs children in Ilorin metropolis

S/N	ITEMS	SA	A	D	SD	MEAN
1	I am happy in my role as a parent of special needs children	57(47.5)	51(52.5)	7(5.8)	5(4.2)	3.3
2	Having child(ren) with special needs leaves little time and flexibility in my life	37(30.8)	57(47.5)	22(18.3)	4(3.3)	3.1
3	Caring for child(ren) with special needs sometimes take more time and energy than I have to give	21(17.5)	32(26.7)	52(43.3)	15(12.5)	2.5
4	I sometimes worry whether I am doing enough for my child(ren) with special needs	12(10.0)	43(35.8)	47(39.2)	18(15.0)	2.4
5	Having child(ren) with special needs has been a financial burden	15(12.5)	12(10.0)	77(64.2)	16(13.3)	2.2
6	It is difficult to balance different responsibilities because of my child(ren) with special needs	9(7.5)	24(20.0)	71(59.2)	16(13.3)	2.2
7	I feel overwhelmed by the responsibility of being a parent of child (ren) with special needs	14(11.7)	32(26.7)	53(44.3)	21(17.5)	2.3
8	Having child(ren) with special needs give me a more certain and optimistic view for the future	36(30.0)	54(45.0)	20(16.0)	10(8.3)	3.0
9	My major source of stress is having child(ren) with special needs in my life	4(3.3)	22(18.3)	66(55.0)	28(23.2)	2.0
10	The behaviour of my child(ren) with special needs is often embarrassing and stressful for me	8(6.7)	15(12.5)	57(47.5)	40(33.3)	1.9
Weighted mean 2.4						

Note: The figures in parentheses are in percentages

Table 1 above showed the influence of parental stress on the academic achievement of special needs children in Ilorin metropolis. The following shows influence of parental stress on the academic achievement of special needs children in Ilorin metropolis as follows: they agreed that having child(ren) with special needs leaves little time and flexibility in their life (3.1), they agreed that caring for child(ren) with special needs sometimes take more time and energy than I have to give (2.5). they disagreed that they sometimes worry whether I am doing enough for my child(ren) with special needs (2.4), they disagreed that having child(ren) with special needs has been a financial burden (2.2), they disagreed that it is difficult to balance different responsibilities because of my child(ren) with special needs (2.2), they disagreed that they feel

overwhelmed by the responsibility of being a parent of child(ren) with special needs (2.3). More so, having child(ren) with special needs give me a more certain and optimistic view for the future (3.0), they disagreed that their major source of stress is having child(ren) with special needs in my life (2.0) and the behaviour of my child(ren) with special needs is often embarrassing and stressful for me (1.9). The overall weighted average mean was 2.5 which indicated that the calculated mean (3.2) is equal to the fixed mean (2.50). This showed that the influence of parental stress on the academic achievement of special needs children in Ilorin metropolis is low.

HQ 1: there is no significant influence of parental stress on academic achievement of special needs children in Ilorin Metropolis

**Table 2:** Summary of Regression Analysis showing influence of parental stress on academic achievement of special needs children in Ilorin Metropolis

Variables	N	Mean	Std. Deviation	$r_{cal}$	$R^2$	Adjusted R Square	F	Sig	Decision
Parental stress	120	25.00	3.78						
Academic Achievement	120	22.50	3.32	0.14	0.02	0.01	2.29	0.13	Not Sig

Table 2 showed the summary of regression analysis of significant influence of parental stress on academic achievement of special needs children in Ilorin Metropolis, it was revealed that parental stress had mean score of 25.00 and standard deviation of 3.78 while academic

achievement had mean score of 22.57 and standard deviation of 3.32,  $R_{cal}$  was 0.14,  $R^2$  was 0.02, adjusted  $R^2 = 0.01$ , F was 2.29 and significant 0.13 ( $r_{cal} = 0.14$ ,  $R^2 = 0.03$ , adjusted  $R^2 = 0.01$ ,  $F = 2.29$ ,  $P > 0.05$ ). The observed p-value is greater than the fixed p-value. This implies that

parental stress had no significant influence on academic achievement of special needs children in Ilorin Metropolis. Therefore, the null hypothesis which stated that there is no significant influence of parental stress on

academic achievement of special needs children in Ilorin Metropolis was not rejected.

Ho2: There is no significant difference on the influence of parental stress on academic achievement of special needs children in Ilorin Metropolis based on gender.

Table 3: Summary of T-test result showing the influence of parental stress on academic achievement of special needs children in Ilorin Metropolis based on gender.

	Gender	N	Mean	Standard Deviation	T	F	Df	Sig	Decision
Parental Stress	Male	46	25.43	3.89	0.99	0.01	118	0.94	Not Sig
	Female	74	24.73	3.71					

Table 3 showed summary of t-test result showing the influence of parental stress on academic achievement of special needs children in Ilorin Metropolis based on gender. It was revealed that male respondents had mean score 25.43 with standard deviation 3.89 while female respondents had mean score 24.3 with standard deviation 3.71, the  $T_{cal}$  was 0.99, degree of freedom 118, F was 0.01 and significant level of 0.94 ( $P > 0.05$ ). This implies that there is no significant difference on the influence of parental stress on academic achievement of special needs children in Ilorin Metropolis based on gender. Therefore, the null hypothesis that states that there is no significant difference on the influence of parental stress on academic achievement of special needs children in Ilorin Metropolis based on gender was not rejected.

**Discussion of the Findings**

The first finding of the study revealed that influence of parental stress on the academic achievement of special needs children in Ilorin metropolis is low the reason could be that the resilience and adaptability of these children is high. Special needs children may have unique strengths and coping mechanisms that allow them to navigate challenges and succeed academically, despite the presence of parental stress. This is not in line with Kersh and Hedvat (2006) who found that high level of parental stress was associated with lower academic achievement among special needs children.

The second finding of this study showed that there was no significant influence of parental stress on academic achievement of special needs children in Ilorin metropolis, the reason could be

that parents of special needs children know how to manage stress they experience, and this assist them in taking care and support their wards with special needs. This finding is not in line with Kersh and Hedvat (2006). The study found that high level of parental stress was associated with lower academic achievement among special needs children.

Lastly the finding of this study shows that there was no significant difference in the influence of parental stress on academic achievement of special needs children in Ilorin metropolis based on gender, the reason could be that parents do not have different expectations for their sons and daughters. This finding is not in line with Semina (2018) who reported that there was significant difference was found on authoritarian parenting style of both parents towards boys and girls.

#### **Conclusion and recommendation**

Based on the findings of this study, It was concluded that parental stress does not influence the academic performance of special needs children, it was therefore recommended that schools and other support systems should provide resources and support for parents of special needs children to help manage stress and improve academic outcomes for their children.

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**Stress, Self-esteem and Suicidal Ideations among Academically High-ability Students in the University of Ibadan, Ibadan, Oyo State**

By

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**Abstract**

The present study examined stress patterns and self-esteem as correlates of suicidal ideations among academically high-ability students at the University of Ibadan, Oyo State Nigeria. Two research questions were generated, and two hypotheses were raised, tested at 0.05 level of significance. The study employed a descriptive survey design of the correlational type. Forty-three (43) academically high-ability students in 300 and 400 levels were randomly selected for the study. Three instruments were used for data collection, they include; Stress Indicator Questionnaire ( $r = 0.79$ ), Rosenberg Self-esteem Scale ( $r = 0.85$ ), and Suicide Risk Assessment Form ( $r = 0.77$ ). Data gathered were analysed using frequency count, percentage, mean and Pearson Product Moment Correlation. The findings of the study revealed that parental stress patterns and self-esteem were significant in their composite contribution on suicidal ideations of academically high-ability students ( $F(2,41) = 6.167$ ;  $R = .485$ ,  $R^2 = .236$ ,  $Adj. R^2 = .197$ ,  $p < 0.05$ ). It was also showed that relative contribution of each of the independent variables on suicidal ideation: self-esteem had  $\beta = .376$ ,  $P < .05$  and stress pattern had  $\beta = .136$ ,  $P < .05$ . The findings also showed that stress pattern does determine the suicidal ideation of academically high-ability students respectively ( $p > .05$ ) and it was shown that self-esteem does determine the suicidal ideation of academically high-ability students ( $p < .05$ ). Based on the findings, the study recommended that parents, peers and tertiary institutions should turn their attention to the psychological well-being of the academically high-ability students in various institutions and to create awareness on suicidal ideations among students in general.

**Keywords:** *Stress Patterns, Self-esteem, High-ability, Suicidal Ideations*

**Introduction**

Prominent in the field of high-ability students' education is given to the cognitive prowess of high-ability students which ultimately shift the minds of majority of people away from the fact that, the high-ability students can be prone to; social, emotional, psychological and psychosocial activities. Many people view high-ability as perfectionism and to most people, a child that has high-ability possesses advanced intellectual capabilities and a good potential for success or societal contribution (Da Costa & Lubart, 2016). By and large, society today, does not exempt anyone from psycho-social activities, though these activities may vary from

individuals. Unveiling myths surrounding the high-ability students, they are fallible, though with higher degrees of predictability compared to their average-ability counterparts in the school environment as this is the reality of human existence. Academic success and cognitive development have been the focus of educational goals, especially for academically high-ability students. Thereafter, the academically high-ability students may feel the pressure to succeed while the affective, psychological, psychosocial, emotional and social development of these youngsters may have been neglected by the

school which sometimes leads to suicidal ideation.

The World Health Organization (2014) rated suicide as the world's second leading cause of death for those between the ages of 15 and 29 years in school setting. This in consonance with (Feng, Waldner, Cushon, Davy, and Neudorf, 2016) that suicide is the second leading cause of death in adolescents and young adults. Approximately 800,000 to a million people globally per year, across all age groups, die from suicide, which include over 3,500 suicides each year. Suicide, hence, is not peculiar to a race, culture, nation, color, or group. Nigeria as a nation; is not exempted from other countries in the universe with high rate of suicide among her population. A nation confronted with social and/or economic instability might be losing citizenry to suicidal thoughts, ideation, attempt, and completion in some instances. Throughout the world, reported cases of suicides and suicidal attempts on campuses cannot be overruled as Nigerian tertiary institutions are not exempted from this endemic life threatened or termination are on reports on campuses, colleges, and universities. A total number of 7316 deaths due to suicide were recorded between 1993-2011 in Sweden, of which 541 were registered among university students (Christine, Rickard, Marie and Marjan., 2017). They found out that suicide among university students constituted 71.4% of all unnatural deaths (N= 757) and 36.4% of all deaths (N= 1485). Nigeria is rated among the

suicides rating countries in the world with both sexes at 17.3% (World Health Organization 2018). As a nation, it is hard to report many occurrences of complete suicidal ideations because of the societal attitudes or beliefs towards such acts but of recent times, complete suicides and/or suicidal attempts have been on pages of Nigerian newspapers, radio stations and other media. This is also buttressed by World Health Organization's report (2018) in an observatory data that suicides in Nigeria are at an estimated rate of 9.8 per 100,000 higher than regional average. Also, stressing that action is needed especially considering that the rate is an underestimated as many cases go unreported and undocumented.

Robert (2008) classified suicidal processes into majorly four, namely: completed suicide, suicidal attempts, suicidal ideation, and self-destructive acts. Complete suicide, is a behavior that results in the death of the victim. Suicide attempts involve a suicidal behavior where the attempter survives. Suicidal ideation includes all over suicidal behaviors and communications such as suicide threats and expressions of wish to die. Self-destructive acts include behaviors that do not lead to immediate death but gradually leads to death after a long time such as alcoholism, sex abuse and drug abuse.

Stress has been a common challenge that exists among students in tertiary institutions regardless of age, gender, intelligence and race. Tertiary institutions are focusing on producing graduates

that are academically sound graduates, but very few of these institutions realize that only by taking care of the students' stress patterns is one of the measures to sustaining these students for longer periods. Sabanita and Ishita (2016) assert that every individual has a unique nature in capabilities, attitudes, personality characteristics and interest. Hence, stress is seen as substantive imbalance between environments, demand and response capability of organism. It is worth saying that, academically high-ability students' increase in expectations from parents, peers, teachers and entire society may be capable of increasing stress patterns in them. Self-esteem plays a crucial role in the mental well-being of high-ability students, particularly in relation to suicidal ideation. These students often face intense academic pressure, and those with low self-esteem are more vulnerable to developing negative mental health outcomes, including suicidal thoughts. Therefore, fostering self-esteem is essential in mitigating suicidal ideation among high-ability students. This study examined stress and self-esteem as predictors of suicidal ideation among academically high-ability students in tertiary institution in Ibadan, Oyo State.

### **Statement of the Problem**

In recent years, significant attention has been devoted to enhancing the cognitive and academic development of high-ability students, particularly within tertiary institutions. However, this focus has often overshadowed the importance of addressing the psychological, affective, social,

and emotional well-being of these students. This neglect of holistic development may leave these students vulnerable to a range of psychological issues, despite their academic prowess. Contrary to common myths, high-ability students are not exempt from experiencing stress, low self-esteem, and suicidal ideation. These psychological challenges are prevalent across various populations and can have profound effects on mental health, regardless of cognitive capability. Research from developed countries has consistently linked stress and low self-esteem to suicidal ideation among high-ability students at different educational stages. It is crucial to investigate the relationship between stress, self-esteem, and suicidal ideation specifically among academically high-ability students at the University of Ibadan, Oyo State. Understanding these dynamics would provide valuable insights into other domains that need to be developed among this population and highlight the need for targeted interventions to support their overall well-being.

### **Research Questions**

- (a) What is the composite contribution of stress patterns and self-esteem on suicidal ideation of academically high-ability students?
- (b) What is the relative contribution of stress patterns and self-esteem on suicidal ideation of academically high-ability students?

### **Hypotheses**

**Ho1:** There is no significant relationship between stress patterns and suicidal ideations

among academically high-ability students in tertiary institution in Ibadan, Oyo State.

**Ho2:** There is no significant relationship between self-esteem and suicidal ideations among academically high-ability students in tertiary institution in Ibadan, Oyo State.

### **Methodology**

The study adopted a descriptive survey research design of correlational type. This research design was used to find out the relationship between stress patterns, self-esteem, and suicidal ideations among academically high-ability students in the Faculty of Education, University of Ibadan, Oyo State. The population were one hundred and fifty-six (156, all academically high-ability students in 300 and 400 levels) with 3.5 cumulative grade point average (CGPA) and above, the sample for the study were forty-three (43) high-ability students with the highest CGPA and were randomly selected from the total population. Three research instruments were used: Stress Indicator Questionnaire, a five likert scale ranging from “Never to Almost Always” Stress Indicator Questionnaire tests stress level in five domains of human life; Physical Indicators (21 Question items), Sleep Indicators (5 Question items), Behavioral Indicators (17 Question items), Emotional Indicators (21 Question items), and Personal Habits (9 Question items). ( $r=0.79$ ), Rosenberg Self-esteem Scale is a 10-item that measures self-worth of 4 likert scale ranging from strongly agree, agree, disagree and strongly disagree, it consists of ten (10) items, five of

which are described in negative qualities and five of which were described in positive qualities. Respondents answer questions on a four-point scale ranging from strongly agree to strongly disagree. The Rosenberg Self-esteem Scale is split into two subscales: Rosenberg Self-esteem Scale positive and Rosenberg Self-esteem Scale negative. ( $r = 0.85$ ), and Suicide Risk Assessment Form was developed by Beck and colleagues in (1974) to measure circumstances related to suicide attempts. It is a 20-item; self-rating inventory that measures circumstances related to suicidal ideation. The instrument is designed to identify and interpret suicidal ideation and intent to commit (suicidal desire), with an assessment on suicidal thoughts (passive desire), and suicidal intention (suicidal desire) (Beck, Aaron, Kovacs, and Weismann, 1979). Each 20 major circumstance has 3-point Likert-type scores ranging from 0-2. At the end, the total scores are calculated as; 15-19 =Low Intent (LI), 20-28 =Medium Intent (MI), 29 and above = High Intent (HI) respectively. ( $r = 0.77$ ). Two research questions were formulated, and two hypotheses were raised and tested at 0.05 level of significant. Data gathered were analysed using frequency count, percentage, mean and Pearson Product Moment Correlation.

### **Results Presentation**

#### **Research Question One**

What is the composite contribution of stress and self-esteem on suicidal ideation of academically high-ability students in tertiary institution in Ibadan, Oyo State?

Table 1: Summary of multiple regression showing composite contributions stress pattern and self-esteem on dependent variable suicidal ideation of academically high-ability students.

Df	Model	Sum of Square	Mean Square	F	Sig.
2	Regression	179.859	89.930	6.167	0.01
41	Residual	583.257	14.581		
43	Total	73.116			

R = 0.485  
 R<sup>2</sup> = 0.236\*  
 Adj. R<sup>2</sup> = 0.197\*

The table 1 above showed the composite contribution of stress pattern and self-esteem on suicidal ideation of academically high-ability students. It was revealed in table 1 that parental stress and self-esteem were significant in their composite contribution on suicidal ideation of academically high-ability students ( $F_{(2,41)} = 6.167$ ;  $R = .485$ ,  $R^2 = .236$ ,  $Adj. R^2 = .197$ ,  $p < 0.05$ ). This implies that both stress pattern and

self-esteem had contribution on suicidal ideation of academically high-ability students in tertiary institution in Ibadan, Oyo State.

**Research Question Two**

What are the relative contributions of stress pattern and self-esteem on suicidal ideation of academically high-ability students?

Table 2: Summary of relative contribution of stress pattern and self-esteem on suicidal ideation of academically high-ability students.

Model	Unstandardized Coefficient		Standardized Coefficient	t	Sig.	Ranking
	B	Std.Error	Beta			
(Constant)	-22.532	20.919		-1.077	.288	
Self-esteem	0.376	.171	.312	2.197	.034	1
Stress pattern	0.136	.063	.309	2.117	.035	2

The table 2 above showed the relative contribution of independent variables (stress and self-esteem) on dependent variable (suicidal ideation) of academically high-ability students. The result revealed the relative contribution of each of the independent variables on suicidal ideation: self-esteem had  $\beta = .376$ ,  $P < .05$  and stress pattern had  $\beta = .136$ ,  $P < .05$ . This indicated that the independent variables; stress and self-

esteem were significant in their relative contributions to the dependent variable; suicidal ideation but self-esteem had better significant value than stress pattern.

HO 1: there will be no significant relationship between stress pattern and suicidal ideation of academically high-ability students.

Table 3: Pearson Product Moment Correlation shows the relationships between stress pattern and suicidal ideation of academically high-ability students.

<b>Variables</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>r-cal</b>	<b>Df</b>	<b>Sig</b>	<b>Decision</b>
Stress pattern	43	342.02	9.65	0.38	41	0.01	Sig
Suicidal Ideation	43	37.79	4.26				

Table 3 showed the correlation between stress pattern and suicidal ideation of academically high-ability students. It was revealed that the mean and standard deviation of stress pattern were 342.02 and 9.65 respectively, while the mean and standard deviation of suicidal ideation of academically high-ability students were 37.79 and 4.26 respectively. The calculated value of r was 0.38; the observed p-value was 0.01 and the fixed p-value 0.05. The observed p-value was less than the fixed p-value ( $p > 0.05$ ). Therefore, the null hypothesis that states that there will be no

significant relationship between stress pattern and suicidal ideation of academically high-ability students was rejected. This implies that there is significant relationship between stress pattern and suicidal ideation among academically high-ability students in tertiary institution in Ibadan, Oyo State.

HO 2: there will be no significant relationship between self-esteem and suicidal ideation of academically high-ability students.

Table 4: Pearson Product Moment Correlation shows the relationships between self-esteem and suicidal ideation of academically high-ability students.

<b>Variables</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>r-cal</b>	<b>Df</b>	<b>Sig</b>	<b>Decision</b>
Self-esteem	43	33.62	3.53	0.41	41	0.00	Sig
Suicidal Ideation	43	36.63	4.13				

Table 4 showed the correlation between self-esteem and suicidal ideation of academically high-ability students. It was revealed that the mean and standard deviation of self-esteem were 33.62 and 3.53 respectively, while the mean and standard deviation of suicidal ideation of academically high-ability students were 36.63 and 4.13 respectively. The calculated value of r was 0.41; the observed p-value was 0.00 and the fixed p-value 0.05. The observed p-value was less than the fixed p-value ( $p > 0.05$ ). Therefore, the

null hypothesis that states that there will be no significant relationship between self-esteem and suicidal ideation of academically high-ability students was rejected. This implies that self-esteem do significantly influence suicidal ideation of academically high-ability students in tertiary institution in Ibadan, Oyo State.

**Discussion of Findings**

The first finding study revealed that both stress and self-esteem had significant contribution on

suicidal ideation of academically high-ability students. The result of the finding is in consonance with Chan (2003) who noted that academically high-ability students experience different kinds of stress because of unrealistic expectations express by their parents. The overwhelming expectations of parents of students who are academically sound bring about great burdens to the psychological well-being of such academically high-ability students. In the same vein, the result correlates with Schwarzer and Lange (2001) submitted that academically high-ability students do feel not competent enough, especially when parents demand high standards.

The finding of this study is in collaboration with the submission of Tang and Yeung (1999) that stress and self-esteem to suicidal ideation among high school students. They found that academically gifted students experience heightened levels of academic stress, which, combined with low self-esteem, contributed to increased suicidal ideation. In the same vein, Riley and Henderson (2014) submitted that high-achieving students are more prone to suicidal ideation due to high levels of academic stress. The researchers also found a strong negative relationship between self-esteem and suicidal thoughts, suggesting that students with lower self-esteem were more likely to experience suicidal ideation. In contrast, Sulkowski and Joyce (2014) opine that there was no significant correlation between academic stress and suicidal ideation. The authors suggested that gifted

students might possess unique coping mechanisms that protect against the negative effects of stress on mental health.

The second finding showed the correlation between self-esteem and suicidal ideation of academically high-ability students. This finding correlates with the finding of Gross (2012) that submitted that the profoundly academically high-ability students in her study had experienced extreme difficulty in establishing positive relationship with age-peer. She stated further that the students lacked ability to communicate with which has significant effect on their social self-esteem and translated to loneliness and isolation among academically high-ability students. This finding is in consonance with Wang and Zhang (2021) in a study that study explored the relationship between academic stress, self-esteem, and suicidal ideation in high-ability high school students in China. The researchers found that self-esteem had a significant moderating effect, with lower self-esteem increasing the likelihood of suicidal ideation. In a similar finding, Kim and Lee (2022) investigated self-esteem, academic stress, and suicidal ideation in a cohort of academically gifted students in South Korea. The findings indicated that self-esteem played a critical protective role, with higher self-esteem linked to lower levels of suicidal ideation, even when academic stress was high. Again, Cao and Zhou (2023) opine that self-esteem was a significant predictor of suicidal ideation among high-ability university students. Those with low self-esteem were more likely to develop suicidal



thoughts, especially when experiencing high academic pressure.

### **Conclusion**

Academically high-ability students need to develop their affective domain to support their cognitive abilities. The study's findings illustrated that the most neglected domain of academically high-ability students is their affective domains, social well-being, psychological, and psychosocial. The myths surrounding academically high-ability students do not allow the general populace to see this category of students as vulnerable when it comes to psychological well-being. The reason that the academically high-ability students are cognitively high does not translate that this population is immune to emotional distress. In fact, overwhelming demands and expectations from society, peers, teachers and parents make them more prone to suicidal ideation especially if these demands and expectations do not meet their own expectations (perfectionism). The resultant effects of unrealistic expectations are stressors to the academically high-ability students, and this can lead the students to find alternate solutions such as; suicide treats, suicide ideation, sudden change in behaviour societal withdrawal, poor self-esteem, and increased irritability, among others.

### **Recommendations**

The study recommended the following:

1. The high-ability students should develop stronger webs to combat their stress levels and increase their self-esteem to combat suicidal ideation.
2. Parents and guardians should provide the necessary needs for the high-ability students to remain focused on their academic activities.
3. Regular teachers should get familiar with different characteristics and needs of high-ability students
4. Parents, teachers, and guardians should not set unachievable goals for high-ability students.
5. Other domains like; affective, psychomotor, and psychosocial of high-ability students should be improved apart from cognitive ability alone.

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**A Survey on Funding Research and Innovation in a Depressed Economy: Implication for Kano State Tertiary Institutions**

By

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**Abstract**

This paper examines funding research and innovation in a depressed economy: Implication for Kano state tertiary institutions. Three objectives and three corresponding research questions guided the study to find out sources of funding of students' researches and innovations in tertiary education of Kano state. The paper carried out an opinion survey involving some administrators, lecturers, and students in higher institutions. The survey assessed the sources and adequacy of funds for executing students' researches and innovations for general societal and educational developments. A researcher-developed questionnaire titled "Funding Research and Innovation in a Depressed Economy Questionnaire (FRIDEQ)" was developed to collect the data from the respondents of the study and it is valid and reliable ( $\rho = 0.67$ ). The population comprised of administrators, lecturers and final year student who are undertaking researches. A total of 120 respondents were selected from three higher learning institutions to serve as sample of the study and a direct method of data collection was employed. Descriptive statistics of frequency and simple percentage count was employed to answer the research questions. Survey research design was adopted to conduct this study. The findings of the study identified that students' researches and innovations are self-sponsored by the learners and their parents. The paper recommended among others that managements of tertiary institutions and private organizations as in form of competition should invest in students researches and innovations through which the best outcome could be sold to public and other private institution of learning in exchange of money.

**Keywords:** *Research, innovation, funding, tertiary institutions and depressed economy.*

**Introduction**

Research is a deliberate and systematic investigation in order to establish a fact. It could focus on any discipline like education, language, arts, science, economy, management etc. to undertake any systematic investigation, resources like, human, fund, equipment are very essential. A research fund is a financial assistance provided for an investigator to enable him or her meet certain research expenses. The expenses may include; travel, purchase, contingency, stationary consumables, hiring of trained personnel and publication expenses. Nigerian educational institutions in particular and general society at

large are in dire need of solutions of problems associated with schools and society at large. Students of tertiary education undertake different researches in partial fulfilment for the requirement of the award of a certificate in their programme of study. These researches are normally self-sponsored by students and their parents and the outcome are seemed to be dumped, unused, unpractised, and or underutilized. While, school administrators, teachers, private organizations as well, are in search of such worthy information/technical

know-how to tackle the everyday arising problems.

A depressed economy has been characterized by economic, political, social and cultural bias. It is a state when things are completely down and there are widespread of unemployment and general misery. Most of African countries are in these conditions. They suffered from chronic economic under-development which due partly to monocultural phenomenon of African economics (Muhammed, 2002) and hence fluctuations. In Nigeria, with removal of fuel subsidy things are getting worst for the citizenries. The Nigerian economy presents a basketful of typical features and characteristics of most African economics. It is an economy in which most of citizens are unable to meet the minimum requirements of basic needs, such as food, healthcare services including education and clothing. In a joint collaborative effort between the National Bureau of Statistics (NBS), the National Social Safety-Nets Coordinating Office (NASSCO), the United Nations Development Programme (UNDP), the United Nations Children's Fund (UNICEF), and the Oxford Poverty and Human Development Initiative (OPHI), a survey sampling over 56,000 households across the 36 states of the federation and the FCT, was conducted between November 2021 and February 2022, and provides multi-dimensional poverty estimates at the senatorial level. Highlights of the survey revealed that; 63% of persons living in Nigeria are multidimensionally poor, 65% of the poor are

living in the north, while 35% live in the south. Poverty levels across states vary significantly, with the incident of multidimensional poverty ranging from a low of 27% in Ondo to a high of 91% in Sokoto. The survey also revealed that over 50% of the population of Nigeria are multidimensionally poor and cook with dung, wood or charcoal, rather than cleaner energy. The study also revealed that high deprivations is apparent nationally in sanitation, time to healthcare, food insecurity and housing. At present with the removal of fuel subsidy, the fuel is sold at #950 per litter in northwest, Nigeria and the exchange rate is about #1 000/US\$. These situations have resulted in unchecked devaluation and hyperinflation thereby reducing purchasing power for most of Nigerian people.

Fuel subsidy refers to that a fraction of the amount that consumers are supposed to pay to enjoy the use of petroleum products is paid by government to ease the price burden. A subsidy is any measure that keeps prices consumers pay for good or product below market levels for consumers or for producers above market. Subsidies may take different forms and generally have a direct impact on price of commodities. These include grants, tax reductions and exemptions or price control (Darlington, 2023). Subsidy removal on the other hand is an official elimination of subsidy on products formerly subsidized. Subsidy removal is the decision of government or institutions to stop payment of subsidy on products or services previously

subsidy. Subsidy removal is the stoppage of subsidy regime in an institutions or country. Subsidy removal is the policy of liberating the prices of goods and service to be regulated by forces of demand and supply (Musa, 2023).

At this junction, policy question to be raised is can parent continues to sponsor their words to undertake end of programme researches and innovations in this depressed economy? This study focuses on how the management of higher learning institution and other private organization can invest into students' researches and innovation in order to complement parents' efforts to maintain the general development of our nation. Omatayo (2017) suggested that there is need for authorities to establish research and development centres virtually in all institution for scholars to dwell into all kind of researches through which the outcome could be sold to government or private organizations in exchange for money. In the same line, Clack (2001) suggested that Nigerian tertiary institutions especially universities should review their curricular on a regular basis in order to ensure that the content of their teaching reflects the rapidly advancing frontiers of human knowledge in all discipline.

Research by nature is a challenging task for any learner irrespective of the level of study but even more so for undergraduate students and sub-degree students. Researches by higher institution learners is difficult for a reason that it is first in time and therefore crown by three basic problems

as identified by Mapolisa and Mapa (2012). Mentor-student challenges, student-related challenges and institution related challenge. Firstly, the mentor student challenges comprised the level of engagement between advisor and student, advisor availability and student interest in the topic. Also, it is faced by lack of scientific training, supervision challenges and pacing of content. Lack of scientific training is major challenge face by students, as they do not have proper training for scientific research. Though they have studied a course in research but they have a transfer of learning challenges where they struggle with putting theoretical knowledge of researches into practice. Secondly, student-related challenges include; research problem definition, time management, quality of literature, working with deadline, data collection and confidence issues. Research problem definition is a major issue in this category, students-researchers struggle with defining their research problem. They make the mistake for having either a too broadly defined problem of a narrowly defined problem. Thirdly, institution-related challenges include; poorly equipped library and lack of access to resources. Poorly equipped library is major problem under this category students waste a lot of time and energy on tracing appropriate books, journals and reports with no or very little help from the libraries which are often times poorly equipped (al-Qaderi, 2016).

Researchers have been carried out different studies to investigate funding research and education in Nigeria and beyond. Akinyemi, Olorunfemi and Bessey (2010) examined Funding Universal Basic Education in a Depressed Economy. The study justifies that the case for compulsory and free universal basic education can only be ensured through having viable and stable economy. It also discussed key areas through which additional resources could be mobilized for funding and achieving sustainable compulsory and free universal basic education in a depressed economy. Okoronia (2004) investigated funding of Business education in a depressed economy. The study assessed the adequacy of funds for providing qualified teachers, equipment, research, standard libraries, and standard lecture theatres. The finding showed that funding for the identified parameters have been grossly inadequate. The paper recommends the creation of investments units in all departments of Business education to explore the numerous business potentials that are available to the discipline both within and outside the school campus. Mapolisa and Mapa (2012) examined challenges that undergraduate students face in conducting research in Harare and Bulawayo regions of Zimbabwe Open University. The study identified money, time, library resources and family problems as critical student-related problems faced by students in conducting their researches. AlQaderi, (2016), in his study identified the lack of well-equipped library and open access to e-resources and

websites as major challenges facing undergraduate research students.

### **Statement of the Problem**

The removal of fuel subsidy which was pronounced by president of Nigeria, in his inaugural speech on 29<sup>th</sup> May, 2023 resulted in high inflation, worsens economic condition and reducing purchasing power for most of Nigerian people. Students research and innovative activities at tertiary level of education is single handily finance by their parents, which was previously strained to handle as a prerequisite in partial fulfilment for the requirement of the award of a certificate undergone. Usually, the students pay for the researches in the final year registration of the programme. With the situation of depressed economy it may be difficult for the parents to continue financing students' researches as it requires extra amount given by parents on school days. This can hinder the speediness of the work and also may affect the outcome of the investigation. Generally, the underfunding of education which consequent fall in standard has been sustained problem in Nigeria over the years and in this depressed economy in particular. This paper believe that the students and their parents can hardly continue to finance students' researches and innovations in the present situation of depressed economy. This proposal if found to be true, has negative implication for general development of Nigerian students and Nigerian education sector at large.

**Objectives of the Study**

This study was set to find out:

- i- Sources of funding students’ researches and innovations in tertiary institutions of Kano state.
- ii- Whether or not the funds available to students’ research can sustain the expected standard in tertiary institutions of Kano state.
- iii- Challenges faced by students in conducting researches in tertiary institutions of Kano state.

**Research Questions**

The following were the research questions:

- i- What are the sources of funding students’ researches and innovation in tertiary education of Kano State?

- ii. Are the funds available to students’ research and innovation sustaining good research standard in tertiary institutions of Kano state?
- iii. What are challenges faced by students in conducting researches in tertiary institutions of Kano state?

**Methodology**

Survey research design was adopted to conduct this study. This design is considered suitable because it enables the researchers to generate data through standardize collection procedure. The population of the study comprised of administrators, lecturers and final year student who are undertaking researches. A total of sixty (60) respondents comprising of 8 administrators, 12 lecturers and 20 students from three higher learning institutions were chosen to serve as sample of the study.

**Table 1:**  
*Sample of the Respondents*

S/N	Institution	Administrators	Lecturers	Students	Total
1	KASCEPS	8	12	20	40
2	SRUOE	8	12	20	40
3	AKCILS	8	12	20	40
<b>Grand Total</b>					<b>120</b>

**Source: Field Survey, 2023**

Table one showed the distribution of sample of the study across state owned tertiary institutions. Which include, Kano State College of Education and Preliminary Studies (KASCEPS), Sa’adatu Rimi University of Education (SRUOE) and Aminu Kano College of Islamic and Legal Studies (AKCILS). The selection of these institutions was based on the fact that they accommodate and engage large percentage of

students in Kano state tertiary institutions and also any candidate must undertake a final year research before graduation. Eight administrators were selected from each institution, 12 lecturers and 20 students were also selected from the institutions. A total sample size of 24 administrators, 36 lecturers, and 60 students were used for this study. A researcher-developed questionnaire titled “Funding Research and

Innovation in a Depressed Economy Questionnaire (FRIDEQ)” Containing nine items with alternative responses of agree and disagree sought to find out the sources of funding students researches is being used. In order to established the reliability of this instrument, twenty respondents were selected from FCE Kano, to respond to the instruments two times at the intervals of two days their responses where statistically correlated using (Spearman's rho correlation). The output stood at 0.67. A total sample of 120 respondents comprising 24

administrators, 36 lecturers and 60 students were used for the study. In order to collect first-hand information for the study, researchers personally went to the field and administered the instrument to the subjects of the study. The analysis of data involved the computation of descriptive statistics using computation of percentages.

**Results and Discussions**

Out of 24 administrators 23 responded. Out of 36 lecturers 32 responded. Out of 60 students 56 responded.

**Table 2:**  
*Distribution of Responses*

S/N	Statements	Agree	%	Disagree	%
1.	Students’ researches are finance by government.	25	23%	86	77%
2.	Government adequately finance students’ researches.	35	31.5%	76	68.5%
3.	Students’ researches are finance by parents.	89	80%	22	20%
4.	Parents adequately finance for students’ researches.	71	67.6%	36	32.4%
5.	Parents can still sponsor researches in this economic situation.	48	43%	63	57%
6.	Students complete their research in good time.	52	47%	59	53%
7.	Financing students’ researches by parents can still maintain the standard.	49	44%	62	56%
8.	Students can complete the work within the time frame.	45	40.5%	66	59.5%
9.	There are adequate facilities and resources for students’ researches.	32	29%	79	71%

The survey showed that only 25 respondent equivalents with 23% agreed with that government finance students’ researchers, while the 86 respondents’ equivalent with 77% disagreed. On the adequacy of finance only 31 respondents indicated their agreement that government adequately sponsor students’ researches, while 76 respondents representing 68.5% disagreed with the statements. With regard to item number three, 80% of the respondents

agreed that parents are sponsoring students’ researches. With regard to item number four, 67% of the respondents agreed that parents adequately fund students’ researches, while 33% disagreed. Item number five, showed that, 43% agreed that parents can still fund students’ researches in this depressed economy, while 57% disagreed. Analysis of item number six indicated that students are not completing researches in good time. Analysis of item number seven revealed that



44% agreed with the statement that financing students researches by parents can maintain the standard while 56% disagreed. Analysis of item eight, indicate that, students can hardly complete the work within the given frame. Finally, the analysis of item number nine showed that agreed that there are adequate facilities and resources for students' researches.

In a nutshell, the findings of this study revealed that parents are the sponsors of students' researches and innovation not the government. The study revealed that the way and manner parents sponsor the researches cannot maintain the expected standard. By implication, students may end up schooling without the certificate, duplicate researches or they can eventually be expelled from the programme. This result agreed with the finding of Okoronia (2004) who noted that, the funds for providing qualified teachers, equipment, research, standard libraries, and standard lecture theatres. The finding showed that founding for the identified parameters have been grossly inadequate. Also, the study agreed with the finding of Akinyemi, Olorunfemi and Bessey (2010). Who justified that the case for compulsory and free universal basic education can only be ensured through having viable and stable economy. It also discussed key areas through which additional resources could be mobilized for funding and achieving sustainable compulsory and free universal basic education in a depressed economy.

The study also revealed that students are faced with time, facilities and resources challenges in conducting their researches. By implication, these major problems energise students to duplicate (copy and paste) works conducted in other institutions of learning. The finding agreed with the findings of Mapolisa and Mapa (2012) who examined challenges that undergraduate students face in conducting research in Harare and Bulawayo regions of Zimbabwe Open University. The study identified money, time, library resources and family problems as critical student-related problems faced by students in conducting their researches. The findings also agreed with the findings of AlQaderi, (2016), in his study that identified the lack of well-equipped library and open access to e-resources and websites as major challenges facing undergraduate research students.

### **Conclusion**

This study was carried out to examine funding research and innovation in a depressed economy. A survey research design was employed in conducting the study. Two objectives and two corresponding research questions guided the study. From the analysis of this study it was concluded that, parents are sponsoring students' researches and innovations and the way and manner parents sponsor students researches cannot be continued in this period of depressed economy. The study also concluded that students are faced with time, facilities and resources challenges in conducting their researches.

**Recommendations**

The following recommendations will improve the funding of students' researches;

1. Managements of tertiary institutions and private organizations as in form of competition should invest in students researches and innovations through which the best outcome could be sold to public and other private institution of learning in exchange of money.

2. The management should create investment unit under directorate of consultancy where investment potentials are to be invited to finance students' researches.

3. Managements of tertiary institutions should reserve at least 2 per cent (2%) of Internally Generated Revenue (IGR) to research projects so as to regularly equip their library/laboratories with the required resources.

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**Principals' Administrative and Teachers' Professional Development Practices as Correlates of Teachers' Job Performance in Technical Colleges in South-West, Nigeria**

By

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**Abstract**

The issue of suboptimal job performance among secondary school teachers poses a significant challenge to the quality of education. This study examined the relationship between principals' administrative practices, teachers' professional development, and job performance in technical colleges. A descriptive survey research design was employed, targeting 526 teaching staff across six states in South-west Nigeria, with a sample of 251 selected through stratified random sampling. Data were gathered using a self-designed questionnaire tagged "Principals' Administrative Teachers' Professional Development Practices and Teachers' Job Performance Questionnaire (PATPDPTJPQ)," which had a reliability coefficient of 0.77. Pearson Product Moment Correlation and Regression Analysis were used for data analysis, with hypotheses tested at 0.05 significance level. The findings revealed a significant relationship between principals' administrative practices and teachers' job performance ( $r = 0.182, P < .05$ ), and between teachers' professional development and their job performance ( $r = 0.234, P < .05$ ). Additionally, a joint relationship was found between principals' administrative practices, professional development, and job performance ( $F_{(2, 248)} = 21.154, p < 0.05$ ). The study concluded that both administrative practices and professional development significantly influence teachers' performance. It recommended that principals involve teachers in the administrative process to foster collaboration, while authorities should focus on enhancing teachers' 21st-century skills through continuous professional development programmes.

**Keywords:** *Principals' administrative practice, teachers professional development practices, teachers' job performance, technical colleges*

**Introduction**

Education serves as a means of socialization, cultural assimilation, and the transfer of valuable knowledge to those dedicated to it, whether they are children or adults. It involves cultivating a learner's abilities so they can use their acquired knowledge to enhance both themselves and society. Education is essential for national development, which is why various governments prioritize it. In Nigeria, as in other countries, education is viewed as a crucial tool for socio-economic and political progress and thus receives significant attention. This importance is emphasized in the National Policy on Education

(Federal Republic of Nigeria, 2014), which declares that education is a superior tool for effective national development.

Teachers' job performance can be described as the measure of a teacher's effectiveness and ability in performing their duties diligently. It involves executing and completing tasks. In this study, teachers' job performance includes general teaching and guidance services essential for students to become valuable members of society. According to Hose (2017), job performance refers to how employees execute their work. He explains that job performance is assessed during

performance reviews, where employers evaluate individual employees based on factors like leadership skills, time management, organizational abilities, and productivity. These reviews, typically conducted annually, can influence decisions about raises, promotions, or even terminations. Annie (2017) suggested that to enhance job performance, organizations should focus on qualities such as the ability to learn, conscientiousness, interpersonal skills, adaptability, and integrity.

In Nigeria, the administration of technical colleges is led by the principal, who is responsible for overseeing both academic and extracurricular activities. The principal acts as the chief executive of the school, providing instructional leadership through the coordination of curricular and co-curricular programs. As instructional leaders, principals' administrative tasks encompass supervision, monitoring, assessment, evaluation, and the dissemination of current information on management and academic techniques to teachers, fostering an effective teaching and learning process. Achimugu (2000) described principals as executive heads due to their role in decision-making and policy implementation within the school. Principals are also perceived as leaders, directors, advisers, and problem solvers. They should create an optimal school climate to encourage strong teacher commitment by avoiding violence, threats, hatred, indiscipline, frustration, and witch-hunting. Mobegi, Ondigi, and Oburu (2010)

emphasized that principals should assume their roles as quality assurance officers, ensuring adequate departmental supervision in their schools.

Administrative practices encompass the performance functions and activities of principals aimed at motivating teachers to enhance their performance in schools, ultimately leading to improved productivity. Principals' administrative practices encompass the activities performed by principals to enhance quality teaching and learning in secondary schools. These practices involve the coordination of teachers' day-to-day activities to improve their instructional performance (Igoni, 2020). Principals' administrative practices serve as the primary duties of principals, guiding and enhancing teachers' effectiveness in disseminating knowledge to students during classroom instruction. According to Ndege (2017), administrative practice involves the use of expert knowledge and experience to oversee and coordinate the improvement of teaching and learning activities in schools. Thus, administrative practice includes the skills and tools that principals acquire and use to influence teachers towards achieving educational goals (Igoni, 2020). These practices are essential for ensuring that teachers carry out their instructional activities effectively, resulting in quality instructional delivery in schools (Ukaigwe, Nwabueze & Nwokedi, 2019). Principals are entrusted to use their administrative practices to

enhance instruction and improve teaching-learning processes in secondary schools. Dornyei (2007) describes these administrative practices as motivational activities employed by principals to support teachers in achieving high productivity and job performance.

Furthermore, principal's administrative practices are crucial management functions focused on obtaining, developing, and motivating the human resources needed by the institution to achieve its objectives. According to Olusanya, Awotungase and Ohadebere (2012), these practices ensure the effective utilization of human resources within an organization. To foster teachers' commitment and performance, the principal's activities must be encouraging. As a reservoir of alternative solutions, the principal addresses problems that may arise from various situations. To align with the national goals and objectives of secondary education, it is essential for teachers to have opportunities and encouragement to update their knowledge and skills through effective administrative strategies, keeping them abreast of current developments in their field (Ngeripaka, Nkporbu & Achey, 2019).

Teachers' professional development practice is a vital aspect of school administration which enhances teachers' performance. It is a means of updating teachers with skills and knowledge for improving instruction (Lawal, 2014). An effective and efficient performance of teachers depends solely on professional development practices made available to teachers, since

teachers are the school personnel that implement policies towards the achievement of educational goals and objectives. This is the cardinal reason for which countries are improving the quality of their teachers in their educational sector by making available staff development programmes to expose teachers to new and current trends in the educational sector and equally revamping the teaching

Teachers' professional development is defined as the continued training and education of an individual in regards to his/her career (Campos, 2020). He further pointed out that the goal of professional development is to keep the individual up to date on current trends as well as help them to develop new skills for the purpose of advancement in their field. Avalos (2011) defined teachers' professional development as the process through which teachers improve on their learning, how they learn and how they apply their newly acquired knowledge in practice. This is in agreement with Opfer and Pedder (2011) who stated that teachers' professional development and learning is about the growth and development of teachers' expertise that leads to changes in their practice to enhance the learning outcome of students. Kampen (2019) defined teacher professional development as any type of continuing education for teachers with the aim of improving teachers' skills which will in turn boost student outcomes. It is further argued that professional development can take place in formal settings such as conferences, courses,

seminars, and workshops, but it can also take place in informal settings such as independent research, peer learning, or even just chatting with a colleague in the staff room. Therefore, the study examined the relationship among principals' administrative, teachers' professional development practices and teachers' job performance in technical colleges in South-West, Nigeria.

### **Statement of the Problem**

The issue of suboptimal job performance among teachers in secondary schools significantly challenges the overall quality of education. This problem arises from several factors, including inadequate motivation, a lack of professional development opportunities, and insufficient administrative support. Addressing these challenges requires effective principals' administrative practices, which play a pivotal role. Such strategies involve the coordination and utilization of human resources to enhance teachers' commitment and performance. Additionally, teachers' professional development programmes are essential for equipping teachers with the necessary skills and knowledge to stay current with educational trends and methodologies. By implementing these principals' administrative strategies and teachers' professional development programmes, the issue of teachers' job performance can be significantly mitigated. Therefore, the study examined the relationship among principals' administrative, teachers' professional development practices and

teachers' job performance in technical colleges in South-West, Nigeria

### **Objectives of the Study**

The main objective of the study was to establish the relationship among principals' administrative, teachers' professional development practices and teachers' job performance in technical colleges in South-West, Nigeria. Specifically, the study;

1. Examined the relationship between principals' administrative practice and teachers' job performance in technical colleges in South-West, Nigeria
2. Established the relationship between teachers' professional development practices and teachers' job performance in technical colleges in South-West, Nigeria
3. Found the joint relationship among principals' administrative, teachers' professional development practices and teachers' job performance in technical colleges in South-West, Nigeria.

### **Hypotheses**

The following hypotheses were tested at 0.05 level of significance

**H<sub>01</sub>:** There is no significant relationship between principals' administrative practice and teachers' job performance in technical colleges

**H<sub>02</sub>:** There is no significant relationship between teachers' professional development practices and teachers' job performance in technical colleges

**Ho<sub>3</sub>:** There is no joint relationship among principal administrative, teachers’ professional development practices and teachers’ job performance in technical colleges

**Methodology**

The study adopted the descriptive research design of survey type. The population of the study comprised five hundred and twenty six (526) teaching staff across the six States of South-west, Nigeria. The sample of the study was 251 teaching staff which was selected using stratified random sampling technique. A self-designed instrument tagged “Principals’ Administrative Teachers’ Professional Development Practices

and Teachers’ Job Performance Questionnaire (PATPDPTJPQ)” was used to elicit information from the respondents. The data were collected through the administration of the research instrument and the reliability co-efficient of the instrument was 0.77. The data collected were analyzed using Pearson Product Moment Correlation and Regression Analysis. The hypotheses were tested at 0.05 level of significance.

**Results Presentation**

**Ho<sub>1</sub>:** There is no significant relationship between principals’ administrative practice and teachers’ job performance in technical colleges

**Table 1**

*Relationship between Principals’ Administrative Practice and Teachers’ Job Performance in Technical Colleges*

Variables	N	Mean	SD	r	Df	p-value	Remark
Principals’ Administrative Practice		32.1543		3.5274	.182	249	.001
Sig	251						
Teachers’ Job Performance		30.1275		3.4529			

Source: Field Survey, 2024

Table 1 showed Mean, Standard Deviation and zero order correlation between the variables. It was observed that there was significant relationship between the independent variable (principals’ administrative practice) and the dependent variable (teachers’ job performance) in the order of (r = 0.182, P<.05). On this premise, the null hypothesis was hereby rejected and the

researcher concluded that there was significant relationship between principal administrative practice and teachers’ job performance in technical colleges

**Ho<sub>2</sub>:** There is no significant relationship between teachers’ professional development practice and teachers’ job performance in technical colleges



**Table 2**  
*Relationship between Teachers’ Professional Development Practice and Teachers’ Job Performance in Technical Colleges*

Variables	N	Mean	SD	r	Df	p-value	Remark
Teachers’ Professional Development Practice				34.2335	5.3234	.234	249
Sig	251						.001
Teachers’ Job Performance			30.1275	3.4529			

Source: Field Survey, 2024

Table 2 shows Mean, Standard Deviation and zero order correlation between the variables. It was observed that there was significant relationship between the independent variable (teachers’ professional development practice) and the dependent variable (teachers’ job performance) in the order of ( $r = 0.234, P < .05$ ). On this premise, the null hypothesis was hereby rejected and the researcher concluded that there

was significant relationship between teachers’ professional development practice and teachers’ job performance in technical colleges

**H<sub>03</sub>:** There is no joint relationship among principal administrative, teachers’ professional development practices and teachers’ job performance in technical colleges

**Table 3**  
*Joint Relationship among Principal Administrative, Teachers’ Professional Development Practices and Teachers’ Job Performance in Technical Colleges*

R = .441, R<sup>2</sup> = .194, Adj R<sup>2</sup> = .183, Std. Error = 2.69433

ANOVA					
Source of Variation	Sum of Squares	Df	Mean Square	F-ratio	P
Regression	245.772	2	122.886	21.154	.001
Residual	1440.566	248	5.809		
Total	1686.338	250			

a. Dependent Variable: Teachers’ Job Performance

b. Predictors: (Constant), Principals’ Administrative Practice, Teachers’ Professional Development Practice

The Table 3 shows the summary of regression analysis on the joint relationship among principal administrative, teachers’ professional development practices and teachers’ job performance in technical colleges. The result yielded a coefficient of linear regression  $R = 0.441$  and  $R^2 = 0.194$ . This suggests that the indices accounted for 19.4% ( $Adj. R^2 = 0.183$ )

variance in the determination of teachers' job performance. The ANOVA result from the regression analysis revealed that there was a joint relationship among principal administrative, teachers’ professional development practices and teachers’ job performance in technical colleges,  $F_{(2, 248)} = 21.154, p < 0.05$ . Based on these, the hypothesis was rejected. It is demonstrated that

there was joint relationship among principal administrative, teachers' professional development practices and teachers' job performance in technical colleges.

### **Discussion of Findings**

The first hypothesis reveals that there was a significant relationship between principals' administrative practice and teachers' job performance in technical colleges. Good administrative practices of principals would enhance effective teacher job performance in the areas of planning of lesson note, making effective use of teaching instructional materials, marking students' exercises regularly, conducting continuous assessment, giving adequate assignment to students and ensuring proper recording of marks. Principals must involve teachers in decision making processes, encouraging active participation of teachers in decision making, and regard teachers' views in decision processes for effective job performance practices. In line with the findings, Ukaigwe and Nwabueze (2015) revealed that good service conditions such as: welfare packages, recognition/praise, improved salary structures, work-life balance, regular payment of salaries, regular promotion/job enrichment, effective job security, and adequate payment of allowances/work leave positively increase staff interest to work effectively for improved productivity.

The second hypothesis reveals that there was a significant relationship between teachers' professional development practice and teachers'

job performance in technical colleges. Programmes such as workshop and in-service training are allowed for teachers in technical colleges and it enhances their capabilities and performances. Apparent from this finding is that, provision of staff development programme is imperative in enhancing teachers' effectiveness in the discharge of their duties in the technical colleges in the areas identified in this study. Thus, teachers need to be regularly provided with opportunities for them to improve their knowledge of the subject they teach and the teaching skills they had acquired in the pre-service courses they offered. This is based on the recognition that we are living in a rapidly changing world such that whatever knowledge and skills teachers learnt in their pre-service training becomes stale very fast, just as new challenges and realities emerge in the socio-economic and political environment (Mohammed 2016). To meet the needs of the changing world, there is need for continuous staff development programme.

The third hypothesis reveals that there was joint relationship among principal administrative, teachers' professional development practices and teachers' job performance in technical colleges. Principals must involve teachers in decision making processes, encouraging active participation of teachers in decision making, and regard teachers' views in decision processes for effective job performance practices. This means that principals' decision making function

significantly correlates with teachers' job performance. Instructional supervision by principals will enhance the commitment of Teachers to their job, which will in turn elevate their performance. This is similar to the findings of Ajetunmobi, Oladejo and Muhideen (2020) which concludes that teachers' job performance in public secondary schools in Ogun State was significantly related to participatory management and professional development.

### **Conclusion**

The overall achievement of school goals and objectives is closely tied to the job performance of teachers. This study reveals a significant link between teachers' job performance in technical colleges in South-West Nigeria and the administrative practice, as well as professional development practice. To improve teachers' job performance and achieve excellent service delivery, educational managers and administrators should continuously address the administrative needs of teachers, particularly by offering targeted assistance to non-performing teachers and involving all teachers in participatory administrative activities. Nigerian policymakers and educational stakeholders should also focus on providing current teachers' professional development programmes and ensuring that teachers are included in the school's administrative process.

### **Recommendations**

Based on the findings, the study recommended that;

1. Principals should avoid managing school affairs in an autocratic manner. Instead, teachers should be given the opportunity to participate in the administrative process, fostering a sense of accomplishment as co-creators of the school's vision.
2. The goal of authorities in technical colleges should be to enhance the 21st-century skills of teachers through continuous staff developmental programmes. This approach will help teachers develop professionally and meet the demands of rapidly advancing technology, enabling them to compete effectively with their peers both domestically and internationally.
3. Additionally, serving teachers should be encouraged to participate in self-improvement training programs, which should be sponsored by the government

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**Challenges and Prospects for Developing a Qualitative Mathematics Teacher Education Curriculum in Nigeria's Depressed Economy: An Appraisal of Specialized and Pedagogical Content Knowledge**

By

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**Abstract**

The mathematical knowledge for teaching (MKT) was widely researched since its reconceptualization. Specialize content knowledge (SCK) subdomain of mathematical knowledge for teaching as well as Pedagogical Content Knowledge (PCK) and their features are used in this paper. The purpose of using SCK and PCK and their supporting characters was to appraise their relevance in mathematics teacher education curricula for Nigeria Certificate in Education (NCE) and bachelor degree program. The paper pinpointed that there is no sufficient professional knowledge of mathematics courses in both programs that would help in training prospective mathematics teachers who have mathematical knowledge that is broad, deep and thorough, as required in the National Policy on Education. The consequences of these setbacks would lead to producing mathematics teachers who cannot explain terms and concepts to students, use symbols and representations correctly, judge and correct textbook treatments of particular topics. Similarly, they cannot ask questions that would assist students in organizing knowledge around important ideas. These shortfall in the curricula of pre-service mathematics teachers of professional mathematics courses would deter the attainment of producing pre-service competent mathematics teachers with sound SCK and PCK. The paper proper a solution, which include urgent revision of pre-service mathematics teachers' curriculum to include courses tailored towards developing competent, conscientious and motivated prospectus mathematics teachers. The paper also suggested pre-service mathematics teachers mentoring program to enhance their professionalism.

**Keywords:** *Mathematical content knowledge*, specialize content knowledge, pedagogical content knowledge, professional mathematics knowledge

**Introduction**

One of the goals of teacher education program in Nigeria is to “produce highly motivated, conscientious and efficient classroom teachers for all levels of the educational system”, (FGN, 2014, p. 43). Actualizing this gigantic goal requires strong determination and commitment from different directions, for example Government (Local, State or Federal); Institution of higher learning (Universities, Colleges of Education, Polytechnics); Policy makers; Stake holders; and so on. Furthermore, the goals have advocated the need for an effort towards

improving the quality of teachers at all levels using national framework for teacher development as well as setting standard for professional teachers. This professional teacher standard shall outline “what teachers should know and be able to do at all levels of education” (FGN, p.45).

Sieving mathematics teacher education as a subdomain from the general framework of teacher education domain have attracted plethora of research nationally and internationally cutting across interest areas such as issues of teaching

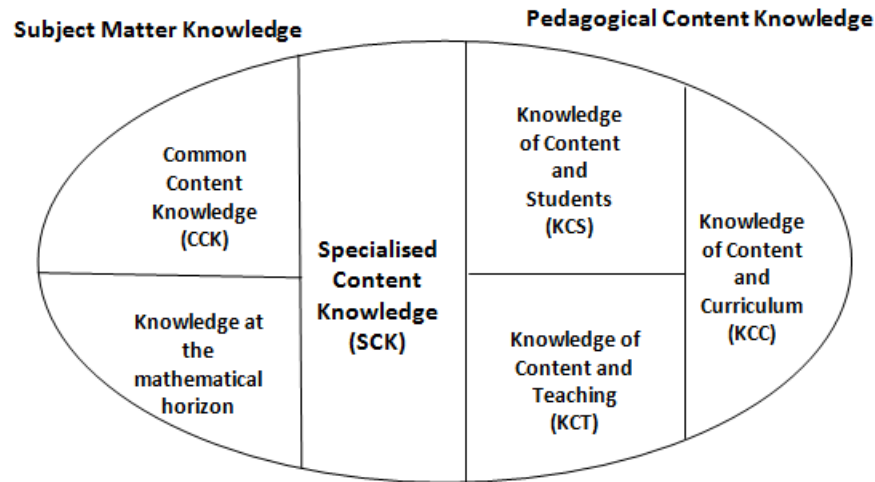
and learning of pre-service and in-service mathematics teachers; mathematics content curricular (primary and secondary level as well as tertiary institution); technology issues related to teaching and learning of mathematics; and so on. The research attention given towards pre-service mathematics teachers is enormous, particularly mathematical knowledge for teaching (MKT) and its subdomain of specialize content knowledge (SCK) as well as pedagogical content knowledge (PCK). Generally, these research reports have shown that pre-service teachers' knowledge of mathematics is limited, (Tobias, 2013). This assertion is genuinely illustrated and supported by research reports on Fraction subconstructs of part-whole, measure, ratio, operator (Usman, in press); Algebraic word problems (Usman, 2015); Trigonometry (Usman, 2020). Further defense accorded to this argument of poor exhibition of mathematical knowledge by pre-service mathematics teachers included, Perception on difficult mathematics concepts, (Iji and Omenka, 2015); Assessment of Mathematics curriculum (Chukwuemeka and Felicity, 2016), and so on. The National Policy on Education have put on an operational framework that serves as a vehicle in producing competent and effective teachers in general as well as mathematics teachers in

particular in Nigeria, but research reports as highlighted above indicated otherwise. The purpose of this paper is an attempt to fill-in the gaps featured above, by appraising the specialized content knowledge (SCK) and Pedagogical Content Knowledge (PCK) in mathematics teacher education program in Nigeria's depressed Economy.

### **Theoretical Framework**

The goal of teacher education program is to produced knowledgeable teachers at all levels. Since teachers' knowledge is a key in the teacher education program in general and mathematics teacher education in particular, there is a need to look at Shulman's work from the mid-1980s. He offered a classification of teachers' content knowledge in to three groups and are: (i) subject matter content knowledge, (ii) pedagogical content knowledge, (iii) curricular knowledge, (Shulman, 1986). This feat championed by Shulman on knowledge of teaching have attracted a lot of research interest, including teachers' knowledge of mathematics (Ball, et al., 2008; Davis & Simmt, 2006; Ma, 1999). A giant stride base on Shulman's work was done by Hill, Ball, and Schelling (2008). It is tag as domain of mathematical knowledge for teaching (MKT), Figure 1.

**Domain of Mathematical Knowledge for Teaching (MKT)**



**Figure 1: Adapted Mathematical knowledge for teaching (Hill et al., 2008, p. 377)**

Mathematical knowledge for teaching framework is split into two (2) major categories and are subject matter knowledge and pedagogical content knowledge. The first category is further subdivided into three: (i) common content knowledge (CCK), the mathematical knowledge that should be known by everyone; (ii) specialized content knowledge (SCK), the knowledge of mathematics content specific to the work of teachers; (iii) horizon content knowledge (HCK), this involves understanding of how different mathematical topics are related. The second major category of MKT domain is pedagogical content knowledge (PCK). It is further divided into three subdomains and are: (i) knowledge of content and students (KCS). It is defined as the knowledge which combines knowing about students and mathematics. (ii) Knowledge of content and teaching (KCT). It is a blend of knowing about teaching and mathematics. (iii) Knowledge of content and curriculum is described by Hurrell (2013) as per-

service mathematics teachers’ ability to articulate and be familiar with the structure of the mathematics curriculum.

Integrating these features of MKT, i.e. SCK and PCK into Nigeria’s mathematics teacher education curricula would enhance the development of sound and qualitative mathematics teachers in Nigeria. Furthermore, these countenances of MKT would provide the bases for the training of competent professional mathematics in Nigeria if properly implemented. This paper used one of the three subdomains of subject matter knowledge, i.e. the SCK as well as all three subdomains of pedagogical content knowledge (PCK) to assess the challenges pose by mathematics teacher education program in a depressed Nigerian economy.

**Appraising mathematics teacher education curricula and the relevance of SCK and PCK.** The relevance of SCK and PCK as important components of MKT were appraised in the context of mathematics teacher education

curriculum in Nigeria. The subdomain of special content knowledge (SCK) is describe as the mathematical knowledge and skill unique to teaching (Ball et al). Furthermore, Hurrell (2013), replenish SCK with some supporting features or tasks that reinforce its value in the training and professional development of an effective mathematics teacher education program. Some of these features include: ability to explain terms and concepts to students, looking for patterns of errors made by students, judge and correct textbook treatments of particular topics, use symbols and representation accurately, present mathematical ideas (the big picture). All these and many more features of SCK could be develop using professional and education courses of the mathematics teacher education curriculum in Nigeria. A standard mathematics teacher education curriculum found in many countries across the globe, example USA, consists of four major components and are: (i) General studies courses, (these include courses in the natural and physical sciences, and humanities). Some of them are core courses while others are elective. (ii) Professional mathematics education courses, (iii) Advanced and intermediate mathematics content

courses, and finally, (iv) and Education courses. Let’s now examine a typical Nigeria Certificate in Education (NCE) as well as bachelor degree mathematics teacher education curriculum in Nigeria. The NCE mathematics teacher education curriculum was guided by the National Commission for Colleges Education (NCCE) minimum standard. It gives detailed explanation on the course distribution as well as requirement for all NCE programs (mathematics education inclusive) in Nigeria. The bachelors’ degree program in mathematics education curriculum was contained in the Benchmark Minimum Academic Standard for Undergraduate Programmes in Nigerian Universities (BMAS). These documents give detailed outlined curricular requirement as well as the course distribution of mathematics teacher education program in Nigeria. A closer look at the structure of these curricula and comparing it with the standard mathematics teacher education curricula obtainable from other countries, it clearly reveals the absence of professional mathematics education components for both NCE and BMAS mathematics teacher education programs in Nigeria, Table 1.

**Table 1: TYPICAL MATHEMATICS EDUCATION CURRICULA COMPONENT**

Different Curricula	General Studies	Professional Mathematics Education	Mathematics Content	Education
Standard Mathematics Education Program (SMEP)	×	×	×	×
Nigeria Certificate in Education (NCE)	×		×	×
Benchmark Minimum Academic Standard (BMAS)	×		×	×

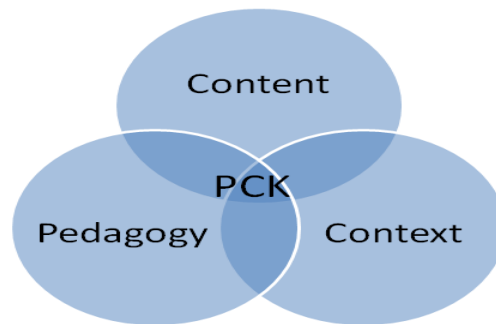
Source: NCCE minimum standard and BMAS.



The absence of these professional mathematics education courses in both NCE and BMAS curricula for training of prospective mathematics teachers in Nigeria, would adversely affect their ability to teach effectively at Basic education level (primary and junior secondary schools), and Post Basic education (senior secondary schools) in Nigeria. The snowballing effects of these setbacks would invariably affect training of professionals that requires mathematics as a core course. Extending the consequences, these professionals would be deficient in their expected contribution towards economic development of Nigeria.

The second component of MKT is the pedagogical content knowledge (PCK). According to Shulman (1986) cited by Ball et al, (2008), PCK is defined as:

*“The most useful forms of representation of those ideas, the most powerful analogies, illustrations, examples, explanations, and demonstrations—in a word, the most useful ways of representing and formulating the subject that make it comprehensible to others. . . Pedagogical content knowledge also includes an understanding of what makes the learning of specific topics easy or difficult: the conceptions and preconceptions that students of different ages and backgrounds bring with them to the learning of those most frequently taught topics and lessons”.* (p. 9)



**Figure 2: Adapted Shulman’s (1986) domains of pedagogical content knowledge**

Another compelling and descriptive working definition of PCK was given by Park and Oliver (2008). They defined PCK as:

*“PCK is teachers’ understanding and enactment of how to help a group of students understand specific subject matter using multiple instructional strategies, representations, and assessments while working within the contextual, cultural, and social limitations in the learning environment”.* (p. 264).

One could broaden and depict that PCK is a practical knowledge of teaching and learning guided through a contextualized knowledge of a mathematics classroom setting.

The intertwined major features of PCK, (Figure 2) above are Content, Context and Pedagogy. The content component of PCK is define as *what I know* of mathematics (lower, intermediate and advance level mathematics), pedagogy is label as *how I can teach* mathematics (in Nigeria), whereas the context component deals with *knowing how to teach at different age levels* (Basic (primary) schools and post Basic (secondary) schools) education in Nigeria). Professional development and training of pre-service mathematics teachers could be enhanced

by integrating professional knowledge components of pedagogical content knowledge (PCK) in Nigeria. The PCK professional knowledge components, Table 1 is compared with the standard mathematics education curricula and that of NCE and BMAS. From the table, it could be inferred that professional mathematics education courses, i.e. PCK were lacking in Nigeria's mathematics teacher education curricula. These PCK mathematics education professional courses are tailored to give pre-service teachers knowledge, skills and experiences in general pedagogy of teaching mathematics. Based on this fact, the prospective mathematics teachers for both NCE and bachelor degree programs could not be trained professionally. They would clearly be deficient in attaining certain level of professional knowledge, competences and experience. The adverse effects of this on Nigerian prospective mathematics teacher is missing a substantial amount of professional knowledge components that include courses that could provide expertise in pedagogical-content specific knowledge and skills on primary, junior and secondary schools mathematics. Similarly, the pre-service teachers would be inadequately trained because of insufficient professional knowledge. The last component of PCK, i.e. context, would include courses that could provide prospective mathematics teachers with knowledge, skills, understanding and familiarity with various educational context in Nigeria, example primary, secondary and even tertiary level. Benchmarking

these features of the professional knowledge components of PCK with our NCE and BMAS curricula, it is apparently clear that these pre-service mathematics teachers would be inadequately trained and consequently could not teach mathematics effectively at various levels of education (primary and secondary schools) in Nigeria.

Broadening the scope of appraising prospective mathematics teachers' education curriculum is the graduation requirement for both NCE and bachelor degree. A closer probing of these requisites indicates that mathematics courses credit units required for graduates of NCE and bachelor degree programs are 94 and 135 credits respectively. Out of this, only twenty-four (24) credit units (25.5%) out of Ninety-four (94) credit units for NCE program are mathematics courses, (NCCE, 2020). In a similar vein, fifty (50) credit units (37.3%) out of one hundred and thirty-four (134) credits units for bachelor degree are mathematics courses, (BMAS). Further analysis of the course requirements for both programs indicated that professional knowledge components is virtually missing (two methodology courses for NCE and one for bachelor degree program). Overall, the remaining credits units are distributed among second subject, education and general studies courses. The end result of this led to producing pre-service mathematics teachers who cannot exhibit SCK and PCK quality features highlighted above. Consequently, these pre-service mathematics teachers cannot explain terms and concepts to

students, interpret students' statements and solutions, provide examples of mathematics concepts, algorithms or proofs, (Usman, 2015). This is clearly a big deficiency for an ideal pre-service mathematics teacher education program in Nigeria. In fact, this incompetence would greatly affect the development of an efficient per-service mathematics teacher as enshrine in the National Policy on Education.

The standard mathematics education curricula from developed economics with comprehensive integration of SCK and PCK courses contributed directly towards developments of professional mathematics teachers at various levels of education (primary and secondary school levels). By extension, these collections of mathematics teachers impacted positively towards development of professionals in different sectors of their economy. Since these professional courses that comprises SCK and PCK are lacking in Nigeria's mathematics teacher education program, these deficiencies would affect the training of competent mathematics teachers in Nigeria. Broadening this impediment, it would negatively affect the training of professionals that form the think-tank or back-bone of Nigeria's sound economic policies.

### **Conclusion and Recommendation**

Developing competent, motivated and efficient mathematics teachers is rightly netted in the National Policy on Education. Achieving this long-term aspiration requires acquisition and implementation of the following in the curricula: (i) General studies courses, (ii) Professional

mathematics education courses, (iii) Advanced and intermediate mathematics content courses, and (iv) and Education courses. These courses are essential components of SCK and PCK for the successful development of mathematics teachers. Even though SCK and PCK supporting features are important, the current NCE and bachelor degree curricula in Nigeria does not favor its incorporation as well as usage. Moreover, the current space in terms of time and resources (human and material) with particular reference to current depressed economy does not favor actualizing these gracious courses. Prospective mathematics teachers need to be rigorously trained in primary and secondary mathematics they are supposed to teach. Knowing a lot of advanced level mathematics does not qualify one to be an effective teacher at primary or secondary school level. Furthermore, there is no research findings supporting the facts that taking many advanced level mathematics courses guaranteed the training of an effective mathematics teacher at both primary and secondary school level. In fact, there is difference between Mathematician and Mathematics Educator. The current depressed Nigeria's economy does not support training of qualified and competent mathematics teachers due to lack of adequate funding and loped sided curricula that lack SCK and PCK content. Similarly, mentorship for Graduate Teaching Assistant (GTA) is virtually absent. Mathematics education GTAs need to be guide over a period of time for them to be effective and conscientious mathematics teachers.

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**Effects of Socrates-Questioning-Technique on Motivation and Performance of Students in Vertebrate Anatomy and Physiology in Colleges of Education, North-West Nigeria**

By

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**Abstract**

This study investigated the effects of Socrates-questioning-technique on motivation and performance of students in vertebrate anatomy and physiology in Colleges of Education, North-West Nigeria. Quasi-experimental research design with pretest, posttest experimental and control groups was adopted for the study. The population of the study comprised of 2,821 NCE II Biology students from five Federal Colleges of Education, North-West Nigeria. Stratified sampling technique was employed to select four Coeducation Federal Colleges of Education in the population. Intact classes of Biology/Integrated Science were purposively sampled from these Colleges and pretested, and the results were subjected to ANOVA test and thereafter Scheffe's test to determine two groups that were statistically insignificant in their ability. The two colleges with a total sample of 214 participants were assigned Experimental Group and control group using simple random sampling technique. Instruments used for data collections were Vertebrate Anatomy and Physiology Test (VAPT) and Vertebrate Anatomy and Physiology Motivation Questionnaire (VAPMQ) with reliability coefficients of 0.83 and 0.74 respectively. The statistical tool used was t-test in analyzing the data collected. The findings of the study revealed among others that students taught Vertebrate Anatomy and Physiology concepts using Socrates-questioning-technique performed better than those taught the same concepts using lecture method. Based on the findings it was recommended among others that lecturers should employ the use of Socrates-questioning-technique in teaching Vertebrate Anatomy and Physiology concepts, as it improves students' academic performance and also enhances motivation level of students.

**Keywords:** *Colleges of education, motivation, performance, Socrates-questioning-technique.*

**Introduction**

Science and Technical Education is the bedrock for sustainable national development. To this end, one of the major concerns of science educators is to make teaching and learning of science more meaningful and more effective in order to achieve the educational goals of a given society. The aim of National Policy on Education (NPE, 2013) as stated therein, in achieving these educational goals are the building of: a free and democratic society, a just and egalitarian society, a united, strong and self-reliant nation, a great and dynamic economy and a land full of opportunities for all citizens. Belzewki (2009) stated that for any

nation to attain the status of self-reliance, science must be an important component of the knowledge to be given to all citizens of that nation irrespective of race, creed or sex. Indeed, science including Biology is recognized as the foundation upon which the bulk of the present day technological breakthrough is built upon. Biology is a subject that involves the use of process skills and different techniques to bring about meaningful learning to the students. It is obvious that no student intending to study medicine, pharmacy, agriculture, nursing sciences among others can do without Biology. In tertiary

institutions, biology is further broken down into so many courses such as animal histology, plant physiology, embryology and vertebrate anatomy and physiology among others.

Vertebrate anatomy and physiology is a core course in which National Certificate in Education (NCE) students offer at 200 level. This course is characterized by poor performance of students (NCE examiners report, 2023). It is however considered to be one of the concepts with abstract and difficult topics to learn (Chew, 2004). Hence it involves describing some processes which cannot be seen with naked eyes. Jibrin and Nura (2007) in their opinion identified poor methods of teaching and improper use of instructional materials as some of the deficiencies of science teachers. Lack of active participation of students has also been described as one of the factors responsible for poor performance in science subjects (Usman, 2007). Several studies were carried out by scholars such as (Usman 2010; & Lakpini 2013) to improve the teaching and learning of science including Biology. Despite these efforts, students' performance more especially in Biology is still not encouraging. Factors such as poor teaching method, and lack of motivation were attributed to the poor performance of students in science (Ojimba 2013; and Gasco, Goni & Villarroel, 2014).

Contrary to lecture method of teaching is Socrates-questioning-technique, which is student-centered method, where all students are actively involved in the teaching/ learning activities. Socrates questioning technique is a

form of inquiry and discussion between individuals, by asking and answering questions to stimulate critical thinking and to illustrate ideas. In this technique of teaching Socrates (470-399 BC) proposed that participants seek and gain understanding of concepts in the text through thoughtful dialogue rather than memorizing information that has been provided for them. He believed that students should be actively involved in their own learning, so that their morals and understanding of certain concepts should be challenged in order to make them think critically. He believed that disciplined practice of thoughtful questioning enable the students to examine ideas logically and to determine the validity of those ideas. With this in mind therefore, Socrates-questioning-technique was investigated to determine the effectiveness of the technique on motivation and performance of students in vertebrate anatomy and physiology in Colleges of Education, North-West Nigeria.

Questioning technique is defined as the various procedures teachers use in the classrooms by asking different kinds of questions (low and high) in different ways to meet the objectives of the curriculum (Richard & Schmidt, 2002). Basically, questions are examined according to their cognitive level or complexity (that is low-level and high-level cognition). This is a hierarchical approach to cognition as described by Bloom (1956). Bloom (1956) identified six levels within the cognitive domain, from the simple recall or recognition of facts, as the lowest level called knowledge, through increasingly

more complex and abstract mental levels, to the highest order, which is classified as evaluation. Science educators use this domain to prepare questions which help students perform better in Biology and other science subjects. The challenge of teachers therefore, is to find ways to encourage all students through motivation to answer questions either on their own or with others in the classroom as long as the desired learning outcome is kept in mind.

Generally, motivation is conceptualized as an internal state that arouses, directs and maintains behavior (Slavin, 2012). It is considered as one of the most important reasons that inspire a person to move forward (Jodai, Zafarghandi & Tous, 2013). A student may be unmotivated for a variety of reasons such as lack of interest, poor teaching strategy or distraction by external forces (Akbari, 2011; Nwagbo & Aham, 2015). Students who are motivated to learn science do so irrespective of their gender. In this study therefore, gender issue is another variable investigated in relation to questioning-technique. There have been a number of studies of gender on academic performance in science including Biology. Ibrahim (2012) defined gender as the amount of masculinity or femininity in an individual. A number of researches on gender and performance such as those of Ibrahim (2012); and Umar (2013) observed that male students perform better than female students in science. However, Lawal (2009) and Bunkure (2012) in their separate investigation concluded that girls achieved better than boys in science subjects.

In another dimension Dahiru (2013) revealed that sex played no significant role in academic performance in Science, Technology and Mathematics. Abdulganiyi (2017); and Yahaya (2017) in their separate studies also revealed that male and female do not differ significantly in their academic performance. Since there are still controversies on gender-related difference and academic performance, this study among other things therefore investigated the difference between male and female students exposed to Socrates questioning technique on motivation and performance in vertebrate anatomy and physiology in Colleges of Education, North-West Nigeria.

#### **Statement of the Problem**

The issue of poor performance of Biology students in secondary and tertiary institutions has been of great concern to many researchers. A lot has been done to improve on the teaching of science more especially Biology in secondary and tertiary institutions in Nigeria. In spite of these, students continue to perform poorly in science subjects including biology. Research studies showed that several factors such as lack of motivation, and poor methods of teaching were behind the reasons for poor performance of Biology students in tertiary institutions (Lawan 2010). In the light of these, this study investigated the effects of Socrates-questioning-technique on motivation and performance of students in vertebrate anatomy and physiology in colleges of education, north-west, Nigeria.

**Table 1.1: Vertebrate Anatomy and Physiology (Bio222) Results of Students' Performance in Federal Colleges of Education North-West Nigeria (2014 – 2021)**

Year	No. of Stds Sat for Exams	No. of Stds Passed(A1-C6)	% Passed	No. of Stds Failed (D7-F9)	% Failed
2014	1,806	542	30	1,264	70
2015	1,894	814	43	1,080	57
2016	1,906	610	32	1,296	68
2017	1,801	756	42	1,045	58
2018	1,783	642	36	1,141	64
2019	1,987	755	38	1,232	62
2020	1,036	394	38	642	62
2021	1,967	767	39	1,200	61
<b>TOTAL</b>	<b>14,180</b>	<b>5,280</b>		<b>8,900</b>	

**Source: Federal Colleges of Education North-West Record Offices (2021)**

An analysis of students' academic performance in vertebrate anatomy and physiology (BIO222) from 2014-2021 as shown in Table 1.1 indicated that the percentage scores of D7 and F9 added up together is too alarming. The failure rate of science students in tertiary institutions has been attributed to the constant use of lecture method by their teachers and this contributes nothing to the critical thinking faculty of the learners as reported by (Lawan, 2010; & Lakpini, 2013). For this reason, this study investigated the effects of Socrates questioning techniques on motivation and performance of students in vertebrate anatomy and physiology in Colleges of Education, Northwest Nigeria.

**Objectives of the Study**

The objectives of this study are to:

- i. ascertain the effect of Socrates-questioning-technique on academic performance of students taught vertebrate anatomy and physiology concepts.
- ii. determine effect of Socrates-questioning - technique on motivation levels of students taught vertebrate anatomy and physiology concepts.

- iii. find out effect of Socrates-questioning-technique on motivation levels of male and female students taught vertebrate anatomy and physiology concepts.

**Research Questions**

The following questions were formulated to guide the study:

- i. what is the difference between the mean academic performance scores of students taught vertebrate anatomy and physiology concepts using Socrates-questioning-technique and those taught the same concepts using lecture method?
- ii. what is the difference between the motivation levels of students taught vertebrate anatomy and physiology concepts using Socrates-questioning-technique and those taught the same concepts using lecture method?
- iii. what is the difference between the motivation levels of male and female students taught vertebrate anatomy and physiology concepts using Socrates-questioning-technique?

**Null Hypotheses**

The following hypotheses were tested at  $P \leq 0.05$  level of significance.



**HO<sub>1</sub>:** There is no significant difference between the mean academic performance scores of students taught vertebrate anatomy and physiology concepts using Socrates-questioning-technique and those taught the same concept using lecture method.

**HO<sub>2</sub>:** There is no significant difference between the motivation levels of students taught vertebrate anatomy and physiology concepts using Socrates-questioning-technique and those taught the same concepts using lecture method.

**HO<sub>3</sub>:** There is no significant difference between the motivation levels of male and female students taught vertebrate anatomy and physiology concepts using Socrates-questioning-technique.

### **Methodology**

The study employed quasi-experimental research design with pretest posttest experimental and control group. The Experimental group (EG) was taught using Socrates-Questioning-technique ( $X_1$ ) while control group (CG) was taught using lecture method only ( $X_0$ ). All the groups were pretested before treatment to determine group equivalence before exposure to treatments, and students' motivation levels. After six weeks of teaching, then posttest ( $O_2$ ) was administered to the groups to determine the effect of Socrates-Questioning-Technique on performance and motivation level of the students. The population for this study comprised of all NCE II Biology students in the five Federal Colleges of Education, North-West, Nigeria with 2,821 students offering

Biology/Integrated Science. Of this population, 1,418 are males and 1,403 are females.

Four co-education Federal Colleges of Education which formed part of the population were used as sample for the study. Stratified sampling technique was employed to select the four coeducation colleges from the population. Intact classes of Biology/ Integrated Science were purposively sampled and pretested. Results obtained were subjected to ANOVA test and thereafter Scheffe's test to determine two groups that were statistically insignificant in their ability. Using simple random sampling (balloting method), the two groups were assigned as Experimental Group and control group respectively. A total of 214 students was used for the study. Two research instruments, Vertebrate Anatomy and Physiology Performance Test (VAPT) and Vertebrate Anatomy and Physiology Motivation Questionnaire (VAPMQ) were used. The instruments, VAPT and VAPMQ, were tested for reliability using PPMC and found to be 0.83 and 0.74 respectively.

### **Results**

The results for this study are presented as follows:

**Research Question One:** what is the difference between the mean academic performance scores of students taught vertebrate anatomy and physiology concepts using Socrates-questioning-technique and those taught the same concepts using lecture method?

To answer this research question, descriptive statistics of mean and standard deviation were used and the summary is presented in Table 1.

**Table 1: Mean Academic Performance of Students for Experimental Group (EG) and Control Group (CG)**

Group	N	Mean	SD	MD
Experimental Group	154	33.23	3.39	
Control Group	60	30.75	3.58	2.48
<b>Total</b>	<b>214</b>			

Table 1, shows that the mean score of the experimental group is 33.23 while the mean score for the control group is 30.75. The mean difference of the experimental and control group is 2.48 in favour of the experimental group. This implied that the treatment appears to have effect on the experimental group. To determine whether the difference is significant or not, the scores are subjected to t test analysis.

**HO<sub>1</sub>:** There is no significant difference between the mean academic performance scores of students taught vertebrate anatomy and physiology concepts using Socrates-questioning-technique and those taught the same concept using lecture method. The result of t-test analysis is as shown in Table 2:

**Table 2: t-test Analysis of Students Academic Performance of Experimental and Control Groups in VAPT**

Group	N	Mean	SD	df	t-value	p-value	Remark	
Experimental Group	154	33.23	3.39					
Control Group	60	30.75	3.58		212	0.795	0.001	Significant
<b>Total</b>	<b>214</b>							

**Significant at  $\alpha P \leq 0.05$**

The result in Table 1, shows that the  $t = 0.795$  and  $p = 0.001$  at degree of freedom (df) 212. Since the  $p = 0.001$ , it indicates that there was a significant difference in the mean scores of the experimental and control groups. The significant difference is in favour of the experimental group exposed to Socrates-questioning-technique as indicated by the mean scores. With this result, the null hypothesis one is rejected.

**Research Question Two:** what is the difference between the motivation' levels of students taught Vertebrate anatomy and physiology concepts using Socrates-questioning-technique and those taught the same concepts using lecture method? To answer this research question, the mean scores experimental and control groups in VAPM was used and the summary is presented in Table 3.

**Table 3: Mean and Standard Deviation Scores of Students' Motivation Levels between for Experimental Group (EG) and Control Group (CG)**

Group	N	Mean	SD	MD
Experimental Group	154	87.25	6.39	34.56
Control Group	60	52.69	5.58	
<b>Total</b>	<b>214</b>			

Table 3, shows that the mean score of the experimental group is 87.25 while the mean score for the control group is 52.58. The mean difference of the experimental and control group is 34.56 in favour of the experimental group. This

implied that the treatment appears to have effect on the experimental group. To determine whether the difference is significant or otherwise, the scores are subjected to t test analysis.

**Table 4: t-test Analysis of Students Motivation Levels for Experimental and Control Groups**

Group	N	Mean	SD	df	t-value	p-value	Remark
Experimental Group	154	87.25	3.39	212	19.16	0.000	Significant
Control Group	60	52.69	3.58				
<b>Total</b>	<b>214</b>						

**Significant at  $\alpha P \leq 0.05$**

The result in Table 4, shows that the  $t = 19.16$  and  $p = 0.000$  at degree of freedom (df) 212. Since the  $p = 0.000$ , it indicates that there was a significant difference in the mean scores of the experimental and control groups. The significant difference is in favour of the experimental group exposed to Socrates-questioning-technique as indicated by the mean scores. With this result, the null hypothesis two is rejected.

**Research Question Three:** what is the difference between the motivation levels of male and female students taught vertebrate anatomy and physiology concepts using Socrates-questioning technique?

To answer this research question, the mean scores of male and female students in VAPT was used and the summary is presented in Table 5.

**Table 5: Posttest Mean and Standard Deviation for Male and Female Students Motivation Level in Experimental Group (EG)**

Group	N	Posttest Mean	SD	Mean Difference
Male	87	40.49	4.75	0.60
Female	67	39.89	4.41	
<b>Total</b>	<b>154</b>			

Table 5, shows that the mean score of the experimental group is 40.49 with a standard deviation of 4.49 while the mean score for the control group is 39.89 with a standard deviation of 4.41. The mean difference of the experimental and control group is 0.60 in favour of the

experimental group. This implied that the treatment appears to have effect on the experimental group.

To determine whether the difference is significant or otherwise, the scores are subjected to t test analysis.

**Table 6: t-test Analysis for Male and Female Students Motivation Levels for the Experimental Group (EG)**

Group	N	Mean	SD	df	t-value	p-value	Remark
Male	87	40.49	4.75	152	0.29	0.78	Not Significant
Female	67	39.89	4.41				
<b>Total</b>	<b>154</b>						

**Significant at  $\alpha P \leq 0.05$**

The result in Table 6, shows that the  $t = 0.29$  and  $p = 0.78$  at degree of freedom (df) 152. Since the  $p = 0.78$ , it indicates that there is no significant difference in the motivation levels of male and female students when exposed to Socrates-questioning-technique in teaching vertebrate anatomy and physiology concepts. Thus the null hypothesis is hereby retained.

**Discussion**

Table 2 showed that there was a significant difference between the experimental and control groups in the academic performance in favour of the experimental group. This could be as a result of the administration of the treatment to the experimental groups (that is teaching using Socrates-questioning-technique). Hence the Socrates-questioning-technique enables students to think critically, make them take ownership of their learning and thus, develop a deeper understanding of the contents. This invariably results to better academic performance. This

result agrees with the earlier findings of Nwosu & Ibe 2013; and Hadassa 2015 who found out in their separate studies that students performed significantly better when taught using Socratic-questioning-technique than their counterparts taught with lecture method.

The finding in Table 4 showed that that there was a significant difference between the motivation levels of Biology students taught vertebrate anatomy and physiology concepts using Socrates-questioning-technique and those taught with lecture method in favour of the experimental group. The significant difference is likely due to the use of Socrates-questioning-technique on the experimental group. This finding is in agreement with the findings of Fulton (2012) and Kusumoto (2018) who separately reported that active learning techniques improve students' motivation level and by extension improve their academic performance.

Table 6 revealed that the Socrates-questioning-technique of teaching enhances students'

motivation. This could be because the technique carry all students along irrespective of their gender, and also allow them to think, discuss, debate, evaluate, and analyze content through their own thinking and the thinking of other colleagues around them. This result is in agreement with the findings Yusuf and Afolabi (2010), Jacinta (2011), and Aliyu (2014) who individually found out that there was no gender difference in the motivation level, academic performance and attitude of students when exposed to activity-based methods of instruction such as questioning-technique, heuristic teaching technique, collaborative learning strategy, problem solving and process approach among others.

### **Conclusion**

Based on the findings of the study, the following conclusions were drawn:

- i. Socrates-questioning-technique is an effective means to enhance the academic performance of students in Colleges of Education.
- ii. Socrates-questioning-technique enhances motivation level of students to learn Biology than lecture method of teaching.
- iii. Socrates-questioning-technique is an effective means to enhance students' motivation in vertebrate anatomy and physiology concepts among male and female college students, hence the technique is gender friendly.

### **Recommendations:**

- i. Lecturers in colleges of education should employ the use of Socrates-questioning-

technique in teaching Biology especially vertebrate anatomy and physiology concepts as it makes students think, discuss, debate, and evaluate content taught thereby making learning meaningful, and also improved the level of motivation among the students toward the subject.

- ii. In-service training by the college authorities and professional bodies such as Science Teachers' Association of Nigeria (STAN) in conjunction with Federal Ministry of Education should be given to our science teachers in the form of seminars, workshops, and conferences to update their knowledge on student-centered teaching strategies like Socrates-questioning-technique for effective teaching delivery.
- iii. The study showed that gender does not play any significant role in the teaching and learning using Socrates-questioning-technique. Therefore it is recommended for teaching in colleges of education.

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**Status of Resources for Teaching Mathematics in Senior Secondary Schools in Ekiti State**

By

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**Abstract**

The study investigated the status of resources for teaching Mathematics in senior secondary school in Ekiti State. Three research hypotheses were generated to guide the study. This study employed descriptive survey design. Twelve public secondary schools were purposively selected from six local government areas of the three senatorial districts (Ekiti North, Ekiti Central and Ekiti South). Two local government areas were selected from each of the senatorial districts using simple random sampling techniques. A total of 120 SSS Mathematics teachers were involved in the selected public secondary schools. Data collected were analyzed using frequency counts, percentages, chi-square, as well as analysis of variance. All hypotheses were tested at 0.05 level of significance. The study showed that there was significant difference between the number of available human resources that are qualified and those not qualified for teaching Mathematics. The study showed that there was significant difference between the non-human resources that are available for teaching Mathematics and those that are not adequate for teaching Mathematics. The result also revealed that there was significant difference between the number of non-human resources that are adequate for teaching mathematics and those not adequate for teaching Mathematics. Based on the findings of this study, it was therefore recommended among others, that both the state government and federal government should assist the NCE teachers through in service training to further their studies.

**Keywords:** *Hypotheses, purposive, regression, public, teaching*

**Introduction**

Mathematics is a core subject in the primary and secondary education in the National Policy of Education (FRN 2004). Mathematics is a part of the universal education and it appears in the curriculum for all children Popoola (2008), suggested different mathematics goals for different levels of schooling since the types of mathematics taught varies according to the perceived ability of the pupils. The goals of secondary education include the following.

- i. Preparation for useful living within the society
- ii. Preparation for higher education, (FRN, 2004)

The inclusion of Mathematics in the core curriculum of 6-3-3-4 new system of education is to achieve the bread goals of secondary

education. Popoola (2009) maintained that Mathematics helps an individual to develop his personally through clear logical and critical thinking as well as power of reasoning. Thus, Mathematics and business subjects are not mutually exclusive in terms of usability. Mathematics is a tool used in the daily lives of an individual. Kolawole (2007) asserted that Mathematics is one of the compulsory courses at the secondary school level and maintained that the lack of Mathematics skill rained serious issues for the nation's development in a scientifically literate citizens and workers at every level.

There is the need to sort for ways of improving the teaching and learning of Mathematics. The term resource according Rowiszowski (2018)



refers to devices and materials employed in teaching and learning of the subject. It includes human and physical resources Akinsola (2000), Akinbobola, Ado and Iyang (2006) classified teaching resources into two human and material resources. Human resources include staff strength, teachers' quantity, quality, qualification and experience while material resources include hardware like black boards, radio, television, tape recorders and projectors and software like transparencies real object cartoon models map and photographs, libraries, laboratories and workshops. The instructional materials resources are important when teachers are planning for Mathematics lesson notes. These resources are also needed by teachers to assess the knowledge of their students; Teachers often assess students by assignment tasks, creating projects administering examinations. Human and materials resources are essential for all of these activities.

Mastery of Mathematics concept cannot be fully achieved without the use of resources. Edoma (2019) stressed that the teaching of Mathematics without resources will certainly result to poor performance in the subject and that a professionally qualified teacher no matter trained would be unable to put his ideas into practice if the school setting lack the equipment and materials necessary for him or her to translate his competence into reality. Experience over the years has shown that teachers have been depending on excessive use of words to express, convey ideas or facts in the teaching learning process. This process termed

the chalk – talk method. Today advances in technology have made it possible to provide materials and devices that could be used to minimize the teachers talking and at the same time make the message clearer, interesting and easier for the learner to. According to Soetan (2010) graphics include charts, posters, sketches, cartoons and drawings communicate facts and ideas clearly through combination of drawings words and pictures.

The teaching of Mathematics requires different resource and also having them enough would improve the teaching of meaningful and useful to the learning its study must progress from concrete experienced through imagination and abstraction to concrete life and living (Betiku, 2000). Therefore, this study is interested in finding out whether these resources are available and adequate.

### **Statement of the Problem**

Mathematics is an important subject in the school curriculum. Its role in our society cannot be over-estimated Mathematics is as old as man. It has developed from time when there was often little practical use of what was studied to its present position as the basis on which our scientific and technical knowledge built. Science and technology have rested on Mathematics. Despite the importance of Mathematics in the society, students have been performing poorly in the subjects in senior secondary school certificate examinations. The indices of student's poor performance in Mathematics in the senior secondary school certificate Examination had been attributed to problem of shortage of Mathematics teachers

and lack of materials for the teaching of the subject in the past. Teaching without proper planning and resource, avoiding the teaching of some topics perceived to be difficult are responsible for the poor achievement in Mathematics. Therefore, this study is designed to examine the status of resources for teaching Mathematics in senior secondary schools.

### **Objectives of the Study**

The study was designed to examine the status of resources for teaching Mathematics in Senior Secondary Schools in Ekiti State. The study was specifically designed to:

- i. determine the percentages of human resources that are qualified for teaching Mathematics and those not qualified for teaching Mathematics.
- ii. examine the difference between the number of available human resources that are qualified for teaching Mathematics and those not qualified for teaching Mathematics.
- iii. examine the difference between the non-human resources that available for teaching Mathematics and those not adequate for teaching Mathematics.
- iv. examine the difference between the numbers of non-human resources that are adequate for teaching Mathematics and those not adequate for teaching Mathematics.

### **Research Question**

This research question was raised

1. what are the percentages of human resources that are qualified for teaching

Mathematics and those not qualified for teaching Mathematics?

### **Research Hypotheses**

The following research null hypotheses were generated

**H<sub>01</sub>:** There is no significant difference between the number of available human resources that are qualified for teaching Mathematics and those not qualified for teaching Mathematics

**H<sub>02</sub>:** There is no significant difference between the non – human resources that are available for teaching Mathematics and those not adequate for teaching Mathematics.

**H<sub>03</sub>:** There is no significant difference between the number of non-human resources that are adequate for teaching Mathematics and those not adequate for teaching Mathematics

### **Methodology**

The study employed descriptive design of survey research design. The population of the study consisted of Senior Secondary School (SSS) Mathematics teachers from public secondary schools in Ekiti State. The sample for the study was 120 Mathematics teachers. Stratified simple random and purposive random sampling techniques were used to choose sample. The geographical area of Ekiti State was stratified into three senatorial districts (Ekiti North, Ekiti Central and Ekiti South). Simple random sampling technique was then used to choose two Local Government Areas from each of the senatorial districts. Four public secondary schools from each of the selected Local Government Area were then selected, using purposive sampling technique. These schools were the top four oldest public

secondary schools with laboratory and library that have been presenting students for WASSCE over 25years. All the senior secondary school Mathematics teachers were involved in the selected twenty-four secondary schools.

Availability and Adequacy of resources for teaching Mathematics (AARTM) was used for the study as developed by the researcher. The questionnaire consisted of two sections A and B sections. A sought information concerning the biodata of the teachers such as name of school, sex age and qualifications Section B consisted of the list of school non-human resources for teaching Mathematics. The instrument was vetted for face validity by experienced secondary school Mathematics teachers. The reliability of the instrument was determined through the test-retest method of reliability using Pearson product moment

correlation to establish the reliability coefficient of AARTM and the coefficient of internal consistency of AARTM was 0.82.

The researchers personally collected data by administering the instruments on one hundred and twenty teachers in twenty-four selected schools. Data collected were analysed using frequency counts, percentages, chi-square, as well as analysis of variance. All the hypotheses were tested at 0.05 level of significance.

**Result Presentation**

The results of the analysis of data collected were presented based on the research question and the research hypotheses that guided the study.

**Research Question**

1. What are the percentages of human resources that are qualified for teaching Mathematics and those not qualified for teaching Mathematics?

**Table 1: Frequency Distribution and Percentages of Available Mathematics Teachers' Qualifications**

S/N	Qualification of Mathematics Teachers	No of Available Teachers	No of Qualified	No of Not Qualified
1	NCE	41	-	41 (34.17%)
2	B.Sc/B.Sc Ed/B.Ed in Mathematics	36	26 (21.67%)	10 (8.33%)
3	BSc Mathematics with PGDE	19	19 (15.83%)	-
4	Other certificates	24		24 (20.00%)
	<b>Total</b>	120	45 (37.50%)	75 (62.50%)

The qualification of Mathematics teachers were considered in terms of the new policy on minimum qualification of teacher teaching in a senior secondary school. Table 1 shows the frequency distribution and percentages of available qualified teachers. It revealed that 37.50% of the teachers were qualified to teach

the senior secondary school Mathematics while 62.50% were not qualified.

**Hypotheses Testing**

H<sub>01</sub>: There is no significant difference between the number of available human resources that are qualified for teaching Mathematics and those not qualified for teaching Mathematics.

**Table 2: Chi-Square Analysis of Available Teachers' Qualification**

Qualification	Qualified	Not Qualified	Row Total	Df	Cal $X^2$ value	Critical $X^2$ value
NCE	-	41	41	3	10.20	7.815
B.Sc/B.Sc Ed/B.Ed (Mathematics)	26	10	36			
B.Sc (Mathematics plus PGDE)	19	-	19			
Other certificates	-	24	24			
Column Total	45	75	120			

P < 005

Table 2 shows that the chi-square analysis of available teachers' qualification. The table revealed that the calculated  $x^2$ -value of 10.20 was greater than critical  $x^2$  -value of 7.815 since the calculated value was greater than the critical value, the null hypothesis was rejected. This implies that there was a significant difference between the number of available human resources that are qualified and those

not qualified. The implication is that there are more unqualified mathematics teachers in senior secondary schools in Ekiti State

**H<sub>02</sub>:** There is no significant difference between the non-human resources that are available for teaching Mathematics and those that are not adequate for teaching Mathematics

**Table 3: Analysis of Variance of Available of Non-Human Resources and those that are not Adequate for Teaching Mathematics**

	Sum of Squares	Df	Mean Squares	F <sub>cal</sub>	F <sub>tab</sub>
Between Groups	33.729	3	11.243	100.384	8.57
Within Groups	13.111	117	.112		
Total	46.840	120			
Between Groups	31.070	3	10.357	154.582	8.57
Within Groups	7.840	117	.067		
Total	38.910	120			
Between Groups	86.187	3	28.729	302.410	8.57
Within Groups	11.123	117	.095		
Total	97.310	120			
Between Groups	35.596	3	11.865	148.312	8.57
Within Groups	9.404	117	.080		
Total	45.000	120			
Between Groups	37.980	3	12.660	104.628	8.57
Within Groups	14.130	117	.121		
Total	52.110	120			

P < 0.05

In table 3, F calculated were greater than the F table at 0.05 level of significance. Therefore, the hypothesis that states that there is no significant difference between the non-human resources that are available for teaching Mathematics and those that are not adequate for teaching Mathematics was rejected. That is,

there was significant difference between the non-human resources that are available for teaching Mathematics and those that are not adequate for teaching Mathematics.

This implies that instructional resources play important roles in teaching and learning of Mathematics.

H<sub>03</sub>: There is no significant difference between the number of non-human resource that are

adequate for teaching Mathematics and those not adequate for teaching Mathematics.

**Table 4: Analysis of Variance of Non-Human Resources that are Adequate and those Not Adequate for Teaching Mathematics**

	Sum of square	Df	Mean square	F <sub>cal</sub>	F <sub>tab</sub>
Between Groups	69.304	3	23.101	139.163	8.57
Within Groups	19.446	117	.166		
Total	88.750	120			
Between groups	72.218	3	24.073	153.361	8.57
Within Groups	18.532	117	.158		
Total	90.750	120			
Between Groups	36.695	3	12.232	197.290	8.57
Within Groups	7.305	117	.062		
Total	44.000	120			
Between Groups	85.085	3	28.362	464.451	8.57
1Within Groups	7.155	117	.061		
Total	92.240	120			
Between Groups	55.126	3	18.375	125.856	8.57
Within Groups	17.126	117	.146		
Total	22.75	120			

P < 0.05

From the table 4 above, F<sub>calculated</sub> were greater than F<sub>table</sub> at 0.05 level of significance, the hypothesis which states that there is no significant difference between the number of non-human resources that are adequate for teaching Mathematics and those not adequate for teaching Mathematics was therefore rejected. This implies that non-human resources are of great importance in the performance of Mathematics students. However, the means square of the between groups higher than that of the means square of the within groups. This implies non-human resource is having important role in academics performance of Mathematics students in secondary schools.

**Discussion of Findings**

The result relevant to the research question /hypothesis one revealed that the percentage of not qualified teachers was higher than the

percentage of qualified teachers teaching Mathematics. That is, there were more unqualified Mathematics teachers in senior secondary schools in Ekiti state than the qualified Mathematics teachers. This implied significant difference between the number of available human resources that were qualified for teaching Mathematics and those not qualified for teaching Mathematics in Ekiti state senior secondary schools. This was in consonance with the findings of Akinbobola, Ado and Iyang (2006) who stated that majority of the Mathematics teachers in our schools were not qualified to teach the subject.

The result relevant to hypothesis two shows significant difference between the non-human resources that were available for teaching Mathematics and those that were not adequate for teaching Mathematics. The implication was that the available non-human resources for teaching senior secondary school Mathematics

were not adequate. This affirms the finding of Akinsola (2000) who stated that the non-human resources for teaching Mathematics were not adequate.

The result relevant to hypothesis three shows significant difference between the number of non-human resources that were adequate for teaching Mathematics and those that were not adequate for teaching Mathematics. The implication was that non-human resources had an important role in the teaching of Mathematics which would enhance that academic performance of students in secondary schools. This was in consonance with the findings of Edoma (2019) who stressed that teaching of Mathematics without resources would certainly result to poor performance in the subject and that a professional qualified teacher, no matter trained would be unable to put his idea into practice if the school setting lacks the equipment and materials necessary for him or her to translate his competence into reality.

### **Conclusion**

Based on the findings of the study it was concluded that there was no significant difference between the number of available human resources that were qualified for teaching Mathematics and those not qualified for teaching Mathematics. The study also revealed significant difference between non-human resources that were available, adequate and not adequate for teaching Mathematics in senior secondary schools.

### **Recommendations**

Based on the findings of this study, the following recommendations were made

- (1) Both the state government and federal government should assist the NCE teachers through in-service training to further their studies.
- (2) There should be enough non-human resources provided for the teaching and learning of Mathematics.
- (3) Instructional materials should be improvised for the students for them to understand Mathematics very well.
- (4) Government should employ more qualified human resources to teach Mathematics.

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**Self-Regulation and Study Habits as a Correlates of Students' Academic Performance in Kwara State Colleges of Education, Nigeria**

By

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**Abstract**

This study investigated self-regulation and study habit as a correlates of students' academic performance in Kwara State colleges of education. The study adopted correlational research design. The population for the study comprised all N.C.E II students in Kwara state colleges of education. Research advisor (2006) table was used to determine the total number of 291 N.C.E II students in Kwara state colleges of education. Instruments used for the study were "Students' Self-Regulation and Study Habits Rating Scale" (SSRSHRS) and Students' Academic Performance was used to determined students' academic performance using students' performance in General Studies (GNS), instrument were subjected to validity by the experts in department of early childhood and primary education Kwara state university, Malete and a test-re-test reliability procedure was used to determine the reliability index of NAS ( $r=0.96$ ). One research question was answered using descriptive of percentage and mean and three research hypotheses were formulated using PPMC to test hypotheses one and two, while t-test was used to test hypotheses three at 0.05 level of significance. The study concluded that students' self-regulation and study habit determined academic performance. Also, gender had no influence on students' academic performance. The findings of the study revealed that self-regulation had a significant relationship with students' academic performance ( $r= .161$ ;  $p<0.05$ ), the study also revealed that study habits had a significant relationship with students' academic performance ( $r= .173$ ;  $p<0.05$ ). However, gender ( $t = 6.453$ ;  $p > 0.05$ ) did not have significant difference in students' self-regulation and study habit based on students' gender. It was recommended that educators should foster a growth mindset by teaching students' self-regulation skills, empowering the students to take ownership of their learning and guiding them towards holistic development through targeted training and support.

**Keywords:** *Academic performance, self-regulation, study habit, study skills*

**Introduction**

The transition to tertiary education introduces new challenges for students, requiring them to adapt and develop new strategies to meet increased academic demands. In today's competitive educational environment, achieving academic success necessitates resilience and strategic learning approaches. Students who develop these skills can navigate academic challenges effectively, remain motivated, and

ultimately reach their full potential. Academic success reflects the extent to which a learner has achieved specific goals in teaching and learning within schools, colleges, and universities. Similarly, Korb (2012) pointed out that academic success, in the field of education, can be conceptualized as exceptionally general (e.g., overall academic performance in school), content-specific (e.g., academic performance in a



specific course or general course) which should always be measured by some type of academic assessment such as an examination. Therefore, scholars view it as the demonstration of a student's proficiency in fulfilling specific classroom tasks within a given course of study or subject emphasizing on the assessment outcomes (Nwikpo & Ofodueze, 2022). Conversely, an alternative perspective suggests that the academic performance extends beyond task completion and assessments to include a wider range of students' performance, such as study habit skill, attainment of educational objectives and even regulate their feelings and attitude toward the attainment of education (Amuseghan, 2018). Nwokeforo and Duru (2016) revealed that academic learning of students especially in tertiary level of education is not impressively acceptable as it is being affected a number of factors such as home, school, peer, gender, teachers, the environment and even the habit of studying. It can therefore be said that academic performance of students is not satisfactory and urgent improvement is needed.

This holistic framework views academic performance as reflective of a student's cognitive growth, skill acquisition, and goal realization throughout their educational journey (Al Husaini et al., 2023). Overall, their definitions largely neglect that good academic performance can be determined only by cognitive variables but also non-cognitive variables involving the extent to which an institution, a teacher, or a student achieves long- or short-term educational goals, hence Abdullah and Golder (2020) posited that an

excellent academic skill is needed for good academic performance. These skills are not just essential for learning for good grades in a subject but for critical thinking, problem-solving and effective communications.

Many researchers have employed several approaches to bring about effective and improve of students' academic performance in tertiary level of education especially in colleges of education, despite the efforts to improve students' academic performance remains persist due to inability to control and manage one's own feelings and behaviors. However, students are required to cultivate a deep understanding of the course of study through develop the skills of study habit, active understanding and critical thinking in order to solve problems, ability to understand one's own feelings, thought, goals, monitoring progress, adjust behavior and to ensure sustainable academic growth and interest, through application of self-regulation, self-monitoring, self-evaluating, self-reinforcement, study habit skills among others (Momoh, 2018).

Poor academic performance of students has also been of concern to many parents, teachers, counsellors, and educational administrators (Popoola et.al 2021). This has been attributed to lack of adequate teaching facilities, unqualified teachers, students' poor study habits, psychological adjustment problems such as anxiety, stress, and depression, and students' lack of financial support such as scholarships, bursary awards, and loans (Popoola et al., 2021).

Erik et al., (2019), posited that academic performance could be influenced by factors that come from within students and from outside. Factors from within include psychological factors and physiological factors, while factors from outside include environmental factors and instrumental factors. Erik, et.al (2019) opined that psychological factors that have a large influence on academic achievement are the study habits of tertiary institution students. Ghulam (2013), asserted that the academic performance of students besides other factors depends upon study habits and study behaviour of students. The poor level of academic performance of students has led the researcher to come up with a lot of variables that could effectively assist students. Among these variables could be students' study habit and self-regulation learning strategies. However, study habit refers to learners' repeated actions to study from the beginning to the end of all educational programmes. It refers to students' habitual practices to complete their curriculum (i.e., the totality of experiences in the educational process). It typically denotes the degree to which the student engages in regular acts of studying characterized by appropriate studying routines (e.g., reviews of material) occurring in an environment conducive to studying (Crede & Kuncel, 2018).

Awang and Sinnadurai, (2017) defined study habits as the students' way of studying, whether systematic, efficient, or inefficient; the adopted way and manner a student plans to attain mastery of the subject. Study habits are a

multidimensional concept that involves setting up strategies, scheduling a study plan and time, definite place, and behaviour patterns by a student to form a structured approach to self-learning and doing accordingly in his or her academic life. It is influenced not only academic adjustment but also the personal and social adjustment for the students beyond school years. Study habits measure improve academic performance predictions (Awang & Sinnadurai, 2017). Good study habits produce positive academic performance, while inefficient study habits lead to academic failure (Mendezabal, 2013). Therefore, successful achievement in any form of academic activity is based upon study, interpretation and application. Everyone has different study habits. All often, students perform poorly in school simply because they lack good study habits. In many cases, students do not know where to begin. Good health, sufficient sleep, appropriate exercise and nutritious diet are essential to achievement of good study results. However, self-regulation is also among the factors that help students focus their attention on their course of study when they may be distracted by environmental factors such as: family, peers, gender, school environment, noisy classmates, a problem they had at recess, or excitement about an upcoming event (Zimmerman, and Kitsantas, 2005). According to Zimmerman (2001), self-regulation is Paget's term which describes an individual's mental process of changing his reasoning pattern to advance from one level of understanding to another. The definition of self-

regulation was further simplified by Man-Chih (2006), who defined self-regulation as an approach that enables individuals to develop their own goal-directed learning processes. It does not only promote individual learning, but also provides opportunities for students to actively engage in learning processes such as goal setting, self-monitoring, self-evaluating, self-reinforcement, and resource management.

Similarly, Zimmerman (2000) defined self-regulation as the capability of active participation in the learning process from the view point of meta cognition, motivation and behaviour. Self-regulated learners have skills from the perspective of metacognitive knowledge and know how to direct their mental processes in the direction of achievement and personal goals (Cooper, 2006). Self-regulation is the ability to monitor and manage emotions, thoughts, and behaviours. The ability to self-regulate helps students get along better with teachers and other students. Students with good self-regulation skills get the most out of school, both in terms of academics and social interactions. This sets them up for being successful in life (Hong, et.,2019). Self-regulation refers to the modulation of affective, cognitive and behavioural processes throughout a learning experience in order to reach a desired level of achievement (Sitzmann, 2018). This definition encompasses the core features of most definitions of self-regulation; it reflects goal-oriented behaviour and includes multiple processes operating in concert.

Korb (2012) postulated self-regulation includes setting goals for one's learning, making plans to achieve the set goals, and monitoring progress leading to the attainment of those goals. Acceptance of responsibility is one of the aspects of self-regulation which students are expected to comply with. Becker (2011) posited that students' take charge for their own learning is the basis of self-regulated learning as learning is not something that happens to students; it is something that happens by students who see the need to update their skills, acquire new knowledge, and solve new problems throughout life. Oates (2019) suggested that students' take charge for their learning is a way of growing independence for the learner and diminishing support from the teacher as self-regulation increases which provides perspective on the inclusion of learners' voice as a pattern shift in teaching.

Controlling one's learning is a strength which students' self-regulation seeks to propagate and achieve. Hence, Oates (2019) argued that when learners control their own learning, they are given opportunity to understand how they learn, their learning styles, and how they process information. This is a reflective dimension of self-regulated learning which relates to the students knowing themselves in relation to their learning and understanding the strategies that work best for them. According to Education Endowment Foundation (2018), allowing students to control their own learning, encourages male students to increase their pupils'

understanding of who they are, through awareness of their strengths and areas for development so as to support the learners in identifying their future learning goals. Furthermore, Benfreiff (2018) argued that students' irrespective of their gender understand their study habits and control of their own learning which makes them more persistent, receptive to instruction, willing to learn from others, honest about their performance, willing to take on challenges, willing to take risks, accurate in their estimations of their abilities, likely to view failure as temporary, likely to take action when depressed and resilient after failure. Richmond (2014) noted that students' controlling their learning is hinged on the adoption of student-centered learning which allow students to further challenge themselves and earn at least, credit in their academic works. In a similar way, Pandolpho (2018) pointed out that it essentially encourages the designing of activities that foster learner independence to invite students to engage more thoughtfully with the content. In other words, when understands their study habits and are in control of their own learning, this will make students feel the influential impact of feedback, praise and criticism as they are given choices and the means to assess their progress to fosters metacognition and independence. On the part of male students, it is likely that this will make them reflect the control the students have over their learning and achievement and thus consider it a significant phase of being an outstanding teacher.

In this study, the researcher seeks to investigate self-regulation and study habits as a correlates of students' academic performance in Kwara state colleges of Education. it has been observed from the literature reviewed that study of this type has never been carried out in Kwara State colleges of education. Therefore, this is meant to fill the gap requiring empirical evidence regarding self-regulation and study habits as a correlates of students' academic performance in Kwara state colleges of education

### **Statement of the Problem**

In the contemporary educational landscape, students' ability to manage their own learning processes has emerged as a crucial determinant of academic success. Self-regulation and study habits encompasses a range of behaviors and strategies, including goal setting, self-monitoring, time management, and adaptive learning strategies, which enable students to take control of their learning journey and have study habit skills. Despite its recognized importance, there is a growing concern that many students struggle to effectively self-regulate, potentially impacting their academic performance. Recent observations and preliminary studies suggest that students who lack self-regulation skills with lower study habits often demonstrate poor academic achievement. These students may experience difficulties in managing their study schedules, maintaining focus, and adjusting their strategies to overcome academic challenges. Consequently, they are less likely to achieve their academic goals and may perform below their

potential. However, there is a notable gap in the existing literature regarding the extent to which self-regulation and study habits directly correlates with academic performance, particularly in Kwara state colleges of education. While some research has explored this relationship, comprehensive studies focusing on diverse student populations and varying educational settings remain limited. This gap is especially pronounced in Kwara state colleges of education in Kwara State, Nigeria, where cultural, socioeconomic, and institutional factors may uniquely influence students' self-regulation and study habits on academic performance. This constitutes that gap which the present study seeks to fill, hence, the need for the study.

### **Research Questions**

1. What is the level of students' self-regulation, study habits and academic performance in Kwara state colleges of education?

### **Research Hypotheses**

**H<sub>01</sub>:** There is no significant relationship on students' self-regulation and academic performance in Kwara state colleges of Education.

**H<sub>02</sub>:** There is no significant relationship on students' study habits and academic performance in Kwara state colleges of Education.

**H<sub>03</sub>:** There is no significant difference in students' self-regulation and study habits based on students' gender in Kwara state colleges of Education.

### **Methodology**

The study adopted a correlational research design. The design allowed to know if there are existing relationship between students' self-regulation, study habits and academic performance in Kwara state colleges of education. The targeted population for this study were all N.C.E. II students in Kwara state public colleges of education, Kwara state. According to Kwara state Ministry of Tertiary education, Kwara state there are three public colleges of education in Kwara state which are Kwara state college of education, Ilorin, Kwara state college of education, Oro and Kwara state college of education, Lafiagi. According to Centre for Information Technology (CIT) Kwara state college of education, Ilorin there are 725 N.C.E II students, 279 N.C.E II students in Kwara state college of education, Oro and 156 N.C.E. II students in Kwara state college of education, Lafiagi which give the total number of 1,160 N.C.E II students out of which 291 N.C.E. II students were used for the study using Research Advisors (2006). Two instruments were used for this study which are: "Students' Self-Regulation and Study Habits Rating Scale" (SSRSHRS) which comprised 10 items concerning situations involving Students' Self-Regulation and Study Habits Rating Scale, and was based on a 3-point Likert scale (3—Always, 2—Sometimes and 1—Never), while Students' Academic Performance was determined using General Studies (Use of English Language). The instruments were validated by experts in the Department of Early

Childhood and Primary Education Kwara State University, Malete, the corrected version was used to determine the reliability in Kwara state private colleges of education which is not part of the study using Test re-test method. The results of the first and second tests were used to determine internal consistency of the instrument and it yielded a reliability coefficient of 0.96. Descriptive statistic of percentage and mean were used to answer the research question raised,

Pearson Product-Moment Correlation (PPMC) was used to test hypothesis one while t-test was used to test hypotheses two at 0.05 level of significance.

**Results**

**Research question one:** What is the level of students’ self-regulation, study habits and academic performance in Kwara state colleges of education?

**Table 1**

*Table showing the level of students’ self-regulation, study habits and academic performance in Kwara state colleges of education, Kwara state*

S/N	Items	Mean
1	I set specific goals for my academic work	1.72
2	I prioritize my work based on their importance and deadline	2.09
3	I avoid procrastination and complete my work on time	1.63
4	I can concentrate on my studies without getting distracted.	2.00
5	I take regular break to maintain my focus and productivity	1.87
6	I manage stress effectively when faced with academic pressures	1.76
7	I stayed calm and composed during exams and presentations	2.33
8	I maintain positive attitude even when my academic performance is not expected	2.37
9	I regularly review my academic performance and progress towards my goals	1.86
10	I seek feedback from lecturers and peers to improve my work	2.22
<b>Weighted</b>		<b>2.43</b>
<b>Decision:</b>		<b>High: 2.50 – 3.00</b>
<b>Low: 0.00 – 1.49</b>		<b>Average: 1.50 – 2.49</b>

Table 1 shows the responses in the level of students’ self-regulation, study habits and academic performance in Kwara state colleges of education. It was indicated that the following items were average: I avoid procrastination and complete my work on time (mean=1.63), I set specific goals for my academic work (mean=1.72), I manage stress effectively when faced with academic pressures (mean=1.76), I regularly review my academic performance and progress towards my goals (mean=1.86), I take regular break to maintain my focus and productivity (mean=1.86), I can concentrate on

my studies without getting distracted (2.00), I prioritize my work based on their importance and deadline (2.09), I seek feedback from lecturers and peers to improve my work (mean=2.22), I stayed calm and composed during exams and presentations (mean=2.33), and I maintain positive attitude even when my academic performance is not expected (mean=2.37). The weighted average (**2.43**) which is a numeric indicator that the level of students’ self-regulation, study habits and academic performance was Average.

**Research Hypothesis One:** There is no significant relationship between students' self-regulation and study habits on academic

performance in Kwara state colleges of education, Kwara state.

**Table 2**

*Summary of PPMC Showing the relationship between students' self-regulation, study habits and academic performance in Kwara state colleges of education, Kwara state.*

Variable	N	Mean	SD	r	Df	Sig.	Decision
Self-regulation		32.22	2.215				
Academic Performance	291	60.24	9.070	.161	289	.023	Significant

Table 2 there is no significant relationship between students' self-regulation and academic performance in Kwara State colleges of education, Kwara state. It was revealed that the mean and standard deviation of self-regulation were 32.22 and 2.215 respectively, while the mean and standard deviation of academic performance were 60.24 and 9.070 respectively. The calculated value of rcal was .161 and degree of freedom was 289, the observed P-value ( $p < 0.05$ ). Therefore, the null hypothesis which

states that there is no significant relationship between students' self-regulation on academic performance was rejected. This implies that there was a relationship between self-regulation and students' academic performance in Kwara state public colleges of education, Kwara state.

**Research Hypothesis Two:** There is no significant relationship between students' study habit and on academic performance in Kwara state colleges of education, Kwara state.

**Table 3**

*Summary of PPMC Showing the relationship between students' study habits and academic performance in Kwara state colleges of education, Kwara state.*

Variable	N	Mean	SD	r	Df	Sig.	Decision
Study Habit		29.33	1.315				
Academic Performance	291	60.24	9.070	.173	289	.001	Significant

Table 3 there is no significant relationship between students' study habit and academic performance in Kwara State colleges of education, Kwara state. It was revealed that the mean and standard deviation of study habit were

29.33 and 1.315 respectively, while the mean and standard deviation of academic performance were 60.24 and 9.070 respectively. The calculated value of rcal was .173 and degree of freedom was 289, the observed P-value ( $p < 0.05$ ).

Therefore, the null hypothesis which states that there is no significant relationship between students' study habit on academic performance was rejected. This implies that there was a relationship between study habit and students' academic performance in Kwara state public colleges of education, Kwara state.

**Hypothesis Three:** There is no significant difference in students' self-regulation and study habits based on students' gender in Kwara state colleges of Education, Kwara state.

**Table 4**

Table showing the significant difference in students' self-regulation and study habits based on students' gender.

Gender	n	Mean	Std. Dev	t	df	Sig	Remark
Male	137	29.13	2.391	6.453	289	.409	Not Significant
Female	154	32.04	1.663				

Table 3 show the difference in students' self-regulation based on students' gender. ( $t = 6.453$ ;  $df = 333$ ;  $p > 0.05$ ). The hypothesis is therefore not rejected in the light of the result since the significant value is greater than 0.05. This implies that there was no significant difference in students' self-regulation and study habits based on students' gender.

own learning is the basis of self-regulated learning as learning is not something that happens to students; it is something that happens by students who see the need to update their skills, acquire new knowledge, and solve new problems throughout life. Similarly, the finding supported Oates (2019) who posited that students' acceptance of concern for their learning is a way of growing independence for the learner and diminishing support from the teacher as self-regulation increases which provides perspective on the inclusion of learners' voice as a pattern shift in teaching.

**Discussion of Findings**

The findings of this study revealed that the level of students' self-regulation on academic performance in Kwara state colleges of education was average. This implies that self-regulation could determine students' academic performance as a result of students' previous negative experiences in their academic performance. This finding is in line with Becker (2011) posited that students' acceptance of responsibility for their

Another finding of the study revealed that there was no significant relationship between students' self-regulation and academic performance in Kwara state colleges of education, Kwara state. This implies that self-regulation determines students' academic performance. This study is in



tandem with Oates (2019) who argued that when learners control their own learning, they are given opportunity to understand how they learn, their learning styles, and how they process information. This is a reflective dimension of self-regulated learning which relates to the students knowing themselves in relation to their learning and understanding the strategies that work best for them. This study is also in line with Hong, et., (2019) who state that self-regulation is the ability to monitor and manage emotions, thoughts, and behaviours. The ability to self-regulate helps students get along better with teachers and other students. Students with good self-regulation skills get the most out of school, both in terms of academics and social interaction. The finding of the study revealed that there was no significant relationship between students' study habits and academic performance in Kwara state colleges of education, Kwara state. This implies that study habits determine students' academic performance. This study is in line with the study of Mendezabal, (2013) who argued that successful achievement in any form of academic activity is based upon study habits, interpretation and application. Everyone has different study habits. All often, students perform poorly in school simply because they lack good study habits. in many cases, students do not know where to begin.

Finally, the finding of the study further revealed that there is no significant difference in students' self-regulation based on students' gender. This implies that gender had no influence in self-

regulation. Similarly, this finding supported Benfreiff (2018) argued that students' irrespective of their gender control of their own learning which makes them more persistent, receptive to instruction, willing to learn from others, honest about their performance, willing to take on challenges, willing to take risks, accurate in their estimations of their abilities, likely to view failure as temporary, likely to take action when depressed and resilient after failure. This finding also supported in the test score of Nwokeforo and Duru (2016) which stated that there was no difference in the self-regulation levels of male and female respondents. The study confirmed the results of difference in self-regulation levels of male and female students.

### **Conclusion**

Based on the findings of this study, it is concluded that students' self-regulation and study habits as a correlates of students' academic performance in Kwara state colleges of education. Students understand and take charge of their performance for their learning related to academic performance. Moreover, students' controlling their own learning is related to academic performance. Hence, students' acceptance of take charge and regulatory their own learning is related to positive academic performance. It is when students are positioned to be fully responsible for their learning and be in full control of same that they will be encouraged to achieve more in their academics.

Also, it was concluded that students' self-regulation had no influence on students' gender

### **Recommendations**

Based on the above conclusion, the following recommendations were made

1. Educators should foster a growth mindset by teaching students' self-regulation skills, empowering them to take ownership of their learning and guiding them towards holistic development through targeted training and support.
2. Students should be more proactive and invested more time in their academic activities, taking ownership of their learning by putting in the necessary efforts to ensure they deliver quality academic task, it can be a way of enhancing peer tutoring among them, they should also adopt the use of planned time tables for their study routine and develop the discipline to stick to it each day's plan.
3. The teachers can also help in considering gender differences and needs of the students which will tailor their approach to support students' self-regulation and their academic accomplishment.

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**Effectiveness of Skill Acquisition Programs on Reducing Symptoms of Anxiety and Depression among Women Exposed to Violent Conflicts in Plateau State, Nigeria**

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**Abstract**

Women who are exposed to violent disputes frequently face serious psychological difficulties, including anxiety, depression, and a general lack of wellbeing among order to close the knowledge gap caused by these experiences, this study examines the impact of skills acquisition programs on lowering anxiety and depressive symptoms among women exposed to violent conflicts in Plateau State, Nigeria. Two null hypotheses were evaluated and two research questions were posed. Pre-test, post-test, and control group were of quasi-experimental design were adapted. Using a multi-stage sampling method, a total of 100 participants (women) who were internally displaced and living in two Local Government Areas in Plateau State—were randomly chosen and placed in a skill-acquisition group and a control group. The study adapted “Depression, Anxiety and Stress Scale” with reliability index of 0.90. The null hypotheses were tested using the Analysis of Covariance (ANCOVA) statistical tool at a 0.05 level of significance. Findings revealed that: there was a higher level of effectiveness of the skills acquisition programme on stress, and depression among women affected by violent conflicts. It was recommended among others that government should assist the women in the IDP Camps through training in skills acquisition training as a matter of urgency in order to ensure and sustain their improved psychological adjustments.

**Keywords:** *Anxiety, depression, skills acquisition training, women, violent conflicts*

**Introduction**

Violent conflicts have become a pervasive feature of modern society, leaving in their wake a trail of devastation, displacement, and psychosocial distress. Plateau State, Nigeria, has been particularly affected by violent conflicts, which have had a profound impact on the lives of women. The psychological consequences of violent conflicts on women are multifaceted and far-reaching, including anxiety, depression, and post-traumatic stress disorder (PTSD).

In response to the growing recognition of the need to address the psychological well-being of women affected by violent conflicts, skill acquisition programs have been implemented in Plateau State. These programs aim to empower women by providing them with skills and

knowledge to improve their economic and social circumstances. However, the effectiveness of these programs in reducing symptoms of anxiety and depression among women exposed to violent conflicts remains largely unexplored.

The effectiveness of skill acquisition programs in reducing symptoms of anxiety has been consistently demonstrated across various studies. These programs focus on teaching individuals’ skills and techniques to manage and regulate their anxiety, leading to significant reductions in symptoms (Beck, Emery & Greenberg, 2015).

One key aspect of skill acquisition programs is the emphasis on cognitive restructuring, which helps individuals identify and challenge negative thought patterns contributing to their anxiety. By

learning to reframe their thoughts and beliefs, individuals can reduce their anxiety levels and improve their overall well-being (Bandura, Ross, Ross, 2011). Additionally, skill acquisition programs often incorporate relaxation techniques, such as deep breathing and progressive muscle relaxation, which have been shown to decrease physiological symptoms of anxiety (Bernstein, Borkovec & Hazlett-stevens, 2015).

Exposure therapy is another critical component of skill acquisition programs, allowing individuals to confront and overcome their fears and anxieties in a controlled and safe environment (Beck et al., 2015). This gradual exposure helps individuals build confidence and develop coping skills, leading to significant reductions in anxiety symptoms (Hofmann et al., 2010). Moreover, skill acquisition programs often focus on enhancing self-efficacy and self-esteem, empowering individuals to take control of their lives and manage their anxiety more effectively (Bandura et al., 2011).

The effectiveness of skill acquisition programs is further enhanced by their adaptability to various populations and settings (Borkovec et al., 2015). Group-based programs, for instance, provide social support and a sense of community, which can be particularly beneficial for individuals with social anxiety disorder. Technology-based programs, on the other hand, offer convenience and accessibility, making them ideal for individuals with busy schedules or limited access

to traditional therapy settings (Miller & Rasmussen, 2010).

Skill acquisition programs have also been shown to be highly effective in reducing symptoms of depression. These programs teach individuals skills and techniques to manage and regulate their depression, leading to significant improvements in mental health. For example, a study by Beck et al. (2015) found that cognitive-behavioural therapy (CBT), a type of skill acquisition program, was effective in reducing symptoms of depression in individuals with chronic depression.

Behavioural activation is another key component of skill acquisition programs that has been shown to be effective in reducing symptoms of depression. This approach encourages individuals to engage in activities that bring them pleasure and help them achieve their goals. A study by Sturm and Andres-Hyman (2012) found that behavioural activation was effective in reducing symptoms of depression in individuals with major depressive disorder. Additionally, mindfulness-based techniques, such as meditation and deep breathing, have been shown to be effective in reducing symptoms of depression.

However, the evidence strongly supports the effectiveness of skill acquisition programs in reducing symptoms of depression and improving mental health outcomes. These programs are adaptable to various populations and settings, making them a valuable treatment approach for depression. For example, a study by Segal,

Williams and Teasley (2013) found that mindfulness-based cognitive therapy (MBCT) was effective in reducing symptoms of depression in individuals with a history of depression. By providing individuals with the skills and techniques necessary to manage their depression, skill acquisition programs offer a valuable treatment approach that can be used in conjunction with traditional therapies or as a standalone intervention.

The findings of this study will contribute to the growing body of research on the psychological consequences of violent conflicts on women and the effectiveness of skill acquisition programs in promoting psychological well-being. The study will also provide insights into the experiences of women affected by violent conflicts and the ways in which skill acquisition programs can be tailored to meet their specific needs. Ultimately, this study aims to encourage policy and programming decisions aimed at supporting the psychological well-being of women affected by violent conflicts in Plateau State, Nigeria.

### **Statement of the Problem**

The protracted violent conflicts in Plateau State, Nigeria have resulted in a significant increase in anxiety and depression among women, with devastating consequences on their mental health and well-being. The prevalence of anxiety and depression among women in this region is alarmingly high, with studies indicating that approximately 70% of women have experienced some form of violence, leading to severe psychological distress.

Despite the growing recognition of the psychological impacts of violent conflicts on women, there is a paucity of research on the effectiveness of skill acquisition programs in reducing symptoms of anxiety and depression among women exposed to violent conflicts in Plateau State, Nigeria. The existing programs may not be tailored to address the unique needs of women affected by violent conflicts, exacerbating the mental health crisis in the region. This gap in knowledge necessitates an investigation into the effectiveness of skill acquisition programs in reducing symptoms of anxiety and depression among women exposed to violent conflicts in Plateau State, Nigeria.

The lack of access to evidence-based interventions and the limited availability of mental health services in Plateau State, Nigeria further compound the problem. Women affected by violent conflicts in this region often have limited access to healthcare services, and those who do seek help often face stigma and discrimination. This underscores the need for a study that investigates the effectiveness of skill acquisition programs in reducing symptoms of anxiety and depression among women exposed to violent conflicts in Plateau State, Nigeria, and explores the feasibility of implementing context-specific interventions to address the mental health needs of this vulnerable population.

This study seeks to investigate the effectiveness of skill acquisition programs in reducing symptoms of anxiety and depression among women exposed to violent conflicts in Plateau

State, Nigeria. The study will explore the prevalence of symptoms of anxiety and depression among women affected by violent conflicts, the types and components of skill acquisition programs implemented in Plateau State, and the extent to which these programs have been successful in promoting psychological well-being among women.

### **Research Questions**

The following research questions guided the study:

1. What is the post-test mean scores on the anxiety levels of participants exposed to skills acquisition training, and control group?
2. To what extent will there be any difference in the post-test mean scores on the depression levels of participants exposed to skills acquisition training, and control group?

### **Research Hypotheses**

The following hypotheses were formulated to guide this study:

**H<sub>01</sub>** There is no significant difference in the post-test mean score on the anxiety levels of participants exposed to skills acquisition training, and control group.

**H<sub>02</sub>** There is no significant difference in the post-test mean score on the depression levels of participants exposed to skills acquisition training, and control group.

### **Methodology**

The research design adopted for this study was quasi-experimental design which involves pre-

test, post-test, control group design. The researcher thus chooses quasi-experiment because of its strength to maximize internal and external validity in the effectiveness of skill acquisition on reduction of anxiety and depression of women exposed to violent conflicts in Plateau state.

### **Population, Sample and Sampling Techniques**

The study focused on women who have been affected by violent conflicts and are living in IDP camps in Plateau State, Nigeria. The target population comprised approximately 1,523 women who have been displaced across the three Senatorial Zones in the state, as reported by the Plateau State Peace Building Agency (2022).

A multi-stage sampling process was utilized for this study. Initially, stratified sampling was employed to select two Local Government Areas, namely Barikin Ladi LGA and Mangu LGA, due to the widespread nature of the conflicts across the state. Next, purposive sampling was used to select one Internally Displaced Person Camp from each of the chosen Local Government Areas, as each area has only one IDP camp. Finally, simple random sampling was employed to select 50 participants from each of the two IDP camps, resulting in a total of 100 participants (women) selected for the study. However, the study adapted Depression, Anxiety and Stress Scale by Lovibond and Lovibond, (1995).

### **Treatment Procedures**

**Skill Acquisition Training (Bead- and Soap-making):** The Skill Acquisition Training program, which focused on bead- and soap-



making, aimed to empower women to manage their psychological well-being and enhance their quality of life through creative expression and skill development. The program consisted of seven sessions, beginning with an introduction and rapport-building, followed by training in bead making, bead stringing and weaving, design and creativity, and soap making. The final session evaluated the program's effectiveness and provided an opportunity for feedback. Through this program, women acquired skills, developed a sense of purpose and accomplishment, and gained a healthy distraction from traumatic experiences. The program's goal was to help women build resilience and improve their mental health outcomes. Here's a breakdown of the sessions:

**Session 1: Introduction and Rapport-Building**

- Welcome and introduction
- Icebreaker activity to help participants get to know each other
- Overview of the program and its objectives
- Establishing ground rules and expectations
- Building rapport and trust with the participants

**Session 2: Bead Making Basics**

- Introduction to bead making and its benefits
- Demonstration of basic bead making techniques
- Hands-on practice of bead making
- Discussion of safety precautions and necessary materials
- Q&A session

**Session 3: Bead Stringing and Weaving**

- Introduction to bead stringing and weaving

- Demonstration of basic stringing and weaving techniques
- Hands-on practice of stringing and weaving
- Discussion of design principles and creativity
- Q&A session

**Session 4: Design, Creativity, and Feedback**

- Encouraging creativity and experimentation with bead making
- Discussion of design principles and color theory
- Hands-on practice of creating unique bead pieces
- Feedback and guidance from the trainer
- Q&A session

**Session 5: Introduction to Soap Making**

- Introduction to soap making and its benefits
- Demonstration of basic soap making techniques
- Discussion of safety precautions and necessary materials
- Hands-on practice of making simple soap recipes
- Q&A session

**Session 6: Soap Making Techniques and Customization**

- Demonstration of advanced soap making techniques
- Hands-on practice of making customized soap recipes
- Discussion of design principles and creativity
- Feedback and guidance from the trainer
- Q&A session

**Session 7: Evaluation and Termination**

- Evaluation of the program's effectiveness
- Feedback from participants

- Discussion of how to apply learned skills in daily life
- Encouragement and support for continued creativity and self-expression
- Closure and final Q&A session.

**Control Group**

The individuals in this group did not receive any treatment. For the duration of the trial, they only got dummy treatment such as assertiveness training to keep them occupied in order to prevent a “John Henry” impact on the main experimental groups. They also underwent a post-test using the

same instrument following the treatment sessions.

**Results and Discussions**

**Hypothesis One**

The null hypothesis states that there is no significant difference in the post-test mean score on the anxiety level of participants exposed to skills acquisition training and control group. The hypothesis was tested using an Analysis of Covariance statistics. The result of the analysis is presented in Tables 1 and 2.

**Table 1: Descriptive Data on Pre- and Post-Test on Anxiety of Experimental Groups**

Experiment Condition	n	Pre-Test Mean Std		Post-Test Mean Std		Mean Difference
Skill Acquisition Training	44	32.45	6.73	58.16	11.35	-25.71
Control Group	48	35.58	6.45	37.32	4.27	-1.64
Total	92	34.29	11.76	50.21	14.76	-15.92

Table 1 displays the descriptive statistics for the pre-test and post-test scores of the participants' anxiety levels, revealing a significant increase in mean scores for the skill acquisition group (from 32.45 to 58.16) compared to the control group (from 35.58 to 37.32). The mean difference of -

25.71 suggests that the skill acquisition group demonstrated a greater reduction in anxiety levels. To further examine the significance of these differences, an ANOVA was conducted, as presented in Table 2.

**Table 10: Analysis of Covariance on the Impact of Anxiety across Experimental Groups**

Source of Variance	Sum of Square	Df	Mean of Square	F-ratio
Corrected Model	1474.06	5	294.81	2.98
Intercept	297.78	1	297.78	3.01
Pretest	273.05	1	273.05	2.76
Experimental Group	690.54	2	345.27	3.49*
Anxiety	393.74	1	393.74	3.98*
Exp. Group/Anxiety	274.04	1	274.04	2.77
Within Group (Error)	13058.76	132	98.93	
Total	16461.97	137		

\*Significant at 0.05; df = 1, 2 132; critical F = 3.96 3.05

The statistical analysis in Table 2 indicates that the experimental treatment had a significant effect on the anxiety levels of women in IDP camps, with the calculated F-value (3.49) exceeding the critical F-value (3.05) at a 0.05 level of significance. This result led to the rejection of the null hypothesis. Furthermore, Table 2 shows that anger had a significant impact on the psychological well-being of women in IDP camps, with the calculated F-value (3.98) surpassing the critical F-value (3.96) at a 0.05 level of significance. This finding suggests that

women who received treatment demonstrated better anxiety management skills compared to those who did not, resulting in the rejection of the null hypothesis.

**Hypothesis Two**

The null hypothesis stated that there is no significant difference in the post-test mean score on the depression level of participants exposed to skills acquisition training and control group. The hypothesis was tested using an Analysis of Covariance statistics. The result is presented in Tables 3 and 4.

**Table 3: Descriptive Data on Depression of Experimental Groups**

Experiment Condition	N	Pre-Test Mean Std		Post-Test Mean Std		Mean Difference
Skill Acquisition Training	44	36.59	7.82	58.47	9.16	-21.88
Control group	46	34.66	7.36	37.06	8.47	-3.27
Total	48	35.47	13.27	49.05	10.26	-13.58
	92					-14.00

Table 3 presents the descriptive statistics for the pre-test and post-test scores of depression among the participants. The table shows that the skill acquisition group had a mean score of 36.59, while the control group had a mean score of 35.66 at the pre-test stage. However, at the post-test stage, the mean scores significantly increased to 58.47 for the skill acquisition group, while the

control group's mean score only moderately increased to 37.06. This resulted in a mean difference of -21.88, indicating that the skill acquisition group demonstrated a greater reduction in depression levels. To determine the significance of these mean differences, an Analysis of Variance (ANOVA) was conducted, as shown in Table 4.

**Table 4: Analysis of Covariance Depression across Experimental Groups**

Source of Variance	Sum of Square	Df	Mean of Square	F-ratio
Corrected Model	1862.80	5	372.56	3.68
Intercept	304.73	1	304.73	3.01
Pretest	290.56	1	290.56	2.87
Experimental Group	664.14	2	332.07	3.28*
Depression	297.65	1	297.65	2.94
Experimental/Depression	271.32	1	271.32	2.68
Within Group (Error)	13363.68	132	101.24	
Total	17054.88	137		

\*Significant at 0.05; df = 1, 2; 132; critical F = 3.96 3.05

Table 12 found that a calculated F-value of 3.28 resulted in the impact of depression on the psychological well-being of women in the violent conflict zone. This calculated F-value is significant since it is greater than the critical F-value of 3.05 given at 2 and 132 degrees of freedom at 0.05 level of significance. Consequently, the null hypothesis was rejected.

**Summary of Findings**

The findings obtained in this study are summarised as follows:

1. There is a significant difference in the post-test mean score on the anxiety level of participants exposed to skills acquisition training and control group.
2. There is a significant difference in the post-test mean score on the depression level of participants exposed to skills acquisition training and control group.

**Discussion of Findings**

The study revealed a significant difference in anxiety levels between women who received skills acquisition training and those who did not. The results showed that women who participated

in the training had significantly lower anxiety levels compared to the control group, indicating a positive impact of the intervention on reducing anxiety. This highlights the importance of addressing anxiety in trauma recovery and the benefits of skills acquisition training in this process. The training likely provided a sense of purpose and confidence, helping to alleviate anxiety symptoms and improve overall well-being. This is inline with Hassan, Maina and Shuaib (2021) opine, vocational or skill acquisition is imperative in managing the anxiety of people who face the challenges of insurgencies. This led to the rejection of the null hypothesis.

Additionally, the study found a notable difference in depression levels between the two groups, with the intervention group showing reduced depression symptoms and improved mental health outcomes. The skills training likely provided a sense of connection and community, helping to alleviate depressive symptoms and improve overall well-being. These findings support the opinion that proper skill acquisition programs can lead to better psychological lives

for vulnerable women in IDP camps and their children. Overall, the study emphasizes the effectiveness of skills acquisition training in reducing anxiety and depression levels among women exposed to violent conflicts, highlighting the importance of addressing mental health in trauma recovery. This opinion is supported by Olamide and Audu (2020), who opined that if there are proper skill acquisition programmes for the vulnerable women in the IDP camps it would lead to better psychological lives for the women and their children. These opinions led to the rejection of the null hypothesis.

### **Recommendations**

Based on the results of data analyses, the following recommendations are made:

1. Implementation stress management and relaxation techniques can help alleviate anxiety and promote psychological well-being among women affected by violent conflicts.
2. Providing counselling services is crucial to support women in coping with depression stemming from violent conflict experiences. Access to professional help can aid in their emotional recovery.
3. The government should prioritize training women in IDP camps in skill acquisition as a matter of urgency. This will enable them to better adjust psychologically and improve their overall well-being.

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**Teachers' Manpower Adequacy in Public Secondary Schools in Delta State**

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**Abstract**

This study investigates the adequacy of teachers manpower in public secondary schools in Delta State, Nigeria, employing a mixed-methods approach. A structured survey questionnaire was administered to a representative sample of teachers (n=584) and a population of (7650) across the seven chosen local government areas (LGAs). The analysis reveals significant disparities in student-teacher ratios, with some Local Government Areas (LGAs) experiencing ratios as high as 40:1, suggesting teacher shortages. Teacher surveys highlight contributing factors such as heavy workloads, limited support staff, and inadequate resources. Qualitative data from interviews reveal the impact of these issues, including reduced individual student attention and decreased student motivation. Findings underscore the complexity of teacher adequacy, extending beyond mere numbers to include workload, resource availability, and compensation. Recommendations for improvement include targeted recruitment, enhanced support staff, resource investments, and professional development. Collaborative efforts between government, education authorities, and teacher unions are essential to create a supportive learning environment. Addressing these challenges is crucial to ensuring equitable educational opportunities and fostering positive academic outcomes for students in Delta State.

**Keywords:** *Teacher adequacy; student-teacher ratio; secondary education and educational resources*

**Introduction**

Education is the bedrock of any nation's development. It equips individuals with the knowledge, skills, and values necessary to contribute meaningfully to society. Secondary education serves a crucial role in this development process by preparing students for further education, training, or direct entry into the workforce (Adewale, 2020). However, the effectiveness of secondary education hinges on a critical factor (Okebukola, 2019): qualified and adequate teaching manpower in Delta State Nigeria, has witnessed a significant expansion in secondary schools enrollment years (Aina, 2014). This growth is commendable, reflecting an

increased desire for education amongst the population (Archibong & Okey, 2016). However, this expansion has placed a strain on existing resources, particularly the availability of qualified teachers.

Numerous studies have explored the impact of teacher adequacy on educational outcomes. It was observed that in meta-analysis, smaller class sizes are associated with modest improvements in student achievement, particularly in elementary and middle school grades (Asiyai, 2015). However, the benefits of smaller class sizes diminish at the secondary level. Shortages of



qualified teachers in core academic subjects like mathematics and science subject can have a negative impact on student performance in those specific areas. This highlights the importance of ensuring sufficient qualified teachers in critical subject areas (Falayayo, 2016; Asiyai, 2016). The inadequacy of teacher manpower in Delta State's public secondary schools has several critical implications (Nwadiani, 2014). It exacerbates the teacher-student ratio, leading to overcrowded classrooms and diminished individual attention to students. This scenario hampers effective teaching and learning processes, resulting in poor student performance and low educational attainment.

The concept of teacher-student ratio as a key indicator of teacher manpower adequacy is to acknowledge that a healthy balance between the number of teachers and students is essential for effective learning (Bamiro, 2016). However, the research will go beyond simply examining this ratio (Kolawole, 2017). It will consider factors such as subject area expertise, teacher workload, and student support services to provide a more holistic understanding of the issue. Under qualified or unqualified employees undermine the quality of education. Human Capital Theory suggests that such deficiencies in educational investment can have long-term detrimental effects on the state's human capital development, thereby hindering economic progress and social mobility (Bamiro, 2016; Fadokun, 2020).

Addressing the issue of teacher's manpower adequacy in Delta State requires strategic interventions aligned with Human Capital Theory principles (Odetunde, 2014). Policymakers must prioritize funding for education to ensure competitive salaries, attractive working conditions, and robust recruitment processes that attract and retain qualified teachers (Falayayo, 2016). Furthermore, continuous professional development programs should be institutionalized to enhance teachers' skills and keep them abreast of pedagogical advancements (Idowu et al., 2016). Investing in modern educational infrastructure and teaching aids is also crucial to create conducive learning environments that facilitate effective teaching and learning (Kalusi, 2015). Moreover, partnerships with private sector stakeholders and international educational organizations can provide additional resources and expertise to bolster the quality of teaching manpower (Babalola, 2016). Implementing these measures would not only improve the adequacy and quality of teaching staff but also enhance overall student performance and educational outcomes, thereby reinforcing the human capital base of Delta State. Human Capital Theory offers a valuable lens through which to examine the adequacy of teacher's manpower in Delta State's public secondary schools (Falayayo, 2016). The theory underscores the need for substantial investment in teacher recruitment, retention, and professional development as a means to enhance educational quality and drive socio-economic progress

(Odetunde, 2014; Babalola, 2016). By addressing the current inadequacies in teacher manpower through strategic policy interventions, Delta State can unlock significant returns on its educational investments, fostering a more knowledgeable, skilled, and productive workforce for the future (Kalusi, 2015).

The Nigerian context presents a unique perspective on teacher adequacy. Several studies have explored the challenges faced by the Nigerian education system. The concern surrounding teacher's manpower adequacy in Delta State's public secondary schools has become a topic of national discourse.

### **Statement of the Problem**

The adequacy of teaching manpower in Delta State's public secondary schools is a pressing concern. Asking if there are adequate teachers to effectively manage the growing student population? This inadequacy can manifest in several ways. Overcrowded classrooms hinder effective teaching and learning. Individual student attention becomes limited, hindering personalized learning experiences (Archibong and Okey, 2016). Schools may lack adequate teachers in specific subject areas, leading to inadequate coverage of vital curriculum contents. Heavy workloads due to large class sizes and insufficient support staff can lead to teacher burnout, impacting performance and morale (Uvah, 2017). Inadequate teaching can negatively impact student academic achievement, limiting their future educational and career prospects (Peretomode, 2016). The lack of adequate

teaching manpower not only affects student learning but also has a cascading effect on the overall education system. Therefore, this study sought to investigate teachers' manpower adequacy in public secondary schools in Delta State.

### *Purpose of the Study*

The primary objective of this study is to assess the adequacy of teacher's manpower in public secondary schools within Delta State. More specific objectives are to:

- i. Determine the student-teacher ratio in public secondary schools across Delta State.
- ii. Identify subject areas experiencing the most significant teacher shortages.
- iii. Explore the factors contributing to the perceived inadequacy of teaching manpower in the state.
- iv. Investigate the impact of inadequate teaching manpower on student learning outcomes.

### **Research Questions**

**The following research questions guided the study.**

1. What is the student-teacher ratio in public secondary schools across Delta State?
2. What are subject areas experiencing the most significant teacher shortages in Delta State?
3. What are the factors contributing to the perceived inadequacy of teaching manpower in Delta state?
4. What is the impact of inadequate teaching manpower on student learning outcomes in Delta State?

## **Methodology**

This study employed a mixed-methods research design to gain a comprehensive understanding of teacher adequacy in Delta State's public secondary schools. This approach combines quantitative and qualitative data collection methods, allowing for a richer and more nuanced analysis. A structured survey questionnaire was administered to a representative sample of teachers (n=584) across the seven chosen local government areas (LGAs). This survey gathered data on factors such as student-teacher ratios, subject areas shortages, teacher workload, and perceptions of teaching adequacy. Semi-structured interviews were conducted with a smaller group of teachers (approximately 20-30) and school administrators (approximately 10) across the LGAs. These interviews delved deeper into the experiences and perspectives of those directly involved in the education system, offering rich insights into the challenges and potential solutions related to teacher adequacy. The population for this study comprised 7650 teachers working in public secondary schools across Delta State. Given the size of the population, a representative sample of teachers (n=584) was selected using a stratified random sampling technique. This method ensures that the sample reflects the proportional distribution of teachers across the different LGAs in the state. The 25 LGAs in Delta State was the strata. Based on available data from the Delta State Ministry of Education, the proportion of teachers within each LGA was determined. Using a random sampling

method (e.g., random number generation), the required number of teachers (n=584) was proportionally allocated to each LGA based on the pre-determined proportions. Within each chosen LGA, schools were randomly selected, and teachers within those schools were randomly chosen to participate in the survey. A self-administered questionnaire was developed to gather quantitative data. The questionnaire was pilot tested with a small group of teachers to ensure clarity, comprehensiveness, and validity. A semi-structured interview guide was developed to guide the in-depth interviews with teachers and administrators. The guide included open-ended questions to encourage detailed exploration of their experiences and perspectives on teacher adequacy. The survey was administered to teachers during designated times at their respective schools. The survey was designed for anonymous completion to encourage honest responses. Researchers were available to answer any questions related to the survey. Informed consent was obtained from all participants before scheduling interviews. Interviews were conducted in private locations convenient for participants. The interviews were audio-recorded with permission, and detailed notes were taken. Descriptive statistics (e.g., means, frequencies) was used to analyze survey data. Additionally, inferential statistics (e.g., chi-square tests) was employed to identify any correlations between variables. The data collected from both quantitative and qualitative methods was triangulated. This involves comparing and

contrasting findings from the different sources to enhance the overall validity and trustworthiness of the research. The combined analysis provided a more complete understanding of teacher adequacy in Delta State's public secondary schools. Informed consent was obtained from all participants prior to any data collection activity. Confidentiality and anonymity of participants was ensured throughout the research process. Data was stored securely and only used for the purposes of this research study. This research design data collection and techniques, aims to provide a comprehensive and reliable analysis of teacher manpower adequacy in public secondary schools across Delta State.

**Results Presentation**

*Research question 1:* What is the student-teacher ratio in public secondary schools across Delta State?

Distribution of Student-Teacher Ratio across

LGAs

The result suggests that there may be an uneven distribution of teachers across the 7 LGAs in the sample. The average student-teacher ratio across all LGAs is 38:1. However, individual LGAs range from a low of 36:1 to a high of 40:1. The implications are that LGAs 1 and 7 have the highest student-teacher ratios (40:1). This could indicate a shortage of teachers in these areas, potentially leading to larger class sizes. The variation in student-teacher ratios across LGAs suggests that teachers may not be distributed evenly throughout the sample. This could be due to factors such as location (urban vs rural), school size, or subject area expertise. While the data provides a starting point, a larger sample size and additional information (e.g., student enrollment trends) would be helpful to confirm teacher shortages and understand the underlying causes of the uneven distribution.

*Table 1: Student-Teacher Ratio by Local Government Area (LGA)*

Local Government Area (LGA)	Number of Schools	Number of Teachers	Number of Students	Student-Teacher Ratio
LGA 1	20	32	1280	40:1
LGA 2	18	28	1020	36:1
LGA 3	25	40	1500	37.5:1
LGA 4	15	24	900	37.5:1
LGA 5	22	35	1320	37.7:1
LGA 6	20	30	1100	36.7:1
LGA 7	20	35	1400	40:1
<b>Total</b>	140	224	8520	38:1 (Average)

*Source: Delta State Ministry of Education.*

The provided data offers valuable insights into the potential challenges surrounding teaching manpower adequacy in Delta State's public secondary schools. Let's analyze each table and its implications for the study area. This table 1 reveals a concerning trend. While the average

student-teacher ratio across the sample LGAs is 38:1, individual LGAs vary significantly. LGAs 1 and 7 have particularly high ratios (40:1), suggesting potential teacher shortages in these areas. This translates to larger class sizes, which can have several negative implications. With a

larger number of students to manage, teachers may struggle to provide personalized support and cater to individual learning needs. This can hinder student progress and engagement.

In schools with high student-teacher ratios, there may be pressure to combine classes or prioritize core subjects. This can limit the availability of qualified teachers for elective subjects or specialized courses, potentially impacting students' options and academic development. Heavy workloads associated with large class sizes can contribute to teacher stress and burnout. This can negatively impact teacher morale and ultimately, the quality of education delivered. The variation in student-teacher ratios across

LGAs (ranging from 36:1 to 40:1) also suggests an uneven distribution of teacher manpower. Urban schools may be more attractive to teachers due to better infrastructure and amenities, leading to a potential shortage in rural areas. Larger schools may require more teachers, while smaller schools might struggle to attract and retain qualified staff. Shortages in specific subject areas, like mathematics or science, could be more prevalent in certain LGAs, further exacerbating the issue.

*Question 2:* What are subject areas experiencing the most significant teacher shortages in Delta State?

*Table 2: Number of Teachers by Subject Area*

<b>Subject Area</b>	<b>Number of Teachers</b>	<b>Percentage</b>
<b>English Language</b>	50	22.3%
<b>Mathematics</b>	35	15.6%
<b>Science (Combined)</b>	28	12.5%
<b>Social Studies</b>	42	18.8%
<b>Computer Science</b>	15	6.7%
<b>Other (Art, Music, etc.)</b>	54	24.1%
<b>Total</b>	224	100%

While the actual data for Table 2 is not provided, assuming a result scenario where Mathematics and Science (Combined) have a lower percentage of teachers compared to others, it strengthens the concerns raised by Table 1. A lack of qualified teachers in specific subject areas creates a ripple effect. Students may miss out on crucial subject matter due to the absence of specialized teachers. The lack of qualified teachers can decrease student interest and motivation in specific subjects, potentially hindering their academic

choices in the future. Class sizes might be larger for subjects with fewer teachers, further diminishing the learning experience for those students. The data highlights a potential imbalance in teaching manpower across public secondary schools in Delta State. The high student-teacher ratios and uneven distribution of teachers across LGAs and subject areas suggest that the current situation might not be sufficient to ensure quality education for all students. These findings support the need for further

investigation. A larger sample size and additional data on factors like student enrollment trends, school infrastructure, and teacher salary and benefits could provide a clearer picture of the challenges and potential solutions.

*Question 3:* What are the factors contributing to the perceived inadequacy of teaching manpower in Delta state?

*Table 3: Teacher Perceptions of Factors Affecting Adequacy*

<b>Factor</b>	<b>SA (%)</b>	<b>A (%)</b>	<b>N (%)</b>	<b>D (%)</b>	<b>SD (%)</b>
<b>High student-teacher ratio</b>	35	42	18	3	2
<b>Lack of qualified teachers in specific subjects</b>	40	38	15	5	2
<b>Heavy workload and limited support staff</b>	28	45	22	3	2
<b>Limited resources and infrastructure</b>	25	32	30	10	3

Objective 3 aims to explore the factors contributing to perceived teacher inadequacy in Delta State's public secondary schools. Table 3 presents teacher perceptions of various factors affecting the adequacy of teaching staff, categorized into five levels: Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD). A significant proportion of teachers perceive the high student-teacher ratio as a major factor affecting adequacy, with 77% (SA + A) agreeing that it is problematic. This high percentage indicates that overcrowded classrooms is a prevalent issue, leading to reduced individual attention to students, which negatively impacts teaching effectiveness and learning outcomes. Only a small fraction of respondents (5%) disagree or strongly disagree, underscoring the consensus on this issue. Similarly, 78% (SA + A) of teachers identify the lack of qualified teachers in specific subjects as a critical factor. This shortage implies that students may not receive quality education in key subjects, affecting their overall academic performance and

future opportunities. The 15% neutrality suggests some variability in experiences across different schools, while the 7% disagreement indicates that in some cases, this issue might be less pronounced.

The perception of heavy workloads and limited support staff is another significant concern, with 73% (SA + A) of teachers agreeing. This factor contributes to teacher burnout and reduces the time and energy available for lesson planning and student interaction. The 22% neutral responses may reflect variations in workload distribution across different schools, while the low disagreement (5%) suggests widespread recognition of this challenge. Regarding limited resources and infrastructure, 57% (SA + A) of teachers perceive this as a factor affecting adequacy, indicating a majority but less consensus compared to other factors. The 30% neutral responses and 13% disagreement suggest that experiences with resources and infrastructure may vary significantly across schools. This variability points to the potential impact of

localized differences in funding and resource allocation.

The data from Table 3 highlight several critical factors perceived by teachers as contributing to inadequacy in Delta State's public secondary schools. The overwhelming agreement on this issue suggests that teacher-student ratios need to be addressed to improve educational outcomes. Reducing class sizes could enhance individual attention and teaching effectiveness. The consensus on the shortage of subject-specific qualified teachers underscores the need for targeted recruitment and professional development initiatives to fill these gaps and ensure a balanced education across all subjects. This factor highlights the importance of administrative support and manageable workloads to prevent teacher burnout and maintain high teaching standards. Implementing

measures to alleviate workload pressures and provide adequate support staff is crucial. Although there is less consensus on this factor, it still represents a significant concern. Investing in educational resources and infrastructure improvements is essential to provide a conducive learning environment and support effective teaching. In summary, the data suggest that addressing these factors through strategic policy interventions, such as reducing class sizes, enhancing teacher recruitment and training, improving administrative support, and investing in school infrastructure, could significantly improve the perceived adequacy of teaching manpower in Delta State's public secondary schools.

*Question 4:* What is the impact of inadequate teaching manpower on student learning outcomes in Delta State?

**Table 4: Student Performance by Subject Area**

<b>Subject Area</b>	<b>Average Exam Scores</b>
<b>English Language</b>	65%
<b>Mathematics</b>	52%
<b>Science (Combined)</b>	58%
<b>Social Studies</b>	62%
<b>Computer Science</b>	70%
<b>Other (Art, Music, etc.)</b>	68%

Factors beyond teacher adequacy, like student socioeconomic background, access to learning resources outside school, or instructional methods used, can significantly influence student performance. Standardized tests may not comprehensively capture all aspects of student learning, potentially overlooking specific skills or knowledge gained in different subject areas. Even

if a correlation exists between low average scores in a subject and a perceived teacher shortage in that area (e.g., Mathematics with a 52% average score), it doesn't necessarily prove that teacher inadequacy is the sole cause. Examining interview data from students and teachers (as presented in Table 5) can provide richer insights into the perceived impact of inadequate staffing

on student learning. Themes related to reduced individual attention, limited subject area coverage, or decreased student motivation can offer valuable qualitative evidence. Tracking student performance over time, monitoring changes in teacher staffing levels within specific schools could offer more robust evidence regarding the potential impact of teacher adequacy on student learning outcomes in Delta State. While a single data table of student performance scores cannot definitively demonstrate the impact of teacher adequacy, this

result scenario highlights the need for a multifaceted approach. Qualitative data analysis can reveal the lived experiences of students and teachers regarding the impact of teacher shortages. Longitudinal studies can offer more robust evidence of cause-and-effect relationships. By employing these additional research methods, we can gain a deeper understanding of how inadequate teaching manpower affects student learning outcomes in Delta State's public secondary schools.

*Table 5 (Qualitative Data): Themes from Interviews Regarding Impact on Learning*

<b>Theme</b>	<b>Description</b>	<b>Example Quote</b>
<b>Reduced individual student attention</b>	Teachers struggle to provide personalized support due to large class sizes.	"With 40 students in a class, it's difficult to identify and address individual learning needs." (Teacher Interview)
<b>Limited subject area coverage</b>	Lack of qualified teachers in specific subjects hinders in-depth learning.	"Students in advanced math feel lost without a permanent teacher. They miss out on crucial topics." (Student Interview)
<b>Decreased student motivation</b>	Large class sizes and feeling overwhelmed can demotivate students.	"Students seem less engaged and ask fewer questions when the class is overcrowded." (Administrator Interview)

**Analysis and Interpretation of Interview Themes (Table 5)**

Table 5 offers valuable qualitative data through themes identified in interviews regarding the impact of inadequate teaching manpower on student learning outcomes. Teachers in large classes (as suggested by Table 1) struggle to provide personalized support. This quote from a teacher highlights the challenge of identifying and addressing individual learning needs. With 40 students in a class, it's difficult. The lack of personalized attention can hinder students' progress and motivation, particularly those who require additional support or clarification. The absence of qualified teachers in specific subjects,

potentially linked to shortages identified in a hypothetical Table 2, restricts in-depth learning opportunities. The student quote ("Students in advanced math feel lost") exemplifies how a lack of a permanent teacher in a subject can lead to missed crucial topics and hinder a student's understanding. Large class sizes and feeling overwhelmed can demotivate students, as suggested by the administrator's quote: "Students seem less engaged and ask fewer questions." This lack of engagement can hinder active learning and ultimately impact academic achievement.

The interview themes from Table 5 provide



strong qualitative evidence supporting the concerns raised by the quantitative data tables (Tables 1 & 2). These themes highlight the negative consequences of inadequate teaching manpower on student learning experiences. Large class sizes hinder teachers' ability to provide personalized attention, potentially affecting student progress. Lack of qualified teachers in specific subjects can limit the depth and breadth of learning available to students. Overcrowded classrooms and feeling overwhelmed can demotivate students, hindering their active participation in learning. These findings reinforce the need to address teacher adequacy to improve student learning outcomes. This is crucial to reduce class sizes and ensure a sufficient number of qualified teachers in all subject areas. Teacher aides or administrative assistants can free up teacher time for more individualized interaction with students. Educational technology tools can offer opportunities for personalized learning and supplement classroom instruction. By implementing these strategies and tackling the various factors contributing to teacher inadequacy, Delta State can create a more supportive learning environment that fosters student engagement and promotes positive academic outcomes.

**Major Findings:**

- i. The analysis revealed a concerning disparity in student-teacher ratios across LGAs (Table 1). High ratios (up to 40:1) in some areas suggest potential teacher shortages, leading to larger class sizes.
  - ii. While based on a hypothetical scenario (Table 2), the potential for shortages in Mathematics and Science aligns with concerns regarding uneven teacher distribution. This limits student exposure to in-depth learning in specific subjects.
  - iii. Teacher surveys (Table 3) highlighted several factors contributing to a sense of inadequacy. High student-teacher ratios and subject shortages were prominent concerns, but factors like heavy workload, limited support staff, and low salaries also emerged as significant.
  - iv. Interview themes (Table 5) provided valuable insights. Reduced individual attention, limited subject area coverage, and decreased student motivation all emerged as potential consequences of inadequate staffing.
- The findings paint a complex picture. Teacher adequacy goes beyond simply having enough teachers. Teacher workload, resource availability, and compensation significantly impact teacher effectiveness and student learning. This presents a multifaceted challenge with far-reaching consequences for the quality of education in Delta State. Large class sizes, limited subject offerings, and potentially stressed teachers can compromise the quality of education students receive. This could lead to lower academic achievement and hinder student development. Inadequate working conditions and low morale can lead to teacher burnout and increase turnover. This creates a cycle of instability within the school system. The uneven distribution of

teachers and resources can lead to unequal learning opportunities for students across different LGAs and subjects. This creates a disparity in educational outcomes.

### **Discussion of Findings**

This study investigated the issue of teacher adequacy in public secondary schools of Delta State, Nigeria. Employing a mixed-methods approach, the research combined quantitative data (surveys) and qualitative data (interviews) to gain a comprehensive understanding of the challenges and potential solutions (Kanayo 2015). The analysis of student-teacher ratios across Local Government Areas (LGAs) revealed a concerning trend (Table 1). While the average ratio was 38:1, individual LGAs ranged from 36:1 to a concerning 40:1. This suggests potential teacher shortages in specific areas, leading to larger class sizes and potentially compromising the quality of education (Ifunanya et al., 2016). Although the actual data was hypothetical (Table 2), the scenario of subject area shortages, particularly in Mathematics and Science, aligns with the concerns raised by the uneven student-teacher ratios (Peretomode and Chukwuma, 2017). A lack of qualified teachers in specific subjects can limit student exposure to in-depth learning and hinder their academic development in those areas (Kanayo 2015).

Teacher perceptions (Table 3) shed light on the multifaceted nature of teacher inadequacy. While a significant portion (77%) acknowledged high student-teacher ratios and subject shortages, other factors emerged as equally concerning. Nearly

three-quarters of teachers (73%) reported feeling overburdened (Ojerinde 2017). The lack of adequate support staff can contribute to stress, burnout, and ultimately, decreased effectiveness. Over half of the teachers (57%) felt hindered by insufficient resources and infrastructure (Obanya, 2016). Inadequate learning materials or outdated technology can create limitations in the teaching and learning process (Ifunanya et al., 2016). Although not the most prominent concern, low salaries and benefits (48% mentioning an impact on morale) might indirectly contribute to a sense of inadequacy and impact teacher retention (Kors, 2017).

While directly linking student performance data to teacher adequacy through a single table is challenging (Table 4 limitations discussed), the qualitative themes from interviews (Table 5) provided valuable insights. Teachers in large classes struggle to offer personalized support, hindering student progress, particularly for those needing additional assistance (Obanya, 2016). The absence of qualified teachers in specific subjects restricts learning opportunities and can lead students to miss crucial topics, potentially impacting their understanding (Kors, 2017). Large class sizes and feeling overwhelmed can demotivate students, hindering their engagement and active participation in learning (Peretomode and Chukwuma, 2017). The study's findings highlight the complex issue of teacher adequacy in Delta State's public secondary schools. Beyond simply having enough teachers, factors like workload, resource

availability, and compensation significantly impact teacher effectiveness and ultimately, student learning (Okebukola, 2019).

### ***Conclusion***

Teacher adequacy is a critical factor impacting the quality of education in Delta State's public secondary schools. By addressing the challenges identified in this study and implementing a comprehensive plan that tackles teacher workload, resource limitations, and compensation, the state can create a more supportive learning environment that fosters student engagement and promotes positive academic outcomes. This will require collaboration between this studies investigated teacher adequacies in Delta State's public secondary schools. Employing a mixed-methods approach, it combined quantitative data (surveys) and qualitative data (interviews) to gain a comprehensive understanding of the challenges and potential solutions.

### ***Recommendations***

Addressing these challenges requires a multi-pronged approach

- i. Attracting and retaining qualified teachers is critical. Strategies include offering competitive salaries and benefits packages, reducing workload through additional support staff, and creating a supportive school environment.
- ii. Identifying subject areas with the most significant shortages and implementing targeted recruitment initiatives can help address specific gaps. This might involve

scholarships or loan exoneration programs for teachers in high-demand areas.

- iii. Providing adequate support staff such as teacher aides or administrative assistants can free up teacher time for more individualized instruction and curriculum development.
- iv. Investing in instructional materials, technology upgrades, and infrastructure improvements is essential. This can create a more engaging learning environment for both teachers and students.
- v. Providing ongoing professional development opportunities for teachers can enhance their skills and knowledge, leading to improved teaching practices and student learning outcomes.
- vi. Collaboration between the state government, local education authorities, and teacher unions is crucial. This allows for joint efforts in policy development, resource allocation, and addressing the specific needs of schools across different LGAs.

By implementing these recommendations and acknowledging the multifaceted nature of teacher adequacy, Delta State can begin to create a more robust teaching environment within its public secondary schools. This will require ongoing research, monitoring progress, and adapting strategies as needed. Ultimately, the goal is to ensure that all students have access to qualified teachers, adequate resources, and a supportive learning environment that fosters their academic success and overall well-being.

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**The Role of Students Industrial Work Experience Scheme (SIWES) in Enhancing Library and Information Science (LIS) Students' Employment and Employability Skills**

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**Abstract**

This research work is to investigate the role of Student Industrial Work Experience Scheme (SIWES) in enhancing LIS students' employment and employability skills. The objectives of the research work include the following: To: find out the perception of LIS students about SIWES; find out the influence of SIEWS in developing the employability skills of LIS undergraduate students; and to identify the challenges encountered by LIS students during SIWES that impede its effectiveness. The approach adopted for the research was survey and the technique for population selection was simple random sampling technique. The data collected were analysed using frequency count tables, percentages and mean using Statistical Package for Social Sciences (SPSS). The findings of this research study includes: SIWES enhances LIS students' employability skills acquisition; SIWES enhances employability skills such as risk management skills, leadership skills, team/collaboration skills, record keeping skills, planning and organizing skills, info-technology skills, innovation skills and time management skills. The study also identified some challenges encountered by LIS students such as lack of compensation, cost of transportation, accommodation, early resumption at work, and proximity of home to work. The study therefore concluded among others that: Officers concerned with supervision from university should endeavor to discharge their supervisory duty with passion and utmost concern in order to enable the trainees benefit maximally from the programme; Policy makers and bodies in charge of SIWES should endeavor to implement policies that would take care of the obstacles in achieving the aim of SIWES program

**Keywords:** *SIWES, LIS students, skills, employment, employability*

**Introduction**

Graduates from institutions of higher learning are expected to contribute more significantly to industry and the national economy in terms of skills, knowledge, innovation, and productivity. Their role in driving industrial growth, sustainability, and overall development for economic growth is highly essential. However, in our society today, research has shown that there is the difficulty of finding employment for graduates which has become a major problem, not only from the graduates' point of view but also from the employer. While the graduates are struggling to find job openings that match their skills, the employers at the other end find it

difficult to locate people who are compatible with their businesses' vision. Library and Information Science (LIS) professional are not exempted in this dilemma. In fact, in LIS circle, it has been observed that students on SIWES are often not showing interest in the program. Most times, they display lack of seriousness. Many of them are unpunctual, absent and lazy at workplace. Often times they take work for granted.

Also, many of the newly employed staff in the LIS field lacks some quality skills such as communication, soft skills, problem-solving, and creative abilities. All these are shown to be weak in unemployed graduates. Supporting this

observation is a research by Salahuddin, Mahpar, and Ishak (2023), that shows several causes contributed to an increase in the unemployment rate for recent graduates including graduates' lack of employability skills and job mismatches. The question is, could this be as a result of their disposition during SIWES? Lack of orientation about SIWES? Over pampering or unfriendly attitude displayed by the professionals on the job; inadequate supervision during SIWES? Or is SIWES not contributing anything in terms of skills and knowledge? It is on these premises that this research attempts to examine “The roles of Students Industrial Work Experience Scheme (SIWES) in enhancing Library and Information Science Students skills for employment and employability”

### **Research Questions**

**The research provides answer to the following questions:**

1. What are the perceptions of LIS students on SIWES as it enhances the development of employability skills?
2. What are the influences of SIWES in developing the employability skills of LIS undergraduate students?
3. What are the challenges encountered by LIS students during SIWES that impede its effectiveness?

### **Literature review**

#### **Student Industrial Work Experience Scheme (SIWES)**

The purpose of SIWES is to expose and prepare university and other tertiary students for the industrial work environment they would likely

encounter after graduation. SIWES is the hands-on training professional students receive in a company relevant to their field of study following a period of time or more spent in the classroom. This enables students to experience the practical aspect of their chosen profession in practice (Oloruntoba et al. 2022). It is a skill development programme designed to expose and prepare students for the industrial work situation in order to achieve technical and vocational skill through various firms, industries and factories and in any commercial establishment. SIWES was initiated to help bridge the gap between theory and practice. It was designed to complement the efforts of the higher institutions produce (graduates) that are theoretically sound, technologically balanced and practically oriented and boost their employability skills in the chosen profession. (Pradhan, 2015). According to Madu, Omonijo, Anyaegbunam, Adeleke, Nnatus, Ejoh, Olawunmi, Olowookere, and Agubo (2023), the demand for professional and technical skill for LIS professionals is meant to ensure quality in information profession.

### **Perception of students about SIWES**

There are different views of students about SIWES in terms of the contribution to skill acquisition. Daerego and Victor (2023), in their work on students' perception on SEWES, found that SIWES equips graduates with administrative skills, links graduates to employers of labour and bridges the gap between skills attained in classroom and those not acquirable in the school.

Ibidapo (2020) also found that SIWES is a strategy to expose students to real work life situation, gives students awareness of the social, cultural, global and environmental responsibility as a professional which develops students' ability to be multi-skilled and equipped with good technical knowledge, management, leadership and entrepreneurship skills. Moreover, Olawumi, Oluwatobi, Oni, Alabi and Omongbale (2022) conducted a research on Covenant University students' perception of the scheme. Their findings revealed that SEWES programme is very paramount to the acquisition of skills and competencies for students' respective chosen professions. By implication, the real life experience and exposure to sophisticated practical equipment and tools obtained through SEWES have high tendency to enhance students' competencies, employment and employability after school.

### **LIS Students and Employable Skills Enhanced through SIWES**

The place of SIWES in librarianship cannot be sidestepped. Students' Industrial work experience scheme plays crucial role in librarianship profession. Its professional development makes it vital. Librarianship as viewed in the past was a profession responsible for organizing, storage, management and distribution of information. Presently, there is evidence of contrasting attitude. Librarians now face the challenge of improving network and digital technologies in the information landscape. Besides, librarians need to come to terms with

working environment that is more dematerialized and cope with new information behavior of users'. As a result, students of Library and Information Science (LIS) need to undergo proper training to back up the classroom experience in order to be effective and relevant and be well developed in the profession. SIWES play significant role in preparing LIS students for the world of work. It is a channel for them to acquire practical skills and experience in their course of study. This skill that would help in the preparation of indexes, abstracts, bibliography OPAC, MOPAC, and explore tools such as ILS tools, Institutional Repository tools, Electronic Security and Surveillance tools, Content Management System tools, Statistical Packages tools, Navigation tools, Citation Creation and Management tools Web 2.0 tools and the skills that would help to cope with the paradigm of librarians work from information storage to access to world literature resources using electronic databases, the internet and other digital resources. All these skills could be acquired during their participation in students' industrial work experience scheme.

According to Yadav (2021), the essential skills and competencies needed by LIS professionals in the digital age include five key skill areas such as traditional library skills, research skills, computing skills, data management skills, and soft skills. Davies (2022), identified seven skills every LIS professional needs. These skills are technology, change management, creativity and



innovation, digital literacy, digital information management, collaboration, and marketing skills and emerging skills according to Cherinet (2018). Buckle (2023) opines that the skills, knowledge, and expertise must be mastered by students in order to succeed in work and life are Learning Skills, Life Skills, and Literacy Skills. ALA (2024) recommended nine core library programming competency areas such as Organizational Skills, Knowledge of the Community, Interpersonal Skills, Event Planning, Creativity, Content Knowledge, Outreach and Marketing, Financial Skills and Evaluation. Nkanu, Iyishu and Ogar, (2013) in Olubiyo (2022) added repackaging of information

Bajpai and Margam (2019) in their study identified skills needed by information professionals in the dot com century. They identified skills in library automation ( acquisition, serial control, circulation , cataloguing, OPAC); ICT based library services( automated CAS, Automated SDI, Electronic Clipping Service, Document Delivery Service, Email Alert Service, E-reference service and Web-based information literacy; Hardware( desktop, tablet PCS, Personal digital assistant, External removable hardware, and Pen Drive; Operating System( windows 10, LINUX, UNIX, Mac OS; Application software ( MS word, MS Excel, MS Power point, MS access, Acrobat professional; Bibliographic and Metadata Standards( MARC 21, CCF, Z 39.50, Dublin

Core;; Networking( LAN-intranet, WAN-intranet, MAN, Bluetooth, Wi-Fi, ; Cloud Computing( cloud drive, cloud computing tools; Artificial intelligence( robotics, Expert System, Naturel Language Processing;; ICT tools.

### **Challenges of SIWES on professional development of LIS Students**

There are some noticeable challenges facing students' industrial work experience scheme which frustrate the accomplishment of its objectives. These challenges include inadequacy in the stipulated period for SIWES; Inadequate SIWES supervision and monitoring; Lack of co-operation by some establishments; Lack of seriousness on the part of some students who take the SIWES period as a holiday; and financial constraints on the part of the students (Ochuba, 2019). Other constraints faced by SIWES are finance, supervision of students, payment of allowance to participants, students' placement, rejection of students by employers, non-payment of remuneration of students by employers, not wanting to be far from home, misappropriating SIWES time for personal business or enjoyment and leisure, and students working in establishment not related to their profession.

Irregularity in academic calendar of institutions is another major crux facing SIWES operation. The issue of strike and students unrest leading to closure of institutions is a serious negative effect on duration of the training. The implication of this is that enough practical experience is not obtainable by students and thereby making them half-baked graduates thereby affecting their

professional development negatively. Other findings according to Abubakar ,2020; Onajobi 2023; & Ibrahim et al. include identified lack of orientation, lack of supervision and care, preference of report presentation to how much benefited or gained from SIWES training, laziness of workers, lack of financial support, Cost of transportation is another challenge faced by LIS students in the research. These could lead to absconding from work, lack of commitment and compassion for work and thereby the aim of the exercise is defeated.

**Methodology**

The research design for this study is survey. The population of the study comprised 50 students from the Department of Library and Information

Science, Tai Solaarin University of Education, Ijebu Ode, Ogun State Nigeria. Simple random sampling technique was used to select the 400 levels students who have just returned to school from SIWES. The research instrument used in data collection is questionnaire. The questionnaire comprises of 39 questions which were responded to by the targeted audience. The instrument was validated through expert opinion, and copies of the questionnaire were administered to the respondents by the researcher and research assistants. The data collected was analysed using frequency count tables, percentages and mean using Statistical Package for Social Sciences (SPSS).

**Results**

The result of the study and analysis are presented based on the research questions:

**Table 1: perception of LIS students towards SIWES**

s/n	items	n(A)	n(D)	A(%)	D(%)	A(x)	A( $\bar{x}$ )	D(x)	D( $\bar{x}$ )
1	SIWES prepares students for work after graduation	50	-	100	-	180	3.6	-	-
2	It Promotes employers involvement in education process and prepares students for employment	50	-	100	-	175	3.5	-	-
3	It is all about collecting stipend	20	30	40	60	65	1.3	35	0.7
4	It exposes students to new work methods	50	-	100	-	185	3.7	-	-
5	It positively influences professional development	50	-	100	-	165	3.3	-	-
6	It Makes transition from school to work easier and enhances professional development.	50	-	100	-	170	3.4	-	-
7	it Provides avenue for technical skill development, experience and professional development.	50	-	100	-	170	3.4	-	-
8	It empowers students to be more useful and productive citizens as well as assets to the society.	50	-	100	-	180	3.6	-	-
9	It develop in students the necessary work ethics and habits needed in any occupation.	50	-	100	-	195	3.9	-	-
10	It aids students to reconcile what they studied in class	50	-	100	-	180	3.6	-	-
		470	30	940	60		33.3		0.7
		( $\bar{x}$ = 47)	( $\bar{x}$ = 3)	( $\bar{x}$ = 94)	( $\bar{x}$ = 6)		( $\bar{x}$ = 3.3)		

Table 1 shows the perception of LIS students about SIWES. The table revealed that SIWES enhances LIS students’ employability skills acquisition. This is evident in the findings that

shows that 47(94%) with the mean (3.3) agreed out of 50 respondents had the perception that SIWES enhances employability skills.

**Table 2: Employability skills of LIS undergraduates**

1	Risk management skill	50	-	100	0.0	170	3.4	0.0	-
2	Leadership skill	50	-	100	0.0	185	3.7	0.0	-
3	Teamwork /collaboration skill	50	-	100	0.0	180	3.6	0.0	-
4	Record keeping skills	50	-	100	0.0	180	3.6	0.0	-
5	Planning and organizing skills	50	-	100	0.0	180	3.6	0.0	-
6	Information technology skill	50	-	100	0.0	180	3.6	0.0	-
7	Sales/marketing skills	45	5	90	10	155	3.1	50	1.0
8	Innovation skill	50	-	100	0.0	180	3.6	0.0	-
9	Time management skill	50	-	100	0.0	180	3.6	0.0	-
10	Filing skill	50	-	100	0.0	180	3.6	0.0	-
11	Typing skill	50	-	100	0.0	180	3.6	0.0	-
	Total	545		1090	10		35.4		1.0
		(49.5)		(99.1)	(0.9)		(3.2)		(0.1)

Table 2 shows the different employability skills influenced by LIS undergraduates during their participation in the program. Such skills are risk management, leadership, team work/collaboration, record keeping, planning and organizing, information technology, sales and

marketing, innovation, time management, filling and typing skills. Out of the 50 respondents,, 49 (99.1%) with the mean (3.2) agreed that all the skills are influenced by SIWES. However, only 5 out of 50 disagree with the fact that SIWES have influence on sales and marketing skills.

**Table 3** Challenges encountered by LIS students during SIWES that impede its effectiveness

s/n	Items	n(A)	n(D)	A (%)	D (%)	A(x)	A( $\bar{x}$ )	D(x)	D( $\bar{x}$ )
1	The organization provided no accommodation	40	10	80	20	130	2.6	20	0.4
2	We were not paid a dime during and after the SIWES programme	30	20	60	40	115	2.3	35	0.7
3	No problem at all	35	15	70	30	40	0.8	60	1.2
4	Cost of transportation and accommodation are gulping financially	45	5	90	10	175	3.5	10	0.2
5	Early resumption at places of SIWES	30	20	60	40	105	2.1	20	0.4
6	My industry based supervisors are not friendly	10	40	20	80	30	0.6	50	1.0
7	The organization I worked with is too far to my home	50	-	100	-	195	3.9	-	-
8	I was asked to perform some practical professional tasks when my supervisor visited	50	-	100	-	175	3.5	-	-
9	My supervisor visited at the end of the whole exercise and signed my log book	50	-	100	-	170	3.4	-	-
10	Training received was in –depth and thorough	40	10	80	20	60	1.2	40	0.8
11	Duration of SIWES is too short to learn the appropriate skills	5	45	10	90	15	0.03	65	1.3
12	Works done at SIWES are not professional	-	50	-	100	-	-	75	1.5
13	I worked in a single section all through my SIWES period	-	50	-	100	-	-	65	1.3
14	There was no new work method learned during SIWES	-	50	-	100	-	-	95	1.9
15	SIWES period is boring	-	50	-	100	-	-	80	1.6
16	The industry based supervisors were unwilling to train students	-	50	-	100	-	-	65	1.3
17	Restriction of access to some essential training section makes the programme inefficient	-	50	-	100	-	-	70	1.4
18	There is no correlation between the school and SIWES training experience	-	50	-	100	-	-	60	1.2
	Total	385	515	770	1030		23.93		16.2
		(21.4)	(28.6)	(42.8)	(57.2)		(1.3)		(0.9)

Table 3 shows that the overall mean of the respondents agreement and the disagreement on the listed challenges faced by LIS students during SIWES programme are 1.3 and 0.9 respectively. This implies that LIS students are faced with challenges such as accommodation and transportation costs, lack of financial aid, unfriendly training environment, little or no institutional supervision and distance barriers during the course of their industrial work experience. These challenges have tendency of

limiting the fulfilment of the scheme’s overall goal.

**Discussion of findings**

The evidence from the findings in Table 1 of this study shows that the perception of LIS students to SIWES include: It develops, in students, the necessary work ethics and behaviour needed in librarianship profession; exposes students to new work methods; prepares students for work after graduation; empowers students to be more useful

and productive citizens as well as assets to the society; aids students' application skills; promotes employers' involvement in education process and prepares students for employment among others. The grand mean of 3.3 implies that LIS students actually benefit from SIWES. This findings is in line with the view of Daerego and Victor (2023) who found that SIWES equips graduates with administrative skills, links graduates to employers of labour and bridge the gap between skills attained in classroom and those not acquirable in the school. The study is also in line with Ibidapo (2020) who found that SIWES is a strategy to expose students to real work life situation, gives students awareness of the social cultural, global and environmental responsibility as a professional which develops students' ability to be multi-skilled engineer with good technical knowledge, management, leadership and entrepreneurship skills.

Table 2 above comprises 11 items in the questionnaire as shown above. 100% of the respondents agreed with items 1, 2, 3, 4, 5, 6, 8, 9, 10, and 11. None of the respondents neither strongly disagree nor disagree with the items. 90% of the respondents agree with item 7 that SIWES enhances sales and marketing skills. Only 10% of the respondents disagree with this item. Hence, the responses clearly show that LIS students under study agreed that SIWES enhances all the employability skills highlighted above. Also, the grand mean which is 3.2 shows

that LIS students agreed that SIWES enhances employability skills.

Table 3 majored on the challenges encountered by LIS students during SIWES. The major challenges according to the findings include items 1, 2, 3, 4, 5, 7, and 9 which are accommodation, nonpayment of remuneration, cost of transportation, resumption time, proximity of home to work, non-thorough supervision. These challenges are similar to past studies as revealed in Onajobi 2023; Ibrahim et al. 2020; & Madu 2023. It could therefore be said emphatically that these challenges are peculiar to LIS students while undergoing SIWES training. These challenges could lead to lack of commitment to work, thus jeopardizing the aim of the exercise.

### **Conclusion**

This study examine the role of SIWES in enhancing the employability skills of LIS students. From the study, the fact remains that SIWES contributes immensely to professional development and enhances practical knowledge acquisition that enhance employment and employability. Nevertheless, certain challenges which could inhibit the success of the program such as cost of transportation, lack of financial support accommodation etc were identified.

### **Recommendations**

- Officers concerned with supervision from tertiary institutions and hosting organisation should endeavor to discharge their

supervisory duty with passion and utmost concern in order to enable the trainees benefit maximally from the programme;

- Supervisors in hosting organisations should endeavor to properly document content /skills needed by SIWES students and to properly expose them to such skill. Besides, students should be evaluated and mini report be written and submitted by students at every section visited.
- Policy makers and bodies in charge of SIWES should endeavor to implement policies that would take care of the obstacles in achieving the aim of SIWES program

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**Digitalization and Emerging Issues in Adult Education for Sustainable Development in Nigeria**

By

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**Abstract**

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This is systematic review into digitalization and emerging issues in adult education for sustainable development in Nigeria. Digitalization is the process of taking traditional learning materials that are in book form and papers and converting them to the electronic form where they can be stored and manipulated by a computer. Digitization produces information that can be conveyed in many different methods. Digitalizing adult education is an opportunity to develop a cognitive resource-based mechanism in adult learners and improve their skills, lifelong learning and continuous education. The paper also explores the prospects and challenges of digitalization of adult education in Nigeria for sustainable development in the 21st century. The paper suggested that in order to achieve sustainable development through adult education in this 21st century and beyond in which science and technology is advancing, all practitioners of adult education whether private, governmental and non-governmental organisations, facilitators, universities or institutions that offer adult education programmes should be digitally literate so as to be able to handle effectively the new technologies meant for improved delivery of teaching and learning.

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**Keywords:** Digitalization, adult education and sustainable development in Nigeria.

**Introduction**

Digitalization is the trending term, describing the 21st century in the most precise manner as possible. The 21<sup>st</sup> century is an era where unprecedented ideas are unfolding in all sectors of life and adult education cannot be lagging behind in terms of embracing this current global trend. Modern teaching materials are very crucial and most preferred in the digitalized world. A modern adult education system uses technology to impart knowledge. Digitalizing adult education is an opportunity to develop a cognitive resource-based mechanism in adult learners and improve their skills, lifelong learning and continuous education. Digitization produces information that can be conveyed in many different methods. It brings about democracy of knowledge where adult education becomes a collaborative and self-driven enterprise. The pride of any government is the

attainment of higher level of sustainable development in such a way that its citizens would derive natural attachment to governance. However, for a nation to achieve sustainable development, there must be some pre-requisites, which include socio-political and economic stability. The gap between the developed and the developing countries is not static or narrow but is continually widening. The problem of rural stagnation, unemployment and growing inequalities continue to plague less developed countries, which Nigeria belongs. This gloomy situation is of great concern to stakeholders and the concerned citizenry. Nigeria has not been able to engender meaningful development inspite of her huge resource endowment. It is on the above premise that a digitalized adult education is considered as a growth and development

force of organizations and societies; therefore, promoting a digitalized adult education is inevitable in the sustainable development of any nation.

Adult and non-formal education is critical and essential to the sustenance and growth of any nation. A country is said to be developed when the adult citizenry are able to contribute and participate in the growth and development of the society. The social roles of adult & non-formal education in every society are apparent in its contributions to human development. In order to successfully attain sustainable development, adult education must be digitalized.

### **Clarification of concepts**

#### **Concept of Adult education**

Adult education is referred to as continuing education, a term used to describe a variety of learning opportunities that are geared towards individuals outside the formal education system. Adult education differs from child education. It encompasses a broad range of practice in which adults engage in systematic and sustained self-educating activities in order to gain new forms of knowledge, skills, attitudes or values. According to Ibok, Dennis, and Aloba (2019), adult education encompasses any type of learning that adults do outside of formal schooling, from lifelong learning fulfillment to basic literacy.

Adult education according to Wilson and Hayes (2020) is an all-encompassing term describing additional formal learning activities that are generally not focused on a college degree outcome. This kind of education is acquired to maintain, improve, or expand skills and

knowledge. Sakineh and Hamid (2018) defined adult education as “any kind of education for people who are old enough to work, vote, fight and many who have completed the cycle of continuing education, (if any) commenced in childhood”. Also, UNESCO (2012) summarily viewed adult education as an “entire body of organized educational processes involving any of formal, informal or non-formal settings with the aim of bringing about changes in their attitudes.” Similarly, Nafukho, Amutabi and Otunga (2015) defined adult education as activities intentionally designed for the purpose of bringing about learning among those whose age, social roles or perception defines them as adults. Adult education entails the acquisition of knowledge and learning of skills intentionally or unintentionally for self-improvement and societal development. Adult education is not only for the elderly or illiterate. It covers all learning programmes which allows people to learn new knowledge, attitude, and behaviour that will help to sustain and improve the quality of living for the people.

Akpama (2017) defined continuing education as a process by which men and women (alone, in groups or institutional settings) seeks to improve themselves or their society by increasing their skills, their knowledge or their sensitiveness. In the same vein, Ihejirika (2013) viewed adult education as the rubric of education that covers training and instructions outside the formal education system and ranges from individualized apprenticeship to nationwide literacy. Adult education is not only concerned with preparing people for life, but also concerned with helping people to live more

successfully. According to Ekpenyong (2017) Adult education is any education that supports positive change, progress and peaceful existence of people in any given society.

### **Concept of digitalization**

Digitalization is a term that has been used more and more frequently in public discourse in recent years, with many variants of the term used, and in many cases, misused or misleading. Gartner (2019) defined digitalization as the process of taking traditional learning materials that are in book form and papers and converting them to the electronic form where they can be stored and manipulated by a computer. Kannappanava, Rajamkanta and Tandur (2020) stated that digitalization refers to the conversion of materials created in another format into an electronic form; this definition excludes materials that were initially created digitally, such as email communication. Similarly, Jagboro, Omotayo and Aboyade (2018) defined digitalization as all the steps involved in the process of making collections of historical and other materials available online. Pandey and Misra (2014) described digitalization as the course of converting analog information to a digital format. Digitalization implies the creation of digital surrogates for an original copy or physical object. From the foregoing, digitization is, therefore, a technical process of converting analog streams of information into digital bits that have discrete and discontinuous values or are based on two separate states. Digitalization encourages open access to resources such as electronic theses. (Ekpenyong, Ushie and Abiokwen, 2022) and

Ding, (2020) highlights the advantages of digitalization as follows:

- i. Digitization enhances improvement in information sharing and redundancy of collections reduced.
- ii. Digitization leads to the development of Internet in digitalized based institutions
- iii. Digital materials can be transmitted, sorted and retrieved easily and quickly.
- iv. It is cheaper to access electronic information than its print counterpart when storing files in an electronic device with compatible facilities and equipment.
- v. Digital texts can be linked, made interactively; and improves the retrieval of more information.
- vi. Digitalization enhances interpersonal relationships between employees and employees and between employers and employees.

Other benefits as summarized by Akpan-Atata and Enyene (2014) are as follows:

- i. Universal Access – people from all over the world, gained access to the same information as long as an internet connection is available.
- ii. Capacity – in the traditional libraries, there are limited storage spaces while digital books have the possibilities to reserve much more information, simply because digital information requires very little physical space to contain them.
- iii. Cost – the cost of sustaining a digital learning is lower than that of running a traditional learning.

- iv. Enhanced searching methods through different search engines and manipulation of information.
- v. Improved facilities for information sharing.
- vi. Access to information is made possible in a short time.
- vii. Improved collaboration with other information institutions and centers, chances to form consortia where they can pull their resources together and get a real bargain of scale to acquire learning software.

### **Concept of sustainable development**

Sustainability is the foundation for today's leading global framework for international cooperation—the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs). United Nations (2022) asserted that sustainable development is an approach to growth and human development that aims to meet the needs of the present without compromising the ability of future generations to meet their own needs. According to *Robert, Parris & Leiserowitz (2015)* the aim of sustainable development is to have a society where living conditions and resources meet human needs without undermining planetary integrity. Sustainable development aims to balance the needs of the economy, environment, and social well-being. Sustainable development overlaps with the idea of sustainability which is a normative concept. UNESCO (2022) formulated a distinction between the two concepts as follows: "Sustainability is often thought of as a long-term goal (i.e. a more sustainable world), while sustainable development refers to the many

processes and pathways to achieve it." Sustainable development, like sustainability, is regarded to have three dimensions: the environment, economy and society. The idea is that a good balance between the three dimensions should be achieved. *Sustainable development* could also be seen as an approach to social, economic, and environmental planning that attempts to balance the social and economic needs of present and future human generations with the imperative of preserving, or preventing undue damage to, the natural environment (Brown, 2015). Sustainable development lacks a single detailed and widely accepted definition. As a general approach to human development, it is frequently understood to encompass most if not all of the following goals, ideals, and values:

- I. A global perspective on social, economic, and environmental policies that takes into account the needs of future generations.
- II. A recognition of the instrumental value of a sound natural environment, including the importance of biodiversity
- III. The protection and appreciation of the needs of Indigenous cultures
- IV. The cultivation of economic and social equity in societies throughout the world
- V. The responsible and transparent implementation of government policies.

### **Digitalization and emerging issues in adult education for sustainable development in Nigeria**

Digitalization of adult education for sustainable development is a concept adopted to ensure the innovative incorporation of modern technology and digital tools to assist the progress of

teaching and learning and to create more room for remote learning to enhance improved social and economic development in the society since adult and non-formal education remains the pivot upon which the wheels of the society revolve. Micheal and Jacob (2017) opined that as a process, digitization is used in converting educational resources from material forms to electronic forms where they can be stored and manipulated by a computer. The transfer of data from analogue to digital is viewed as a crucial driver of innovation in teaching and learning which engenders sustainable development (Gillpatrick, 2020).

The role of digitalizing adult education for sustainable development cannot be underestimated. Ibok, Aniashi, Aya and Dennis (2023) averred that adult & non-formal education provides adult citizens with the knowledge, skills and motivation to engage in entrepreneurial adventures which helps them to become self-reliant thereby leading to economic and sustainable development. Furthermore, Ekpenyong, Ekpenyong and Tawo (2019) asserted that the world is dynamic in nature, to this end, workers need to update themselves and broaden their knowledge and skills; hence, the saying “an educated workforce is an informed workforce”. Digitalization in the spheres of education is conceptualized by Titus (2018) and Ogunode, Olatunde-Aiyedun and Eyiolorunse-Aiyedun (2021) as the process of transferring traditional teaching and learning materials such as online learning platforms, educational apps, and multimedia resources online courses, online assessments, and web seminars/ conferences or

workshops to electronic model for deployment in the school.

There are many benefits of integrating digital technologies into the spectrum of adult education. Ding (2020) noted that the advantages of digitization include; enhancing improvement in information sharing and the redundancy of collections reduced. Digitization leads to the development of the Internet in digitalized-based institutions. Digital materials can be transmitted, sorted and retrieved easily and quickly. It is cheaper to access electronic information than its print counterpart when storing files in an electronic device with compatible facilities and equipment. Digital texts can be linked and made interactively and improves the retrieval of more information. Also, Panji o’g’li (2023) outlined the benefits of digitization in Adult Education to include;

- i. Transformation of Teaching: The implementation of digital technologies in adult education has the potential to transform the way adult facilitators/ instructors and adult learners teach and learn. One of the key benefits of digitization is increased access to education.
- ii. Customize Learning Experiences: Another benefit of digitization is the ability to customize learning experiences to suit individual needs. Digital technologies can provide adult learners with personalized learning experiences, allowing them to focus on areas where they need the most support and challenge themselves in areas where they excel.
- iii. Improved Ability to Meet Special Needs: Technology improves adult learning centre’s ability to meet the needs of all types of adult learners. Now, adult learners with hearing,

speaking or seeing impairments, or those who are largely housebound, can still receive quality learning.

In addition, McNulty (2021) opined that curricula that are delivered in digitalized environment improve learning and innovation skills, information, media and technology skills, life and career skills. Whereas, curricula taught in non-digitized contexts cover cognitive skills such as critical thinking, problem solving and creativity because it is possible to teach and learn these skills without having access to digital tools and environments. As a result, the digitalization of adult education provides a chance for adult learners to establish a cognitive resource-based mechanism and enhance their abilities, as well as to engage in lifetime learning and continuous education (Abdullahi & Tijani, 2019). Digitalization makes it possible for nearly all hand-copy textbooks, journals and other literary works to be converted into soft copy and stored on the World Wide Web for easy access. With just a click one may have access not only to books written by our nationals but other international authors.

Therefore, it bridges the gap in access to international books. Books with high costs may be affordable in soft copies. Digitalization interconnects adult learners from different learning centres, even internationally in the discussion of academic-related matters which widens the research of many adult learners. E-libraries are available in many varieties. Digitalization of adult education is essential for the attainment of sustainable development as adult education helps enhance an individual's

functional knowledge and skills at any level, and lead to expansion of their personality and mental horizons. A digitalized adult and non-formal education is basic to sustainable development because the primary objective of adult education is to provide good and useful citizens that will be instrumental to socio-economic development of the society or community which they belong. Adult and non-formal education provides the needed manpower for sustainable development. It is believed that an educated polity or nation is one that has enough manpower and each person occupies his or her rightful position to enhance economic, national growth and sustainable development.

#### **Challenges Associated with the Digitalization of Adult Education in Nigeria**

There are many challenges associated with the digitalization of adult education in Nigeria. Some of these problems include; poor funding of adult education, inadequate digital facilities, unstable power, poor internet coverage, high cost of digital facilities, high cost of maintenance, shortage of digital personnel, poor adult facilitators' digital skills and knowledge, poor adult learners' digital skills and knowledge, the resistance of change and lack of self-control. A brief description of each is as follows:

- i. **Poor Funding of Adult Education:** Poor funding of adult education in Nigeria has hampered the development of digitalizing adult education in Nigeria. Dada (2022) noted that inadequate financing and allocation for adult education has resulted in an insufficient supply of digital facilities, equipment, and materials.

ii. **Inadequate Digital Facilities:** The development of digital education in adult learning centres is hinged on the availability of adequate digital facilities and adequate funding. Ogunode et al. (2021) opined that educational institutions, both formal and non-formal, lack the resources necessary to fully integrate into the nation's digitalization programs.

iii. **Unstable Power Supply:** Poor power supply distribution across the federation has hampered the digitalization programme across institutions of learning. Power generation and distribution in Nigeria as of today is poor (Ogunode et al., 2021).

iv. **Poor Internet Coverage:** Availability and stable internet services make digital adult education efficient and effective in educational institutions. The inability of the government to ensure a meaningful internet connection across Nigeria has affected the digitalization of educational institutions. For instance, Guardian newspaper (2022) reported that only 12.1 per cent of the Nigerian population currently enjoys Internet services (Meaningful Connectivity) quality in the country.

vi. **High Cost of Maintenance:** The sustainability and survival of digital facilities depend on high maintenance culture from users. The maintenance of these technological facilities is very expensive to carry out.

vii. **Shortage of Digital Personnel:** One of the challenges of digital development in higher institutions in Nigeria is the shortage of professionals in digital technologies. Poor shortage of digital personnel in higher institutions has hampered the development of digital education in higher institutions.

viii. **Poor Adult Facilitators' Digital Skills:** Digital literacy is the key to the deployment of digital facilities in adult learning centres. When adult facilitators who are supposed to use these facilities are not literate in them, it becomes a problem and may hinder the usage of the facilities (Ogunode, 2020).

ix. **Poor Adult Learners' Digital Skills:** Poor digital knowledge and skills among adult learners are a major problem for digitalization of adult education in Nigeria.

x. **Resistance to Change:** Another challenge to the digitalization of adult education in Nigeria is resistance to change by the player in the sector. Many key stakeholders in educational institutions across the country are afraid of changing from old ways of doing things to new and modern methods.

xii. **Poor Implementation of Digital Policies:** Poor policy implementation has been a challenge to the digitalization of higher education in Nigeria.

### **Conclusion**

The twenty-first century has been transformed by the advancement in science and technology where different inventions have made teaching and learning more creative and digitalized than before. Different gadgets like Iphones, Ipads, Laptop computers, internet, visual, audios, interactive boards, power point and so on are now veritable tools for effective teaching delivery and learning in adult education. An analogue adult educator and adult learner in this century may not function as expected due to current emerging technological and literacy skills needed. Ability to handle and operate emerging technology effectively by adult

professionals for effective delivery of knowledge to adult client's demand being digitally abreast with modern technology for sustainable development through adult education in the 21<sup>st</sup> century. To attain sustainable development, the role of information and digital literacy cannot be ignored. This paper discussed the digitalization of adult education in Nigeria, its benefits and problems. The paper identified poor funding of adult education, inadequate digital facilities, unstable power, poor internet coverage, high cost of digital facilities, high cost of maintenance, shortage of digital personnel, poor adult facilitators' digital skills and knowledge, poor adult learners' digital skills and knowledge, the resistance of change, high cost of internet services and poor implementation of digital policies as challenges affecting the digitalization and attainment of sustainable development in Nigeria.

**Suggestions:**

To address these problems, the paper is suggesting the following:

- i. Government should organize constant training for all adult facilitators to improve their digital capacity.
- ii. More digital professionals should be employed into the field of adult education to support the digitalization of adult education.
- iii. The national policy on digital technology in all higher institutions should be well implemented beyond mere policy statements.
- iv. The government should increase the coverage of Internet services across the country



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**Teacher Education: A Panacea for Transforming Basic Education in Nigeria through Collaborative Culture**

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**Abstract**

The need for well-planned teacher education as a panacea for successful building culture of collaboration for transformative basic education program in Nigeria cannot be neglected or over emphasized. There is high desire for quality education and improvement of basic education programme as the solid foundation for secondary school and tertiary institution. This paper argues that teacher Education is a critical solution for transforming basic education in Nigeria. By prioritizing teacher education, Nigeria can develop a corps of skilled educators who can foster a culture of collaboration. The quality of education depends strongly on the quality of skillful teachers produced for goals/objectives accomplish in basic education program. There is need for adoption of entrepreneurship education program, planned curriculum design, positive shared vision, and establishment of good relationship among administrators, teachers and learners, knowledge for the characteristics / modes of successful collaboration towards improving basic education program. The conclusion includes the need for introduction of entrepreneurship education in basic education program with positive collaboration of skillful educators, stakeholders, learners for goals/objectives accomplished. This paper reviewed that teacher education is a critical solution for transforming basic education, if and only if, teacher education can develop a corps of skilled educators who are ready to embrace culture of collaboration. Adoption of positive change behaviour, attitude for effective teaching and learning. There should be good training for pre-service teachers also. The recommendations stated some suggestions that the government, necessary stakeholders should embrace entrepreneurship education into basic education program in Nigeria; the government should employ skilled educators into basic education program, imbibing culture of collaboration will help in transforming Nigeria basic education program, and to enhance the effectiveness of basic education program, it was also recommended that teachers and administrators prioritize collaborative effort towards a shared, clear, and well defined vision.

**Keyword:** *Teacher education, collaborative culture, transformative basic education*

**Introduction**

The clarion call for quality education and sustainable educational development through the effective role of teacher education/ educators as a panacea in building culture of collaboration for transformation of basic education in Nigeria stimulated this write up in order to accomplish the stated educational goals/ objectives. In fact, the standard of education in Nigeria secondary schools is increasingly falling mostly in particularly the basic education which is the solid foundation of learning activities that requires

concrete learning. According to Adeyemi (2002), basic education comprises primary education (first stage of basic education) and lower secondary education (second stage). It also covers a wide variety of non-formal and informal public and private activities intended to meet the basic learning needs of people of all ages. The rate at which educational standard is increasingly falling make educated, enlightened parents to be highly worried and are more curious to know the functions of the school administrators,

stakeholders, teacher education, etc. This paper argues that teacher education is a critical solution for transforming basic education in Nigeria. By prioritizing teacher education, Nigeria can develop a corps of skilled educators who can foster a culture of collaboration. However, in order to achieve the educational goals/objectives of the basic education system through the role of teacher education/ educators serving as a panacea in building culture of collaboration for transformative teacher education/educators requires all stakeholders to make sure that there is high need to coordinate the three domains effectively “the cognitive domain (head), the affective domain (heart) and the psychomotor domain (hand). This generates balance educational development for the basic education of learners through effective culture of collaboration of stakeholders, teacher education, administrators/ teachers to transform basic education in Nigeria.

### **Conceptual Clarification**

**Education:** Education is the process of transmitting societal norms, values and desirable attitudes from one generation to another, in which individuals are made functional to members of the society and it has relationship with the effective collaboration of teacher education for a sound production of basic education learners.

**Teacher education** refers to the formal and informal training, development, and support provided to teachers to enhance their knowledge, skills, and competency. Teacher education or

teacher training refers to programs, policies, procedures, and provision designed to equip teachers with the knowledge, attitudes, behaviours, approaches, methodologies and skills they require to perform their tasks effectively in the classroom, school and wider community. Educators like administrators; teachers acquire their knowledge, skills, and attitudes through teacher training programs planned.

**Collaborative Culture** describes a school environment where teachers, administrators, students and communities work together, share ideas, and supports each other to achieve a common goals/objectives. The quality of education in any country depends on the quality of the teachers since no education system can rise above the quality of its teachers. The FRN (2004) provides three stages of teacher preparation for education. The first stage is initial teacher training, which is a pre-service course before entering the classroom as a teacher. The second stage is the induction that includes all the processes of providing training and support during the first few years at teaching or first year in a particular school. The final stage of teacher preparation is continuing professional development that can be described as the job training during in-service training for practicing teachers. To achieve the focus of the role of teacher education/educators as a panacea in building culture of collaboration for transformative basic education in Nigeria requires serious minded trained teachers,

administrators to display their learnt knowledge, skills effectively to produce sound basic education to learners that acquire different skills, knowledge, also entrepreneurial skills/ education. The present situation in Nigeria economy needs highly the introduction of entrepreneurial education for our future citizen/learners in order for them to be highly dependent, self-reliant, self-actualized to contribute positively to the community, society and nation at large. (Oladele & Oyekan, 2022).

#### **The Need for Building Culture of Collaboration of Teacher Education/Educators In Line With Entrepreneurial Education in Basic Education**

The need for teacher education/educators for sound production of learners cannot be over emphasized. Teaching tasks are those used to help learners to acquire positively or change attitude, behaviour, skills, knowledge and idea or appreciation (Peretomode, 2006). The trained teachers, administrators should be dedicated, focused, open minded to perform their various duties, responsibilities assigned to them mostly in the classroom situation. There is high need for the academic staff and the non-academic staff to cooperate together effectively to achieve stated goals/objectives of the learners. The stakeholders, administrators should focus on the need for qualitative entrepreneurship education mostly in basic education with the effort of effective collaboration for effective teacher education, educators to perform their right duties focus on acquisition of entrepreneurship

education should be implemented at all levels in Nigeria, mostly the basic education section. Some areas of focus towards teacher education/educators, administrators are highlighted below:

- Teachers should learn to act as entrepreneurs by playing the role of mediators of learning by assisting learners acquire the desirable entrepreneurship skills, attitudes, knowledge to relate real life situations.
- There should be positive cooperation, love shared among teachers, administrators.
- Administrators should organize workshops/seminars through cooperative effort of the teachers, parents and learners.
- Administrators, teachers, pre-service teachers should collaboratively oversee the curriculum development for entrepreneurship education and other curriculum.
- All teachers should be effectively integrated with their various disciplines.
- Teachers should be capable of balancing effective teaching and learning to match the three domains e.g. cognitive, affective, and psychomotor domain.
- Teachers, pre-service teachers should make teaching and learning more concrete with the help of teaching materials and embrace creativity whereby learner make use of their hidden potentials. (Oladele & Oyekan, 2022).

#### **Curriculum Preparation Needs Collaboration of Teachers and Culture Collaboration Requires Students Activeness**

To achieve planned curriculum requires high cooperation of administrators, teachers and pre-service teachers in order to accomplish stated goals/objectives. This act requires skillful/trained teachers, administrators to apply knowledge, skills, attitudes, behaviours, approaches, methodologies, techniques, procedures to effectively plan their curriculum mostly if it is out dated or not properly planned as expected. To create a collaborative school's culture, relate to how the learners cooperate with the school authority/management to abide with the necessary rules/regulation, improving the overall learning environment. To foster positive collaboration among teachers and breaking down any form of barriers that could affect effective teaching and learning situation. There is high need for school culture transformation in order to build student-centered school culture to benefit all learners and to embrace peaceful coexistence in the school among teachers, administrators and learners, (Oladele & Oyekan, 2022, Nwosu & Okeke, 2021). It should be noted that building a positive school culture is essential ingredient for improving good school climate, address student's needs, avoid indiscipline among students. A school culture that promotes collaboration, empathy, and respect fosters a supportive learning environment that benefits both students and teachers. Culture of collaboration brings about positive transformation of teacher education; educators because it stimulates learners to thrive in setting where they feel values, comfortable and understand better, and

teachers are highly happy to be more effective when they feel supported, empowered and encouraged to bring out their best,(Ojeje, 2023).

**Promotion of Clear/Shared Vision for Positive Collaboration by Stakeholders for Easy Goals/Objectives Accomplishment towards Basic Education in Nigeria**

To achieve the collaboration of established school culture, curriculum planners requires establishment of a shared/clear vision through effective collaboration of teacher education to produce sound/skillful teachers who are dedicated to their assigned duties/responsibilities, adequate/skillful administrators who embrace discipline as their "watch word" to enforce their duties, exhibit love, open heart to their subordinates, incorporation of necessary stakeholders into the administrative functions for goals/objectives focus. So doing, the administrator to achieve his shared vision for easy collaboration, requires his determination to achieve the school values and goals easily with positive cooperation from the subordinates. Therefore, the school administrator, necessary stakeholders, teacher education program should endeavor to promote effective collaboration strategies in the school for goals/objectives accomplishment, (Timess,2000). For the purpose of emphasis, Ogunleye & Adebayo, (2022) stated that encouragement of professional collaboration and building positive relationship with learners is needful for easy basic education achievement towards goals/objectives established.

The success towards checking learners misbehavior lies in fostering collaboration among necessary stakeholders like teachers, administrators, parents, community leaders working cooperatively together to checkmate the learners through different strategies, insights, good practice habit, motivation, etc. Okubotimibi, (2024). To promote professional collaboration could be done through co-planning effectively; by sharing together best practices need for learners development/growth in future. Introduction of entrepreneurship education to make learners creative/productive; by providing good opportunities for learners/peers feedback; by integrating and allowing opportunities for learners voice used and make their best choice in life endeavor. That is by empowering learners to take control of their education with guide/direction when need be; all to foster positive collaboration and create a more positive, supportive learning environment where learners can easily succeed and thrive in life endeavor through good start in basic education.

The school administrator, teachers, parents should build positive relationship with their learners, children through effective collaboration to address their various needs/want in life by creating supportive environment that is friendly. Okubotimibi, (2024). Some highlighted strategies to build up strong relationship with learners are:

- Create good rapport to know their interests, hobbies, etc.

- Promote empathy, love to acknowledge their needs, challenges and offer support to encourage them.
- Provide good supportive environment that is conducive for teaching and learning with the aid of teaching tools to make learning concrete not abstract (real life situation).
- Application of positive reinforcement through praise for good work/ performance, provide feedback in order to build up their confidence and have trust in you as their skillful, trusted teacher, administrator, parents, community leaders. The specific goals of basic education shall be the same as the goals of the levels of education to which it applies (i.e. primary education, junior secondary education and non-formal education. Basic education shall be of 9-years duration comprising of 6 years primary education and 3 years of junior secondary education though said to be free and compulsory which requires effective collaboration of all stakeholders for easy transformation of learners development/growth, transformation of teacher education program and easy accomplishment of the goals/objectives of basic education in Nigeria.(Ogunleye & Adebayo, 2022).

**Collaboration in the Classroom of Basic Education Program for Transformation of the Learners; Teachers and Administrator's Strategies Applied**

Staff collaboration for effective classroom instruction/management is necessary in order to accomplish the stated education goals/ objectives as stated in the National policy on education (FRN 2004). This is to enforce effective classroom instruction/ management delivery adequately in positive cooperation/ coordinated efforts of teachers, support staff, and administrators working together to create a conducive and successful environment for learners characteristics of successful administrative/ teachers towards basic education program for goals/objectives accomplishment are as follows:

- i. Know that involvement in collaboration is voluntary with free and open mind.
- ii. Effective collaboration is uniformity among all participants like the stakeholders.
- iii. Effective collaboration must be based on mutual goals/ objectives to be accomplished.
- iv. Effective collaboration must depend on shared responsibility for easy participation and effective contribution during decision making
- v. Effective collaboration requires sharing of their given resource and application of maintenance culture. Also, must embrace proper accountability towards goals/ objectives accomplishment. (Oladele & Oyekan, 2022). However, effective

collaboration strategies applied, attracts some benefits for teachers and learners towards accomplishment of goals/ objectives of basic education programs.

- vi. When there is collaboration skillful professionals and skillful education communication embrace facts and reality.
- vii. Effective collaboration stimulates trust, new ideas, constructive ideas/feedback gotten to promote basic education programs and activities for goals/ objectives accomplishment.
- viii. Effective collaboration among educators, administrator, and expert professional leads to better services render in basic education programs to learners with various needs/wants. (Oladele & Oyekan, 2022).

Some models for effective staff collaboration towards the successful accomplishment of basic education programmes in Nigeria are listed below;

- To attain good planning of time for basic education programs.
- To promote professional learning communities that involve group of educators focus on specific issues related to basic education programs.
- To stimulate good relationship, friendship with open mind to discuss professional and academic activities for promotion of basic education program for development/growth of learners towards upper level of secondary



education and tertiary institutions. (Oladele & Oyekan, 2022).

### **Conclusion**

The paper reviewed that teacher education as a critical solution for transforming basic education, if and only if, teacher education can develop a corps of skilled educators who are ready to embrace culture of collaboration. The need and recognition of teacher education as a penance in building culture of effective collaboration for transformative basic education programme in Nigeria cannot be neglected and over emphasized. That is to accomplish the stated goals/objectives stated in the National policy on Education and balance accomplishment of learners needs for personal and future society, community and nation needs. To improve the standard of education for basic education program through the effective culture building of collaboration of administrators, teachers and subordinates require the administrator to monitor, guide, supervise the teachers to be dedicated over their given tasks to performs and embrace positive change in behaviour, attitude, skills improve/right application of knowledge to teaching and learning situation. The school administrator should endeavor to introduce entrepreneurship education programs in the school curriculum to assist learners acquire desirable entrepreneurship skills, attitudes, knowledge to relate real life situations.

### **Recommendations**

The following recommendations were made on the above discussions:

1. Government, other stakeholders should employ skillful educators into the basic education program.
2. There is high need to imbibe the culture of collaboration in transforming the Nigeria basic education program for attainment of stated goals and objectives.
3. To enhance the effectiveness of basic education programs, it was recommended that teachers and administrators prioritize collaborative efforts towards a shared, clear, and well defined vision.
4. The government, necessary stakeholders should embrace entrepreneurship education into basic education program in Nigeria.

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**Effects of Nutrition on the Academic Performance of Primary School Pupils' in Ondo West Local Government, Ondo State**

By

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**Abstract**

The early childhood period is critical and it is a period when children need high quality care especially in the area of nutrition and health. The purpose of the study is to examine the effect of nutrition on the academic performance of primary school pupils in the study area. This study investigated the effects of nutrition on the academic performance of primary school pupils in Ondo West Local Government. The study adopted descriptive survey research design. Sample for the study comprised twenty primary school teachers and eighty primary pupils selected from four primary schools through the use of purposive sampling technique. One research instrument was used and three research questions were answered. A research instrument titled "Questionnaire on the Effect of Nutrition on the Academic Performance of Primary School Pupils (QENAPPSP) was used for data collection. Data collected was analysed using descriptive statistics of percentage, mean and standard deviation and reliability co-efficient of 0.87 was obtained. The findings revealed that a larger percentage of the pupils lack proper nutritional value which affects their academic performance. It was recommended that there is need to organise seminars to expose parents, educators and policymakers to importance of nutritional services needed by young children.

**Keywords:** *Nutrition, Academic performance, Pupils, Primary Education*

**Introduction**

Nutrition is a pre-requisite for good cognitive development in pupils. Good nutrition is also essential for country's general development as pupils' good health eventually translates into good performance thus resulting into brilliant leaders who will be productive economically, socially and in all other areas as "Health is wealth". Beryl (2019), defined nutrition as "the study of food and the way the body uses them. It is the process concerned with growth, maintenance and repair of the living body as a whole or its constituent organs. Brown (2018), considering the meaning of nutrition, a layman will define nutrition as the in-take of food or food

consumption. Furthermore the oxford advanced learner dictionary explained nutrition as the process by which living things receive the food necessary for them to grow and be healthy. Also according to College Biology textbook by Idodo (2014), which defines nutrition as the process by which living organisms obtain and utilize materials from external environment for metabolic activities such as respiration, growth, excretion and reproduction. The food in this explanation was defined by the same textbook as any substance which when absorbed into the body cells yields energy and materials for growth,

repairs of damaged tissues and regulation of body processes without harming the living organisms.

Globally, nutrition affects one in three people and each of its major forms out-do most other diseases (WHO, 2020). There is increasing proof, with resulting international concern that the high level of nutritional deprivation combined with heavy burden of diseases in pre-school pupils have negative consequences for their long term overall development. The science of nutrition is the science of nourishing the body. To function properly, the body needs certain chemical substances for which the general term is nutrients. Some of these nutrients cannot be synthesized by the body, hence it is expedient to consume food in the right quantity and proportion in order for the body to obtain these nutrients. For food to be nutritious, it must contain some essential nutrients which are majorly protein, carbohydrates, vitamins, minerals, water, fat and oil. In a situation whereby some or more of these nutrients are absent or insufficient in the food, it results to nutritional problems which can also be referred to as malnutrition. The advantages of nutritious food in maintaining good health cannot be low played or under estimated. The picture ever become so clearer if one should take critical assessment of the problems of malnutrition in our society especially as it affects young pupils. Based on the research carried out by the Nigeria society of clinical nutrition, it was discovered that nutritional problems are the improper amount or unbalanced combination of

nutrients which in turn results into violent disturbances in every part of the body (Deran, 2014).

Many pupils in developing countries suffer from poor health and nutrition. The United Nations estimates that one third of primary school age pupils in developing countries, a total of 180 million pupils under age five experience growth stunting relative to international norms (United Nations, 2010), while hundreds of millions more suffer from tropical diseases, including malaria and intestinal parasites, (World Health Organization (WHO, 2020). Poor health as a result of poor nutrition among pupils has a negative impact on their growth and education, hence, there is need to organize programs or policies that increase pupils' health status in order to improve pupils' education, growth and development. Good Nutrition facilitates the development of a child in all dimensions and has considerable long-lasting effects on the holistic development of the child's life.

Studies by World Health Organization (WHO, 2020) showed that nutrition affects students thinking skills, behaviour and academic performance. Florida Department of Health, 2013, suggests that diets high in Trans and Saturated fats can negatively impact learning and memory, nutritional deficiencies early in life can affect the cognitive development of school pupils and also in recent times especially in the primary school stage, inadequate nutrition is a great problem that hampers learning in this level of

education. Access to nutrition improves student's cognition, concentration and energy levels. The feeding habits or nutrition of the pupils determines to a great extent the level of their performance. The diet of pupils has being given major consideration not only for the potential health repercussions later in life, but also for its immediate effects on the physical and mental health of pupils and their consequent school experiences and attainment.

A child with less nutritious diets performed worse on a standardized literary assessment and those who ate more fast-food fared worse on mathematics and reading. When a child's performance in class is not as expected, the teacher becomes worried because the energy used in impacting knowledge to the child is just being wasted such that the child finds it difficult to be useful to himself and also to his immediate environment and his society at large (Ajala, 2014).

Nutrition also impacts school performance. Poor nutrition can leave pupils susceptible to illness or lead to headaches and stomach aches, resulting in school absenteeism (Brown, 2018). Access to nutrition that incorporates protein, carbohydrates and glucose has been shown to improve student's cognition, concentration and energy levels (Bellisle, 2014). In contrast, nutritional deficiencies particularly zinc, vitamin B, omega-3, fatty acids and protein early in life can affect the cognitive development of school pupils.

Research by Ray (2014), has also established a link between nutrition and academic performance. Access to nutrition, particularly breakfast can enhance a child's psychosocial well-being, reduce aggression and decrease discipline problem, nutrition and performance is therefore an area of concern for study among school pupils and a threat to their academic performance and even later development and productivity. Studies on pupils' nutrition have not covered the relationship between nutrition and performance of primary school pupils, there is need for more studies to underscore the relationship between poor nutrition and performance of primary school pupils. Most schools in Ondo State do not have any centrally organized meals in schools and not all pupils carry packed food and snacks to school, obviously due to the socio-economic status of the community. The parents are expected to pack meals and snacks for the pupils when leaving home for school, but only a few parents do this. Some parents are either too busy working as casual labourers or are ignorant about the need for proper nutrition to boost their children's academic performance in school, hence, a study of this nature is inevitable.

### **Research Questions**

1. Do primary school pupils eat balance diet every day?
2. Do primary school pupils who eat in the morning before coming to school pay attention in the class than those who do not eat?

3. How does nutrition affect primary school pupils' academic performance in study area?

**Methodology**

The study adopted the descriptive survey research design. The population of the study comprised 200 primary three pupils and 420 teachers in Ondo West Local Government Area. The sample for the study comprised of twenty primary three teachers and eighty primary three pupils who were purposively selected on the criteria that they were ready to participate in the study and equally allowed researchers to use their school for the study. A self- designed questionnaire titled "Effects of Nutrition on the Academic Performance of Pupils' (ENAPPSP) was used as the research instrument for data collection. The instrument was validated by one lecturer in the Department of Early Childhood Care and

Education and a nutritionist from Home Economics Department both in Adeyemi Federal University of Education. Data collected was analysed using descriptive statistics of percentage, mean and standard deviation The reliability test of the questionnaire was done through test, re-test method and reliability coefficient of 0.87 was obtained while validity of the instruments were ascertained using face and content validity procedure. The data collected were analysed using simple percentage statistical tool method.

**Result Presentation**

This section deals with analysis and interpretation of data collected as illustrated below:

**Research Question 1:** Do primary school pupils eat balance diet every day?

**Table 1:** Primary school pupils' responses on balance diet

S/N	Items	Yes	%	No	%
1	Do you always feel tired in the class as a result of the food eating?	64	64	36	36
2	Do you always eat good food like fruits, beans, egg, and meat?	44	44	56	56
3	Are you served up to 3-4 times a day?	74	74	26	26
4	I always sleep in the class as a result of food eating in the morning?	82	82	18	18
5	I always eat carbohydrate like eba, semovita, fufu, amala, soak gaari in the afternoon and evening.	90	90	10	10

Table 1 revealed that 64% of the respondent indicated that they always feel tired in the class as a result of food eating while 36% of the respondents indicated otherwise. 44% of the respondent indicated that they always eat good food like fruits, beans, egg, and meat while 56% of the respondents indicated otherwise. 74% of

the respondent indicated that they are served up to 3-4 times a day while 26% of the respondents indicated otherwise. 82% of the respondent indicated that they always sleep in the class as a result of food eating in the morning while 18% of the respondents indicated otherwise. 90% of the respondent indicated that they always eat

carbohydrate like eba, semovita, fufu, amala, soak gaari in the afternoon and evening while 10% of the respondents indicated otherwise.

**Research Question 2:** Do primary school pupils who eat in the morning before coming to school pay attention in the class than those who do not eat?

**Table 2:** Teachers responses on primary school pupils who eat in the morning before coming to school pay attention

S/N	Items	Yes	%	No	%
1	Pupils who go to school hungry or without breakfast tends to lower scores and more likely to have repeat at least once in the same class	10	100		
2	Pupils who eat breakfast at school, closer to the time they take tests, perform better on standardized tests	10	100		
3	Pupils that are not adequately fed are usually academically backward.	10	100		

Table 2 revealed that 100% of the respondents affirmed that pupils who go to school hungry or without breakfast tends to have lower scores and more likely to repeat at least once in the same class, pupils who eat breakfast at school, closer to the time they take tests, perform better on standardized tests and pupils that are not adequately fed are usually academically backward.

The result from the analysis revealed that primary school pupils who eat in the morning before coming to school pay attention in the class than those who do not eat.

**Research Question 3:** How does nutrition affect primary school pupils’ academic performance in study area?

**Table 3:** Table 3 shows the results on the effect of nutrition on pupils’ academic performance.

S/N	Items	Yes	%	No	%
1	I have poor classroom concentration because I do not eat well	82	82	18	18
2	Do you think good nutrition will improve your academic performance?	98	98	2	2

Table 3 revealed that 82% of the respondents affirmed that they have poor classroom concentration because they do not eat well while 18% of the respondents indicated otherwise. 98% of the respondents affirmed that good nutrition

will improve their academic performance while 2% of the respondents indicated otherwise. The result revealed that nutrition affect primary school pupils academic performance in study area.

**Table 4:** Teachers responses on primary school pupils’ responses on nutrition and academic performance

S/N	Items	Yes	%	No	%
1	Occupation and Economic status of parents can influenced pupils academic performance.	4	80	1	20
2	Malnourished pupils are often scared from attending schools.	4	80	1	20
3	Taking meals that incorporates all the essential nutrients improve student’s cognitive domain.	5	100		
4	Lack of good food may affect pupils’ performance	5	100		

Table 4 revealed that 80% of the respondents affirmed that occupation and economic status of parents can influenced pupils academic performance while 20% of the respondents indicated otherwise. 80% of the respondents affirmed that malnourished pupils are often

scared from attending schools.while 20% of the respondents indicated otherwise. 100% of the respondents affirmed that taking meals that incorporates all the essential nutrients improve pupil’s cognitive domain and lack of good food may affect pupil’s performance.

**Table 5:** Primary school pupils’ academic performance in mathematics, English language and General paper

S/N	Subject	N	Score (0-4) % Fail	Score (5-10) % Pass	Score (11-15) % Excellent
1	MATHEMATICS	100	64 (64%)	20 (20%)	16 (16%)
2	ENGLISH LANGUAGE	100	52 (52%)	34 (34%)	14(14%)
3	GENERAL PAPER	100	56 (56%)	36 (36%)	8 (8%)
4	BASIC SCIENCE	100	33 (33%)	60 (60%)	7 (7)

Sources: *Field Report 2022*

**Key:** N=Number of Respondent, 0-4 = Fail, 5-10 = Pass, 11-15 = Excellent

Table 5 showed the analysis on the achievement test conducted for the pupils on four subjects; English Language, Mathematics, General Paper and Basic Science. It was conducted based on the effect of nutrition on Academic Performance of Primary school pupils. Table 7 revealed that 64% of the respondents failed in Mathematics, 20% pass while 16% performed excellently. Table 7 revealed that 52% of the respondents failed in English Language, 34% pass while 14% performed excellently. 56% of the respondents failed in General Paper, 36% pass and 8%

performed excellently. Also, 33% of the respondents failed in Basic Science, 60% pass and 7% performed excellently. This implies that majority of the pupils failed mathematics and English due to poor nutrition.

**Findings of the Study**

From the proceeding data, the following findings were deduced;



- i. That hungry pupils' have high tendency of performing poorly due to lack of concentration and dormancy in class.
- ii. It is very clear that the position of balanced diet is indispensable for all the children, in the society especially the primary school pupils because it has a great effects on their cognitive development.
- iii. In view of this and as it is suggested by the data, good feeding habit and balanced meal should be given always and regularly to pupils in the primary schools because this will help them to grow properly, stay healthy with good cognitive development to performance well in class.

### **Discussion of Findings**

The results from this findings is in support with the finding from the study of Stevens, (2012). that the daily micronutrient intake of children is very crucial because there is a great relationship between nutrition and brain development This findings also supports the findings from the study conducted by Donald (2010) that malnutrition has a great effect on the cerebrum development which can affect performance of children in later years. Analysis revealed that hunger and malnutrition can significantly impact cognitive function and academic performance in the children. Hungry pupils are more likely to experience poor concentration and attention span, decreased memory and learning capacity, lower academic achievement and performance. A balanced diet, on the other hand, has been found to cognitive

development and academic performance in the children. A well-nourished diet provides essential nutrients for brain growth and development, leading to improved concentration and focus, Enhanced memory and learning abilities, better performance and achievement. Studies have also highlighted the importance of breakfast consumption in improving cognitive function and academic performance in children. This finding is therefore in consonance with the findings of Brauw (2012) that successful students can be attributed to healthy food consumption coupled with good physical activities and fitness policies.

### **Conclusion**

This study investigated the effects of nutrition on the academic performance of pupils in primary school. The results showed a significant positive correlation between nutrition and academic performance indicating that pupils who consumed a balanced diet performed better academically than those who did not.. The findings suggest that nutrition is indispensable for primary school pupils, as it is plays a critical role in the cognitive development and academic performance. Ensuring that children receive adequate nutrition is essential for their overall growth and development. Specifically, the study found that;

- i. Pupils who consumed a diet rich in fruits, vegetables and whole grains performed better in reading and mathematics.

- ii. Pupils who skipped breakfast had lower academic achievement than those who ate breakfast regularly
- iii. Pupils who consumed high amounts of sugary snacks and drinks had lower academic achievement than those who consumed healthier snacks.

**Recommendations**

The following recommendations are made.

- 1. Seminars should be conducted to expose head teachers as well as parents and caregivers to importance of balanced diet for pupils.

- 2. Parents should be sensitized on the need to provide balanced diet food for their children to promote their holistic development.
- 3. Creating awareness through radio, jingle and information campaign on good food hygiene.
- 4. Adult education classes especially for mothers should be conducted on matters such as cooking, meal planning and proper use of locally available food materials for proper feeding of pupils
- 5. Encourage parents to support healthy eating habits at home.

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**Effects of Mathematics Operators Instruction on Senior Secondary Students' Achievement in Word Problems in Calabar Education Zone, Cross River State, Nigeria.**

**By**

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**Abstract**

An assessment of the possible effect of Mathematics operator instruction on achievement in word problems, its implication to national numerical literacy was the main thrust of the study. Two research questions and two corresponding null hypotheses were raised to guide the study. The non-equivalent control group pretest-posttest quasi-experimental research design was adopted. The multistage sampling techniques were used to select a sample of 387 participants from 6,740 senior secondary class one (SS1) students in the eighty-one (81) government-owned coeducational secondary schools in Calabar Education Zone of Cross River State. The treatment class was exposed to Mathematics operators' instructional strategy for solving word problems while the control class was exposed to regular word problem class, otherwise called conventional method. "Students Mathematics Achievement Test (SMAT)" was the instrument used for data collection after validation by experts. The reliability coefficient of 0.90 was determined using the Kuder Richardson formula 20. Primary data were obtained after informed consent from the participants. The null hypotheses were all tested at the .05 alpha level using the Analysis of Covariance (ANCOVA). Findings revealed a significant effect of the Mathematics Operator instructional strategy on students' word problem achievement in secondary schools and that male students perform significantly better in word problems than their female counterparts when taught using the mathematics operators in solving word problems. These findings discussed fundamental theoretical, practical, and research implications. It was recommended, among other things, that the teachers of Mathematics should concentrate on demystifying the abstraction in Mathematics by deliberately adopting Mathematics operators instructional strategy in interpreting Mathematical statements and sentences into their symbolic operations before engaging in their computation in order to improve national numerical and computational literacy.

**Keywords:** *Mathematics, operators, instructions, numeracy & literacy*

**Introduction**

Mathematics is one of the most important subjects taught in schools today because of its vital role in shaping how individuals deal with the various aspect of private, social, and civil life (Ekwueme, 2013). Mathematics is a language of science and acts as a universal language that helps people to communicate and describe different situations in everyday life (Edoho & Esuong 2016). The importance of Mathematics cannot be overemphasised. Everyone uses mathematics daily, especially in this scientific and

technological world. The emphasis in Nigeria today is on technological development, and Mathematics is needed for this technological development (Esuong 2016). This justifies the compulsion of Mathematics (a core subject in the secondary school curriculum) to provide the rudiment for all scientific and technological careers. Despite the overall importance and critical value of Mathematics to society, students' achievement in the subject in high stakes examinations such as the West African Senior

School Certificate Examinations (WASSCE) and the National Examination Council (NECO) Examinations has been dismal (WASSCE chief Examiner report, 2000 - 2018).

The information in Table 1 shows that the percentage achievement of students who failed or scored low in Mathematics in the past eighteen (18) years is exceptionally high, 72.6%, compared to students who scored credit and above, which is just 27.31%. The WASSCE Chief Examiners reports listed some of the weaknesses of candidates as difficulty in (a) Translating word problems into Mathematical statements; (b) Solving problems on probability; (c) Solving equations simultaneously involving indices; (d) Solving problems involving mensuration. However, difficulty translating word problems into Mathematical statements has

been a recurring weakness in all the years of reports (WAEC Report, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, and 2018).

A key component responsible for the reoccurring low students' achievement in Mathematics word problems in WASSCE Examination is the understanding and usage of Mathematics operators which is key to finding a solution to Mathematics word problems. The reports presented by Mathematics chief examiners for 2010 – 2018 reveal that Mathematical problems which require the translation of words into Mathematics statements often occur yearly, as shown in Table 2. The average scores, as presented in Table 2, show students' poor achievement levels in tackling Mathematics word problems.

**Table 1: WAEC Mathematics Results from 2000 – 2018**

Year	Total number of candidates	No. of students with credit and above (A1 - C6)	% of students with credit and above (A1 – C6)	No. of students with grades below a credit (D7 - F9)	% of students with grades below a credit (D7 - F9)
2000	530,074	173,816	32.80	356,258	67.20
2001	843,991	350,746	41.60	493,245	58.40
2002	949,139	142,589	15.00	806,550	85.00
2003	518,516	237,377	45.80	281,139	54.20
2004	1,051,246	565,570	53.80	485,676	46.20
2005	1,091,763	388,122	35.55	703,641	64.45
2006	1,184,223	472,979	39.94	711,244	69.06
2007	1,275,330	198,441	15.56	1,076,889	84.44
2008	1,369,142	314,903	23.00	1,054,239	77.00
2009	1,373,009	425,633	31.00	947,376	69.00
2010	1,351,577	453,447	33.55	898,110	66.45
2011	1,540,250	587,630	38.93	952,620	61.97
2012	1,675,224	819,390	49.00	852,834	51.00
2013	1,543,683	555,726	36.00	987,957	64.00
2014	1,692,435	529,732	31.30	1,162,703	68.70
2015	1,593,442	544,638	34.18	1,048,804	65.82
2016	1,544,234	597,310	38.68	946,924	61.32
2017	1,678,440	501,556	30.12	1,176,884	69.88
2018	1,650,321	664,112	31.01	986,209	68.99
MEAN (%)			27.31		72.60

**Source:** Test Development Division, West African Examination Council (WAEC) Lagos.

**Table 2: Question Analysis of WAEC Word Problems Questions**

Year	Question no	Average score	Percentage (%)
2010	2,5,8,4	32.20	21.90
2011	2,7,5,9	24.50	11.10
2012	3,5,8,9	37.50	32.80
2013	2,4,7,9	20.90	10.08
2014	2,4,5,8	25.70	12.56
2015	3,4,5,9	32.80	22.20
2016	2,4,5,9	30.40	20.10
2017	2,3,7,8	31.80	20.95
2018	3,5,7,9	30.20	20.50
Mean score		24.18	19.13

**Source:** Test Development Division, West African Examination Council (WAEC) Lagos

Mathematics operators instruction involves a critical analysis of Mathematics operators. However, Mathematics operators are symbols meant for carrying out one or more Mathematical operation on some functions. It is worthy to state that all operators are symbols but not all symbols of Mathematics are operators for example symbols like 1, 2, 3... are not operators but just symbols that denote numbers (Ofonime, 2016). An operator in Mathematics is any symbol that indicates an operation to be performed. For instance, square root of  $x\sqrt{x}$  indicates the square root is to be taken and  $dy/dx$  indicates “differentiation with respect to  $x$ ” is to be performed. Specifically, according to Staley, (2005) a symbol indicating a Mathematics operation is called an operator. For example, there are five basic Mathematics operators used in solving problems and manipulating values, these are + (addition), - (subtraction),  $\times$  (multiplication),  $\div$  (division), and = (equality). This follows logically with Aina (2001), who opined that the symbols of the Mathematics operator have predefined rules to be applied to the given operands or numbers. Based on the type of operation, different terms are assigned to the

operands. Operationally using the Mathematics language instruction in operators, students are made to understand that basic operations are used simultaneously but in different forms such as multiplication which is repeated addition and division which is repeated subtraction. Operational signs such as +, -,  $\times$ , /, and = serve as verbs while the operands (1, 2, 3, ..... ) serve as nouns in a Mathematical sentence. Thus, using these operations, word problems are modeled into Mathematical and symbolic expression which can be read and understood by anybody devoid of ethnic and cultural backgrounds. Word problem is seen as crucial part of the Mathematics curriculum given that it enables students to apply their knowledge of various Mathematics concepts in real life scenarios. However, there is a growing concern and needs for students to understand and choose the correct Mathematical operations that will enable them solve Mathematics word problems accurately. Thus, to solve a given word problem correctly students need to develop knowledge of the operators and their correct usage. Table 3 shows the basic Mathematics operations along with the

terms assigned to operands and the resultant values.

**Table 3: Basic Mathematics operations along with the terms assigned to operands and the resultant values**

3 → Augend	15 → minuend
+	-
9 → Addend	5 → subtrahend
12 → Sum	10 → difference
Operands: Augend and Addend	Operands: minuend and subtrahend
Operator: (+)	Operator: (-)
Operation: Addition	Operation: subtraction
Result: sum	Result: difference
4 → multiplicand	30 → dividend
×	÷
9 → multiplier	6 → divisor
12 → product	5 → quotient
Operands: multiplicand and multiplier	Operands: dividend and divisor
Operator: (×)	Operator: (÷)
Operation: Multiplication	Operation: division
Result: product	Result: quotient

To understand the utility of Mathematics operators and operations as illustrated in Table 3, consider an example; Sarah has two baskets full of fruits. The first basket has 5 apples, and the second has 6 bananas. She mixes them in a big basket. How many fruits are there in the big baskets?

Solution

First basket = 5 apples

Second basket = 6 bananas

Total fruits = 5 apples and 6 bananas

The Mathematical expression with operands (5) and (6) and operator (+) performing the operation (addition) will be.

Total fruits  $5 + 6 = 11$

According to Blessman and Myszczyk (2001), who examined the impact of Mathematics

language on students' understanding, one of the four identified causes of confusion and difficulties in Mathematics language is use of Mathematics operators. During word problems solving students write numbers, using one or more Mathematical operations, but they do not know exactly how to use the operators properly, most often students compute numbers with the appropriate operations but cannot manipulate the operators to provide the required answers to the problems. Consequently, Halliday (1978), added that everyday work in the classroom shows that students express difficulties in solving word problems, although in solving other tasks they are skillful, but students show a stronger difficulty in carrying out different tasks with Mathematics operations such as addition, subtraction, multiplication, division, identification of units of



measurement and other tasks that require calculations, tasks with numbers and equations. These difficulties in handling computational problems goes further to show the weakness of students in understanding the use of Mathematics operators which is a key constituent of Mathematics word problem. Accordingly, Aina (2013), stated that understanding of Mathematics operations influences comprehension of lessons, assignments, and tests especially in solving word problems, a lack in understanding of Mathematical operational language affects individual capabilities to solve problems being that Mathematics is a subject written and spoken with its own specialized and peculiar language using operators as its major connectives to give statements and sentences meaning, particularly when used in classroom situation. Thus, for an effective communication of lessons in the classroom there must be proper use and interpretation of operators amongst students and teachers.

Some environmental, socio-cultural, and psychological factors moderate the effect of Mathematics operator instruction on students' academic achievement, such as gender, age, location, task difficulty and self-esteem. However, this study focused on the moderating effect of gender. Gender is a social construct; it concerns the differential qualities culturally attributed to women and men. The use of the word "gender" not only denotes an emphasis on the social (as opposed to biological) attributes of women and men but also indicates recognition of the relationship between masculinity and

femininity (Hyde, Fennema & Lamon, 1990). In this study, gender is considered in relation to those differences that might be observed or perceived between boys and girls concerning achievement in word problems when taught using the Mathematics symbol instruction. Girls tend to perform better in overall school achievement than boys, but they perform less than boys in Mathematics (Esuong & Edoho, 2018). This observation could be interpreted as an issue about girls and Mathematics. It has been reported that boys are better than girls in Mathematics and other science subjects (Aremu, 1999), while Georgius, and McConell (2008), found that girls outperformed boys in some other subjects. Esuong, Udom and Udo (2019) examined the influence of gender on achievement and found that male and female students tend to perform differently in various subject areas of education. Mathematics, science, and reading are traditional subjects prone to obvious achievement gender gaps. Male students tend to be more motivated to achieve better in Mathematics and science subjects, while female students perform better in readings (Ayara, Udom & Esuong, 2019). Owan, Eno and Esuong (2019) reported that sex is a factor in school Mathematics achievement. On the general trend, in Nigeria, they assert that male learners tend to achieve higher in Mathematics than their female counterparts. It is against the facts presented above, and as can be seen, the current study determines the effects of Mathematics Operators Instruction on Senior Secondary Students' Achievement in Word

Problems, in Calabar Education Zone, Cross River State, Nigeria

### **Research Question**

The following research questions guided this study.

1. To what extent do students in the experimental group differ from those in the control group in their posttest achievement in word problems?
2. What is the gender difference in students' posttest achievement in word problems between the experimental and control groups?

### **Statement of hypotheses**

The null hypothesis formulated and tested for this study is.

**Ho1:** Students in the experimental group do not differ significantly in their posttest achievement in word problems from those in the control group.

**Ho2:** No significant gender difference exists in students' posttest achievement in word problems between the experimental and control groups.

### **Methods**

The research design adopted for the study is the non-equivalent control group pretest-posttest quasi-experimental design. The population of this study comprised 6,740 Senior Secondary School One (SS1) students in the eighty-one (81) government-owned coeducational secondary schools spread across the seven (7) LGAs in Calabar Education Zone of Cross River State. The

multistage, purposive and simple random sampling techniques were used to select a sample of 387 students representing three (3) local government areas in the Calabar Education Zone. In applying the multistage random sampling system, at the first stage, a simple random sampling technique particularly the hat and draw system was used to select three (3) Local Government Areas in Calabar Education Zone LGAs for the study. At the second stage, for each of these three (3) randomly selected LGAs, simple random sampling technique was used to select the secondary schools that will participate in the study. At the third stage, simple random sampling technique was further used to choose the schools that will form the experimental and control group in the study. At the final stage all the students in SS1 in each of the randomly selected schools in the LGAs were used for the study.

The experimental or treatment class was exposed to Mathematics operators instruction for solving word problems while the control class was exposed to normal word problem class otherwise called conventional method. This sampling procedure was deemed appropriate for this study in that it allowed the researcher to have a representative sample of the Local Government Areas that make up Calabar Education Zone for adequate prediction and generalization.

**Table 4: Sample distribution of the participants of this study**

S/N	LGA	Number of schools	The number of schools that met the criteria.
1	Odukpani	11	1
2	Calabar South	15	3
3	Calabar Municipal	12	2
Total number of schools selected			6

**Table 5: Number of SS1 students in each of the purposively selected schools for the study.**

S/N	LGA	Schools	No of students	Total Selected
1	Odukpani	A	52	52
2	Calabar South	B	82	212
		C	67	
		D	63	
		Sub-total		
3	Calabar municipality	E	50	123
		F	73	
		Sub-total		
Total				387

The instrument used for data collection was an achievement test titled: The Students Mathematics Achievement Test (SMAT), consisting of three (3) sections. Section one (1) consists of students' demographic information, and section two (2) consists of five (5) items designed and organised to measure students' ability to express basic mathematics operators and their interpretation. Section three (3) of the Students Mathematics Achievement Test (SMAT) was a teacher-made test which will consisted of fifty (50) multiple-choice items drawn from the SS1 mathematics curriculum/syllabus and covers the following core area of Senior Secondary School Mathematics; 1. Algebra, 2. Arithmetic, 3. Geometry, 4. Everyday statistics

The instrument received face and content validity from two experts in Mathematics Education and one expert in Research, Measurement and Evaluation, all in the Faculty of Education, University of Calabar, Calabar, who vetted the items for clarity and relevance. The instrument

was trial tested using twenty (20) SS1 students outside the sample used for the research. The result obtained from the trial testing was used to determine the reliability coefficient for SMAT. The internal consistency reliability coefficient of 0.90 was determined using Kuder Richardson formula 20 (KR-20)

**Result Presentation**

Hypothesis 1

The first hypothesis of this study states there is no significant difference in Mathematics achievement between students word problem taught using Mathematics operator instruction and those taught with the conventional method in Calabar Education Zone of Cross River State. The independent variable of this hypothesis is Mathematics instruction in operators while the dependent variable is students' posttest achievement in Mathematics word problems, with the pretest scores as the covariate. Analysis of Covariance (ANCOVA) was performed to test the null hypothesis at the .05 level of significance.

The descriptive result section of Table 6 reveals a higher mean achievement score in the experimental group (3.54) as against the control group (1.90). The table generally revealed that there is a significant difference in the posttest Mathematics achievement scores between students in the experimental and control group ( $F_{(1, 384)} = 306.748, p < .05, \text{partial } \eta^2 = .444$ ). However, the result indicates further that there is no significant difference in the pretest

achievement of students in word problems between the experimental and control group ( $F_{(1, 384)} = 0.964, p > .05, \text{partial } \eta^2 = .003$ ).

Based on this result, the null hypothesis was rejected while the alternate hypothesis was upheld. This implies that there is a significant difference in Mathematics achievement between students taught Mathematics word problem using Mathematics operation instruction and those taught with the conventional method

**Table 6**

Result of post-test difference in mathematics (word problem) achievement, mean and standard deviation between students taught Mathematics word problem using Mathematics operator instruction and those taught with the conventional method

Group	Mean	SD	N
Control	1.90	.936	205
Experimental	3.54	.902	182
Total	2.67	1.232	387

**Table 7**

ANCOVA results of the post-test difference in mathematics (word problem) achievement between students taught Mathematics word problem using Mathematics operator instruction and those taught with the conventional method

Source	Type III SS	Df	MS	F	Sig.	Partial $\eta^2$
Corrected Model	260.401 <sup>a</sup>	2	130.201	153.201	.000	.445
Intercept	507.851	1	507.851	599.561	.000	.610
Pretest Symbol	.817	1	.817	.964	.327	.003
Group	259.827	1	259.827	306.748	.000	.444
Error	325.268	384	.847			
Total	3343.000	387				
Corrected Total	585.664	386				

a R Squared = .445 (Adjusted R Squared = .442)

**Hypothesis 2**

The second hypothesis of this study stated that; no significant gender difference exists in students

posttest achievement in word problems between the experimental and control groups

**Table 8**

Independent t-test results of gender difference in Mathematics (word problem) achievement when students taught using mathematics operator instruction

Dependent variables	Gender	N	Mean	SD	MD	t	Sig.
Posttest in Mathematics language	Male	169	27.73	11.847		.11	2.11
	Female	218	24.90	11.751			

Df = 385; No. of Males = 169; No. of Female = 218

The result of the second hypothesis indicates that male students are significantly different from their female counterparts in their post-test achievement in Mathematics word problems when taught using Mathematics operators instruction  $t_{(385)} = 2.11$ ,  $MD = .11$ ,  $p < .05$ . The result of the analysis led to the rejection of the null hypothesis.

### **Discussion of findings**

The result of the first hypothesis of this study established a significant effect of mathematics operators' instruction on students' achievement in word problems. This result is not surprising since there was a significant difference in the posttest achievement of students in the experimental group and control group. Before the treatment, no significant difference was recorded in the pretest. This implies that the treatment offered to the experimental group played a crucial role in improving their knowledge of Mathematics operators, which contributed 44.4% (partial  $\eta^2 = .444$ ) to their achievement in the word problem. This finding is not surprising because, for effective solving of word problems, there is a need to understand the usage of mathematical operators. These play a part in enabling the student to translate grammatical statements into Mathematical expressions. This study supports the finding of Aina (2013), who stated that understanding of Mathematics operations influences comprehension of lessons, assignments, and tests especially in solving word problems, a lack in understanding of Mathematical operational language affects

individual capabilities to solve problems being that Mathematics is a subject written and spoken with its own specialized and peculiar language using operators as its major connectives to give statements and sentences meaning, particularly when used in classroom situation. And the study of Blessman and Myszcza (2001), who examined the impact of one of the four identified causes of confusion and difficulties in Mathematics language as the use of Mathematics operators. During word problems solving students write numbers, using one or more Mathematical operations, but they do not know exactly how to use the operators properly, most often students compute numbers with the appropriate operations but cannot manipulate the operators to provide the required answers to the problems. Given these points, raised from the study, difficulties presented to students in word problem solving can be solved by devising different student strategies and activities.

The result from the second hypothesis of this study also revealed that gender plays a significant role in moderating the effect of mathematics operator instruction on students' achievement in word problems. This result is so because male students differed significantly from their female counterparts. The significant difference in gender achievement is due to perceived male students' proficiency in Mathematics in addition to the treatment offered to them. This implies that male students have a better knowledge of Mathematics operators, specifically in solving word problems than females when taught using Mathematics

operator instruction. An explanation for this result may be the general perception that male students are better in science-oriented subjects than females, who are often believed to be better in languages. This agrees with Esuong and Edoho's (2018) results that girls tend to perform better in overall school achievement than boys but perform less than boys in Mathematics. Furthermore, it has been reported that boys are better than girls in Mathematics and other science subjects (Aremu, 1999), while Georgius and McConell (2008) found that girls outperformed boys in some other subjects.

### **Conclusion**

Based on the findings of this study, it was concluded that Mathematics operator instruction plays a significant role in promoting students' achievement in word problems in senior secondary schools and in promoting national computational literacy amongst students. Students exposed to the mathematics operation instruction tend to achieve better than those not exposed to the treatment or instruction in word problems. This finding implies that exposing senior secondary school students to quality teaching of Mathematics operation will enable them to decode word problems, translate same into appropriate Mathematical expressions, and apply the proper procedures and operators in solving them. A student's gender affects the student's achievement in word problems when taught using the Mathematics symbols instruction.

Practically, the study has also revealed the need for Mathematics teachers to pay close attention to developing their skills to master the Mathematics operators instructional approach and use the same to teach word problems in secondary schools to boost students' Mathematics achievement in norm-referenced, criterion-referenced or high stakes examinations beyond word problems. This research has opened new paths for prospective related studies to be anchored.

### **Recommendation**

Based on the study's conclusion, it is recommended that mathematics teachers concentrate on demystifying the abstraction in mathematics by interpreting mathematical statements and sentences into their operational notations before engaging in their computation. Students should first be taught the operators of mathematics properly, enabling them to make adequate and appropriate interpretations of word problems.

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**An Examination of the Conventional Health Literacy Primer Used in City Women Center Kano State Agency for Mass Education**

By

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**Abstract**

This study examined the conventional health literacy primer used by the participants in City Women Center Kano State Agency for Mass Education in Kano Municipal Local Government Area Kano State. The objectives were to examine the content of the identified conventional literacy primer, which contains maternal health issues and to determine the effectiveness of the identified conventional literacy primer in City Women Center Kano State Agency for Mass Education. In line with objectives two research questions were raised. The research adopted survey design. The population consisted of all the 181 post literacy participants of the center. A sample of 123 participants was drawn through simple random technique. The research instrument used was a questionnaire (PRQ). The instrument was validated by experts from the Department of Adult Education and Community Services (ANFE), and Nigerian Languages, Language (Harshe). The reliability of the instrument was established through test re-test method and the reliability index of 0.62 was obtained. The data was analyzed using frequency and percentages. The findings revealed that, the content of the identified conventional literacy primer containing maternal health issues, includes some aspects of maternal health, such as signs of pregnancy, antenatal visits, danger signs of pregnancy, drugs, balance diet, labor skills, breast feeding, healthy timing and spacing of the pregnancy, the data collected indicate effectiveness of the identified conventional literacy primer because participants were able to follow written health instructions related to pregnancy, learned something new and find it easy to recall health information previously read related to maternal health.

**Keywords:** *Adult literacy, conventional literacy primer, maternal health issues,*

**Introduction**

The National Commission for Mass Literacy Adult and Non-Formal Education (NMEC) was set up in 1990 by the federal government, charging it with the task of eradicating illiteracy in the country. Women are specially targeted in the programs of the commission with mass literacy classes being conducted in all nooks and crannies of the country. The commission is also responsible for the organization, monitoring, and assessment of the Adult literacy practices in the country. One of the broad objectives of the commission is to develop literacy programs with special attention to the disadvantage groups such as women, the marginalized groups, rural

dwellers and the out-of-school children among others. On the other hand, one of the functions of the commission is developing and disseminating learning and instructional materials in non-formal education programs aimed at promoting literacy level among all the target groups.

Kano State Agency for Mass Education was created in April 1980 as an autonomous body by an Edict No. 5 of 1981 with primary aim of eradicating illiteracy, provision of continuing education, and serve also as a source of public enlightenment in the state. The Agency for Mass Education involved the strategy of utilizing confined places called women centers to provide



information, knowledge and skills aimed at educating them through various non- formal education programs. The programs include basic literacy, post literacy, remedial education, vocational education and others.

City Women Center Kano State Agency for Mass Education is one of these centers which was organized and managed by Agency. Parent and family life education is one of the non- formal education programs which aimed at educating women, to offer competences and ideas about issues of concern to families, especially on reproductive matters such as pregnancy, child bearing and rearing practices, family planning, safe motherhood skills and others. Instructional materials are very important in literacy classes as they increase learners understanding, reinforce knowledge acquired, and help achieve learners needs. Instructional materials are vital for the sustenance of improved participation in literacy classes. In literacy instruction, effective use of instructional materials determine the success of learning experience.

There are different types of instructional materials for teaching literacy skills. Primer is among the standard instructional materials for imparting basic skills of reading, which is developed based on specific needs and interest of learners. The provision of primer constitute an integral part of effective adult literacy delivery.

There is a general consensus that, reading materials for adult learners that are developed in the mother tongue are more easily learned than

the materials in other languages, because it will facilitate quick understanding of the content. Therefore the primer titled “Uwa Malamar Danta”

(Mother as the first teacher of her Child) was currently used in city women center.

### **Statement of the Problem**

Instructional materials are very important in literacy classes as they increase learners understanding, reinforce knowledge acquired, and help achieve learners needs. Instructional materials are vital for the sustenance of improved participation in literacy classes. In literacy instruction, effective use of instructional materials determine the success of learning experience.

There are different types of instructional materials for teaching literacy skills. Primer is among the standard instructional materials for imparting basic skills of reading, which is developed based on specific needs and interest of learners. The provision of primer constitute an integral part of effective adult literacy delivery.

There is a general consensus that, reading materials for adult learners that are developed in the mother tongue are more easily learned than the materials in other languages, because it will facilitate quick understanding of the content. Luke (1999) opined that primers and other instructional materials are purposely build for the selection, construction and transmission of valued knowledge and practice of novices and apprentice readers and writers. Therefore the primer titled “Uwa Malamar Danta”(Mother as

the first teacher of her Child) was currently used in City Women Center and the study was Examine the conventional health literacy primer used in City Women Center Kano State Agency for Mass Education

### **Empirical Studies**

Halilu. (2017), conducted a study on Construction and Validation of Ajami Based Maternal, Neonatal and child health literacy promotion primer for adult learners in Kano State Nigeria. The study adopted triangulation mixed method research design. The population of the study consisted of 210 adult learners and 12 facilitators of the post literacy outreach classes in Kano State, and 20 MNCH, related institutions and organization in Kano.

The objectives of the study are to identify the Maternal New-born and Child Health (MNCH) learning needs of the adult learners, construct and validate an Ajami based (MNCH) literacy promotion primer, and to determine the acceptability of the health literacy promotion primer among stake holders. The findings indicated that (MNCH) adult learners needs include maternal danger sign, ANC, facility delivery, nutrition and routine immunization issues, an Ajami (MNCH) literacy promotion primer was constructed and validated using different process of validation and the Ajami based (MNCH) literacy promotion primer was found to be acceptable by (MNCH) stake holders in Kano State. The study recommends that mass education agencies and primer developers should undertake learner needs assessments before

primer publication, and it also recommends the use of Ajami scripts in all literacy activities including health promotion in the state especially that geared towards promoting quality of life of the people.

Mojoyinola. (2011), conduct a study on the influence of maternal health literacy on healthy pregnancy and pregnancy outcomes. It was carried out among 231 pregnant women and nursing mothers using the discipline survey research design of the expo-facto type. The findings of the study indicated significant positive relationships among maternal health literacy, antenatal care, and healthy pregnancy. The study also revealed a positive association between maternal health literacy and pregnancy outcomes. Therefore, it can be concluded that maternal health literacy is an important and effective tool in ensuring effective antenatal care, healthy pregnancy and success. The study recommends that there is need for pregnant women to attend antenatal care, clinic, health education and nutritional class it also behaves pregnant women with low literacy level to attend adult literacy classes in their various communication with which they can improve their literacy levels and have adequate and appropriate information about pregnancy and child birth.

### **Objectives of the Study**

The objectives of this study:

1. To examine the content of the identified conventional literacy primer, containing

maternal health issues, in City Women Center Kano State Agency for Mass Education.

2. To determine the effectiveness of the identified conventional literacy primer in City Women Center Kano State Agency for Mass Education.

**Research Questions**

The research answered the following questions:

1. What is the content of the identified conventional literacy primer which contains maternal health issues, in City Women Center Kano State Agency for Mass Education?
2. How effective is the identified conventional literacy primer in City Women Center Kano State Agency for Mass Education?

**Methodology**

The study adopted survey design. According to Babbie, (1986) cited in Fajonyomi, (2003) survey research designed is used for descriptive,

exploratory and explanatory purposes. The designed entails seeking information from a group or selected individuals otherwise known as sample about issues, events and relationships concern a larger group otherwise known as population. Survey design is used via questionnaire for the collection of data. A survey designer made use of questionnaire for the collection of information from fractional part or the entire population. Data gathered from the representative sample could be generalized on the entire population.

The population for the study comprised of all post literacy participants in the center. According to the statistics obtain The from City Women Center in 2018, there are 181 participants. This consists of the participants that attend the center in the morning, and afternoon. In the morning session, there are 40 post literacy participants (A), and 57 (B) post literacy participants, while 36 post literacy participants (A) and 48 (B) post literacy participants are attending afternoon session.

**Table 1.1 Population Table**

S/N	Participants	Population
1	Post Literacy A Morning Year 1	40
2	Post Literacy A Afternoon Year 1	36
3	Post Literacy B Morning Year 2	57
4	Post Literacy B Afternoon Year 2	48
	Total	181

Source: City Women Center

The study sampled out a total number of 123 participants out of the population from all the clusters of the post literacy program, this is based

on the advice of Kreicie Morgan and Daryle (2006). A total number of 30 and 30 were drawn from post literacy A morning and afternoon year

one, while 33 and 30 was also from post literacy B, morning and afternoon year two.

The sampling technique used in determining the size of the population of this study is simple random sampling technique. It was employed in the selection of one hundred and twenty three (123) respondents among the participants of post literacy classes in City Women Center Kano State Agency for Mass Education in Municipal Local Government Area. This is done in order to ensure proper representation of the population of the study area. In this procedure of sampling, each member of given population has an equal chance of being selected in the sample. The important point to note here is that members are independently selected (Haruna, 2010).

Questionnaire was used as an instrument for data collection, in such a way that, it is convenient for the respondents. The questionnaire was divided into "A and B", section A consists of questions aimed at obtaining information about demographic characteristics of the respondents, while section B, covered the objective area of the study. The key variables in section A are age of the participants, marital status and educational level. The last section which is section B, the key variable is the content of the identified primer, in this section the study aims to examine the areas covered, and how well the content is understood..

The questions are in clear and simple English, no ambiguity and the items are organised logically. In designing the questionnaire, close-ended format was used. The questions asked were in close-ended format.

The instrument was validated by team of experts from the Departments of Adult Education and Community Services, and Nigerian languages B.U.K.

The reliability of the questionnaire was established through test-retest method where by 30 copies of the questionnaire was distributed to the sampled adult learners in a center not targeted by this study. The center is Goron Dutse Women Center. The same questionnaire was re-administered to the same group of adult learners, after two (2) weeks interval and the results obtained was correlated with the help of Pearson Product Moment Correlation (PPMC). The reliability co-efficient obtained stood at 0.62. This showed that the instrument is reliable for the study.

## **Data Presentation and Analysis**

### **1. Research Question One**

What is the content of the identified conventional literacy primer which contains maternal health issues, in City Women Center Kano State Agency for Mass Education? This research question was analysed using frequency counts and percentage.

**Table 2.1. Content of the Identified Conventional Literacy Primer**

S/N	Contents	Frequency	Percentage	
1.	Signs of pregnancy	Yes	116	100%
		No	0	0%
		Total	116	100%
2.	Antenatal visits	Yes	89	76.7%
		No	27	23.3%
		Total	116	100%
3.	Danger sign of pregnancy	Yes	104	89.7%
		No	12	10.3%
		Total	116	100%
4.	Drugs	Yes	108	93.1%
		No	8	6.9%
		Total	116	100%
5.	Balance diet	Yes	106	91.4%
		No	10	8.6%
		Total	116	100%
6.	Labour skills	Yes	110	94.8%
		No	6	5.2%
		Total	116	100%
7.	Breast feeding	Yes	109	94%
		No	7	6%
		Total	116	100%
8.	Healthy timing and spacing of pregnancy	Yes	62	53.4%
		No	54	46.6%
		Total	116	100%
		<b>Rating the content of the identified conventional literacy primer</b>		Moderate
		Good	48	41.3%
		Very good	38	32.8%
		Total	116	100%

Source: Field Survey, 2018

Table 2.1 above indicated that, 100% (116) of the respondents, said yes the areas/content of the identified conventional literacy primer, covered signs of pregnancy. 76.7% (89) of the respondents said yes the areas/content of the identified conventional literacy primer, covered antenatal visits while 23.3% (27) said no. 89.7% (104) of the respondents answer yes that the areas/content of the identified conventional literacy primer, covered danger signs of pregnancy while 10.3% (12) answer no. Moreover, 93.1% (108) of the respondents

responded yes, that the areas/content of the identified conventional literacy primer, covered drugs while 6.9% (8) responded no, 91.4% (106) said yes the areas/content of the identified conventional literacy primer, covered balance diet while only 8.6%(10) said no. 94.8% (110) said yes the areas/content of the identified conventional literacy primer covered labour skills while 5.2% (6) said no. Moreover, 94% (109) said yes the areas/content of the identified conventional literacy primer, covered breast feeding, while 6% (7) said no, and 53.4% (62)

said yes, the areas/content of the identified conventional literacy primer, covered healthy timing and spacing of pregnancy while 46.6% (54) said no. 25.9% (30) rated the content of the identified conventional literacy primer moderate, 41.3% (48) rated the content of the identified conventional literacy primer, good while 32.8% (38) rated the content of the identified conventional literacy primer very good. From the above interpretation, 100% of the respondents have been aware of the identified conventional

literacy primer. According to the data collected, recorded 71.6% high level of understanding the content while 41.3% recorded moderate level of understanding of the content. This indicates the significant level of awareness and understanding.

**2. Research Question Two**

How effective is the identified conventional literacy primer in City Women Center Kano State Agency for Mass Education? This research question was analysed using frequency counts and percentages.

**Table 3.1: Effectiveness of the Identified Conventional Literacy Primer**

S/N	Items	Yes		No		Total	
1.	Are you able to follow written health instructions related to pregnancy?	109	94	7	6	116	100
2.	Did you find it easy to recall health information previously read related to maternal health?	106	91.4	10	8.6	116	100
3.	Did you explain with ease health information learned to others?	101	87.1	15	12.9	116	100
4.	Are you be able to follow written health instruction related to pregnancy and apply it?	82	70.7	34	29.3	116	100
5.	Did you learn any life skills related to health after being taught with identified conventional literacy primer?	82	70.7	34	29.3	116	100

Source: Field Survey, 2018

Table 3.1 above indicates that 94%(109) of the respondents said yes they can be able to follow written health instructions related to pregnancy while 6%(7) of the respondents said no. 91.4%(106) of the respondents said yes they find it easy to recall health information previously read related to maternal health while 8.6%(10) of the respondents said no. 87.1%(101) said yes they can explain with ease health information learned to others while 12.9%(15) said no. 70.7%(82) said yes they can be able to follow written health instructions related to pregnancy and apply it, while 29.3%(34) of the respondents said no.

70.7%(82) of the respondents responded yes, they have learnt life skills related to health after being taught with conventional literacy primer while 29.3% (34) of the respondents said no. The interpretation above indicates that, 91.4% of the respondents find it easy to recall health information previously read related to pregnancy while 70.7% learned life skills related to health after being taught with the identified conventional literacy primer. This implies the effectiveness of the identified conventional literacy primer.

### **Findings and Discussions**

The findings of table 2.1 revealed that, the content of the identified conventional literacy primer which contains maternal health issues in City Women Center Kano State Agency for Mass Education, includes some aspects of maternal health, such as signs of pregnancy, antenatal visits, danger signs of pregnancy, drugs, balance diet, labour skills, breast feeding, healthy timing and spacing of the pregnancy. Therefore the findings showed that the content of the identified conventional literacy primer covered prenatal care, antenatal care, and postnatal care. The findings is in line with the assertion by Luke (1999), who opined that primers and other instructional materials are purposely build for the selection, construction and transmission of valued knowledge and practice of novices and apprentice readers and writers

The findings of table 3 on how effective is the identified conventional literacy primer in City Women Center Kano State Agency for Mass Education. The data collected indicates the effectiveness of the identified conventional literacy primer, because 94% of the participants were able to follow written health instruction related to pregnancy. From the analysis 92.2% the respondents learned something new after reading identified conventional literacy primer, 91.4%, find it easy to recall health information previously read related to maternal health. 87.1% from the respondents can explain with ease health information learned to others, while 70.7% of the

respondents can be able to follow written health instructions related to pregnancy and apply it. Similarly 70.7% of the respondents learned life skills related to health after being taught with the identified conventional literacy primer. The findings showed that, the identified conventional literacy primer was adjudged to be effective as learners can read, recall, follow and use the written health information.

The above data indicates that all listed are generally effective, also the finding is in line with the opinion of Kiskbush, (2001) who opined that, in health care settings, that literacy also refers to capacity to read and have basic numeric skills (the three Rs). However, it has moved away from this simple definition to one that accounts for complexity, culture, individual empowerment and community development.

### **Conclusion**

The research was on the examination of the conventional health literacy primer used in city women center Kano state agency for mass education. The study was designed to achieve the main objectives of examining the content of the identified conventional literacy primer which contains maternal health issues, and the effectiveness of the identified conventional literacy primer in City Women Center Kano State Agency for Mass Education. The study indicated the role played by conventional literacy primer in promoting maternal health. The study was found effective and relevant to the participants as indicated from the findings, the majority of the

participants were able to apply knowledge gained into practice.

**Recommendations**

There is a need to expand the content of the identified conventional literacy primer to include, the issues of miscarriage, family planning process, issues of HIV/AIDS,

prevention, transmission from mother to child, and management process.

There is a need for a regular review of the content to integrate missing essential aspects, such as new health issues arises this will make the primer current and remained effective.



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## **Strategies for Enhancing National Economic Development in Nigeria Through Entrepreneurship Education**

By

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### **Abstract**

The paper x-rays the economic challenges facing Nigeria due to absence of robust entrepreneurship education in Nigeria despite the abundant natural resources in every facets of the country. The paper has the following objectives; Challenges of Economic Development in Nigeria, Entrepreneurship Education, Objectives of Entrepreneurship Education in Nigeria, The Role of Entrepreneurship, Education in Economic Development and Strategies for Enhancing National Economic Development. The paper explain that the 21<sup>st</sup> century skills as a result of Entrepreneurship education has emerged as a potential catalyst for economic growth and development in the country. The paper use systematic review as the methodology of research mapping out the strategies to be adopted using entrepreneurship education can serve as traction address unemployment, poverty, and economic stagnation. The paper also identify those challenges that have prompted policymakers and educators to explore innovative solutions, by incorporating entrepreneurship education into the teaching of students and youths in tertiary institutions and skills acquisition centres. The paper concludes By fostering an entrepreneurial mindset and providing practical skills, can lead to the creation of new businesses and employment opportunities. Furthermore, the paper recommends that entrepreneurship education can stimulate innovation and enhance the global competitiveness of Nigerian businesses. By empowering individuals to create sustainable livelihoods, it can also contribute to poverty alleviation efforts.. Provide keywords

### **Introduction**

Today, it is evident to note that, Nigeria faces significant economic challenges despite its vast natural resources. Entrepreneurship education has emerged as a potential catalyst for economic growth and development in the country. This concept has gained traction as a means to address unemployment, poverty, and economic stagnation. Nigeria, Africa's most populous nation and largest economy, possesses abundant natural resources, including oil, gas, and various minerals. However, the country grapples with issues such as high unemployment rates, particularly among youth, income inequality, and over-reliance on the oil sector (Oyedepo, 2012). These challenges have prompted policymakers and educators to explore innovative solutions, with entrepreneurship education gaining

prominence. Entrepreneurship education aims to equip individuals with the knowledge, skills, and mindset necessary to identify opportunities, create value, and launch successful ventures. In Nigeria, this approach has been increasingly integrated into formal and informal educational systems. Many Nigerian universities have incorporated entrepreneurship courses into their curricula. For instance, the National Universities Commission (NUC) mandated all higher education institutions to include entrepreneurship education as compulsory course for all students, regardless of their field of study (Akhuemonkhan, Raimi & Sofoluwe, 2013).

Technical and vocational education and training (TVET) institutions have also embraced entrepreneurship education to

enhance the employability and self-employment prospects of their graduates (Okolie, Nwosu & Mlanga, 2019). Additionally, various non-governmental organizations (NGOs) and government initiatives offer entrepreneurship training programs targeting youth, women, and other marginalized groups (Arogundade, 2011). The potential benefits of entrepreneurship education in Nigeria are numerous. By fostering an entrepreneurial mindset and providing practical skills, it can lead to the creation of new businesses and employment opportunities (Olorundare & Kayode, 2014). Encouraging entrepreneurship across various sectors can help reduce Nigeria's dependence on oil exports and promote a more diverse and resilient economy (Ebiringa, 2012). Furthermore, entrepreneurship education can stimulate innovation and enhance the global competitiveness of Nigerian businesses (Adejimola & Olufunmilayo, 2009). By empowering individuals to create sustainable livelihoods, it can also contribute to poverty alleviation efforts (Ogundele, Akingbade, & Akinlabi, 2012).

Despite the promise of entrepreneurship education in Nigeria, several challenges hinder its full potential, including inadequate funding, limited access to credit, infrastructural deficiencies, and a lack of practical training approaches (Eze & Nwali, 2012). To address these issues, stakeholders should enhance collaboration between educational institutions and the private sector to ensure curricula meet industry needs and provide internship opportunities (Gabadeen & Raimi, 2012). Improving access to finance through

microfinance, government grants, and private sector partnerships is essential (Ihugba, Odii, & Njoku, 2013). Additionally, investing in digital infrastructure and promoting technology-driven entrepreneurship can leverage the global digital economy (Okunuga & Ajeyalemi, 2018). Addressing sociocultural barriers, especially for women and certain ethnic groups, is also crucial (Akinbami & Aransiola, 2016). Successful entrepreneurship education will depend on overcoming these systemic challenges to create an environment conducive to innovation and self-reliance, enabling Nigeria to harness its human capital for sustainable economic growth..

### **Objectives of the Study**

1. To identify key Challenges of Economic Development in Nigeria,
2. To Analyze Entrepreneurship Education,
3. To Assess Education in Economic Development
4. To propose Strategies for Enhancing National Economic Development

### **Literature Review**

#### **Challenges of Economic Development in Nigeria**

##### 1. Inadequate Infrastructure

Inadequate infrastructure poses a significant challenge to economic growth and development. Poor infrastructure, including inadequate transportation networks, unreliable electricity supply, and insufficient water and sanitation facilities, hampers industrial productivity and reduces the quality of life for citizens. According to a report by the World Bank (2023), countries with insufficient

infrastructure face higher operational costs and inefficiencies, which deter both domestic and foreign investment. For instance, in sub-Saharan Africa, unreliable electricity supply results in frequent power outages, which significantly disrupt business operations and reduce economic output (Eberhard et al., 2023). Improving infrastructure is crucial for facilitating trade, enhancing connectivity, and fostering sustainable economic development.

#### 2. Overdependence on Oil Exports

Overdependence on oil exports can make an economy vulnerable to volatile global oil prices, leading to economic instability and hindering long-term growth. This phenomenon, known as the "resource curse," often results in neglect of other sectors and impedes economic diversification (Ross, 2023). Countries that rely heavily on oil exports may experience significant economic downturns during periods of low oil prices, as seen in Nigeria's economic struggles during the 2014-2016 oil price collapse (OPEC, 2023). Diversifying the economy by investing in agriculture, manufacturing, and services is essential to mitigate the risks associated with oil dependence and promote sustainable growth (Auty, 2023).

#### 3. Corruption and Poor Governance

Corruption and poor governance are major impediments to economic development and social progress. Corruption undermines public trust, distorts markets, and diverts resources away from essential public services and infrastructure projects. According to Transparency International (2023), countries with high levels of corruption often experience

slower economic growth, lower investment rates, and increased poverty and inequality. Poor governance, characterized by weak institutions, lack of accountability, and ineffective legal frameworks, exacerbates these issues and impedes the efficient allocation of resources (Kaufmann & Kraay, 2023). Strengthening governance structures, promoting transparency, and implementing anti-corruption measures are crucial for fostering economic development and improving public welfare.

#### 4. Skill Mismatch in the Labor Market

A skill mismatch in the labor market occurs when the skills of the workforce do not align with the needs of employers, leading to high unemployment rates and reduced economic productivity. This issue is particularly prevalent in developing economies, where educational systems often fail to equip students with relevant, in-demand skills (McGuinness et al., 2023). For example, in many African countries, a significant portion of graduates is trained in fields with limited job opportunities, while sectors like information technology and engineering face shortages of skilled workers (Adams, 2023). Addressing skill mismatches requires reforming educational curricula, enhancing vocational training programs, and fostering stronger collaborations between educational institutions and industry (OECD, 2023). By aligning education and training with market demands, economies can enhance employability, boost productivity, and support sustainable economic growth.

### **Entrepreneurship Education**

Entrepreneurship education involves teaching individuals the knowledge and skills needed to develop and manage businesses. This type of education is crucial for fostering innovation, creating job opportunities, and driving economic growth (Ahmed & Jones, 2024). Programs in entrepreneurship education typically cover topics such as business planning, financial management, marketing, and leadership. They also emphasize critical thinking, problem-solving, and risk management (Williams & Kim, 2024). By equipping students with entrepreneurial skills, these programs aim to empower them to start their own ventures and contribute to the economy (Johnson & Lee, 2023). Additionally, entrepreneurship education can promote social entrepreneurship, which addresses social issues and contributes to community development (Smith & Brown, 2023).

### **The Role of Entrepreneurship Education in Economic Development**

New venture creation is essential for stimulating economic growth by introducing innovative products, services, and business models. Startups and small businesses are pivotal in driving innovation, generating jobs, and fostering competition, which in turn enhances efficiency and productivity across various industries. Research by Audretsch and Keilbach (2023) highlights that regions with higher entrepreneurial activity often experience accelerated economic growth and increased employment levels. By creating an environment conducive to entrepreneurship, governments and institutions can effectively leverage new

ventures to significantly boost economic development.

Entrepreneurship also serves as a catalyst for innovation and technological progress. Entrepreneurs frequently lead the development of new technologies and inventive solutions, addressing unmet needs and refining existing products and services. As Schumpeter (2023) describes, this process of "creative destruction" involves replacing outdated technologies and business models with more efficient alternatives, crucial for economic advancement and global competitiveness. Additionally, entrepreneurship enhances resource utilization by transforming raw materials into valuable products, as noted by Porter (2024). This value addition boosts industry productivity, fosters new market development, and stimulates further investment and innovation. Furthermore, entrepreneurial activities improve productivity and competitiveness by introducing new processes and technologies, as Baumol (2023) indicates. This competitive environment drives existing firms to innovate, optimizing their operations and contributing to overall economic efficiency.

### **Strategies for Enhancing National Economic Development**

#### **1. Integrate Entrepreneurship Education into All Levels of the Education System**

Integrating entrepreneurship education into all levels of the education system is crucial for cultivating an entrepreneurial mindset from an early age. By incorporating entrepreneurship courses and activities into the curricula of primary, secondary, and tertiary education, students can develop critical skills such as

creativity, problem-solving, and resilience. Programs that emphasize hands-on learning, such as business simulations, startup projects, and collaboration with local businesses, can provide practical experience and inspire students to pursue entrepreneurial ventures (Neck & Greene, 2024). Educators should be trained to deliver entrepreneurship education effectively, and partnerships with industry professionals can enhance the relevance and impact of these programs (Fayolle & Gailly, 2023).

## 2. Establish Incubation Centers and Mentorship Programs

Establishing incubation centers and mentorship programs is vital for supporting aspiring entrepreneurs. Incubation centers provide startups with essential resources, including office space, technical support, and access to networks of investors and business experts. These centers can significantly reduce the initial costs and risks associated with starting a business (Isenberg, 2023). Mentorship programs connect entrepreneurs with experienced mentors who offer guidance, share insights, and help navigate the challenges of business development. Such support systems can enhance the success rates of startups by providing strategic advice, fostering accountability, and facilitating valuable connections (St-Jean & Audet, 2024).

## 3. Improve Access to Finance for Startups and SMEs

Improving access to finance for startups and small and medium-sized enterprises (SMEs) is essential for fostering innovation and economic growth. Financial barriers often hinder the

ability of new businesses to scale and compete effectively. Governments and financial institutions can address this issue by offering grants, low-interest loans, and venture capital funds tailored to the needs of startups and SMEs (Klapper & Love, 2023). Additionally, developing alternative financing options such as crowdfunding and peer-to-peer lending can provide entrepreneurs with diverse funding sources (Belleflamme et al., 2023). Establishing clear policies and support mechanisms can also encourage private investment in early-stage companies.

## 4. Create an Enabling Environment for Business Growth

Creating an enabling environment for business growth involves implementing policies and regulations that support entrepreneurship and reduce bureaucratic obstacles. Simplifying business registration processes, ensuring property rights, and providing tax incentives can make it easier for entrepreneurs to start and grow their businesses (Djankov et al., 2023). Governments should also invest in infrastructure development, including reliable internet access, transportation networks, and utilities, to create a conducive environment for business operations (World Bank, 2023). Furthermore, fostering a culture that celebrates entrepreneurship and innovation through public awareness campaigns and recognition programs can inspire more individuals to pursue entrepreneurial ventures. There is the need to provide more critical analysis with concrete evidences or examples of how entrepreneurship education have practically solve economic development in other part of

the world to serve as a lesson to be learnt by Nigeria.

### **Methodology**

The study employed a systematic review methodology to analyze existing research on strategies for enhancing national economic development in Nigeria through entrepreneurship education. Through an analysis of peer-reviewed journals, government reports, and worldwide publications, the study established important solutions and obstacles. Sources were selected based on inclusion criteria, focusing on works published between 2010 and 2024 and relevant to entrepreneurship education and economic development. Data from these studies were extracted and analyzed using thematic content analysis, with findings categorized into themes such as entrepreneurial skills development and policy recommendations. Ethical guidelines were followed, and the study acknowledged limitations, including the potential lack of recent or region-specific data.

### **Results and Discussion**

The findings from the systematic review of existing literature revealed several key strategies for enhancing national economic development in Nigeria through entrepreneurship education. These strategies were derived from a wide range of studies that explored the role of entrepreneurship education in addressing economic challenges and fostering growth in developing nations like Nigeria.

#### **1. Entrepreneurial Skills Development**

Entrepreneurial education plays a crucial role in equipping students with the necessary skills to

start and manage businesses, thereby contributing to economic development. Studies emphasized that curricula focusing on practical skills, innovation, and problem-solving were more effective in preparing graduates for the demands of entrepreneurship (Izedonmi & Okafor, 2010). The development of entrepreneurial skills was found to significantly impact youth employment rates and contribute to reducing poverty levels. Entrepreneurship education programs that incorporated hands-on training, mentorship, and real-life business scenarios had more success in fostering graduates capable of launching and sustaining small enterprises, particularly in regions with high unemployment (Adeyemo & Adeleye, 2012).

#### **2. Policy Recommendations and Institutional Support**

Government policies and institutional frameworks were identified as critical to the success of entrepreneurship education in enhancing economic development. Effective policies included those that provided funding for startups, facilitated access to business development services, and ensured the availability of mentorship programs (Yahya & Bello, 2020). The Nigerian government's National Policy on Education highlights entrepreneurship education as a key component in developing the workforce, but gaps still exist in its implementation. The study found that regions with stronger institutional support—through partnerships between universities, the private sector, and government agencies—reported higher rates of entrepreneurship success among graduates (Osakwe, 2019).

### 3. Challenges and Gaps in Entrepreneurship Education

While entrepreneurship education holds potential for enhancing national economic development, several challenges hinder its effectiveness. One significant issue is the inadequacy of resources and facilities in tertiary institutions, which limits students' exposure to practical entrepreneurial experiences (Agwu, 2014). Furthermore, many educational institutions in Nigeria still rely on theoretical models of entrepreneurship, without sufficient focus on real-world applications. Studies pointed out that without substantial improvements in infrastructure, including laboratories, business incubators, and technological tools, entrepreneurship education would continue to fall short of its potential impact (Ekpoh, 2017).

### 4. Economic Impact and Job Creation

The review highlighted that entrepreneurship education has been successful in promoting job creation and reducing dependency on formal employment in the Nigerian economy. Small and medium-sized enterprises (SMEs), often initiated by graduates of entrepreneurship programs, play a significant role in economic growth, particularly in sectors such as agriculture, technology, and retail (Ezeani & Izuagba, 2014). Graduates equipped with entrepreneurial skills were found to be more likely to start businesses that contribute to local and national economic development by creating jobs and increasing economic activities in their communities (Ediagbonya, 2013). However, it was noted that the impact of entrepreneurship education on economic development could be

further enhanced if programs were better aligned with the specific needs of Nigeria's diverse economic sectors (Inegbenebor, 2017).

### 5. Importance of Continuous Curriculum Development

A recurring theme across the reviewed studies was the importance of continuously updating the curriculum for entrepreneurship education to reflect the changing dynamics of the global and local economy. Programs that were adaptive to new technologies, emerging industries, and global business trends were seen as more effective in preparing students for real-world entrepreneurship (Nwangwu, 2007). The need for integrating technology and digital tools into entrepreneurship curricula was emphasized, as digital entrepreneurship is an increasingly important driver of economic development (Obi, 2019).

### **Conclusion**

Entrepreneurship education holds significant potential for advancing Nigeria's economic development by fostering innovation, creativity, and resilience among its youth. Integrating entrepreneurship education throughout the education system equips students with the skills to seize opportunities, manage risks, and build successful businesses from an early age. To support this, Nigeria must address challenges like inadequate infrastructure, dependence on oil exports, corruption, and skill mismatches. Implementing a national entrepreneurship policy could streamline processes and provide incentives for business creation. Enhancing teacher training, establishing industry partnerships, and creating incubation centers



can bridge the gap between theory and practice, while improving access to finance and promoting digital entrepreneurship will enable Nigerian entrepreneurs to access global markets and drive economic diversification. Despite the promise, the systematic review found that challenges such as outdated curricula and insufficient practical training need to be addressed through targeted policies and resource allocation to fully realize the benefits of entrepreneurship education for sustainable economic growth.

### **Recommendations**

Based on the identified strategies for enhancing national economic development in Nigeria through entrepreneurship education, the following recommendations are proposed:

1. Schools should develop and implement comprehensive entrepreneurship curricula that focus on practical skills, innovation, and problem-solving.
2. Government should establish and enforce robust national policies that support entrepreneurship education and provide a conducive environment for business development.
3. Invest in improving the infrastructure of educational institutions, including the development of laboratories, business incubators, and technological tools.
4. Develop and promote financial mechanisms such as grants, low-interest loans, and alternative financing options to support startups and small and medium-sized enterprises (SMEs).
5. Encourage the adoption of digital technologies and e-commerce to help Nigerian

entrepreneurs reach global markets and increase productivity.

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**The Impact of Suicidal Attempt and Depression among Students with and Without Learning Disabilities of Senior Secondary School Students in Kano State, Nigeria**

By

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**Abstract**

This paper examined the impact of suicidal attempt and depression among students with and without learning disabilities of senior secondary school students in Kano state, Nigeria. One (1) research questions and two (2) research hypothesis were set to guide the conduct of the study. An ex post facto design was adopted. The total population of the study consisted of, 107,084SS II students. A sample size of 381 students was selected using multi stage sampling technique. Beck Depression Inventory (BDI) and Beck scale for suicidal ideation (BSSI) were used to collect data. The instruments were validated using face and construct validity, after pilot testing the properties of the instrument showed a high reliability coefficient of 0.79 for Beck Depression Inventory and 0.83 for Beck Scale for Suicidal Ideation (BSSI) respectively. The data collected were analysed using descriptive and inferential statistics, at descriptive level, mean, standard deviation were used and at inferential Pearson Product moment correlation (PPMC) and t-test (independent sample), were used at 0.05 level of significance. The result of the findings revealed that low self-esteem, academic stress, problems with romantic relationships, poor economic background and trouble at home, are responsible for depression and suicidal attempt among students with and without learning disabilities. It was also disclosed that there is a weak positive correlation between depression and suicidal attempt in students with and without learning disabilities. The r-value is 0.14 while  $p = .006$ ,  $p < .05$  indicating significant relationship between depression and suicidal attempt in students with and without learning disabilities. In line with findings of the study the researcher recommended that multidisciplinary approach should be employed to support students with depression and suicidal ideation, mental health experts, for example, school psychologists, behavior analysts, and professional counselors should be available in schools to assist students to manage or overcome distress that may interfere with their overall mental health development.

**Keywords:** *Suicidal attempt, depression, mental health, disabilities*

**Introduction**

Suicidal attempt can be defined as having thoughts of committing suicide. Suicidal ideation is an important predictor of suicide attempts and completed suicides, and is a marker of other mental health problems among the youth. The World Health Organization (WHO) report of the year 2021 revealed that suicide is the second leading cause of death among 15–29 year olds worldwide, constituting a major public health problem. Suicide has been recognized as a major

public health problem with high burden in low and middle income countries. Suicide has long lasting psychological trauma on friends and relatives in addition to loss of economic productivity. Globally, suicidal behaviour is seen as a growing public health problem, Suicidal thought negatively impacts the quality of life, physical, and mental well-being of the students. suicidal ideation has been reported as an important risk factor for suicide. It is also

associated with a subsequent risk of attempting suicide. In the general population, a suicide attempt is the most important risk factor for suicide, and the risk of suicide increases with the number of attempts. According to a systematic review, around one third of adolescents aged 12-20 years have reported suicidal ideation Pandey, (Bista, Dhungana, Aryal, Chalise and Dhimal 2019).

According to a Global School-based Health Survey conducted in Benin in (2009), Many factors can lead an adolescent to suicidal behavior and these factors can be divided into two categories psychological problems (loneliness, worry, hopelessness) and social-environmental factors such as low, or lack of, parental or peer support, harmful alcohol and drug use, smoking and being bullied or sexually abused. As mentioned, psychological problems and social-environmental factors related to an individual's life history are the main risk factors for suicide. In contrast, parental support, supervision, understanding adolescents' problems and worry, and peer support at schools have all been recognized as protective factors against suicidal ideation. Social, psychological, cultural and many other factors can interact to increase the risk of suicidal behaviour, but the stigma attached to suicide means that many people who are in need of help feel unable to seek it. Risk factors for suicide include previous suicide attempts, mental health problems, harmful use of alcohol, drug use, job or financial loss, relationship breakdown, trauma or abuse, violence, conflict or

disaster, and chronic pain or illness (WHO, 2014.) it was discovered that deaths by suicide have received little or no recognition with most cases mistakenly labeled as an accident or another cause of death. Also, due to its sensitive nature and associated stigma around it, suicide is occasionally not acknowledged or reported. Suicidal attempts in form of self-harm are significantly more common than actual suicide and are thought to occur between 10 and 20 times more frequently. About 3 out of every 1000 adults worldwide report trying to commit suicide each year, according to estimates. A lifelong attempt at suicide is made by about 2.5% of the population (Tolulope, Olutayo, Babatunde and Adesanmi 2019).

Globally, 4.4% of the world's population was estimated to be suffering from depression. It can either be recurrent or long-standing and significantly impairs an individual's ability to function and cope with daily life. It is not the same as simple grief, bereavement or mourning mood, as these are appropriate emotional responses towards unwanted circumstances. Depression is the leading cause of disability and is a major contributor to the total global burden of disease. Although depression can be found across all age groups, it has been found that there are different and diverse manifestations of this mental disorder.(WHO, 2014.)

It was also discovered that during adolescence and adulthood, self-esteem is said to have a substantial impact on crucial life outcomes such as health and social results. Higher self-esteem is

linked to favorable outcomes such as stronger social relationships, a sense of well-being, favorable peer evaluations, academic accomplishment, and good coping abilities. Low self-esteem on the other hand has been linked with depression, substance misuse, antisocial behavior, and suicide. Majority of the participants in this study had good self-esteem, but some students still had low self-esteem. According to Aryana, (2010) high self-esteem is linked with good academic performance but low self-esteem is linked with poorer outcomes among school students. Screening for poor self-esteem in adolescents could be a useful technique for identifying young adults who are at risk of anxiety, depression, or suicide.

In African setting, it is strongly believed that a person who commits suicide is under a spell or a curse. Families whose members commit suicide are also sometimes stigmatized. Children and young adults in the African setting are to be seen and not heard by adults. As such, they are, most of the time, not free to discuss their feelings or problems with adults. This lack of freedom may also hinder them from discussing their thoughts with their family or peers. Due to this, it is obvious then that little information is available on suicidal ideation, suicide plans and attempts in Nigeria. Mental health problems, suicidality or suicidal behaviours is limited in Nigeria due to certain reasons. Attempting or committing suicide is regarded as taboo and these acts are discussed in hushed tones. When information is sought about an individual who has committed

suicide in a family, family members will often deny that the reason for death is suicide. Cultural or traditional beliefs in some families such as the need to perform certain rituals before a person that has committed suicide is buried also hampers information on suicide. Some families keep silent about family members who have committed suicide because they may sometimes not want to partake in such rituals that expose their family member as having committed suicide. From the religious point of view, it is believed in some quarters that anybody who commits suicide will go to hell. Hence, a person who wants to commit suicide may give no hint about committing suicide so as not to be dissuaded by religious authorities (Edwards, 2018).

Nigerian students have one of the highest rates of suicidal ideation and attempts. These rates and attempts are comparable to those of other developing countries and higher than developed countries. Suicidal attempt and depression are serious mental conditions that put those affected at risk for attempted suicide or suicide. Nigeria is not known to have a data bank where information on depression and suicidality among students with and without learning disabilities can be accessed. Lack of information on depression and suicidality in Nigerian students is due to religious, cultural and traditional beliefs. Researches on depression and suicidality in Nigeria will provide statistics that can guide mental health experts and related professionals on how to overcome these problems. Students, with or without learning disabilities, need to be

assisted to overcome factors that predispose them to depression and suicidal ideation so that they will not go on to attempt or commit suicide.

### **Research Questions**

1. What are the factors responsible for depression and suicidal attempt in students with and without learning disabilities among senior secondary school students in Kano state?

### **Research Hypothesis**

1. **H<sub>01</sub>:** There is no significant relationship between depression and suicidal attempt in students with and without learning disabilities among senior secondary school students in Kano state?
2. **H<sub>02</sub>:** There is no significant difference in the depression and suicidal attempt of male and female with and without learning disabilities among senior secondary school students in Kano state.?

### **Methodology**

Ex-post factor research design was adopted for this study. The population of the study comprised all the 107,084 senior secondary school students' SS II in public secondary schools in Kano States. (Kano State Senior Secondary School Management Board, 2022) The students comprised of both male and female who came from urban and rural areas of the states, whose ages range between 16 to 20.

A total of three hundred and eighty-one (381) students were selected (by using Research

Advisors (2006) tool for determining Sample Size to determine the samples for the study. Multistage sampling technique was used in selecting the sample of this study. Out of this sample 199 were males and 182 were females. Convenience sampling was used in this study, because all the students who expressed willingness participated in the study. Two instruments were employed for the study Beck Depression Inventory (BDI) adopted from Beck A.T (1996) which consisted of 21 items and Beck scale for suicidal ideation (BSSI) that consisted of 18 items.

The instrument was validated by the expert in test and measurement and educational psychology for the purpose to ascertain face and convergent validity. Cronbach Alpha was used during the pilot study and yielded the reliability coefficient of 0.79 for Beck Depression Inventory and 0.83 for Beck Scale for Suicidal Ideation (BSSI) respectively. The data collected was analysed using descriptive and inferential statistics; at descriptive level, mean, standard deviation were used and at inferential Pearson Product moment correlation (PPMC) were used at 0.05 level of significance.

### **Results and Discussions**

**Research Question 1:** What are the factors responsible for depression and suicidal attempt in students with and without learning disabilities among senior secondary school students in Kano state?



**Table 1.**

*Means and Standard Deviations on Factors Responsible for Depression and Suicidal Attempt in Students with and Without Learning Disabilities*

Variables	N	Mean	SD
Low self-esteem	381	3.30	1.14
Academic stress	381	3.75	1.52
Trouble at home	381	3.51	1.33
Poor economic background	381	3.39	1.35
Problems with romantic relationship	381	3.40	1.23

Table 1 shows that the mean scores of low self-esteem, academic stress, problems with romantic relationships, poor economic background and trouble at home responses on factors responsible for depression and suicidal attempt, are the major factors responsible for depression and suicidal attempt among students with and without learning disabilities.

**1. Hypothesis 1:** There is no significant relationship between depression and suicidal attempt in students with and without learning disabilities among senior secondary school students in Kano state?

Pearson r Correlation was used to test this hypothesis at 0.05 level of significance and the result of the analysis was presented on Table 2.

**Table 2:**

*Correlation Between Depression and Suicidal Attempt in Students with and Without Learning Disabilities.*

		Depression	Suicidal
<b>Depression</b>	Pearson Correlation	1	.14
	Sig. (2-tailed)		.006
	N	381	381
<b>Suicidal</b>	Pearson Correlation	.14	1
	Sig. (2-tailed)	.006	
	N	381	381

From the table 2 there is a weak correlation between depression and suicidal attempt in students with and without learning disabilities among senior secondary school students in Kano state, the r- value is 0.14 while  $p = .006$ ,  $p < .05$  indicating significant relationship between depression and suicidal attempt in students with and without learning disabilities. Therefore, the null hypothesis was reject and alternate hypothesis is accepted.

**Hypothesis 2:** There is no significant difference in the depression and suicidal attempt of male and female with and without learning disabilities among senior secondary school students in Kano state.

Independent sample t test was used to test this hypothesis at 0.05 level of significance and the result of the analysis was presented on Table 2

**Table 3**

Independent Sample t-test of differences in depression and suicidal attempt between male and female with and without learning disabilities in depression and suicidal attempt.

Variables	Groups	N	Mean	Std. Dev.	df	t	P	Decision
Male	1	190	3.8648	.61	379	1.14	.000	Rejected
Female	2	182	2.7923	.57				

Table 3 shows that there is significant difference in the depression and suicidal attempt of male and female with and without learning disabilities among senior secondary school students in Kano state. An observation of the data shows that the mean scores of male is (3.8648) is higher than of the female student (2.7923). The  $p=.000$ ,  $p> .05$  which is less than the level of significance 0.05 we therefore reject null hypothesis.

**Discussion**

Low self-esteem, trouble at home and academic stress were selected by the majority of students with learning disabilities in this study as causing depression. The majority of these participants also selected problems with romantic relationships and poor economic background as factors leading to depression. Saghatoleslami (2005), Rappo and Pepi (2014) Rosetti and Henderson (2013) all observed that low self-esteem correlates with depression in students with learning disabilities which concurs with the findings of this study. As confirmed in this study, Mojs et al. (2012) reported a relationship between poor financial status, rejection in romantic relationships and depression in students. Academic stress, academic failure and academic problems were reported by Flatt (2013), Furr et al. (2001), Mojs et al. (2012), Bansal and Yamana

(2012), Bandura et al. (1999), Oh et al. (2008), Park (2009) and Moon (2006) as correlating with depression in young adults and students in higher institutions.

In contrast Findings from Global School-based Students Health Survey (2009), reveals high suicide rate of suicidal ideation and attempt among Nepalese school going adolescents came as a results of Factors like food insecurity, anxiety, Loneliness and gender were found to be associated with suicidal ideation while anxiety, loneliness, truancy, cigarette use and gender were found to be associated with suicidal attempt.

The second findings of the study disclosed that there is indeed a relationship between depression and suicidal attempt in students with and without learning disabilities. These findings are in line with the studies of Wilson et al. (2009), Renee et al. (2011) Garlow et al. (2008) and Dunlay et al. (2015). Who also submitted that there is a significant relation between depression and suicidal attempt in their various studies.

From the result of data analysis presented in table 3, there was significant differences in the depression and suicidal attempt of male and female with and without learning disabilities in senior secondary school students in Kano state. From table 3 the data shows the male is 3.8648

and that of the female student is 2.7923. The p value is .000 which is less than the level of significance 0.05 therefore the hypothesis is reject null hypothesis. The finding is in accord with that of Medoff (2006) who discovered higher levels of depression and suicidal behaviours in male students with and without learning disabilities in his study on Native American Adolescents. Depression and suicidality were also found to be higher in male students with and without learning disabilities in Cheung and Dewa (2006) and Shaffer and Waslick (2002) when compared to the female participants. Similarly, Johnson, Ogunsanmi and Ayokanmi (2021) study reported that self-harm and suicidal tendencies develops faster in males than females. In contrast to this study from Li and colleagues revealed that female gender is significantly associated with suicidal ideation. This could be due to the fact that women are more emotionally expressive than men. There was more alcohol use reported among the students than tobacco smoking. In another study contrast to this, by Evans, Hawton, Rodham and Deeks (2005) reported that the ideation of suicide is more prevalent in females than males. Their study results showed that females attempted suicide more than males, but the latter would utilize lethal means compared to the females. This could be because females are more emotionally expressive than their male counterparts

### **5. Conclusions**

This study showed the prevalence and related correlates of depression and suicidal attempt

among senior secondary school students in Kano. Students in any nation are potential nation builders. As such, they are the bedrock of the nation and their mental and physical health need to be monitored and take care of. Those who experience depression, mental health problems and suicidal attempt need swift intervention so that they do not commit suicide. Identified risk factors should be taken into consideration by public health authorities in the development and implementation of interventions aiming at educating students in how to cope with stressful situations to avoid risky behaviors and offer protection against suicide attempt and behavior.

### **6. Recommendations**

1. Improving community resilience and societal support for promoting a healthy lifestyle and implement culturally-sensitive approaches, to reduce the risk of suicidal behavior and depression especially in high-risk groups.
2. To promote the use of mental health services and services for the prevention of depression and suicide.
3. Strengthening governance and institutional arrangements to effectively implement comprehensive suicide prevention plans.
4. Promote good life opportunities for less privileged groups in order to reduce the availability, accessibility and attractiveness of the means to suicide (e.g. pesticides, medications, firearms).

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**Influence of Teaching Material Improvisation Skills on Senior Secondary School Students' Achievement and Interest in Biology in Karu Local Government Area of Nasarawa State**

By

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**Abstract**

The study examined the influence of teachers' material improvisation skills on senior secondary school students' achievement and interest in Biology. Two research questions and two hypotheses were generated to guide the study. The research design used for the study was descriptive survey. The target population for the study was senior secondary school (SSS) three students in Karu LGA of Nasarawa state. Data were collected from 180 SS 3 students which served as sample from six selected schools in Karu LGA of Nasarawa state and were selected through random sampling. The instrument used for the collection of data for the study was Teachers Material improvisation skills questionnaire (TMIKQ) developed by the researchers. The reliability coefficient of the instrument was 0.79 using Cronbach Alpha. The data collected for study were analysed using frequency, percentages and mean statistics to answer the research questions while Analysis of Variance (ANOVA) was used to test the hypotheses. Scheffe was used as Post Hoc to ascertain the direction of the significance among the levels. Findings revealed that the extent to which teachers' material improvisation skill for teaching and learning processes of senior secondary school students was high. Also, the students whose teachers had high material improvisation skill had highest achievement and interest in Biology. There was significant difference in senior secondary school students' achievement in Biology considering teachers' material improvisation levels. There was significant difference in senior secondary school students' interest in Biology based on teachers' material improvisation levels ( $F(2, 177) = 9.869, P > 0.05$ ). It is therefore recommended that Biology teachers should sustain constant material improvisation skill in order to improve students' academic achievement and interest in the subject. Principals should acknowledge and commend the heightened level of biology teacher' materials improvisation at the senior secondary school level.

**Keywords:** *Teachers' improvisation skills*, interest, achievement, biology, senior secondary school student

**Introduction**

Biology serves as a channel for teaching students the ability to apply learning of science concepts and principles in solving every day's problems. This means that Biology remains one of the basic sciences whose teaching and learning is universally known to be efficient and successful, if only undertaken simultaneously with the help

of adequate instructional resources and facilities. Mberekpe (2013) noted that Biology is a very important science subject and a requirement for further studies of other science related professional courses such as biotechnology, agriculture, pharmacy, genetic engineering, medicine. Ibrahim and Ibrahim (2019) also

stressed that Biology is taught in schools in order to promote individual and societal development as seen in biotechnology and genetic engineering. Biology is the key to economic, intellectual, sociological, human resource development and well-being of any society (Mberekpe, 2013). Biology plays vital role in the field of biochemistry, medicine, physiology, ecology, genetics and molecular biology and as such, biology has been made a central focus in most human activities including being a solution to the problem of food scarcity, health, hygiene, family life, poverty eradication, management and conservation of natural resources, biotechnology, ethics, various social vices and as well lack of appropriate infrastructural materials. Biology is one of the science subjects that senior secondary students offer in senior secondary certificate examinations in Nigeria (FRN, 2004). Ajaja (2001) also outlined the following as the contents of Biology: Cells and Molecules of life, Genetics and Evolution, Organisms and Environment Health, Defence and Diseases, Human Physiology: (Regulation and Control), Applied Ecology, Microorganisms and Human and Biotechnology. However, the problem remains that in some secondary schools in Nigeria, there is high rate of poor performance in the subject. Esiobu (2008) revealed that researches have shown that secondary school students are exhibiting low interest in Biology and that this low interest of students in Biology has been traced to poor achievement in examinations. For example according to the Vice Principal

Academic of GSS Mararaba, in 2021 out of the total number of 89 students who registered Biology only 4 had distinction (A1-B3), 30 students had credit (C4-C6), 45 students had pass (D7-E8) while 10 had failure (F9). In 2022, out of the 66 students who sat for Biology in the same school, no student had distinction. However, 25 students had credit (C4-C6) 15 students had pass (D7-E8) while 26 failed (F9). In order to advance scientifically and technologically, positive achievement in Biology at all levels of schooling is necessary. However, achievement of students in Biology at the end of the secondary school has not improved in the last decade cited in Mberekpe (2013) has attributed poor achievement in Biology specifically to poor teachers' material improvised instructional resources in schools as well as shortage of sufficient Biology teachers due to poor funding of schools.

Shortage of Teachers' material improvisation represents a problem that reduces the opportunities for students to have interest in Biology thereby affecting their achievement in the subject. Miller (2008) who further stresses that this problem is greater in developing countries reaffirmed that teacher material improvisation seriously affects material consistency and as a result student achievement. The National Policy on Education (FGN,2004) stresses the need for teaching and learning of science processes and principles. Improvisation skills for teaching/learning of Biology in secondary schools cannot be over emphasized. This study therefore will focus on the influence of

Teachers' material improvisation skills on senior secondary school students' achievement and interest in Biology.

### **Theoretical Framework**

Piaget's theory of constructivism asserts that students create knowledge and develop meaning on the basis of their experiences. Utilising experiences, learners construction new knowledge through accommodation and assimilation. Constructivism is the theory which enunciates that the students learn to create knowledge rather than just obtaining the information. As the students explore and interact with others, they create new information and knowledge. The constructivist theory is created on the idea that students are active in their learning journey because the knowledge they gained is constructed based on their own experience and assimilates the new learning with their prior knowledge or schema (Kurt, 2021). For Solow Effect theory, the assumption is that material improvisation is a good predictor of students' performance.

### **Statement of Problem**

The increasing rate at which secondary school students are exhibiting low interest in Biology have resulted in their poor performance in examination such as the Senior secondary school certificate examinations (WAEC and NECO). Umoinyang (1999) stated that achievement of students in Biology at the end of the secondary school has not improved in the last decade. The reason for the low interest is not far-fetched. Lack

of adequate improvised materials have been attributed as some of the causes for students' low interest in Biology. This is in line with the position of Ibrahim and Ibrahim (2019) as they maintained that the teaching of Biology cannot be done effectively without interaction between the teacher, students and the environmental resources. Similarly, Folorunso (2004) attributed poor achievement trend in Biology specifically to the absence of improvised materials in schools due to poor funding of the schools. It is however, worrisome that some senior secondary schools suffer from poor Biology improvised teaching materials and dearth of sufficient Biology teachers. Despite concern by school administrators, parents and the government at large to forestall students' low interest in Biology, the problem still persists. It is therefore necessary to study the influence of material improvisation skills on senior secondary school students' achievement and interest in Biology.

### **Research Questions**

The following questions have been formulated to guide the study:

1. To what extent do teachers engage in the improvisation of teaching and learning materials for senior secondary school biology students?
2. To what extent do teachers' material improvisation levels influence senior secondary school students' achievement and interest in Biology?



### **Hypotheses**

The following null hypotheses were tested in the study at 0.05 level of significance:

1. There is no significant difference in senior secondary school students' interest in Biology taking into consideration the teachers' improvisation levels.
2. There is no significant difference in senior secondary school students' achievement in Biology on the basis of the teachers' improvisation levels.

### **Methodology**

The research design used for the study was descriptive survey design. The population of this study is the entire SSS three Biology students of government and private senior secondary school of Karu Local Government Area. Six senior secondary schools were randomly selected from Karu Local Government of Nasarawa State. Thirty SSS3 Biology students were selected from each of the schools through simple random sampling technique to make a total of 180 sample used for the study. The instrument used for this study was Teachers Material Improvisation Skills Questionnaire (TMISQ). The questionnaire contained sections A, B, C and D. Section A dealt with the Bio-data of each participant, Section B collected data on teachers Material improvisation skill scale, Section C collected data on Biology

achievement Test (BAT) and Section D collected data on Student interest scale on biology. The draft instrument was pilot tested to 25 Biology students in one the public secondary schools that was not involved in the actual study. The reliability coefficient was .79 using Cronbach Alpha. The researchers visited senior secondary schools in the Karu Local Government area and administered the questionnaire after obtaining permission from the administrator of each school. The data collected for this particular study was analysed using relevant statistical tools. The questions were answered using frequency counts, percentages and mean statistics. Inferential statistics were used to test the hypotheses. Analysis of variance (ANOVA) was used to test hypotheses 1 to 4. Scheffe post hoc analysis was utilized to ascertain pair comparison mean difference significance. All hypotheses were tested at 0.05 level of significance.

### **Results**

The results of the study are presented as follows:

**Research Question one:** To what extent do teachers engage in the improvisation of teaching and learning materials for senior secondary school biology students

Table 1: Mean & Standard Deviation of Teacher's Improvisation of Teaching and Learning

**Materials for Biology Students (N = 180)**

<b>Statement</b>	<b>Agree (%)</b>	<b>Undecided(%)</b>	<b>Disagree(%)</b>	<b>Mean</b>	<b>StdDev</b>	<b>Std Error</b>
My Biology teacher uses drawing when Teaching	177(98.4%)	-	3(1.7%)	4.18	.590	.044
My Biology teacher labeling drawing when teaching us	173(96.1%)	-	7(3.9%)	4.14	.678	.051
Biology teacher use of model when teaching	171(95.0%)	1(.6%)	8(4.4%)	4.11	.713	.053
My Biology teacher uses chart when teaching	153(85%)	16(8.9%)	11(6.1%)	3.92	.728	.054
Biology teacher uses physical demonstration during teaching	166(92.3%)	9(5.0%)	5(2.8%)	2.26	1.283	.096
My Biology teacher uses audio- visual during the lesson	100(55.5%)	54(30.0%)	26(14.5%)	1.83	.842	.063
My Biology teacher takes us to zoological garden during the lesson	109(60.5%)	19(10.6%)	26(14.5%)	1.83	.842	.063
Biology teacher use different Specimens during Biology laboratory	164(91.1%)	4(2.2%)	12(6.6%)	2.14	1.040	.078
My Biology teacher use different instructional Materials	161(89.5%)	6(3.3%)	13(7.2%)	3.96	.794	.059
Biology teacher use laboratory equipment during the lesson	163(89.6%)	2(1.1%)	13(8.3%)	3.96	.848	.063
Biology teacher always assure safety equipment have been provided during laboratory practical	167(92.8%)	2(1.1%)	11(6.1%)	4.00	.791	.059
Biology teacher always provide us with laboratory manual during practical	169(93.9%)	2(1.1%)	9(5%)	4.01	.709	.053
Biology teacher always prepare laboratory chemicals together with us	166(92.2%)	4(2.2%)	10(5.6%)	3.95	.703	.052
Biology teacher always adhere with the Precautions	164(91.1%)	8(4.4%)	8(4.4%)	3.97	.728	.054
Biology teacher provide us with permanent slides for future use	163(90.6%)	7(3.9%)	10(5.6%)	3.95	.727	.054
<b>Weighted Mean =3.62</b>						

From Table 1, only 3(1.7%) of students disagreed that Biology teacher uses drawing when teaching while 177(98.4%) agreed. Biology Teacher labeling drawing when teaching of Biology as 173(98.4%) agreed while 7(3.9%) of student disagreed. Also 171(95.0%) of student agreed that Biology teacher use model when teaching while 8(4.4%) of student disagreed. 153(85%) of student agreed that Biology teacher uses chart when teaching while 11(6.1%) disagreed. In addition, only 5(2.8%) disagreed that Biology teacher uses physical demonstration during teaching while 166(92.3%) agreed. Biology teacher always assure safety equipment have been provide during laboratory practical as 167(92.8%) agreed while only 11(6.1%) of students disagreed. So also 169(93.9%) of student agreed while

9(5%) disagreed that Biology teacher always provide them with laboratory manual during practical. Biology teacher always prepared laboratory chemicals together with Student as 166(92.2%) agreed while only 10(5.6%) of Student disagreed. Furthermore, Biology teacher always adhere with the precautions as 164(91.1%) of student agreed while only 8(4.4%) disagreed. 163(90.6%) of student agreed Biology teachers provide the student with permanent slides for future use while 10(5.6%) disagreed. Having the bench mark as 2.5 and the weighted mean as 3.62, this shows that the teachers’ engagement in the improvisation of teaching and learning materials for senior secondary school biology students was high.

**Table 2: Mean & Standard Deviation of Students Achievement and Interest in Biology by Teachers Material Improvisation level.**

Variable	Material Improvisation Level	N	Mean	Standard Deviation	Standard Error
<b>Achievement</b>	Low	32	16.75	7.007	1.239
	Moderate	86	22.13	5.293	.571
	High	62	18.16	7.800	.991
<b>Interest</b>	Low	32	49.97	2.857	.505
	Moderate	86	52.86	3.932	.424
	High	62	49.97	5.206	0.656

Table 2 shows that the mean scores of 16.75, 22.13, 18.60, 52.86 were respectively recorded for teachers with low, moderate and high improvisation levels. These mean that students whose teachers had moderate improvisation skill had the highest achievement in Biology. Also,

49.97, 52.86 and 57.92 were students mean interest in Biology scores obtained for low, moderate and high teachers’ improvisation level respectively. Biology students who had teachers with high improvisation skills also had high interest in Biology.

**Testing of Hypotheses**

**Hypothesis one:** There is no significant difference in senior secondary school students’

achievement in Biology on the basis of the teachers’ improvisation levels.

**Table 3: ANOVA of Students’ achievement in Biology on the basis of the teachers’ improvisation levels.**

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	849.132	2	424.566	9.869	.000
Within Groups	7614.51	177	43.020		
<b>Total</b>	<b>8463.644</b>	<b>179</b>			

\* = Significant at P < 0.05

As observed on Table 3, the F value of 9.869 is significant because P value is less than 0.05. Therefore, there is significant difference in senior

secondary school students Biology achievement based on the teachers’ improvisation levels.

**Table 4: Scheffe Multiple Comparisons of students’ achievement in Biology on the basis of the teachers’ improvisation levels.**

(I) Material Improvisation level	(J)Material Improvisation level	Mean Difference (I-J)	Standard Error	P
<b>Low Improvisation</b>	Moderate	-5.378	1.358	.001
	High	-1.847	1.428	.435
<b>Moderate Improvisation</b>	Low	5.378	1.358	.001
	High Improvisation	3.531	1.093	.006
<b>High Improvisation</b>	Low	1.847	1.428	.435
	Moderate Improvisation	-3.531	1.093	.006

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

The post hoc result on Table 4 shows that there was significant difference in senior secondary schools’ students Biology achievement between teachers that have moderate improvisation material. Since P value .001 which is less than 0.05. But there was no significant difference in Student Biology Achievement between teacher that have moderate Improvisation and high

Improvisation material because P value of .435 is greater than 0.05.

**Hypothesis two:** There is no significant difference in senior secondary school students’ interest in Biology taking into consideration the teachers’ improvisation levels.

**Table 5: ANOVA of Student interest in Biology base on the considering the teachers' improvisation levels.**

	Sum of Squares	Df	Mean Square	F	P	Sig.
Between Groups	849.132	2	24.566		9.869	.000
Within Groups	7614.512	177	3.020			
Total	8463.644	179				

\*=Significant at P<0.05

As seen on Table 5, F value of 9.869 is significant because P value .000 is less than 0.05. Therefore, there is significant difference in senior secondary school students' interest in Biology Considering the Teacher improvisation level. There is significant difference in senior secondary school student interest in Biology for teachers improvisation level between teachers that have

low improvisation and those that have moderate improvisation since P value .001 is less than 0.05. But there is no significant difference in Student Biology interest between teacher that have moderate improvisation and high improvisation because P value of .435 is greater than 0.05.

**Table 6: Scheffe Multiple Comparisons of Students' achievement in Biology on the basis of the teachers' improvisation levels.**

(I) Material Improvisation level	(J)Material Improvisation level	Mean Difference (I-J)	Standard Error	Sig.
<b>Low Improvisation</b>	Moderate Improvisation	-5.378	1.358	.001
	High Improvisation	-1.847	1.428	.435
<b>Moderate Improvisation</b>	Low Improvisation	5.378	1.358	.001
	High Improvisation	3.531	1.093	.006
<b>High Improvisation</b>	Low Improvisation	1.847	1.428	.435
	Moderate Improvisation	-3.531	1.093	.006

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

Table 6 shows that there was significant difference in senior secondary schools students' Biology achievement between eachers that have moderate improvisation material. Since P value .001 which is less than 0.05. But there is no

significant difference in Student Biology Achievement between teacher that have moderate Improvisation and high Improvisation material because P value of .435 is greater than 0.05.

### **Discussions of findings**

It was found that the extent to which Biology teachers make use of improvised materials as teaching aids. According to Mbajiorgu (2003) improvised instructional materials not only bridged the achievement between male and female students in sciences but also promote learning by doing and skill acquisition for further use and for achievement of self-reliance of students in certificate examinations. This is in line with the position of Mbajiorgu (2003) as he maintained that improvised instructional materials bridged the attendant achievement gap between male and female students in sciences. Similarly, this finding is in tandem with the finding of Ahmed (2010) as he claimed that instructional resources ensure that the learners see, hear, feel, recognize and appreciate as they learn, utilizing almost all the five senses at the same time. In the same vein, the finding is in consonance with the stance of Olagunjo (2000) who asserted that improvisation provides a cognitive 'bridge' between students abstract and real experience of teaching and learning.

It was discovered that the Biology students' interest in Biology is high. Abolade (2004) lends credence to the above finding as according to him, when students are motivated by their teacher to produce or source their own instructional materials, it greatly arouses the students' interest to learning and development of scientific attitude. The use of improvisation of instructional materials in the teaching of Mathematics has efficacy to improve

academic performance of mathematics students. (Adepoju, 2020)

Also, the study revealed that there was significant difference in senior secondary school student interest in Biology for teachers' improvisation level between teachers that have low improvisation and those that have moderate improvisation. Teachers with high improvisation skills have the tendency to use the improvised materials both in the classroom and the laboratory to draw the attention of the students and thereby enhance the interest of the students towards the subject. With variety of improvised materials teachers would also make choices as to the appropriate instructional materials to utilize at different situation in order create interactions among the Biology students. When the interest of students is positive towards learning generally and Biology in particular there would be drastic improvement on the academic achievement

### **Conclusion**

The study looked at the influence of teachers' material improvisation skills on senior secondary school students' achievement and interest in biology. It is obvious from this research work has proved that teachers' material improvisation skills can influence senior secondary school students' achievement and interest in Biology. From the results obtained in the study on the influence of teachers' material improvisation skills on senior secondary school students' achievement and interest in Biology, it was found that Biology teachers' material improvisation skills are crucial for boosting Students interest and

achievements in Biology. Therefore, the importance of teachers' material improvisation skills cannot be overemphasized. Despite the fact that Biology teacher's material improvisation skills are crucial, there are factors which can impede their positive influence on senior secondary school students.

### **Recommendations**

In view of the following recommendations:

- The Ministry of Education should encourage and provide ongoing support to educators to sustain their active involvement in the improvisation of instructional materials for senior secondary school biology, recognizing its pivotal role in enhancing the overall educational experience.
- School administrators should assist Biology teachers financially to use local materials for their improvisation so as to make sure stock the laboratory with required practical specimen.
- Government should offer focused assistance and training for teachers to refine their improvisation skills, acknowledging the significant variance in student biology achievement based on teachers' levels of improvisation.
- The Ministry of Education should introduce interventions to mitigate substantial differences in student achievement in biology associated with teacher improvisation levels,

ensuring the equitable application of effective teaching practices for all students.

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**The Relevance of Test Score Equating Methods on Educational Assessment**

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**Abstract**

The paper examined the impact of test score equating on educational assessment. The paper explained test equating method to include ensuring validity across different tests, maintaining fairness, securing test items, and supporting continuity in programmes that introduce new items or require ongoing development. The paper further explained that test score equating is crucial for testing Programmes that regularly release new versions of a test, as it ensures that scores from these different editions retain consistent meaning over time. In testing programmes that help make high-stakes decisions, it is extremely important that test equating be done carefully and accurately. Objectives of this study are to examine the concept of test score equating, data collection designs for test equating, test score equating methods and the importance of test score equating methods on educational assessment. This study adopted content analysis technique using a secondary source of literature review. The finding of the literatures reviewed showed that test equating is crucial for ensuring fairness in high-stakes examinations. It allows for the comparison of scores between test takers who have completed different versions of the test. Based on this, it was recommended that the equating process must be carefully designed to achieve the most accurate relationship between test forms. Item developers should adhere to established guidelines for equating tests to produce multiple equivalent forms. Additionally, regulatory examination bodies should strengthen their efforts to monitor and standardize public examinations to ensure that the results remain reliable and uncontaminated.

**Keywords:** *Test score, equating methods and educational assessment*

**Introduction**

Educational assessment programmes serve multiple purposes, including enhancing student learning through improved instruction based on assessment outcomes, complementing curriculum or teaching methods, providing progress updates for teachers and students, informing the public about school performance, guiding decisions regarding students, teachers, or schools, and offering data for various comparisons. The data used for these purposes come from individual tests within an assessment program. However, using different forms of the same test introduces issues with score comparability. Despite efforts to create multiple test forms that are similar in structure, timing,

item types, format, and subject matter, variations in test difficulty are inevitable. Thus, claiming that scores from different test forms are directly comparable is not feasible; instead, formal 'test equating' is necessary (Redfield, 2001).

Testing programmes require exams that assess the same content but use different questions, known as alternate forms of the same test. However, when different questions are used, there is no guarantee that the scores will be equivalent; variations in item difficulty can lead to differences in scores. While multiple forms of the test are designed to cover the same content and maintain similar statistical properties, they include different items (Shea & Norcini, 2012).

This approach is often employed for security reasons and to track changes in performance over time.

There are at least three key reasons for using multiple forms of a test. First, security is a major concern, especially in high-stakes exams that have significant consequences for examinees and the public, such as licensing or college admissions. To ensure that test scores accurately reflect an examinee's knowledge and abilities without being influenced by prior exposure to test content, it is important to use different forms for examinees who are seated close to each other, those who take the test on different days, or those who take it multiple times (Petersen, Kolen & Hoover, 2019). Second, with the growing trend toward open testing, many programmes release test items to the public (Holland & Rubin, 2022). Once items are released, they cannot be used in future tests without giving examinees an unfair advantage. Finally, testing content and questions must evolve over time to stay current with advancements in knowledge and practice in various fields, ensuring that the test remains relevant and reflective of current standards.

It sometimes happens also that the correct answer to previously used questions simply changes. When this occurs, it is necessary to rewrite or replace the item. Given that different forms of an examination are necessary, it is important to ensure that the scores on one form of the test have the same meaning as the scores on another form. This issue of equivalence is important in most educational assessment, but it is crucial in licensure and certification. Thus, the primary

reasons for requiring equivalence are maintenance of the meaning of licenses/certificates and fairness to examinees. If this condition is met, it is then possible to make comparisons that are of interest to testing programmes among performances of different examinees who took alternative test forms, and among items and overall test scores that are given to various groups. A caveat is that, in most cases, particularly those common to licensure and certification settings, equating is meant to adjust for unintended differences in test difficulty. As such, the real burden of creating parallel tests falls to test development. Thus, it is imperative that test developers and psychometricians collaborate to achieve the goal of producing interchangeable scores (Brennan & Kolen, 2017). However, in its simplest form, the process of equating has two components, that is, selection of a data collection design and transformation of scores using a specific set of statistical techniques and methodologies.

### **The objective of the Study**

The objective of this study was to examine the concept of test score equating, data collection designs for test equating, test score equating methods and the importance of test score equating methods on educational assessment.

### **Concept of Test Score Equating**

The process of equating tests starts with linking two tests together, then expands to linking several tests, and ultimately involves connecting all possible tests. Linking refers to the method of converting scores from one test to scores on another test. The primary goal of connecting tests

that aim to measure the same variable is to ensure that the different measures provided by each test are unified on a single common scale. It also includes the practice of matching or pairing scores from two test forms without a definitive assertion that the paired scores have identical substantive meanings. When two test forms are considered equated, they assess the same content and cognitive processes, and support similar inferences about students' knowledge and abilities, with the goal of producing scores that can be used interchangeably. To ensure that achievement tests are meaningful and useful, they undergo statistical procedures such as linking, scaling, or equating. Equating methods help adjust for variations in difficulty between different test forms, leading to comparable score scales and more precise assessments of ability.

Adeyemo (2019) explains that test equating is a process designed to make scores from different forms of the same test comparable. Once two test forms are effectively equated, educators can confidently interpret performance on one form as having the same substantive significance as the score on the other equated form. When different forms of the same test are used, or when various tests designed to measure the same constructs are administered from year to year or across different schools, the issue of score comparability arises. Once two tests are equated, corresponding pairs of equivalent scores can be established. For instance, an equivalent score pair like (17, 19) would show that a total score of 17 on one test is equivalent to a total score of 19 on another test. After equating, the scores on the reference test

remain unchanged, while scores from other test forms are adjusted to align with the reference test scores using the chosen equating method. There are specific criteria that must be met for test equating to be considered successful and effective. These criteria according to Doran as cited by Adeyemo (2019) are:

- i. the two tests must measure the same construct (e.g. latent trait, skill, ability).
- ii. The two tests should have the same level of reliability.
- iii. The equating must achieve equity (i.e., for individuals of a given proficiency or ability level, the conditional distributions of scores on each test must be equal).
- iv. The equating transformation should be symmetric (i.e., the equating of Y to should be the inverse of the equating of X to Y).
- v. The equating transformation should be invariant across sub-populations of the population on which it is derived.

### **Methodology**

This study adopted content analysis technique to examine the relevance of test score equating methods on educational assessment using a secondary source of literature review. The choice of content analysis technique is used to determine the meaning, purpose or effect of literatures on test score equating methods by analyzing and evaluating them.

### **Data Collection Designs for Test Equating**

There are four fundamental designs underpin most commonly used strategies: (a) a single-group design, where one group of test-takers completes two or more versions of a test; (b) an

anchor-test-nonequivalent-groups design, where different groups of examinees each take a different test form; (c) a counterbalanced design, where each group of examinees takes all versions of the test; and (d) an equivalent groups design, where different groups are matched to ensure comparability.

the data collection design for two papers.

**Table 1. The Single-Group Design for test equating**

Test		
Sample	Paper 1	Paper 2
Common Sample	√	√

**Source: Lamprianou (2007)**

Using this design assumes that the examinees' scores on the second test are not influenced by the experience gained from taking the first test, even if some time has passed between the two. It also presumes that factors such as learning, practice, or fatigue do not significantly impact the results of the second test.

**2. Anchor-Test-Nonequivalent-Groups Design:** In this design, each of two distinct groups of examinees takes a different version of

**1. Single-Group Design:** This is one of the most straightforward data collection designs. In this design, two versions of the same test are given to the same group of students. The following table exhibits

the same test. However, both groups also complete a shared test, referred to as 'the anchor test,' which serves as a link between the two versions. It is essential that the anchor test is closely aligned in content and difficulty with the tests being equated. The table below illustrates the Anchor-Test-Nonequivalent-Groups Design, which can be used to equate two test forms through an anchor test.

**Table 2. The Anchor-Test-Nonequivalent-Groups Design for test equating**

Test			
Sample	Paper A	Paper B	Anchor Paper
Sub-Sample 1	√		√
Sub-Sample 2		√	√

**Source: Lamprianou (2007)**

The term 'anchor test' describes a set of items, which can be used as a link for the equating of two or more tests. According to Lamprianou (2007), The anchor test should be given to both groups in the same sequence, considering that scores on the second test can be influenced by the prior test due to factors like learning, practice, or fatigue. Finally, an anchor test can either be

'external' or 'internal'. If the anchor test is just a sub-test in the tests to be equated then it is called an internal anchor test. If, however, an anchor test is a different form tested at a different time, that test is an external anchor test.

**3. Counterbalanced-groups design.** The counterbalanced groups design is somewhat more complex than the independent groups design or

the anchor-test-nonequivalent-groups design. In this approach, both groups of examinees take all forms of the test. The order in which the test forms are presented is counterbalanced: one half of each group receives Test X followed by Test

Y, while the other half receives Test Y followed by Test X, in order to minimize the impact of practice effects and fatigue. Schematically, the design would look like this:

**Table 3. The Counterbalanced-groups design for test equating**

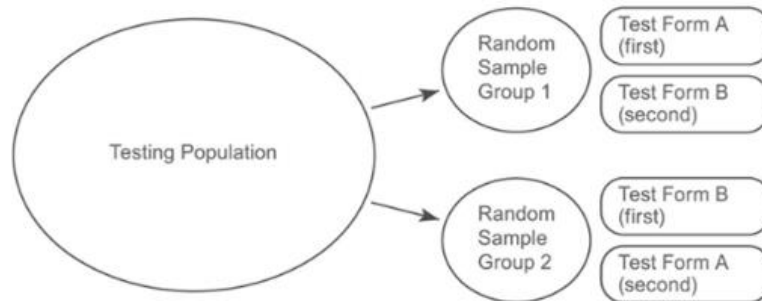
Group A	→	Group B
Test X +		Test Y +
Test Y		Test X

Source: Shea & Norcini (2012)

A design like this is attractive because it allows for a direct evaluation of the comparability of test forms, as they are administered to the same group of examinees. This design also facilitates comparisons among examinees across different groups. However, similar to the single-group design, it is infrequently used in practice due to practical constraints: it is often impractical to administer more than one complete test form to examinees because of time and resource

limitations for both the examinees and the examiners.

**Equivalent Groups design:** The Equivalent Groups design, also known as the Random Groups design, relies on the principle of random sampling. When two sufficiently large random samples are drawn from a testing population, they can be considered functionally equivalent regarding student achievement.. See fig.1 below:



**Fig. 1: Equivalent Groups design (Ryan, 2018)**

This design often utilizes the practice of spiraled test forms to create the random sample groups. In the example in Figure 1, Forms A and B might be packaged in A/B/A/B order with instructions directing test administrators to distribute forms A and B alternately from one student to the next.

This random assignment of test forms creates two random sample groups within each classroom.

**Test Score Equating Methods**

A test is an assessment instrument, tool, technique or method used systematically to measure a sample of behaviour by posing a set of questions or to complete certain tasks for the

students to react in order to gauge mastery of a skill or knowledge in the curriculum content. Adom, Mensah and Dake (2020) stated that tests are designed to measure the quality, ability, skill or knowledge of a sample against a given standard. Test equating methods are statistical tools used to produce exchangeable scores across different test forms (Daramola, Olutola & Jimoh, 2022). Lamprianou (2007) stated that many different methods have been proposed, the most prominent of which may be grouped as Classical Test Theory (CTT) approaches, and Item Response Theory (IRT) approaches. In CTT, mean scores and standard deviation are used to equate the performance in two forms. The Observed Score are the two recognized equating methods. Observed-score equating method refers to the transformation of the raw scores of a new test, “X”, into the raw scores of an old test, “Y”. It is used to ensure that test scores from different test forms are comparable and that the scores can be used interchangeably. The usual CTT approaches are the linear and the equipercentile methods. In IRT, equating means the process of placing scores from two parallel test forms onto a common score scale. The scores from the two different forms can be compared directly or treated as if they come from the same test form. Horizontal and vertical test equating are recognized. Vertical equating refers to the process of equating tests administered to groups of test-takers with different abilities, in different years of schooling (e.g., Senior Secondary students 1 and Senior Secondary students 2) at a time. Horizontal equating refers to the equating

of tests administered to test-takers of different groups (Male and female in Senior Secondary students 1) with similar abilities. The most usual IRT approaches are the 2-Parameter Logistic Model (2PLM) and the Rasch Model (RM).

### **Classical Test Theory (CTT)**

**Equipercentile equating.** Equipercentile equating is a method of transforming scores so that, when the equating is complete, two scores are said to be comparable if they have the same percentile or rank within their respective examinee group. This method makes no statistical assumptions about the tests to be equated. However, the result is that the distributions underlying each form are identical in all moments (i.e., they have the same distribution). The procedure stretches or compresses the two distributions so that this outcome is achieved. Equipercentile equating is typically done by computer, though it is relatively easily done by hand. The major advantage of the equipercentile technique is that it is quite suitable for describing curvilinear relationships between scores on different tests. But, a fairly significant disadvantage that causes many investigators to choose other models is that the process of smoothing is quite subjective. Moreover, this method forces distributions of two scores to be the same, even when there may be legitimate reason for having very different distributions (i.e., the purpose of the examination changes and it becomes more or less difficult). As it is stated, this method is entirely data dependent. If other observed distributions of test scores were equated, a different conversion table would

emerge. This is likely to be particularly true at the tails of the distribution where there are few data points. Clearly, large samples are needed for precise equating. On the other hand, with large samples that sometimes occur in licensure and certification programmes, scores will be observed over the entire range including the area that contains the cutting score. Overall, the equipercentile method has been widely used and continues to be the preferred method for some test in programmes. In some sense, it remains the standard against which other methods are compared.

**Linear equating:** The second common equating procedure is linear. The general formula that applies is a linear transformation of the form  $Y = AX + B$ , where A and B are parameters that use standard score terms to express the ideas of equating  $[(x - m)/s = (y - m)/s]$ , X refers to scores on Test X, and Y refers to scores on Test Y. This general linear formula is applicable in many different designs. However, the designs differ in the way in which the transformation constants, A and B, are calculated.

### **Item Response Theory**

This is sometime called latent trait theory. There are numerous item response theory models, developed from competing mathematical frameworks. Item Response Theory model has been developed to deal with responses to either items that are dichotomous or polytomous form. The models for dichotomous scoring pattern are the one parameter model (Rasch model), two parameter logistic model and three parameter logistic model. The models for polytomous

scoring pattern are graded model, nominal model, partial credit model and rating scale model. There are three parameters needed to differentiate among the one parameter (1p), two parameter model (2p), and three parameters (3p). The 'b' parameter model is known as the difficulty parameter. This value tells us how easy or how difficult an item is. 'a' parameter is called the discrimination parameter. This value tells how effective the item can discriminate between highly proficient students and less proficient students, the 'c' parameter is known as the 'G' parameter or the guessing parameter. This value tells how examinees are likely to obtain the correct answer by guessing (Chong, 2016).

**1-parameter model:** The 1-parameter model is also frequently referred to as the Rasch model, reflecting the work of Georg Rasch (1980) who first described the fundamental model. The 1-parameter model is so named because it characterizes a test item in terms of only one feature, that is, the item difficulty. Using this model, an ability is estimated for each possible raw score between 0 and the perfect (100 percent correct) score. All students who make the same raw score are considered to have the same ability, regardless of which items they answered correctly to obtain that raw score. A central concept in all IRT models is the Item Characteristic Curve (ICC), sometimes described as "the basic building block of IRT". Two hypothetical item characteristic curves, reflecting the 1-parameter model, are illustrated in the figure 2 below:

Item Characteristic Curves

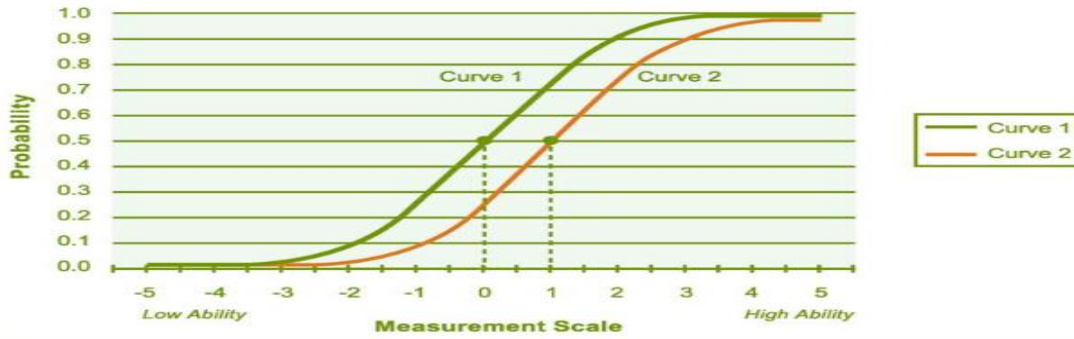


Fig. 2: Two item characteristic curves (ICCs)

In figure 2 above, the vertical axis shows the probability of a correct answer, which like all probabilities goes from 0 to 1; the horizontal axis shows test taker ability represented as a number along the measurement scale; the curves show that students' probability of a correct response goes up as test-taker ability increases (Ryan, 2018). To find the difficulty of one of the items in figure 1, locate the point along the curve where probability is equal to .5 on the vertical axis, then go down to the horizontal axis to find where that point is placed on the measurement scale. For this illustration, then, the difficulty of the first item represented by Curve 1 is 0. The difficulty of the second item, Curve 2, is 1, showing that it is a harder item; in other words, a test taker would need an ability of 1 on the measurement scale in order to have a .5 probability of answering the second item correctly. The item characteristic curve is used in IRT to describe the relationship between: a.) the probability of a correct response to the item; and b.) test taker ability. The curve shows the hypothesized and reasonable relationship: examinees with greater ability have a higher probability of answering the item

correctly, and those with lower ability are less likely to get the right answer. In Curve 1 of the figure 1, students with an ability of -2 are expected to get it right only about 10 percent of the time; students with an ability of 3, about 97 percent of the time.

Item discrimination is the steepness of the curve when the probability of a correct answer is .5. An item has only one discrimination, which occurs at .5. Also note that in the simplified examples shown in figure, the probability of a correct response approaches zero as students ability gets lower and lower. In many cases, however, students with low ability may answer an item correctly by chance or by using partial information.

**2- and 3-parameter models:** The 2-parameter model uses the item difficulty parameter and the item discrimination parameter. In addition to item difficulty, this model includes item-level information that reflects the data showing that some items discriminate more sharply between higher and lower ability students than others. In figure 1 above, shows item characteristic curves for items with identical discrimination; if the ICC



was very steep when the probability of a correct answer is .5, the item would be more discriminating. If the ICC is very flat when the probability is .5, the item would be less discriminating. In other words, item discrimination shows how rapidly the probability of a correct response goes up as ability increases. The 3-parameter model uses a third parameter in addition to the item difficulty and item

discrimination to adjust the lower end of the ICC for possible guessing. By contrast, the ICCs used in all previous examples have the lower ends of the curves approaching a probability of zero, which assumes that no students answer test items correctly as a result of guessing. According to Ryan (2018), an illustration of various item parameters, as represented by three separate items with individual ICCs, is shown in Figure 3.

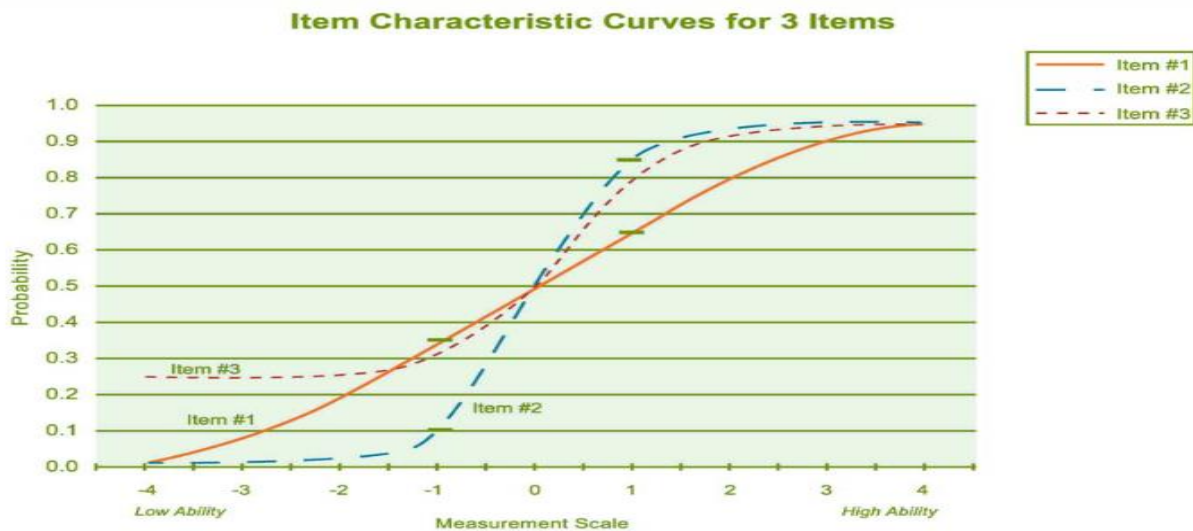


Fig. 3: Illustration of three item characteristic curves (ICCs)

In the example shown in Figure 3, consider students at the ability level of 0: each has a .5 probability of answering each of these items correctly. The difficulty of all three items is the same: each item probability of .5 maps to the same ability level (in this example, 0.) However, the items vary in discrimination. The ICC slope of Item 2 goes up more sharply than Item 1, which means Item 2 is more highly discriminating. For Item 2, each student at the ability of -1 has about a .1 probability of answering the item correctly, but students at the ability of +1 have a .85 probability of answering correctly (a change in

probability of .75). In contrast, consider Item 1: students at the ability of -1 have a .35 probability of answering correctly, and students at the ability of +1 will answer correctly with .65 probability (a change in probability of .30). This difference in the rate of change in the probability of answering correctly is the item's discrimination. Lastly, the ICCs for Item 1 and Item 2 approach the probability of 0.0 as ability gets lower (moving toward the left-most side of the horizontal scale). The ICC for Item 3, however, appears to flatten out at a probability of about .25. This is the same probability that is expected if

students were randomly guessing on items with four answer choices. The 3-parameter IRT model includes the pseudo-guessing parameter to account for this kind of item data, which affects the lower end of the ICCs, although the c-parameter is generally below the theoretical .25 value.

### **Importance of test score equating methods on educational assessment**

1. Test score equating is an essential tool in educational assessment due to the critical role it plays in several key areas which include establishing validity across tests, fairness of test, test security, and continuity in programmes that release items or require ongoing development.
2. Equating test scores are often used for such purposes as the assessment of the abilities and/or skills of individuals who are competing for college admissions or seeking professional certification. This evaluation of test scores (when used in conjunction with other information) may lead to a decision to exclude a candidate from some academic programme or to limit the ability of an examinee to practice the profession of his choice.
3. Test score equating is essential for any testing programme that continually produces new editions of a test and for which the expectation is that scores from these editions have the same meaning over time.
4. Finally, test score equating is used to compare different test scores from different test forms.

### **Results**

The finding of the literatures reviewed showed that test equating is crucial for ensuring fairness in high-stakes examinations. It allows for the comparison of scores between test takers who have completed different versions of the test. This related to a study by Dorans, Moses, and Eignor (2010) on principles and practices of test score equating revealed that score equating is essential for any testing program that continually produces new editions of a test and for which the expectation is that scores from these editions have the same meaning over time. In the same vein Koretz (2008) stated that a student's scores from multiple tests may be used to infer patterns and trends in performance and academic growth.

### **Recommendation**

Based on the findings, the following recommendations were made.

1. The equating process must be carefully designed to produce the most accurate relationships between test forms.
2. Item developers should adhere to guidelines for equating tests to create multiple equivalent test forms. Test items should be carefully designed to align with varying levels of difficulty that correspond to student abilities, ensuring they accurately reflect students' responses and performance. Developers must also conduct thorough item analysis to ensure that the test content is accurate, relevant, and meaningful.
3. Established regulatory bodies should increase their efforts to oversee and standardize public examinations to ensure that the results remain uncontaminated.

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**Funding of Primary School Education for Effective Management in Jere Local Government Council, Borno State**

By

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**Abstract**

The present study is aimed at investigating into funding of primary school education for effective management in jere local government council, Borno state. The objectives of this study are to find out how effective is the funding of primary school education and investigate the elements behind funding primary school education in Jere Local Government Council Borno State. The study adopted the use of the survey design of the descriptive statistics and from which the use of simple random sampling was used to select 30 respondents out of a population 52 head teachers and 5 zonal inspectors. Questionnaire that was validly and reliably verified was used in gathering data and SPSS though simple percentage and frequencies was used in analyzing the data. The findings of the study revealed that, most of the primary schools in Jere Local Government are not receiving any financial support from either state or local Government but a little from parent and Non-governmental organizations (NGO. the concluded that, several challenges inhibit the effective management of primary schools in Jere Local Council which leads to a decay in this important system of education where the other levels will build upon. The study recommends that, governments must mobilizing and allocating resources in the current economic context, school managers should embark on creating internally generated revenue ( IGR) at the school level to shoulder their minor expenses. NGO, philanthropies, parents and individual should have financial support to public primary schools to complement government effort.

**Keywords:** *Challenges, effective, funding, managements, primary education.*

**Introduction**

Education has remained a social process in capacity building and maintenance of society for decades, as well as a weapon for acquiring skills, relevant knowledge and habits for surviving in the changing world (Adepoju & Fabiyi,2007). According to Adesina (2011), education is a major force in economic, intellectual, social and cultural empowerment. He goes on to say that education has the capacity to bring about character and attitudinal change, as well as reshape human potential for desired development. Given the above, it is safe to say that primary education is very important in the Nigerian education system. The

significance of primary education is also located in the United Nations Millennium Development Goals (MDGs) declaration to achieve universal access to education by 2015 (Adepoju and Fabiyi 2007). Quadri (2001) identified the intentions of primary education in Nigeria to be: help the child to develop intellectually, physically, morally, socially and emotionally; produce well-qualified citizens that are capable of going to secondary and tertiary institutions to be trained as professionals in various services that are essential for the development of the country; and assist primary school learners who cannot

further their education to become useful citizens to themselves and community at large. No doubt therefore that primary education is the foundation upon which other strata of educational edifice are built.

(Oni 2009). Adesina (2011) added that primary education serves as the foundational level of all other education by providing children with a good preparatory ground for further education. Essentially, primary education can be considered as the most important period in the education of a child. The government of Nigeria perhaps meant well when it emphasized the place of primary education in its 1977 National Policy on Education (NPE) as follows:

1. Inculcation of permanent literary and numeracy and the ability to communicate;
2. Laying of a sound basis for scientific and reflective thinking;
3. Citizenship education as a basis for effective participation and contribution to the life of the society;
4. Character and moral training and the development of sound attitudes.

The policy, which was launched in 1977, was revised in 1985 to include free primary education among others (Amaghi onyeodiwe and Osinubi 2006: 32). With the introduction of free primary education, one can argue that education is then easier to access. Igbuzor (2006) disagrees. In a keynote address to Civil Society Action Coalition in July 2006, Igbuzor frowned at the 2005 Nigeria Millennium Development Goals report, which hinted that literacy level in the country had experienced an all-time low. A review of the NPE in 2004 added the following specific objectives:

1. Developing in the child the ability to adapt to his changing environment;
2. Giving the child the opportunities for developing manipulative skills that will enable him function effectively in the society within the limit of his capacity; and
3. Providing basic tools for further educational advancement including preparation for trades and crafts of the locality.

Heads of primary schools are tasked with the implications of these objectives. The success of primary school education rests on a good administration involving the local communities, well qualified and contented staff, adequate funds for equipment and facilities together with interested parents supplying children's material needs and bringing home training to supplement the efforts at school. For heads of schools to succeed in the administration of primary schools, they need the co-operation and support of the parents, teachers, the primary schools board and the ministry of education. Odia and Omofonmwan (2007) stated that education in Nigeria is besieged by colossal problems such as poor funding, poor educational infrastructure including inadequate classrooms, unqualified teachers and polluted learning environment. In the face of a dismal lack of these vital resources, heads of school's efforts to administer schools diligently will be thwarted. Likely outcomes of this kind of situation include recalcitrant pupils, non-literate population and a subdued teaching workforce to name a few. Many primary schools in Borno State are no exemption from this sour state of affairs. Many are challenged by a constant outbreak of unruly behavior on

the part of pupils, a constant lack of educational amenities as well as an overpopulation of pupils.

### **Funding Primary School Education in Nigeria**

Funding is the amount of money needed to facilitate an on-going project or a programme for future development (Oke et al., 2017). According to Ogbonnaya (2012), funding denotes a certain sum of money kept or made available for a certain purpose. In line with the foregoing discussion, for every nation to develop, the education sector must be fully funded. No nation develops beyond its education level for education is the only tool that can propel every nation towards development for it entails the development of skills, the mind, body and soul which can be very vital towards nation building.

Reacting on the need to fund education especially at the lower levels, UNESCO suggests that for every nation to develop, the country must designate 26% of its budget to education. Sadly, for Nigeria, the budget has never exceeded even 10% to say the least. Oke et al. (2017) asserted that primary education has suffered tremendously in Nigeria from meager funding, uneven allocation of funds and a host of other problems.

Further, this issue is worsened by Nigeria's regular meager percentage allocation to education from the budget (Agbai et al., 2021). Poor funding of education in Nigeria has added to the shocking state of most public schools, with many facilities in dire need of salvation. (Akindele 2012) As a result of the current

demand for education, heads of schools resort to urging the stakeholders in the education sector to work assiduously to provide funding that can be used for facilities, infrastructure and staff welfare. Ayeni and Omobude (2018) observed that the education sector receives only 6.3% of the annual budget for 2021 which is far less than the UNESCO 26% standards. Insufficient funding remains a huge challenge rocking the education sector in Nigeria and it has persevered for years. The funding of the education sector in Nigeria in the last 20 years has lagged some 15-20% suggested benchmark prescribed by the United Nations Educational, Scientific and Cultural Organization (UNESCO).

Given that most nations are struggling to fund education, UNESCO commissioned the Education for All (EFA) scheme to suggest funding for education by numerous states. In their recommendation, Education for All appealed for a momentous escalation in education funding to fast-track progression in the sector (Apie & Moses, 2019). Developed nations owe most of their successes to extensive money spent on education over the years. Countries invest in education for numerous aims, with the regular resolve being the acquisition of skills which drive critical sectors of the economy, wealth creation, strengthen democracy, and the smooth running of society (Taiwo, 2019).

Ige (2016) stated that education qualities in Nigeria should be given importance given that most government schools are relentlessly underfunded which has led to unfavorable

learning environment ranging from insufficient educational infra structure, lack of learning materials, and incompetent teachers. Aside from that, a large number of children in the country lack access to education. Education expenditure has increased and is equally caused by the rapid growth of the school system in the country. The fact remains that the needs and demands in the education sector are limitless, but funds to meet them are limited, necessitating budgeting to prioritize these needs (Anaduaka & Okafor, 2013). For the effective realization of strategic goals, the school administration heavily relies on a good budgetary system. Thus, identifying school goals, allocating costs, and carrying them out or implementing them hold the key to achieving these goals.

### **Factors Affecting Primary School Funding in Nigeria**

Nwafor et al. (2015) and Ugochwukwu et al (2021) highlighted some factors that have continued to affect the funding of primary school education and the education sector in general. These factors include:

1. **Improper Planning:** With good planning, it is possible to know the number of pupils enrolled and the resources allocated to them. Most schools do not keep adequate records and therefore makes it difficult for resources to be shared and allocated.
2. **Inadequate Supervision by Authorities:** There is usually lack of supervision and monitoring of schools by the authorities which affects the activities of the education sector. For primary education to stay

important, consideration must be given on the ways administrative duties are carried out as well as teaching and learning.

3. **Ineffective Monitoring by Government:** The poor monitoring of funding in Nigeria leads to corruption and diversion of funds. Whenever money is sent, there is no follow-up to make sure whether it has been spent properly or not.
4. **Appointment of Head Teachers:** In most cases, the appointment or selection of head teachers in primary school has been politicized. Those with god-fathers in high places are usually considered regardless of their competence. This sort of political meddling affects the achievement of the objectives of primary education since selections are done not on merit but by favoritism.
5. **Lack of Citizen and Civil Society Organization Monitoring:** Citizens do not seem to care about what is happening. Some CSOs also do not put an eye to what is happening therefore giving the administrators and corrupt official the leeway to embezzle funds with impunity.
6. **Incessant Corruption:** Corruption has become the major bane of development in Nigeria. The education sector has been characterized with misappropriation of funds, diversion of resources meant to enhance teaching and learning and many other factors to mention.

### **Statement of the Research Problems**

In the administration of schools, the primary school heads face numerous administrative

problems which directly related to funding and causing great challenges against the effective running of their schools.. There is the general outcry that Primary School Education has not produced the desired objectives as stipulated in the National Policy on Education due to inadequate funding in the system. This has led to many problems, such as delay or non-payment of Primary School teachers' salaries and allowances, inadequate school buildings for learning, poor supervision, poor environment among others, this has drastic effect on the standard of UBE in of Nigeria. It is on the basis of finding solutions to this problem that prompted the researcher to carry out the study on alternative strategies of financing universal basic education for sustainable national development by the school managers in Jere Local Government Borno State Nigeria

### **Objectives of the study**

The objectives of this study are to:

1. investigate the extent at which the funding provided by the stakeholders of education has affected the implementation of primary school education.
2. identify contributions of sectorial bodies such as Education Trust Fund to primary education.
3. investigate the extent at which the funding provided by the community has affected the implementation of primary educational.

### **Methodology**

Descriptive survey research design was used in this study. Surveys capture snapshot of practices, beliefs or situation from a random sample of subjects in field setting through a

survey questionnaire or less frequently, through a structured interview (Creswell, 2012). Available data obtained from Jere local government education authority revealed that there are 56 head teachers in the domain. Therefore, the target population for this study will be all the 56 head teachers and 5 zonal inspectors of Jere local government education authority. Out of 56 head teachers in 5 zones of the local government, 5 head teachers and 1 zonal inspector will be drawn from each zone making a sample of 30 was randomly selected. Simple random sampling technique was adopted which guaranteed every member of the population equal opportunity to be selected. Both primary and secondary data was used in the collection of data. The primary source of data collection was structured questionnaire while the secondary source was the document from Jere local education authority and universal basic education headquarters Maiduguri Borno state (SUBEB)

The instrument was validated by experts in the field of test and measurement. The researcher by the helped of research assistance administered the questionnaire and all instruction was clearly explained to the subjects or respondents so as to minimize error. After clearing, organizing, sorting and coding of the raw data; to ensure the variables of interest meet appropriate statistics, the Statistical Package for the Social Science (SPSS) version 22 was used. Tabulation of simple percentage and frequencies was used to answer the research questions.



**Result Presentation**

The results of the analysis are presented based on the objectives of the study using tabular

form. After the results are presented, discussion of each follows.

**Table 1: Result of funding provided by the stakeholders**

S.N.	Item	Yes %	No %	Total
1.	Do you regularly receive financial assistance from Local Education Authority?	3	10	27 97 100
2.	Do you regularly receive financial assistance from state ministry of Education?	2	2.7	28 93 100
3.	Do you regularly receive financial assistance from universal basic Education board?	5	17	25 83 100
4.	Do you regularly receive financial assistance from federal ministry of Education?		1	3.3 29 97 100

In table 1: the study revealed that, 97% of the respondents were not receiving financial assistance from Federal Government and 93% do not have any financial support state ministry of education, while 90% having financial problems with their Local Education Authority, where 83% do not have financial assistance

from state universal basic education board. considering the above information, there were serious financial problem faced by head teachers in managing their schools. Anderson and Lumby (2005) point out that, there is a high degree of pressure on school heads to raise funds so that their schools are fully functional.

**Table 2: Result of funding provided by the sectorial bodies**

S.N.	Item	Yes %	No %	Total
1.	Do you regularly receive financial assistance from Education trust fund?	7	23	23 76 100
2.	Do you regularly receive financial assistance from foreign bodies?	16	53	14 47 100
3.	Do you regularly receive financial assistance from UNICEF?	10	33	20 67 100

In table 2: the study revealed that 76% of the respondents were not receiving financial assistance from education trust fund, while 67% do not have financial support from unicep. 53% are receiving financial assistance from foreign bodies. The information above generally revealed that most of the schools visited are enjoying financial support from foreign body such as World Bank. Omwami and Keller (2010) are in agreement that because most sub-

Saharan African countries depend on foreign financial aid, it is not surprising that African economies will be unable to provide universal access to education because their national budgets lack the capacity to do so. It is even argued surreptitiously that funds meant for primary schools were grossly misused because there was lack of commitment and good financial administration on the part of officials.

**Table 3: Result of funding provided by the community**

<b>S.N.</b>	<b>Item</b>	<b>Yes %</b>	<b>No %</b>	<b>Total</b>		
1.	Do you regularly receive financial assistance from individuals?	3	10	27	90	100
2.	Do you regularly receive financial assistance from community leaders?	5	17	25	83	100
3.	Do you regularly receive financial assistance from clubs and associations?	4	13	26	86	100
4.	Do you regularly receive financial assistance from parent Teachers Association?	20	67	10	33	100

Result in table 3 revealed that 90% are not receiving financial assistance from individual, while 86% are not receiving financial support from clubs and associations. 83% do not have financial assistance from community leaders and 67% are having financial assistance from parent teachers association. The information above generally revealed that, they are not receiving any financial assistance throughout the community except from parent teachers association (PTA) Apart from different legislations on education in form of ordinances that were enacted, joint responsibility of Regions and Federal Government on education started in the Macpherson Constitution of 1951. The Education Act of 1952 that established Local Education Authorities and Local Education Committees emphasized joint responsibility of the Central, Regional and Local Governments, the local communities and the parents in primary education funding.

**Conclusion**

The importance of primary education in Nigeria’s education system is enormous because it not only lays a sound foundation for scientific and reflective thinking, but it also serves as the foundation upon which other categories of education are established.

Emphasis is now made to Borno State in Nigeria, this study sought to determine the extent at which several challenges inhibit the effective management of primary schools in Nigeria. Utilizing a self-administered questionnaire, the study found among others that, poor funding hampered the smooth running of the schools because it inhibits the maintenance of the available structure, construction of toilets, provision of portable water and fund to the day to day running of school activities will also be affected.

**Recommendations**

Even though the basic education of Nigeria continues to be the government’s top priority, the performance in Nigerian public primary schools is generally deficient in line with the National Policy on Education. This requires providing the minimum conditions for learning in all primary schools, as recommended

- 1) Governments must make difficult decisions about mobilizing and allocating resources in the current economic context
- 2) The government should work to ensure that there is maximum transparency in the management of funding to the primary education.
- 3) The government should also create a central

data-based system that will document all inflows of governments funds allocated to the primary education, to maintain an accurate account of all funds disbursed to public primary schools.

4) school managers should embark on creating

internally generated revenue ( IGR) at the school level to shoulder their minor expenses

5) NGO, philanthropies, parents and individual should have financial support to public primary schools to complement government effort.

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**Perception of Classroom Learning Environment as Predictor of Secondary School Students' Achievement in Chemistry in North-Central Nigeria**

By

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**Abstract**

This correlational study examined the extent to which students' perceptions of their classroom environment predict their chemistry achievement. A sample of 1,104 SS2 chemistry students from 36 public schools in two North-Central Nigeria states and FCT, Abuja were selected using a multistage sampling procedure. Data were gathered using two instruments: Students' Perception of Classroom Learning Environment Questionnaire (SPLEQ), and, Chemistry Students Achievement Test (CSAT). Three experts from Abubakar Tafawa Balewa University Bauchi's Faculty of Technology Education conducted a content and construct validity the instruments. Following a pilot test of the instruments, the CSAT's test-retest reliability (as determined by Pearson Correlation) was found to be 0.874, and the SPLEQ's Cronbach's alpha score was 0.906, indicating the instruments' reliability. To test null hypotheses at  $p < 0.05$  and answer research questions, data collected were analyzed using multiple regression analysis and simple linear regression analysis. The multiple regression analysis results revealed R Square of 0.351. The results also indicated that, of the classroom environment factors, teacher support ( $\beta = .595$ ,  $p = .000$ ) and investigation ( $\beta = .104$ ,  $p = .020$ ) were the greatest predictors. As a result,  $H_{01}$ ,  $H_{02}$ ,  $H_{03}$  and  $H_{04}$  were rejected. The study's findings, concludes that students' perceptions of their classroom environment factors predict their achievement in chemistry, and recommends that a positive classroom environment be created for students by teachers where they are supported by teachers, given the opportunity to conduct investigations, make discovery and, are actively involved, and discuss ideas freely.

**Keywords:** Classroom environment, achievement, chemistry, perception

**Introduction**

The classroom environment features social interaction of students with peers, as well as with the teachers, instructional facilities and accessories (Fraser, 2019). Student learning and academic achievement is significantly impacted by social relationships within the classroom environment (McLure, *et al.*, 2022). In light of the fact that students spend great amount of their formative time within the confines of the classroom, Fraser (2023) observed that their interaction and their experiences exert influences on their learning and learning outcomes. Students' perceptions of the classroom learning environment is essentially a judgment about the quality and the

nature of social relations between teachers and students, or among the students that affect their learning. Hence if these classrooms are perceived as positive by students, they are likely to engage more productively in learning, which most likely increases their academic achievement.

A positive classroom learning environment is perceived for example, when students feel respected by their teachers, when their opinions are taken into consideration, and when they freely and actively interact and communicate with one another (McLure *et al.*, 2022). In contrast, if students perceive the classroom as

not supportive and unfriendly, they engage less, and chances of academic achievement are reduced. Therefore creating positive classroom environment can help students to be academically successful even in challenging subjects like chemistry (Mangubat & Picardal, 2023), where stakeholders always express concerns following the release of external examinations results. In North-central Nigeria also, despite the improvement in performance in the WASSE examinations between 2017 and 2022 for example, many students struggle with learning chemistry as reflected in their low achievement (Usman, 2023). Thousands of students unable to get credit pass in chemistry, typically drop out from pursuing chemistry-related courses in university and other tertiary education institutions, which could have resulted from poor attitude and low engagement, influenced by factors in the classroom environment. Studies have shown classroom factors teacher support, involvement and investigation stand out among others in predicting academic achievement of science students.

**Teacher Support:** The teacher who steers the instructional system is at the center of the whole teaching and learning process, and how the teacher supports the process and social interaction either promote or retards learning and academic achievement. Teacher support lower student anxiety, chemistry. Studies (Wong, *et al.*, 2022; Jamaluddin, *et al.*, 2021; Lei, *et al.*, 2018; Amponsah, *et al.*, 2018) indicate that students who perceive their teachers as supportive show more engagement

and ultimately higher academic achievement, though studies with secondary school chemistry students in north-central Nigeria are underrepresented especially with the low availability of science teachers in the region.

**Involvement:** The term "involvement" describes how students actively participate in class discussions, which provide them with opportunity to show a strong interest in the lessons being taught. Students' delivery and problem-solving skills tend to increase when they actively participate in class discussions and negotiate ideas rather than listening passively. Participation in educational activities by students reduces anxiety and is favorably correlated with their academic achievement (Delfino, 2019; Albena & Anthony, 2018). However, studies involving secondary school chemistry students in North-central Nigeria, characterized by overcrowded classrooms have been minimally reported.

**Investigation:** The purpose of investigation is to provide students the chance to investigate and explore things they are learning. Student investigation refers to the process of learning more about scientific procedures or making an effort at "problem-solving." According to Logar, *et al.*, (2018), classes lacking in student-centered inquiry or investigation is likely to impede the development of students' motivation and problem-solving abilities. Investigation aid transferability of learning because if students acquire a particular skill, they can easily apply it in other areas, and appreciate the relationship between what they learn in class and what they observe physically.

Students actually do science, as they are engaged in hands-on activities, manipulating equipment to find solutions to problems, hence perform better than other students who do not (Cairns, 2019). Such claim however needs to be confirmed especially with students of schools in north-central Nigeria, a region characterized with challenges of inadequate laboratory facilities in schools.

### **Theoretical Framework**

According to social cognitive theory, social context plays a major role in human learning. People often pick up specific knowledge and abilities, as well as ideas and attitudes, from watching and engaging with others. Human outcomes were explained by Bandura (1986) using a framework of triadic reciprocal determinism, which included two-way interactions between behavioral, personal, and human environment variables. Social cognitive theory can be applied to chemistry classroom learning situations where students' interaction with peers, teachers and physical resources shape students engagement in learning. The environment may influence personal affect such as anxiety that negates learning. For example, students view chemistry as difficult because of its abstract nature (Musengimana *et al.*, 2021). The social interaction within the classroom influence the individual's behavior towards learning, lead to more engagement, which subsequently alter cognition and the environment (Bandura, 1997).

### **Literature Review**

Researchers Ezike (2018) found that the classroom setting was correlated with

chemistry achievement. The correlational study, which included 208 senior secondary school students in Ibadan, South-West Nigeria, found a favorable and statistically significant association between students' achievement in chemistry and the classroom environment. Sample size and location however limits generalization to Northern Nigeria. The degree to which students' achievement in chemistry was connected with the classroom environment as perceived by one hundred secondary school students was evaluated by Nja and Obi (2019). The study which used independent sample t-test, found substantial correlation between the students' perceptions of the classroom environment and their achievement in chemistry in Calabar. While the sample size and context limits generalization, the statistical analysis provides only binary comparisons against the multifactor nature of the classroom environment.

Eya, et al., (2020) in a study which investigated relationship between psychosocial factors of classroom environment and academic achievement of 100 chemistry students in secondary schools in Nsukka, Nigeria found that the class environment influenced students' academic achievement. However, t-test and linear regression used to analyze data provided limited insights into the multiple factors of the classroom. Orongan and Nabua (2020) in a study which utilized causal-comparative design to investigate the relationship between factors of classroom environment and 1,123 science students' performance in Philippines' secondary schools found that classroom



environment factors significantly correlated with students' achievement. However difference in geographical and cultural context such as North-central Nigeria, characterized with overcrowded classrooms, inadequate qualified science teachers and laboratory facilities could provide more insight into the relationships between classroom environment and achievement. The present study therefore aimed to investigate students' perception of classroom environment as predictor of their achievement in chemistry in North-Central Nigeria.

**Research Questions:** The following research questions guided the study

1. To what extent does senior secondary school students' perception of teacher support predict their achievement in chemistry?
2. To what extent does students' perception of involvement predict their achievement in chemistry?
3. To what extent does students' perception of investigation predict their achievement chemistry?
4. To what extent does students' perception of classroom environment factors, teacher support, involvement and investigation predict their achievement in chemistry?

**Research Hypotheses:** The following null hypotheses were tested at  $p < 0.05$

H<sub>01</sub>: There is no significant relationship between senior secondary school students' perception of teacher support and their achievement in chemistry

H<sub>02</sub>: There is no significant relationship between students' perception of Students cohesiveness and involvement with their achievement in chemistry.

H<sub>03</sub>: There is no significant relationship between students' perception of investigation and their achievement in chemistry.

H<sub>04</sub>: There is no significant difference in the predictive ability of classroom environment factors teacher support, involvement and investigation on their achievement in chemistry

### **Methodology**

The study is a correlational study and data on variables collected from participants were correlated for statistical relationships while the variables were not manipulated by the researcher (Creswell, 2012; Roni, Merga & Morris, 2020). The study was carried out in two states in North-Central Nigeria, Nasarawa and Niger States, and the FCT Abuja. The target population was 37,468 senior secondary two (SS2) science students enrolled in 417 public senior secondary schools. The sample of the study was 1,104 senior secondary two (SS2) chemistry students drawn from 36 public secondary schools using multistage sampling. Three states were selected. From each of the states, 3 educational zones were randomly selected and 4 public schools were randomly selected from each educational zone. The schools selected include both rural and urban located schools. The sample was selected from the 36 public schools.

Two instruments were used for data collection which include Students' Perception of Learning Environment Questionnaire (SPLEQ) with 24 items in 3 subscales; and Chemistry Students' Achievement Test (CSAT), a 40 item test instrument which comprises multiple choice items, open-ended question items and practical-related question items. Content and construct validation of the instruments were conducted in the Faculty of Technology Education, Abubakar Tafawa Balewa University, ATBU, Bauchi by 3 experts-two in chemistry education and one in measurement and evaluation. The instruments were subjected to a pilot study involving SS2 students of a community school which share cultural similarity with public schools in North-Central Nigeria. Administration of the CSAT was carried out twice within a two-week interval as test and retest, while the SPLEQ was administered once. Pearson correlation coefficient was used to calculate test-retest reliability of the CSAT as 0.874 while Cronbach's alpha was used to calculate internal consistency of the SLEPQ as 0.906. The values indicated good reliability of the two instruments (Cohen & Swerdilk, 2018; Taber, 2018).

The instruments were administered to the SS2 students after seeking permission from the

zonal education offices and the schools principals. The data was collected in the mid 3<sup>rd</sup> term of the 2023/2024 academic session before the end of term examinations. The researcher with the help of research assistants administered the SPLEQ and CSAT, which took average of 14 and 50 minutes respectively to complete. After collection, linear regression analysis was used to answer research questions 1,2,3 and test  $H_{01}$ ,  $H_{02}$ ,  $H_{03}$ , while Multiple regression was used to answer research question 4 and test  $H_{04}$  at  $p < 0.05$ .

**Results Presentation**

Research Question 1: To what extent does senior secondary school students' perception of teacher support predict their achievement in chemistry?

To answer research question 1, the sample correlation in Table 1 was .586 and R Square 0.301 indicating approximately 30.1% of variance in students' achievement can be explained by students' perception of teacher support. Teacher support positively and moderately predict achievement in chemistry. This show that increased teacher support in chemistry classroom could result in a higher achievement of students.

**Table 1:** Regression Summary on teacher support as predictor of students' achievement

Model	R	R Square	Adjusted R Square	F	df	Sig	Decision
1	.537	.301	.299	447.350	1	.000	Significant

Dependent Variable: Chemistry Achievement

Research Question 2: To what extent does students' perception of involvement in class predict their achievement in chemistry?

Examined the relationship between involvement and achievement. In Table 2, the sample correlation of 0.328 and R Square of

0.108 indicating about 10.8% of variance in achievement is explained by involvement. Though the result indicate a low relationship, it is positive. This shows that increased student involvement in the chemistry classroom could lead to a higher academic achievement.

**Table 2:** Regression Summary on relationship between involvement and students' achievement

Model	R	R Square	Adjusted R Square	F	df	Sig	Decision
1	.328	.108	.107	132.910	1	.000	Significant

Dependent Variable: Chemistry Achievement

Research Question 3: To what extent does senior secondary school students' perception of investigation predict their achievement in chemistry? In Table 3, the sample correlation 0.537 and R Square of 0.301 indicate about 30.1% of variance in students' achievement in

chemistry is accounted for by investigation. This shows that student could become more academically successful in chemistry if they are given more opportunities to conduct investigations.

**Table 3:** Regression Summary on investigation as predictor of students' achievement

Model	R	R Square	Adjusted R Square	F	df	Sig	Decision
1	.537	.301	.299	447.350	1	.000	Significant

Dependent Variable: Chemistry Achievement

Research Question 4: To what extent does senior secondary school students' perception of teacher support, involvement and investigation combined together predict their achievement in chemistry? Table 4, the sample correlation of 0.591 and R Square of 0.351 indicate about 35% of variance in achievement is explained

for by linear combination of variables teacher support, involvement and investigation. The moderate relationship is stronger than each variable individually, meaning that the three variables together exert a stronger predictive relationship and could result in higher achievement in chemistry.

**Table 4:** Regression Summary on teacher support, involvement and investigation as predictors of achievement

Model	R	R Square	Adjusted R Square	F	df	Sig	Decision
1	.591	.351	.349	196.338	3	.000	Significant

Dependent Variable: Chemistry Achievement

H<sub>01</sub>: There is no significant relationship between senior secondary school students' perception of teacher support and their achievement in chemistry.

From Table 1, R Square was 0.343 and the p-value is 0.000 which is significant (p<0.05). In Table 5, Standardized coefficient regression

**Table 5: Beta Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients		Decision
		B	Std. Error	Beta	t	
1	(Constant)	8.611	.623		13.821	.000
	Teacher Support	.648	.027	.586	23.995	.000 Significant

a. Dependent Variable: Chemistry Achievement, S: Significant

weights ( $\beta$  which examined to identify the extent to which teacher support contributed to the variance in students' achievement), show perception of teacher support positively contributed to performance. The  $\beta$  coefficient ( $\beta=0.586$ ) was positive and significant ( $p=0.000<0.05$ ). As a result, H<sub>01</sub> was rejected.

H<sub>02</sub>: There is no significant relationship between students' Perception of Involvement in class and their achievement in chemistry

Table 2 described the relationship between scales students' perception of involvement and their achievement. R Square was 0.360 and the p-value is 0.000 which is significant (p<0.05). In Table 6, Standardized regression weights ( $\beta$

**Table 6: Beta Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients		Decision
		B	Std. Error	Beta	t	
1	(Constant)	15.163	.708		21.420	.000
	Involvement	.375	.033	.328	11.529	.000 Significant

a. Dependent Variable: Chemistry Achievement, S: Significant

H<sub>03</sub>: There is no significant relationship between students' Perception of Investigation in class and their achievement in chemistry.

The sample correlation of 0.537 and R Square of 0.301 and p-value 0.000 which is significant

which examined to identify how the variable contributed to the variance in students' achievement), show the  $\beta$  coefficient ( $\beta=0.328$ ) was also positive and significant ( $p=0.000<0.05$ ). This showed there was significant relationship between involvement and achievement scores. As a result, H<sub>02</sub> was rejected.

( $p=0.000$ ) as reported in Table 3. In Table 7, Standardized coefficient regression weights ( $\beta$  coefficient  $\beta=0.537$ ) was positive and significant ( $p=0.000<0.05$ ). The results showed there was significant relationship between investigation and achievement scores, therefore, H<sub>03</sub> was rejected.

**Table 7: Beta Coefficients**

		Unstandardized Coefficients		Standardized Coefficients		Decision
		B	Std. Error	Beta		
1	(Constant)	9.775	.650	15.049	.000	Significant
	Teacher Support	.603	.028	.537	21.510 .000	

a. Dependent Variable: Chemistry Achievement, S: Significant

H<sub>04</sub>: There is no significant difference in the predictive ability of classroom environment factors teacher support, involvement and investigation on their achievement in chemistry

The results from Table 4 showed R square 0.351 and p-value 0.000 (significant) that students' perception of classroom environment factors positively and moderately predict

achievement. Table 8 shows the beta coefficients ( $\beta$  which examined to identify how the relative contribution of each variable to the variance in students' achievement). Teacher support was the strongest predictor ( $\beta = 0.595$ ;  $p = 0.000 < 0.05$ ) which was significant, followed by investigation ( $\beta = 0.104$ ;  $p = 0.02 < 0.05$ ), while involvement was not significant ( $\beta = 0.064$ ;  $p = 0.321 > 0.05$ ). H<sub>04</sub> was rejected.

**Table 4: Beta Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.	Decision
		B	Std. Error	Beta				
1	(Constant)	9.298	.672	13.830	.000			
	Teacher Support	.658	.068	.595	9.722	.000		S
	Involvement	.072	.072	.064	.993	.321		NS
	Investigation	.119	.039	.104	3.065	.020		S

Dependent Variable: Chemistry Achievement, S: Significant, NS: Non-significant

**Discussion of the Findings**

The study revealed that teacher support predict student' achievement in chemistry. This supports the findings of Li and Singh (2022), Jamaluddin *et al.*, (2021), and Wong, *et al.*, (2022) that achievement is predicted by students' perceptions of the teacher's support in the classroom. This implies that when students feel accepted and supported by the teacher, they engage more, leading to better achievement.

Involvement showed weak positive relationship with achievement. Involve-ment in classroom activities reduces anxiety. This

agrees with the findings of Delfino (2019) and Fink *et al.*, (2020), who found that a feeling that a student belongs to the group, involves in class activities increases engagement leading to improved achievement. The weak relationship obtained however could have a link with the overcrowded nature of classrooms in North-central Nigeria.

The study also revealed that investigation moderately predicts achievement. The report concurs with Cairns (2019) that investigation and laboratory experi-

ments predict improved achievement. This means that students who engage in inquiry, thinking about evidences, carry out investigations to test ideas and find answers to puzzling questions tend to get better achievement scores.

According to the study, it was revealed that students' perception of classroom learning environment influences how well they would perform in chemistry. This is consistent with other studies which emphasize how positive perceptions of classroom factors are important predictors of achievement, such as findings by Orongan and Nabua (2020), Ezike (2018), Nja and Obi (2019), and Eya *et al.*, (2020), which discovered a substantial correlation between students' achievement in chemistry and their perception of the classroom learning environment. The general finding implies that students would record higher academic achievement in chemistry in a supportive classroom environment, where they are actively involved in class activities, are supported by teachers and are allowed to conduct their own investigations.

### **Conclusion**

The study highlight the importance of classroom environment factors in predicting students' achievement. These findings are consistent with previous research on the positive relationship between classroom environment factors as perceived by students and students' achievement in science subjects like chemistry. Stakeholders in education therefore need to consider interventions that promote supportive and positive classroom

environment so as to make up for higher achievement in chemistry.

### **Recommendation**

Supportive classroom learning environment should be created for students by stakeholders where they are supported by teachers, allowed to discuss ideas freely and have a shared role in class, allowed to conduct investigations and discover scientific findings. This will enable students to engage more productively leading to higher achievement.

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**Internally Generated Revenue and University Sustainability**

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**Abstract**

This study investigates the critical relationship between internally generated revenue (IGR) and university sustainability, focusing specifically on tuition/fees revenue and grant acquisition as sub variables. The main objective is to analyze the impact of these revenue sources on key indicators of institutional sustainability. A descriptive survey methodology was employed, utilizing a questionnaire administered to 85 administrative staff members at Igbinedion University, Benin, Edo State. Data was collected via an online survey and analyzed using Pearson correlation. The findings reveal a moderately strong positive correlation between tuition/fees revenue and grant acquisition, and key indicators of university sustainability, including financial resilience, academic excellence, and stakeholder satisfaction. Additionally, both revenue sources demonstrate positive correlations with key indicators of sustainability, such as financial resilience, academic excellence, and stakeholder satisfaction. In conclusion, the study highlights the significance of diversified revenue streams in enhancing university sustainability. Recommendations include fostering a culture of innovation, optimizing financial management practices, and strengthening stakeholder engagement to ensure long-term viability and effectiveness of higher education institutions.

**Keywords:** *Internally Generated Revenue*, university sustainability, administrative staff, tuition fee revenue and grant acquisition

**Introduction**

In the realm of higher education, the sustainability of universities is increasingly tied to their ability to generate revenue internally. Internally generated revenue (IGR) plays a pivotal role in addressing the financial challenges universities face today, as highlighted in recent studies (Gbolahan, 2023). This paper delves into the critical relationship between IGR and university sustainability, with a focus on tuition/fees and grants as key components. Globally, universities are facing reduced government funding, compelling them to seek alternative revenue streams to maintain

operations and academic excellence (Okeke & Ogunbayo, 2021). In Nigeria, universities face financial hurdles due to rising operational costs and increasing student enrollments, further exacerbated by a growing demand for modern infrastructure (Adediran & Olutola, 2023).

The financial landscape of higher education has undergone significant transformations, influenced by evolving economic conditions, regulatory frameworks, and societal expectations (Afolabi & Adeola, 2022). As universities compete for limited resources, their ability to generate internal revenue through tuition and

grants has become essential for their long-term viability (Ajayi & Ojo, 2022). Tuition and fees are currently the largest contributors to IGR, though rising costs are raising concerns about equitable access to education (Ibrahim & Yusuf, 2023). Grants from external sources, such as private foundations and international organizations, have also become critical for supporting research and development (Nwosu & Ifediora, 2023). As these two streams grow in importance, universities must find a balance between increasing revenue without compromising accessibility and academic quality (Olubunmi & Lawal, 2023). Failing to manage this balance could jeopardize the sustainability of higher education, particularly in developing countries like Nigeria. Tuition/fees and grants play distinct but complementary roles in shaping the financial health of universities. Tuition revenue supports academic programs, infrastructure, and student services, while grants fuel research and innovation. Universities with robust grant portfolios can bolster their research infrastructure and enhance their societal impact (Garcia, 2023). Together, these revenue streams form the foundation for financial stability, academic excellence, and institutional resilience (Roberts & Anderson, 2022). Beyond tuition and grants, universities are increasingly exploring diverse revenue streams, such as philanthropic donations, intellectual property, and continuing education programs, to bolster their financial resources (Chen & Smith, 2023). By adopting innovative revenue strategies and fostering interdisciplinary collaboration, universities can

better position themselves for success in a rapidly evolving higher education landscape. As they adapt to this new reality, universities must prioritize financial management strategies that optimize revenue, enhance operational efficiency, and align with their academic mission (Hill, 2023). This approach will ensure that universities continue to serve as engines of innovation and progress in the 21st century.

### **Problem Statement**

Universities in Nigeria grapple with a plethora of challenges as they strive for long-term sustainability. Rising operational costs, influenced by factors such as inflation and technological advancements (Ogbeide & Ebohon, 2020), impose considerable financial strains on these institutions. Additionally, heightened competition for external funding, including government grants and philanthropic donations, intensifies the pressure on Nigerian universities to diversify their revenue streams (Adeyemi & Ogunnaike, 2019). This competition is further compounded by changing student demographics, with an increasing demand for online and flexible learning options necessitating significant investments in digital infrastructure and instructional design (Oladipo & Oladipo, 2018). Simultaneously, evolving regulatory landscapes, characterized by shifting accreditation standards and compliance requirements, add complexity to resource allocation and strategic planning efforts (Owoseni & Agbonlahor, 2021). In light of these multifaceted challenges, understanding the role of internally generated revenue (IGR) becomes

imperative for university administrators and policymakers in Nigeria. By elucidating the dynamics of revenue generation within the Nigerian university ecosystem, stakeholders can develop informed strategies to enhance financial resilience, promote academic excellence, and uphold institutional mission and values.

### **Research Questions**

The following research questions were raised for the study:

1. What is the relationship between tuition/ fees and the financial sustainability of universities?
2. What is the relationship between grants in supporting research and innovation within universities?

### **Hypotheses**

1. **Ho:** There is no significant positive relationship between tuition/fees revenue and the financial sustainability of universities.
2. **Ho:** There is no significant positive relationship between university grant funding for greater research output and innovation capacity.

### **Conceptual Review**

The conceptual framework of this study is based on the understanding that universities operate as complex institutions with diverse revenue streams that are essential to their sustainability. Two primary sources of internally generated revenue (IGR) are tuition/fees and grants, each contributing uniquely to a university's financial foundation. Tuition/ fees represent direct contributions from students and their families, while grants serve as external investments aimed

at fostering academic research and institutional development. Together, these revenue streams provide the financial resources necessary for universities to maintain their operations and advance their mission in an era of dwindling government support.

### **Tuition/Fees Revenue**

Tuition and fees have become critical components of university funding. In recent years, this revenue stream has gained increasing importance, especially in countries where state funding has significantly decreased (Abolaji, 2022). Rising operational costs and growing student enrollment have driven universities to depend more heavily on tuition revenue to fund academic programs, build infrastructure, and support student services (Brown & Johnson, 2021). As a result, institutions are prioritizing enrollment management strategies to attract and retain students, recognizing that fluctuations in enrollment directly impact their financial stability (Garcia, 2023). Demographic shifts, changing student preferences, and economic conditions all play crucial roles in shaping these revenue streams (Roberts & Anderson, 2022). Despite its importance, overreliance on tuition/fees poses challenges. Economic downturns, such as the global financial crisis and the COVID-19 pandemic, have exposed the vulnerability of institutions that rely too heavily on student fees (Hill & Brown, 2021). Furthermore, the increasing cost of education has sparked debates about affordability and the burden of student debt, raising concerns about the long-term sustainability of tuition-dependent models

(Wilson & Smith, 2022). Recent studies call for greater transparency and equity in tuition policies to ensure access to education for students from all socioeconomic backgrounds (Owoseni & Agbonlahor, 2021). To mitigate these challenges, universities are exploring innovative revenue management strategies. Differential tuition models, which charge varying rates based on program type, as well as merit-based scholarships and targeted financial aid programs, are among the approaches being adopted to diversify revenue streams and make education more affordable (Oladipo & Oladipo, 2018). Empirical evidence supports the effectiveness of these strategies in attracting diverse student populations, improving retention, and stabilizing revenue (Adeyemi & Ogunnaike, 2019). Additionally, advances in data analytics and predictive modeling are helping institutions forecast enrollment trends and optimize their pricing strategies (Gbolahan, 2023). Beyond financial considerations, tuition revenue also plays a key role in institutional innovation. Universities with strong tuition/fees revenue are able to invest in faculty development, research infrastructure, and student support services, all of which contribute to higher academic quality and enhanced institutional reputation (Garcia & Johnson, 2022). Studies have demonstrated the positive relationship between tuition revenue and academic excellence, suggesting that institutions with robust tuition income are better equipped to improve faculty-student ratios, provide state-of-the-art learning resources, and offer comprehensive student services (Smith, 2023).

The growing dependency of Nigerian universities on tuition/fees revenue, in particular, highlights the challenges faced by institutions in developing nations. As government funding declines, many universities are forced to raise tuition, which in turn affects accessibility, particularly for low-income students (Adediran & Olutola, 2023). This situation underscores the need for well-designed financial aid programs that can offset the impact of rising tuition costs (Ibrahim & Yusuf, 2023).

### **Grant Revenue**

Grants, another essential source of IGR, offer universities opportunities to fund research, innovation, and development projects. These external funds, sourced from government agencies, private foundations, and corporate sponsors, play a pivotal role in advancing scientific discoveries and addressing societal challenges. Research-driven institutions with strong grant portfolios often experience enhanced research capacities, faculty development, and global recognition (Nwosu & Ifediora, 2023). Grants not only provide financial resources but also elevate universities' reputations as centers of innovation and thought leadership. Universities with diversified revenue streams that include grants are typically better positioned to withstand fluctuations in student enrollment and government funding. These institutions use grant revenue to fuel research endeavors, often resulting in interdisciplinary collaborations that advance knowledge and promote economic development (Garcia, 2023). The importance of grants in driving innovation is particularly

evident in the STEM fields, where external funding supports groundbreaking research and attracts top-tier faculty and students (Chen & Smith, 2023). Both tuition/fees and grant revenue are fundamental to the financial sustainability of universities. However, the challenge lies in balancing revenue generation with the need to provide equitable access to education. Universities must navigate a complex landscape of competing financial demands, ensuring that they generate sufficient revenue without compromising accessibility and academic excellence. This study explores how universities can manage this balance effectively, offering insights into the strategies that institutions can adopt to achieve financial sustainability while maintaining their core educational mission. Recent empirical evidence underscores the transformative potential of grant funding in advancing knowledge frontiers, addressing societal challenges, and fostering interdisciplinary collaborations. However, challenges related to grant acquisition, management, and sustainability necessitate strategic investments, adaptive strategies, and institutional collaborations.

### **Theoretical Framework**

This study is guided by Institutional Theory, focusing specifically on isomorphism, a concept introduced by DiMaggio and Powell (1983). Institutional Theory posits that organizations, including universities, are influenced by external pressures to conform to established norms, values, and practices. Isomorphism, a central feature of this theory, explains how organizations

tend to adopt similar structures and behaviors in response to these external forces. This framework is pertinent to exploring the relationship between internally generated revenue (IGR) and university sustainability. Isomorphism is categorized into three forms: coercive, mimetic, and normative (Scott, 2008). Coercive isomorphism involves pressures from external entities such as government bodies, regulatory agencies, and accrediting organizations. For example, universities may adjust their tuition or grant policies to comply with government regulations or to qualify for public funding (Owoseni & Agbonlahor, 2021). These external pressures can drive universities to modify their revenue strategies to align with national or regional educational policies. Mimetic isomorphism occurs when organizations imitate practices from other institutions perceived as successful. Universities might replicate the tuition structures or grant-seeking practices of prestigious institutions to improve their financial standing and gain legitimacy (Adeyemi & Ogunnaike, 2019). Normative isomorphism arises from the influence of professional norms and values. Universities may align their policies with societal expectations, such as promoting affordability and accessibility in higher education (Garcia & Johnson, 2022). This reflects the influence of shared values within the academic community, where institutions strive to balance financial sustainability with social responsibilities like inclusivity and equity.

Applying Institutional Theory to this research provides insights into how universities adapt their

IGR strategies in response to external pressures and institutional norms. It explains why universities adopt specific revenue-generation practices amidst financial challenges. The theory helps to understand how universities navigate these pressures to achieve financial stability, maintain academic quality, and meet societal expectations. By using this theoretical framework, the study reveals how coercive, mimetic, and normative forces collectively shape revenue-generation strategies in universities. Furthermore, it offers a structured perspective on how universities' efforts to increase tuition revenue or secure grants are influenced by broader institutional expectations and external mandates. This theoretical approach is essential for examining higher education sustainability, particularly as universities face increasing pressure to become self-sustaining due to reduced government funding. It facilitates an exploration of the strategies universities adopt and their impacts on both financial stability and educational equity. The findings from this research could inform policy recommendations that balance financial resilience with accessibility and excellence in higher education.

### **Empirical Review**

Recent empirical studies shed light on the intricate dynamics of internally generated revenue (IGR) and its implications for university sustainability. Six key studies provide valuable insights into various aspects of IGR, including tuition/fees revenue and grants, and their impact on institutional resilience, competitiveness, and effectiveness. Brown & Johnson (2021)

conducted a comprehensive analysis of tuition/fees revenue trends in public universities in the United States. Their study examined the factors influencing tuition/fees increases, enrollment patterns, and the relationship between tuition revenue and institutional budgets. Findings revealed a significant dependence on tuition/fees revenue to offset declines in state funding, highlighting the importance of tuition policies in sustaining university operations.

Garcia (2023) investigated the role of grants in supporting research and innovation within universities. Their study analyzed grant acquisition strategies, funding sources, and the impact of grant funding on research productivity and collaboration. Results indicated a positive correlation between grant funding and research output, with universities leveraging grants to advance knowledge frontiers and address societal challenges. Oladipo & Oladipo (2018) explored the challenges and opportunities associated with grant management in Nigerian universities. Their qualitative study examined the administrative, financial, and compliance aspects of grant-funded projects, highlighting the need for capacity-building initiatives and streamlined processes to enhance grant effectiveness and sustainability. Adeyemi & Ogunnaike (2019) conducted a comparative analysis of tuition/fees policies in public and private universities in Nigeria. Their study examined the affordability, accessibility, and equity implications of tuition/fees structures, drawing insights from student surveys and financial aid data. Results revealed disparities in tuition/fees burden among students from different

socioeconomic backgrounds, underscoring the importance of equitable tuition/fees policies in promoting access to higher education. These empirical studies provide valuable insights into the complex dynamics of internally generated revenue and its implications for university sustainability. By examining tuition/fees policies, grant acquisition strategies, and the institutional factors influencing revenue generation, researchers contribute to a deeper understanding of the challenges and opportunities facing universities in today's rapidly evolving higher education landscape.

### **Methodology**

This study employed a descriptive survey design to investigate the relationship between internally generated revenue (IGR) and university sustainability, focusing on Igbinedion University, Benin, Edo State. The methodology includes details on the population, sampling procedure, data collection methods, and analysis techniques. The study targeted the administrative staff involved in financial management, planning, and revenue generation, totaling approximately 120 members. A sample of 85 staff was selected using simple random sampling, determined by Taro Yamane's formula:  $n = \frac{N}{1 + N(e^2)}$

where N is the total population (120) and e is the error margin (0.05). This calculation ensured a statistically significant sample size. An official request was sent to the university's management for permission to engage their staff. Upon approval, an online survey link was distributed via the university's internal email system.

Participants were instructed on completing the survey and assured of confidentiality. Follow-up reminders were used to boost response rates. Data were collected through a structured online questionnaire divided into sections on: Demographic information, Tuition/fees revenue, Grant acquisition strategies, University sustainability indicators. The questionnaire was developed from existing literature and piloted with 10 participants to ensure reliability and clarity. Feedback led to adjustments in the survey instrument. Data were analyzed using Pearson correlation to assess the relationship between tuition/fees revenue, grant acquisition, and sustainability indicators. Correlation coefficients and p-values indicated the strength and direction of these relationships, with values ranging from -1 (perfect negative correlation) to +1 (perfect positive correlation). Results were presented in tables, highlighting correlation coefficients and significance levels. The analysis identified trends and significant relationships, providing insights into financial strategies for enhancing university sustainability. Statistical software facilitated the processing and interpretation of the data, leading to practical recommendations for improving revenue generation and ensuring institutional resilience.

### **Data Analysis**

The collected data was subjected to statistical analysis using Pearson correlation to examine the relationship between tuition/fees revenue, grant acquisition, and key indicators of university sustainability. The analysis yielded the following results:

**Table 1: Pearson Correlation Coefficients**

Variable	Tuition/Fees Revenue	Grant Acquisition
Tuition/Fees Revenue	1.00	0.68
Grant Acquisition	0.68	1.00

Source: Field Survey (2024)

Table 1 presents the Pearson correlation coefficients between tuition/fees revenue and grant acquisition. The coefficient between tuition/fees revenue and grant acquisition is 0.68, indicating a moderately strong positive correlation between these variables. This

suggests that as tuition/fees revenue increases, there is a tendency for grant acquisition to also increase, and vice versa. This finding underscores the complementary nature of tuition/fees revenue and grant acquisition in contributing to university sustainability.

**Table 2: Summary Statistics of Tuition/Fees Revenue and Grant Acquisition**

Variable	Mean	Standard Deviation	Minimum	Maximum
Tuition/Fees Revenue	₦50,000	₦ 15,000	₦30,000	₦80,000
Grant Acquisition	₦25,000	₦10,000	₦15,000	₦40,000

Source: Field Survey (2024)

Table 2 presents the summary statistics of tuition/fees revenue and grant acquisition. The mean tuition/fees revenue is ₦50,000 with a standard deviation of ₦15,000, indicating variability in revenue across respondents. Similarly, the mean grant acquisition is ₦25,000 with a standard deviation of ₦10,000, reflecting

variations in grant funding among administrative staff. The range of values for both variables underscore the diversity of revenue sources within the university and highlights the importance of financial planning and resource allocation.

**Table 3: Correlation Matrix of Tuition/Fees Revenue, Grant Acquisition, and University Sustainability Indicators**

Variable	Tuition/Fees Revenue	Grant Acquisition	Financial Resilience	Academic Excellence	Stakeholder Satisfaction
Tuition/Fees Revenue	1.00	0.68	0.45	0.60	0.55
Grant Acquisition	0.68	1.00	0.40	0.55	0.50
Financial Resilience	0.45	0.40	1.00	0.75	0.60
Academic Excellence	0.60	0.55	0.75	1.00	0.70
Stakeholder Satisfaction	0.55	0.50	0.60	0.70	1.00

Source: Field Survey (2024)

Table 3 presents the correlation matrix between tuition/fees revenue, grant acquisition, and key indicators of university sustainability, including financial resilience, academic excellence, and stakeholder satisfaction. The correlation coefficients highlight the relationships between these variables. For instance, there is a positive

correlation between tuition/fees revenue and financial resilience (0.45), academic excellence (0.60), and stakeholder satisfaction (0.55), indicating that higher tuition/fees revenue is associated with greater financial stability, academic quality, and stakeholder support.



## **Discussion**

This study highlights the crucial relationship between internally generated revenue (IGR) and university sustainability by analyzing tuition/fees revenue, grant acquisition, and key performance indicators. The results show a moderately strong positive correlation between tuition/fees revenue and grant acquisition, indicating that these revenue streams complement each other in supporting university sustainability. This finding aligns with existing literature on the significance of diversified revenue sources for long-term viability (Brown & Johnson, 2021). Viewed through Institutional Theory, particularly mimetic isomorphism, universities often adopt successful strategies from peers to enhance their financial health (DiMaggio & Powell, 1983; Scott, 2008). The study's results reflect this behavior, where universities emulate practices from successful counterparts to improve outcomes. The positive correlation between tuition/fees and grants underscores their interdependence in sustaining academic programs, research, and student services (Roberts & Anderson, 2022; Oladipo & Oladipo, 2018). The variability in revenue sources among administrative staff highlights the diverse financial environments within universities, emphasizing the need for strategic financial management influenced by normative pressures (Garcia & Johnson, 2022). The study also found that higher levels of IGR are associated with stronger indicators of sustainability, such as financial resilience, academic excellence, and stakeholder satisfaction (Hill, 2023). From an

Institutional Theory perspective, the pursuit of diverse revenue streams responds to external pressures. Universities use coercive isomorphism to meet regulatory requirements and normative isomorphism to align with societal expectations for affordability and accessibility. These strategies help universities maintain their reputation and competitiveness in the evolving higher education market, thereby enhancing their financial and operational resilience.

## **Summary**

This study investigated the relationship between internally generated revenue (IGR) and university sustainability, focusing on tuition/fees revenue and grant acquisition. A descriptive survey design was used to collect data from 85 administrative staff members of Igbinedion University, Okada, via an online questionnaire. Pearson correlation analysis revealed a moderately strong positive correlation between tuition/fees revenue and grant acquisition, indicating their complementary roles in supporting university operations. Institutional Theory provided a framework for understanding these findings, illustrating how coercive, mimetic, and normative isomorphism influence universities' financial strategies. The analysis also showed positive associations between revenue sources and key sustainability indicators such as financial resilience, academic quality, and stakeholder satisfaction. These results highlight the significance of IGR in enhancing university sustainability and offer insights for policymakers and administrators to improve financial resilience

and academic excellence while balancing affordability and accessibility.

**Recommendations**

1. Based on the findings of the study, it is recommended that universities prioritize the optimization of tuition and fee structures as a means of enhancing their financial sustainability. This can be achieved by developing flexible, yet competitive, tuition models that reflect both market demands and the financial capacity of students.
2. To foster research and innovation, universities should actively seek grant funding from external sources, including government agencies, private foundations, and international organizations. The study highlights the significant role grants play in supporting research initiatives and driving innovation.

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**Impact of Innovative Strategies in Mathematics on the Academic Performance of Junior Secondary School Student of Ibadan North Local Government Area, Oyo State, Nigeria**

By

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**Abstract**

This study is conducted to determine the effect of innovative methods of teaching on the academic performance of junior secondary school mathematics students in Ibadan North Local Government Area of Oyo State, putting into consideration variables such as peer tutoring, problem-based learning, discovery learning and cooperative methods. Four research questions were articulated, and four hypotheses were formulated to guide the study. The study employed a quasi-experimental research design. The population for the study were all junior secondary two in Ibadan North Local Government Area. A purposive random sampling technique was employed to select five schools and twenty (2) students were picked from each of the schools totaling 100 students. The population for the study consist all Junior Secondary School Two (JSS 2) students in Ibadan North Local Government Area.. A fifty (50)-items 'Mathematics Achievement Test' (MAT). The instrument was face and content validated. Using Kuder Richardson formula 21, a reliability index of 0.78 was obtained. Research questions were answered using mean and standard deviation. Hypotheses were tested using t-test analysis at 0.05 level of significance. The result of the study revealed that students taught with peer tutoring, problem-based learning, discovery learning and cooperative methods achieved significantly higher than those taught using the conventional method. The educational implications of these findings were discussed, and various recommendations were made.

**Keywords:** *Mathematics*, innovative teaching, strategies academic performance, students

**Introduction**

Education is generally concerned with the transmission of worthwhile values and skills, knowledge and activities that can develop the learner's potentials for national development. The role of education as a potential tool for cultural, social, political, scientific and technological development cannot be overemphasized (Stone, 2017).

It must also be noted that educational systems were said to produce the skilled manpower and the new knowledge required for technological advancement and economic growth. Iben (2020) said that, various governments and many stakeholders usually embark on so many changes but such changes are not usually

implemented fully or implemented at all. For instance, lack of teacher commitment may produce only positive compliance with change and thus the potentials benefit of the change may not be fully realized.

Changes in education often come about when the current practices are challenged and questions are raised about the way things are done. The search for more efficient ways of achieving educational objectives may lead to proposal for either a new way of doing the same thing or instructing the current provision to enable the achievement of the same set of goals. Also, Mathematics Education in Nigeria has come a long way. In the traditional society,

before the introduction of formal education, Mathematics was used mainly in taking stock of daily farming and trading activities. Even in the system of education, Mathematics occupied a central position in the school curriculum (Balbalosa, 2018). This important position occupied is borne out of the roles Mathematics play in scientific and technological development, a sine-qua-non for nation building. Among many others, the main objective of Mathematics education in Nigeria are:

- i. To develop precisely logical and abstract thinking
- ii. To encourage creativity
- iii. To develop the ability to recognise the problem and to solve with mathematical knowledge (NPE, 2007).

The importance of Mathematics to science education was explained better by Andaya (2015) when he observed that Mathematics is widely regarded as the queen of all sciences. Aplaon (2015) observed earlier that there is hardly any area of science that does not make use of mathematical concepts to explain its own concept, theories or models. Mathematics is a science of the methods by which quantities sought are deducible to others known or supposed. Thus anyone who neglects Mathematics may not be able to go far in the sciences and in fact other things of the world (Babalola, 2018). Practical work and observation of nature are the main source of scientific discoveries, Mathematical methods plays a very important role in this.

The basic components of innovative teaching/learning strategies comprised of services learning education, field investigations, learner-centred education, group projects, problem-based activities and interactive classroom sessions. Inactive learning, the processing of knowledge also requires a problem-solving orientation, a critical approach and an evaluation of knowledge. The ultimate goal of knowledge processing is that the learner can elaborate on applications of knowledge and she/he may produce new knowledge using cognitive processes rather than being a passive listener (Stone, 2017) .

Teaching is the creation of a situation in which learning takes place effectively, so it is not only important to have better knowledge and experience about the subject but also requires the usage of suitable teaching methods. A good match between student's performance (Harb & El-Shaarawi, 2006). The selection of any teaching method depends on the learner's knowledge and capability; hence many educational institutes use innovative teaching methods to facilitate better learning (David, 2018).

Teaching methods could be classified into traditional and innovative methods. Traditional methods include lecture method discussion, and demonstration, questioning and project methods. The most used and the oldest in this group is the lecture method (Okechukwu, 2015). It is a verbal presentation of the subject matter. The major advantage of the lecture

method is that it would be used to cover a large content area within a very short period no matter the class size and does not require the use of laboratory. However, it is characterized by being a one-way mode of communication. Learners are always passive and so inappropriate for the acquisition of practical skills as required in practically oriented courses like Physics and lead to poor academic achievement (Achuonye, 2014).

Innovative methods of teaching include peer tutoring and problem-based learning. Peer tutoring is an instructional strategy that consists of pairing students together to learn or practice an academic task. The underlying theory is peer interaction which can have a powerful influence on academic motivation and achievement (Topping & Littleton 2011). Peer tutoring also is an organized learning experience in which one student serves as the teacher or tutor, and one is the learner or tutee. It allows students to use their knowledge in a meaningful, social experience (Johnson & Johnson, 2009).

Conrad (2014) considers Problem-based learning (PBL) as a student-centre pedagogy in which students learn about a subject through the experience of solving an open-ended problem found in material. The PBL process does not focus on problem-solving with a defined solution, but it allows for the development of other desirable skills and attributes. This includes knowledge acquisition, enhanced group collaboration and communication. It enhances critical appraisal, literature retrieval and encourages ongoing learning in a team environment in which the students are actively

involved. It encourages self-directed learning by confronting students with problems and stimulates the development of deep learning (Jeremiah & Alamina 2017).

Cooperative learning is an educational approach that aims to organize classroom activities into academic and social learning experiences. It has been described as “Structuring positive interdependence. (Ignacious, 2016) Students must work in groups to complete tasks collectively towards academic goals. Unlike individual learning, which can be competitive, students learning cooperatively can capitalize on one another’s ideas, monitoring one another’s resources and skills (asking one another for information, evaluating one another’s ideas, monitoring one another’s work, etc.). The successful cooperative learning task is intellectually demanding, creative, open-ended, and involves higher-order thinking tasks.

Several studies on how students learn through innovative strategies in the teaching of many subjects at junior levels has been documented by many researchers, such as Bawan and Udo (2019) in physics; Hillary and Akor (2018) in agricultural science, Udo and Bawan (2016), in physics; Agommuoh (2015) in physics, Agommuoh and Ifeancha (2013) in physics and mathematics and Eta (2013) in physics. The authors in their different studies concluded that students taught with one or combinations of innovative teaching methods outsmarted students on conventional teaching methods.

These learning techniques are practically oriented (Jansen, 2016), and helps to deemphasize rote memorization of scientific concepts and principles, encourage knowledge and skill acquisitions, and provide hands-on-minds learning of science, encourage the active participation of learners and enhance learner's acquisition of science process skills (Okoli, 2006). Having thus x-rayed the efficacies of innovative teaching methods, the problem of the study put in question is: What is the influence of innovative teaching methods on secondary school basic science student's academic achievement.

#### **Objectives of the study**

The objectives of the study seek to find out:

1. impact of peer tutoring on the academic achievement of students in Mathematics;
2. impact of problem-based learning on the academic achievement of students in Mathematics; and
3. impact of cooperative learning on the academic achievement of students in Mathematics.

#### **Research Questions**

1. What is the impact of peer tutoring method on the academic achievement of students in Mathematics?
2. What is the impact of problem-based teaching method on the academic achievement of students in Mathematics?
3. What is the impact of cooperative learning on the academic achievement of students in Mathematics?

#### **Research Hypotheses**

The following null hypotheses were formulated and tested at 0.05 level of significance.

1. There is no significant impact in the use of peer tutoring method on the academic performance of students in Mathematics.
2. There is no significant impact in the use of problem-based teaching method on the academic performance of students in Mathematics.
3. There is no significant effect in the use of cooperative teaching method on the academic performance of students in Mathematics.

#### **Methodology**

The study employed a quasi-experimental research design. Specifically, the study employed a non-equivalent pre-test, post-test control group design. The population of the study consisted of all the Junior Secondary School (JSS) students in the secondary schools in Ibadan North Local Government Area of Oyo State in the 2022/2023 academic session.

The sample for this study was 100 Junior secondary two (JSII) students randomly selected from five secondary schools offering mathematics at the Junior Secondary School level in Ibadan North local government area of Oyo State. The students involved were divided into classes and grouped into treatment and control groups through a simple random technique. In each of the groups and schools, an intact class of students were used.

The instrument used for data collection in this study was a 50 item Mathematics Achievement

Test (MAT) drawn from the five identified difficult topics: (1) Areas of three (2) Volumes of solid shape object (3) Dimensional Shape Objects (4) Bearing and Distances. The mathematics Achievement Test (MAT) was face- and content-validated by three experts in Test and Measurement and Basic Education. The instrument was trial-tested using 50 students in Ibadan North East Local Government Area.

The result of the trial test was analysed using Kuder Richardson formula-21 and a reliability index of 0.78 was obtained. This result was high enough to consider the instrument reliable. The MAT was administered to the Mathematics students in the respective schools with the help of the Mathematics teachers who were the research assistants in each school. Pre-test was administered on both experimental and control groups before the actual treatment. Both groups were taught the selected topics using innovative teaching methods by the regular Mathematics teachers at each school; each teacher was assigned to use one of the four innovative teaching methods. After the teaching, the post-test was administered on both groups and the

results were analysed using mean, standard deviation, and t-test.

**Results Presentation**

The data for this research work were analysed and presented in tables based on the three research questions and three hypotheses formulated. Before the use of innovative teaching (peer tutoring, problem-base, and cooperative) methods in the teaching of basic science by Mathematics teachers are presented in Table 1. In the experimental group, their mean score was 31.89 and a standard deviation of 2.78. The control group had a pre-test mean score of 30.45 coupled with a standard deviation of 2.12 in the Mathematics Achievement Test (MAT) and this is slightly lower than the experimental and control group. This shows that the range of scores between the experimental and control group was very narrow. More so, the result indicated that the calculated t-test was less than the critical value, hence, there was no significant difference in the pre-test scores of the experimental and control groups. This implied that both groups are homogeneous and any variation in performance in the post test could rightly be attributed to treatment.

**Table 1:** Pre-test Scores of Mathematics Achievement Test of Both Experimental and control Groups.

Treatment	N	Df	X	SD	t <sub>cal</sub>	t <sub>crit</sub>
Experiment	60		31.89	2.78		
Control	40	98	30.45	2.12	1.08	1.89

N=Number of Observation, df= degree of freedom, X = means, SD= standard deviation, t<sub>cal</sub> = t calculated, t<sub>crit</sub> = t table

**Research Question One:** What is the effect of peer tutoring method on the academic achievement of students in Mathematics?

Table 2 revealed the post-test mean Mathematics achievement scores of students taught with peer tutoring method. The results



indicated that after the treatment, which was teaching the students in both groups, the post-test mean score for experimental students taught using peer tutoring method improved appreciably from 31.89 to 55.78 and a decrease in standard deviation from 2.78 to 1.90. There was also an increase in the mean score of the

control group from 30.45 to 41.45 and an increase in standard deviation from 2.12 to 2.63. The mean gain difference was 23.78 for peer tutoring method and 11.34 for the control group. This indicates that students taught with peer tutoring method performed better than those taught using the conventional method.

**Table 2:** Post Test Mathematics Achievement Scores of Students Taught with Peer Tutoring Method.

Treatment	N	X	SD	Mean Gain
Peer Tutoring	34	55.78	1.90	23.78
Control	40	41.45	2.63	11.34

N= Number of Observation, X means, SD= Standard deviation

**H<sub>0</sub>1:** There is no significant effect of peer tutoring method on the academic performance of students in Mathematics.

The t-test analysis of the mean Mathematics achievement scores of students taught Mathematics with peer tutoring method and those taught with conventional method is as shown in Table 3. The result revealed that the calculated t value (11.63) was higher than the critical value (3.35) and this indicated that there

was a significant difference in the performance of students taught Mathematics with peer tutoring than those with the conventional method. The null hypothesis which states that there was no significant effects of peer tutoring method on the academic performance of Mathematics students was hereby rejected at 0.05 level of significance. This indicated that there was a significant effect on the performance of students taught Mathematics using peer tutoring.

**Table 3:** T Test Analysis of the Mean Mathematics Science Achievement Scores of Students taught with Peer Tutoring and Conventional Methods

Treatment	N	Df	X	SD	Tcal	Tcrit	Decision
Peer Tutoring	34		55.78	1.90			
Control	40	72	41.45	2.63	11.63	3.35	Significant

N= Number of Observation df= Degree of freedom, X= means, SD= Standard Deviation, Tcal= T calculated, Tcrit= T Table.

**Research Question Two:** What is the effect of problem-based learning method on the academic performance of students in Mathematics?

The Post – Test means scores of students taught with a problem based method of teaching and

conventional lecture method (control) are as shown in Table 4. The experimental group had a mean score of 67.43 and standard deviation of 1.05 while the control group had a mean score of 49.05 and a standard deviation of 2.03.

Referring to table 1 (Pre test scores), the result showed that there was a difference between student's pre-test and post test scores with a mean gain difference of 31.89 for the experimental group and 11.34 for the control

group. This implied that students taught with problem-based learning methods performed better, hence problem-based learning methods affect Mathematics student's academic performance positively.

**Table 4:** Post Test Mean Mathematics Academic Achievement Scores of Students Taught with problem Based Learning and Conventional Methods

Treatment	N	X	SD	Mean Gain
Problem Based	34	67.43	1.05	25.18
Control	40	49.05	2.03	11.34

N= Number of Observation, X means, SD= Standard Deviation

**H<sub>0</sub>2:** There is no significant effect in the use of the problem-based method on the academic performance of students in Mathematics. The t test analysis of Mathematics achievement scores of a group of students taught Mathematics with problem based learning and conventional methods are presented in Table 5. The results indicated that the calculated t value was higher than the critical value, hence the null

hypothesis which stated that there was no significant effect of the use of the problem-based learning method on the academic performance of Mathematics students was rejected at 0.05 alpha level. This indicated that there was a significant effect on the academic performance of Mathematics students taught using the problem-based learning method.

**Table 5:** T- Test Analysis of Mean Mathematics Achievement Scores of Group of Students Taught with Problem Based Learning and Conventional Methods.

Treatment	N	Df	X	SD	Tcal	Tcrit	Decision
Peer Tutoring	34		67.43	1.05			
Control	40	72	49.05	2.03	9.78	2.35	Significant

N= Number of Observation, df= Degree of freedom, X= Means, SD= Standard Deviation, Tcal= t Calculated, tcrit= T Table.

**Research Question 3:** What is the effect of cooperative learning method on the academic performance of students in Mathematics?

Table 6 showed the students mean achievement scores in Mathematics Achievement Test MAT taught with cooperative method and control groups. The results indicated that students in the treatment (cooperative) group had a mean score

of 72.43 and a standard deviation of 2.34 while the control group has a mean score of 55.67 and a standard deviation of 3.67. Furthermore, Table 8 showed a mean gain of 37.32 for the experimental cooperative group and 11.34 for the control group. Since the mean gain was higher, it indicated that the students performed well when taught Mathematics with the cooperative method of teaching,

**Table 6:** Student’s Mean Achievement Scores in Mathematics Achievement Test (MAT) taught with Cooperative Method and Control Groups

Treatment	N	X	SD	Mean Gain
Cooperative Method	32	72.43	2.34	37.32
Control	45	55.67	3.67	11.34

N= Number of Observation, X means, SD= Standard Deviation

**H<sub>03</sub>:** There is no significant effect of cooperative teaching method on the academic performance of Mathematics students

The t test analysis of the mean Mathematics achievement scores of students taught with cooperative and conventional methods is as shown in Table 7. The results showed that the calculated t value was higher than the critical value, hence the null hypothesis which stated that there was no significant effect of cooperative learning method on the academic

performance of Mathematics students was rejected at 0.05 alpha level. This implied that there was a significant effect on the academic performance of Mathematics students taught using the cooperative teaching method. **Table 7:** T- Test Analysis of the Mean Mathematics Achievement Scores of Students Taught with Cooperative and Conventional Methods.

Treatment	N	Df	X	SD	Tcal	Tcrit	Decision
Cooperative method	32		72.43	2.34			
Control	45	75	55.67	3.67	22.31	2.34	Significant

N= Number of Observation, df= Degree of freedom, X= Means, SD= Standard Deviation, Tcal= t Calculated, tcrit= T Table.

**Discussion of the Findings**

The impact of innovation in teaching means to take up or accept innovation and make use of it in the educational sector. It simply means having new creative ideas implemented, meanwhile the students that were taught with innovative teaching methods (peer tutoring, problem based and cooperative methods) were found to have high achievement scores than their counterparts in the control group, the current results on innovative teaching methods in the teaching mathematics corroborated earlier findings of Bawan and Udo (2019); Hilary and Akor (2018); Agommuoh and

Ifeanacho (2013); Eta (2013). These researchers observed that the students in the experimental group who were allowed to interact and carry out activities in the group performed better than those in the control group who were passive listeners in their Physics, and other science , physics, physics and mathematics and physics classes respectively. The innovative (peer tutoring, problem based, and cooperative) methods used in this study were activity oriented and encourage student teachers, student- students, and student materials interaction. Students in the experimental group who obtained high

performance were taught with the use of more activity oriented teaching methods. The activity nature of the teachings methods make the students provide relevant answers to the MAT questions than their counterparts in the control groups that were not exposed to the activity based method. This observation agrees with Hillary and Akor (2018) who claimed that adoption of good and thought-provoking teaching methods, under a conducive learning environment lead to mastery of the learnt materials by students and thus, resulted in higher achievements. This implied positive impacts of innovative teaching methods in the teaching of Mathematics over the conventional methods. This finding is in agreement with Agommuoh and Ifeanacho (2013); ETA (2013) who reported that when students were taught with an innovative approach, it had a greater impact on student's academic achievement and other related practical science subjects. The result of the hypothesis revealed that the mean performance scores of the different groups of students taught with different method differed. The test scores recorded by students depended greatly on the teaching methods employed by the basic science teachers. This was corroborated by Udo and Bawan (2016) who found out that the performance obtained by students in mathematics lessons was solely dependent on the attractive and stimulating nature of the innovative method(s) employed by the teacher of mathematics. This implied that each of the innovative methods varied in their efficacy as far as mathematics teaching was concerned.

### **Conclusions**

From the foregoing findings the following conclusions were drawn:

- i. Most students taught with peer tutoring, problem based learning, discovery and cooperative (innovative) teachings method performed well in the achievement test items when compared with those taught with conventional method.
- ii. Generally, students with the use of cooperative method performed better than those taught with other innovative teachings methods. Hence, it implies that the development and introduction of more virile and results oriented instructional approaches in mathematics classrooms should be encouraged

### **Recommendations**

1. Teachers are encouraged to integrate thoroughly the following innovative teaching strategies.
  - i. Peer tutoring
  - ii. Problem-based learning
  - iii. Discovery learning and cooperative approaches in the teaching of Mathematics in Junior Secondary Schools.
2. Textbook writers should incorporate the use of these innovative teaching strategies to guide teachers and students in their usage.

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## **Mobilizing Domestic Resources for Financing HIV/AIDS Programme in Katsina State**

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### **Abstract**

The study examined sustainable health financing of HIV/AIDS Programme through Domestic Resource Mobilization in Katsina State. The study had two objectives. Survey research design was adopted for the study. The total population of the study is 20, 250 with 377 subjects selected as sample from the diagnosed HIV/AIDS Patients, 10 Katsina SACA technical staff, 12 members of Budget Committee under Katsina State Ministry of Budget and Economic Planning, and 25 members of Katsina State House Committee on Health, Finance, and Appropriation. Instrument tagged Domestic Resource Mobilization Questionnaire (DRMQ) was used for data collection. Face and content validity of the instrument was done by five experts in community development. The reliability of the instrument was established through test-re-test method and a co-efficient of 0.73 was obtained using Pearson Product Moment Correlation. The research instruments were administered by the researcher with the help of three research assistants. The data collected were analyzed using simple percentages and mean scores. The findings of the study revealed that the domestic resource mobilization strategies used for sustainable financing of HIV/AIDS in Katsina State are government reliance on external sources of funding, annual HIV budget, users fees, private sector engagement, HIV Trust Fund, philanthropy, funds raised from diaspora bonds, and private insurers. Based on the findings of the study, it was recommended that Katsina State government should diversify funding by seeking support from private sector partnerships, philanthropic organizations, and implementing innovative financing mechanisms like social impact bonds or crowd funding campaigns.

**Keywords:** *Healthcare financing, HIV/AIDS, domestic resource mobilization, sustainability*

### **Introduction**

Nigeria has the second largest burden of HIV in the world with about 1.9 million individuals living with HIV. With only 12% of total funding from domestic sources, the country depends primarily on foreign donors for funding of the HIV programme. About 50% of individuals needing HIV treatment are unable to access required services primarily due to lack of financial capacity of the Nigerian HIV programme (NACA, 2019a).

The country's 1.4% HIV prevalence in the adult population is considered low, but due to

the large population of over 200 million people, there are about 1.9 million people living with HIV in 2019 (NACA,2019a).

Despite recording a 13% reduction in new infection in the last ten years, about 53,000 and 45,000 deaths were reported from HIV related illnesses in 2018 and 2019 respectively (UNAIDS, 2020). Data also indicates that Nigeria accounts for 2 out of every 3 new HIV infection in west and central Africa in 2019 (UNAIDS, 2020).

HIV/AIDS poses a significant public health

challenge, with Sub-Saharan Africa bearing a disproportionate share of the epidemic. Nigeria, as one of the countries in this region, has made significant progress in combating HIV/AIDS, but funding remains a critical issue (UNAIDS, 2022). Katsina State, in particular, grapples with inadequate financial resources, which impedes its ability to provide comprehensive HIV prevention, treatment, and care services.

In Katsina State, Nigeria, HIV/AIDS patients face significant financial burdens related to their treatment and care. This challenge is primarily due to the cost of antiretroviral therapy (ART), hospital visits, and associated healthcare needs. While international and national programmes provide free ART to patients, the indirect costs of transportation to healthcare centers, supplementary medications, and nutritional support pose a heavy financial burden on patients and their families.

A study by Yusuf, Ibrahim and Abubakar (2020) highlights that although ART is free, patients still incur substantial costs in managing opportunistic infections, transportation, and nutritional supplements. The burden is worsened by the fact that many patients in Katsina State come from low-income households, making it difficult for them to afford the complementary needs that ensure adherence to treatment and overall health maintenance. According to Mohammed, Ahmed and Sani (2021), the majority of HIV/AIDS patients in rural areas of Katsina often have to travel long distances to access healthcare services, further exacerbating their financial

struggles.

Historically, HIV/AIDS programmes in Nigeria have been largely funded by international donors and multilateral organizations, such as the Global Fund and the President's Emergency Plan for AIDS Relief (PEPFAR). However, reliance on external funding is becoming unsustainable due to changing global economic dynamics and the shifting priorities of donor agencies (Ogungbemi, Adewale & Usman, 2020). As a result, domestic resource mobilization (DRM) has emerged as a viable solution for ensuring sustainable financing for HIV/AIDS programs (Adebayo & Yusuf, 2021). DRM entails raising funds from within the country through mechanisms such as taxation, public-private partnerships, and community-based contributions, which can reduce dependency on foreign aid.

The Nigerian government has made efforts to increase DRM for health, including HIV/AIDS programs, through the introduction of policies like the National Health Act of 2014, which established the Basic Health Care Provision Fund (BHPF) (Federal Ministry of Health, 2014). Despite these initiatives, Katsina State still faces significant challenges, such as weak healthcare infrastructure, low tax revenues, and competing demands on state resources. It is against this background that this study examined mobilizing domestic resources for financing of HIV/AIDS Programme in Katsina State, Nigeria.



### **Statement of the problem**

The financing of HIV/AIDS programmes in Katsina State, Nigeria, has faced significant challenges due to a reliance on external donor funding, which has proven unsustainable in the long term. External financial support for HIV/AIDS initiatives in Nigeria has declined sharply in recent years, leaving a funding gap that threatens the continuity of crucial services (NACA, 2020). While Nigeria has made progress in combating the HIV/AIDS epidemic, there remains a significant dependency on international donors, which creates vulnerabilities in the health system, especially when donor priorities shift or funds are reduced (UNAIDS, 2019). In Katsina State, the impact is particularly pronounced due to high HIV prevalence, poverty, and limited government fiscal capacity.

Domestic resource mobilization (DRM) has emerged as a critical strategy for closing this funding gap and ensuring the sustainability of HIV/AIDS interventions (WHO, 2021). However, despite various efforts, Katsina State's current framework for DRM has been insufficient in generating the necessary resources. Challenges such as weak institutional capacity, poor tax administration, and low community participation in health financing schemes have further exacerbated the situation. Consequently, there is an urgent need to explore innovative domestic funding mechanisms to secure long-term financial sustainability for HIV/AIDS programmes, ensuring that vulnerable populations continue to receive life-saving

treatment and care (FMoH, 2020). In view of this problem therefore, this study examined mobilizing domestic resources for financing HIV/AIDS Programme in Katsina State, Nigeria.

### **Research Questions**

The following research questions guided the study:

1. What are the domestic resource mobilization strategies in Katsina State?
2. What is impact of domestic resource mobilization on financing HIV/AIDS in Katsina State?

### **Literature Review**

#### **Mobilizing Domestic Resources for Financing HIV/AIDS Programmes in Nigeria**

The financing of HIV/AIDS programmes is a crucial component of combating the disease and achieving long-term sustainable healthcare outcomes. In low- and middle-income countries like Nigeria, external donor funding has traditionally played a significant role in HIV/AIDS interventions. However, with the gradual reduction in donor funding, there has been an increasing shift towards mobilizing domestic resources to sustain HIV/AIDS programmes. This shift requires an innovative approach to ensure continuous support for prevention, treatment, and care services, particularly in states like Katsina, where the prevalence of HIV/AIDS remains a public health challenge.

Domestic resource mobilization refers to the use of local financial and material resources to fund

national or subnational initiatives, such as healthcare programmes. According to UNAIDS (2020), the global response to HIV/AIDS must focus more on domestic funding mechanisms as international funding levels decrease. In Katsina State, domestic resource mobilization for HIV/AIDS financing can be sourced through government allocations, private sector engagement, community contributions, and innovative healthcare financing models. These models may include public-private partnerships, taxes on high-risk products, and leveraging community-based insurance schemes (Ogundeji, Abiuro & Ataguba, 2021).

Government involvement in domestic resource mobilization is critical to the sustainability of HIV/AIDS programs. Adeyi, Smith and Robles, (2020) suggest that effective budgetary allocations and political commitment at the state level can foster an enabling environment for domestic financing. Katsina State, like other Nigerian states, faces fiscal constraints, but prioritizing HIV/AIDS programs in the state budget and healthcare policies could lead to more sustainable financing. The inclusion of HIV/AIDS funding in health insurance schemes, community health financing initiatives, and taxation policies could also alleviate funding gaps (National Agency for the Control of AIDS [NACA], 2019).

Furthermore, partnerships with the private sector can significantly contribute to domestic resource mobilization. The private sector's involvement in

financing HIV/AIDS programmes can include direct financial support, corporate social responsibility initiatives, and providing healthcare infrastructure (Poku, 2020). Katsina State can harness these resources by fostering collaborations with businesses, especially those in the healthcare, pharmaceutical, and financial sectors.

### **Methodology**

Survey research design was adopted for the study. The population of the study covered twenty thousand, two hundred and three (20, 250), comprising of 20, 203 diagnosed HIV/AIDS Patients, 10 Katsina SACA technical staff, 12 members of Budget Committee under Katsina State Ministry of Budget and Economic Planning, and 25 members of Katsina State House Committee on Health, Finance, and Appropriation. From the 20, 250 population of the study, 377 subjects were selected as sample. Domestic Resource Mobilization Questionnaire was used for data collection. HIV/AIDS patients and technical staff from the State Agency for Control of Aids responded to the questionnaires while committee members from Katsina State Ministry of Budget and Economic Planning and the state house of assembly were interviewed. Face and content validity of the instrument was done by five experts in community development, Adult and Non- Formal Education, Test and Measurement and healthcare financing. The reliability of the instrument was established through test-re-test

method and a co-efficient of 0.73 was obtained using Pearson Product Moment Correlation (PPMC). The research instruments were administered by the researcher with the help of three research assistants. The data collected were analyzed using simple

percentages and mean scores.

**Results, Findings and Discussion**

1. What are the domestic resource mobilization strategies used for sustainable financing of HIV/AIDS in Katsina State?

**Table 1: Domestic Resource Mobilization Strategies Used for Sustainable financing of HIV/AIDS**

Domestic resource mobilization strategies use for sustainable financing of HIV/AIDS	Responses								Mean	Decision
	SA		A		DA		SD			
	F	%	F	%	F	%	F	%		
Government reliance on external sources of financing HIV/AIDS	122	34.1	163	45.5	42	11.7	31	8.7	3.05	Accepted
The annual HIV budget at State level	93	26.0	148	41.3	59	16.5	58	16.2	2.77	Accepted
User fees paid by HIV patients	118	33.0	199	55.6	31	8.7	10	2.8	3.19	Accepted
Private sector organizations	95	26.5	134	37.4	72	20.1	57	15.9	2.75	Accepted
HIV Trust Fund	103	28.8	185	51.7	33	9.2	37	10.3	2.99	Accepted
Contributions from individuals and Philanthropists	81	22.6	191	53.4	53	14.8	33	9.2	2.89	Accepted
Funds raised from diaspora bonds	100	27.9	173	48.3	38	10.6	47	13.1	2.91	Accepted
Private insurance	91	25.4	101	28.2	94	26.3	72	20.1	2.59	Accepted
<b>Grand Mean</b>									<b>2.89</b>	

Table 1 showed the domestic resource mobilization strategies used for sustainable financing of HIV/AIDS in Katsina State. The table indicated that the respondents agreed that the following are domestic resource mobilization strategies use for sustainable financing of HIV/AIDS in Katsina State; Government relied more on external sources of financing HIV/AIDS (3.05), The annual HIV budget at State level provided a chief source of funding for HIV/AIDS (2.77), User fees paid by HIV patients in Katsina State provided source of financing

HIV/AIDS (3.19), Private sector organizations contributed funds for HIV/AIDs (2.75), HIV Trust Fund provided a funding source for HIV/AIDs Financing (2.99), individuals and philanthropists contributed with some funds to cover HIV expenditure (2.89), Funds raised from diaspora bonds for local production of HIV commodities (2.91), and Private insurers in Nigeria included HIV Services in their benefit package (2.59). This is because of the fact that the mean scores of the statements were found to be above the grand mean score of 2.89 and the

decision rule of 2.50.

The findings reveal significant implications for sustainable financing of HIV/AIDS in Katsina State based on the identified domestic resource mobilization (DRM) strategies. Firstly, the state's reliance on external sources of funding for HIV/AIDS programmes, while helpful in the short term, is unsustainable in the long run. It risks creating dependency and vulnerability to fluctuations in donor priorities or global economic conditions. Sustainable financing

necessitates a shift toward more domestic sources, including local revenue generation and private sector involvement. The presence of an annual HIV budget suggests a degree of government commitment, but it may be insufficient to meet the long-term demands of HIV/AIDS programmes unless backed by substantial domestic revenue.

2. What is impact of domestic resource mobilization on financing HIV/AIDS in Katsina State?

**Table 2: Impact of domestic resource mobilization on financing HIV/AIDS**

Impact of domestic resource mobilization on financing HIV/AI	Responses								Mean	Decision
	SA		A		DA		SD			
	F	%	F	%	F	%	F	%		
Domestic resource mobilization increased fund availability	124	34.6	193	53.9	17	4.7	24	6.7	3.16	Accepted
Domestic Resource Mobilization reduced the dependence on external resources	98	27.4	208	58.1	31	8.7	21	5.9	3.07	Accepted
Domestic Resource Mobilization narrowed the huge resource gap for financing HIV/AIDS Programme	74	20.7	182	50.8	63	17.6	39	10.9	2.81	Accepted
Domestic Resource Mobilization improved sustainability of HIV/AIDS Programme	100	27.9	163	45.5	43	12.0	52	14.5	2.87	Accepted
Domestic Resource Mobilization contributed to overall healthcare systems strengthening	118	33.0	192	53.6	19	5.3	29	8.1	3.11	Accepted
Increased funding from Domestic Resource Mobilization can help reduce treatment gap	87	24.3	179	50.0	61	17.0	31	8.7	2.90	Accepted
Domestic Resource Mobilization promoted greater community engagement	103	28.8	177	49.4	54	15.1	24	6.7	3.00	Accepted
Domestic Resource Mobilization ensured that funds are used efficiently and equitably through collaborative governance.	91	25.4	162	45.3	60	16.8	45	12.6	2.84	Accepted
Domestic Resource Mobilization give marginalized and underserved populations voice in healthcare financing decisions.	101	28.2	193	53.9	38	10.6	26	7.3	3.03	Accepted
Adequate enrolment into Katsina State Contributory Health Agency boost health financing for HIV/AIDS	135	37.7	182	50.8	29	8.1	12	3.4	3.23	Accepted
<b>Grand Mean</b>	<b>3.00</b>									

Table 2 showed the impact of domestic resource mobilization on financing HIV/AIDS in Katsina State. The table indicated that the respondents agreed with the fact that the following are impact of domestic resource mobilization on financing HIV/AIDS in Katsina State; Domestic resource mobilization increased fund availability (3.16), Domestic Resource Mobilization reduce the dependence on external resources (3.07), Domestic Resource Mobilization narrowed the huge resource gap for financing HIV/AIDS Programme (2.81), Domestic Resource Mobilization improved sustainability of HIV/AIDS Programme (2.87), Domestic Resource Mobilization can contribute to overall healthcare systems strengthening (3.11), Increased funding from Domestic Resource Mobilization can help reduce treatment gap (2.90), Domestic Resource Mobilization help to promote greater community engagement in HIV/AIDS Programme (3.00), Domestic Resource Mobilization ensures that funds are used efficiently and equitably through collaborative governance (2.84), Through Domestic Resource Mobilization, marginalized and underserved populations can have a greater say in healthcare financing decisions (3.03), Adequate enrolment into Katsina State Contributory Health Agency boost health financing for HIV/AIDS (3.23). This is because of the fact that the mean scores of the statements were found to be above the grand

mean score of 3.00 and the decision rule of 2.50. The findings that domestic resource mobilization has increased fund availability and reduced dependence on external resources hold several significant implications for healthcare financing and sustainability. The increased availability of funds implies that Katsina State can now independently address its healthcare needs without relying excessively on external donors. This is particularly important for improving the continuity and reliability of funding for critical health programmes like HIV/AIDS prevention and treatment. Moreover, by reducing dependence on external funding, the state is better positioned to manage local priorities and respond to health emergencies autonomously.

### **Findings of the Study**

The following were the findings of the study:

1. That the domestic resource mobilization strategies used for sustainable financing of HIV/AIDS in Katsina State are government reliance on external sources of funding, annual HIV budget, users fees, private sector engagement, HIV Trust Fund, philanthropy, funds raised from diaspora bonds, and private insurers.
2. That the domestic resource mobilization increased fund availability, reduce the dependence on external resources, narrowed the huge resource gap, improved sustainability, contribute to overall healthcare systems, increased funding, reduce treatment gap, promote greater

community engagement, ensures that funds are used efficiently and equitably, enhance inclusiveness, lift enrolment into Katsina State Contributory Health Agency and boost health financing for HIV/AIDS.

### **Discussion of the Findings**

The study found out that the domestic resource mobilization strategies used for sustainable financing of HIV/AIDS in Katsina State are government reliance on external sources of funding, annual HIV budget, users fees, private sector engagement, HIV Trust Fund, philanthropy, funds raised from diaspora bonds, and private insurers. This finding was in line with the view of Itiola and Agu, (2018) where they argued that HIV programme in Nigeria has three primary sources of funds: public, i.e. the Government, private sector and external (International). In addition, the international donors have been the leading funder of Nigeria's HIV/AIDS programme through international, bilateral and multilateral organisations, foundations, and NGOs. Individuals and philanthropies are potential sources of financing for Nigeria's HIV programme and for ensuring sustainability of the programme. Moreover, According to Peiffer, and Boussalis, (2010) Healthcare in Nigeria is largely financed by user fees. Field studies by the World Bank estimate that Nigerian households pay roughly 45% of total health expenditures in the country. The Federal Government subsidizes staff salaries in federal facilities, which usually account for more than 65% of recurrent

expenditure in the health service. In non-federal facilities, staff salaries are paid through the funds allocated by the Federal Government to the LGAs. Health financing systems where government revenues are the main source of health care expenditure are referred to as tax-based systems. [WHO, 2004]. The health system is generally funded from federation account to the states and LGAs, both of which also generate about 20% internal revenue from taxes, rates and levies.

### **Conclusion**

The appraisal of sustainable health financing for HIV/AIDS programmes through domestic resource mobilization in Katsina State, Nigeria, highlighted the need for paradigm shift in healthcare financing. The study underscores the importance of domestic resource mobilization in ensuring the sustainability of HIV/AIDS programmes, particularly in resource-constrained settings like Katsina State. Through an in-depth analysis of various financing mechanisms and their impact on programme effectiveness, this study provides valuable insights into the opportunities and barriers faced in financing HIV/AIDS initiatives.

Moreover, the study emphasizes the importance of adopting innovative financing strategies, strengthening partnerships between government, civil society, and the private sector, and improving governance and accountability frameworks to optimize resource mobilization and utilization.

**Recommendations**

1. Katsina State government should diversify funding by seeking support from private sector partnerships, philanthropic organizations, and implementing innovative financing mechanisms like social impact bonds or crowd funding campaigns.
2. KTSACA should establish robust monitoring and evaluation systems to track the impact of domestic resource mobilization strategy on HIV/ AIDS programmes, identify gaps, and make evidence-based adjustments. This ensures resources are allocated efficiently and programs remain effective in achieving their objectives

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**Utilization of Information and Communication Technologies by Principals in Administration of Secondary Schools in Okene Local Government Area, Kogi State**

By

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**Abstract**

This study examined utilization of Information and Communication Technology (ICT) by principals in administration of public secondary schools in Okene Local Government Area of Kogi State. The study and four research questions were formulated to guide the study. Descriptive survey design was adopted for the study. The population of the study comprised of 147 public secondary school principals and vice principals in Okene Local Government Area of Kogi State. The simple random sampling technique was used to select a sample of thirty principals and vice-principals. Utilization of ICT in Administration of Secondary Schools Questionnaire" (ICTASSQ) was used to collect data from principals and vice-principals. The instrument was validated by two lecturers in Measurement and Evaluation from Federal College of Education, Okene, Kogi State. The split-half method was used to test the reliability of the instrument and a reliability coefficient of 0.75 was obtained using Spearman Brown Correlation Coefficient. The instrument was administered to the respondents using face to face approach. Simple percentage and mean were used to analyse the data. This study revealed that ICT facilities are not available in public secondary schools and that there is a low level of usage of ICT for administration of the school. The study also revealed that ICT facilities has a great benefit in facilitating principal's administrative effectiveness and the study concluded that the principals encounter series of problems while using ICT facilities for administration of public secondary school. The study recommended amongst others that ICTs should be made available in schools for utilization and Principals' should be sensitized on the benefits of using ICTs in carrying out their administrative duties in public secondary schools.

**Keywords:** Administration, information communication technology, principals, secondary school, utilization,

**Introduction**

The invaluable roles and contributions of education in the development of an individual and the society cannot be overemphasized. Many countries including Nigeria, take education as an instrument for the promotion of national development as well as effecting desirable social change (Federal Republic of Nigeria, 2012). Education is not just about an exchange of information and preset instruction; it is a gateway that opens our creative and imaginative capabilities, the bedrock of development. FRN (2012) viewed education as instrument "par excellence" for national development. Many communities in the world

today look up to the school for the nurturing of the innovative ideas which transformed the technological, economic, political and social dimension of people's life towards development (United Nations Education, Scientific and Cultural Organization , 2012). This perhaps might be responsible for the growing concerns of all stakeholders in education industry and changes that are likely to affect it as well as the implication such changes will have on the management and administration of the schools. In Nigeria, the principal is the head of secondary schools charged with the responsibility of running the day-to-day affairs

of the school accordingly. They are responsible for all that happens in the school. Various writers have expressed their opinion on who the principal is vis-a-vis his administrative roles. The successful administration of secondary school requires competent principal with appropriate administrative effectiveness. According to Murphy (2006) administrative effectiveness of principals refers to the knowledge, skills and abilities which the principal requires to do their jobs proficiently. It is their opinion that the personal characteristics that complements the professional competency the principal required for effective school administration.

The integration of modern technology has transformed the educational system, often referred to by various terms such as instructional technology, e-learning, assistive technology, and information and communication technology (Molindo, 2014). ICT encompasses both information technology, which involves the collection, storage, manipulation, and transfer of information electronically, and communication technology, which includes devices and software that link computer hardware and transfer data across locations. Molindo (2014) describes ICT as an umbrella term that includes numerous communication devices and applications, such as computers, printers, and satellite systems, enabling interaction in the digital world. Plante and Beattie (2004) further defined ICT as comprising computer systems for information processing and telecommunication systems for information dissemination. The use of ICT in education enhances administrative functions,

such as managing records, responding to communications, and planning for future needs, ultimately aiming to automate processes and improve efficiency in instructional supervision, staff management, and school operations (Onyeije & Opara, 2013).

Unfortunately, many secondary schools in Okene LGA are finding it difficult to set up functioning and well-equipped ICT centers, the principals still cling firmly to the traditional manual methods of operation due to unavailability of ICT facilities such as computers, projectors, internet website, DVDs/CDs players, Ipads, tablets and phones. These facilities are supposed to be used for staff members and students orientations, workshops, easy and quick communication, efficient and effective administration etc. Secondary schools in Okene LGA are administered by principals who are accountable to the authorities that appointed them. As principals they are expected to perform administrative functions including planning, organizing, supervising, staffing, evaluating, coordinating, purchasing and maintaining of instructional materials, equipment and facilities. The effectiveness of the principal as administrator of the school depends on the extent to which they perform the above administrative function effectively. Despite the immense benefits of ICT and the level of administrative responsibilities bestowed on the principals, some secondary schools choose to ignore those benefits and still continue with the cumbersome, slow and stressful means of administration. This study therefore investigated utilization of information and communication technology by principals in

the administration of secondary schools in Okene Local Government Area.

### **Statement of the Problem**

The secondary school operates as an open system that continually interacts with its environment, receiving inputs such as human and material resources, processing them, and then returning outputs to the environment (Okon, et al., 2015). This dynamic interaction significantly complicates the administrative responsibilities of the principal, which include decision-making, planning, communication, coordination, evaluation, and overseeing curriculum development, instructional supervision, student administration, finance, community relations, and facility management (Selwood, 2005; Adeyemi & Olaleye, 2010). The increasing number of students and the complexity of school programmes have led principals in Okene LGA to manage large volumes of data that must be processed efficiently. This complexity necessitates the use of advanced tools and facilities, such as ICT, to enhance administrative efficiency. The positive impact of ICT on the principal's effectiveness is evident in various areas of school administration, including improved communication, record-keeping, information sourcing, student registration, exam result analysis, financial accountability, and budget preparation. Despite the importance of ICT in school administration, many government or public secondary schools in Okene LGA lack adequate ICT tools, and their use by administrators is limited. This study seeks to examine the effectiveness of utilization of information and communication technologies

by principals in administration of secondary schools in Okene Local Government Area, Kogi State.

### **Objectives of the Study**

The study sought to:

1. examine the availability of ICT facilities for school administration in Okene Local Government Area.
2. determine the level of ICT usage for administrative purposes by secondary school principals in Okene Local Government Area.
3. examine the perceived problems principals would encounter in using ICT for administrative purposes in Okene Local Government Area.

### **Research Questions**

1. What are the ICT facilities available for school administration in Okene Local Government Area?
2. What is the level of ICT usage for administrative purposes by secondary school principals in Okene Local Government Area?
3. What are the perceived problems principals would encounter in using ICT for administrative purposes in Okene Local Government Area of Kogi State?

### **Theoretical Framework**

The system theory, introduced by biologist Ludwig Von Bertalanffy in 1920, is highly relevant to this study as it emphasizes the interdependence and interaction of various parts within a system, where the functioning of one part affects the entire system. This concept is applicable to the education system, which, like other social systems, relies on the interconnectedness of its components to

function effectively (Adekunle, 2013). Schools, viewed as open systems, consist of various elements, such as administrative staff, ICT tools, and instructional facilities, all of which must work together to achieve educational goals. Effective administration in education requires recognizing the role of each part, understanding the influence of external inputs like ICT, and ensuring collaboration among all facets of the system (Meadows, 2008). This collaborative approach between the Ministry of Education and school administrators is crucial for translating policy into practice and achieving educational objectives. The successful implementation of ICT, guided by knowledgeable school principals, further enhances the administration and overall functioning of the school system.

### **Literature Review**

Ajayi and Ekundayo (2019) conducted a study on the application of information and communication technology in Nigerian secondary schools. The study was carried out in Ondo and Ekiti States. The study revealed that ICT facilities were lacking in schools and teachers and students were to a little extent exposed to the use of ICT. Moreover, the study revealed the benefits of using ICT in schools which include making teaching learning interesting, helping the distance learning programme, helping teachers to be up-to-date, enhancing quality of work by both the teachers and the students. However, despite the perceived benefits, the study also revealed some of the challenges facing ICT in secondary school as irregular power supply, inadequate computer literate teachers, high cost of

purchasing computers in schools, inadequate facilities to support full application of ICT and lack of fund. Okon, et al. (2015) conducted a study on the relationship between information and communication technology (ICT) utilization and principals' administrative effectiveness in public secondary schools in Akwa Ibom State, Nigeria. The results of the study revealed a significant relationship between ICT usage in the communication process and record keeping, and principals' administrative effectiveness in public secondary schools in Akwa Ibom as ICT usage facilitates principal's administrative effectiveness. Adeyemi and Olaleye (2010) conducted a study on the use of information communication and technology (ICT) for effective management of secondary schools in Ekiti State, Nigeria. The results revealed that the level of provision of ICT equipment to secondary schools in the State was low. The level of principals' management of schools was also low. The intermittent disruption of electricity and inadequate funding were found as major problem inhibiting the usage of ICT equipment for the management of schools in the State. Fehintola (2018) conducted a study on the challenges of ICT among students in Nigerian educational system. The findings showed that students use ICT amidst lot of challenges such as inadequate facilities, poor power supply, lack of computer technical know-how, problems of far distance and insecurity of examination materials. Egomo, et al., (2017) carried out a study on availability and utilization of ICT tools for effective instructional delivery in tertiary institutions in

Cross River State Nigeria. The study revealed that availability and utilization of ICT tools for effective instructional delivery is significantly below. Cyber cafe internet connectivity and use of laptops is a common phenomenon among institutions and lecturers. Competence in the use of ICT tools among lecturers is discouraging.

**Methodology**

The study adopted descriptive survey design. The study is carried out in Okene Local Government Area, Kogi State. The population of the study is made up of 147 public secondary school principals and vice principals in Okene Local Government Area, Kogi State. Simple random sampling technique was adopted. Thirty (30) principals and vice-principals were selected from Ten (10) secondary schools in Okene Local Government Area of Kogi State for the sample of the study. One (1) principal and two (2) vice principals from each of the schools were randomly selected for the study. Simple random sampling technique was used to select the schools from all the public secondary schools in the Local Government Area. The instrument for data collection was researcher made four point Likert scale Utilization of ICT in Administration of Secondary Schools Questionnaire" (ICTASSQ) designed in four (4) clusters, and elicited responses from the respondents on the Use of ICT for

Administration of Secondary Schools. Cluster 1 elicited information on the available ICT facilities in secondary schools with response mode of YES OR NO. Cluster 2 drew information on the level of ICT usage for administrative purposes by secondary school principals with response mode of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) Rating scale as follows: SA= 4, A= 3, D=2 and SD =1. Cluster 3 elicited information on the benefits of using ICT on principal’s effectiveness with response mode as in Cluster 3. Cluster 4 sought information on the problems principals’ encounters in using ICT for administrative effectiveness with response mode as in Cluster 2. The instrument was content validated by two lecturers in Measurement and Evaluation from Federal College of Education, Okene, Kogi State. Reliability of the instrument was established with split half internal consistency while Spearman Brown Correlation Coefficient was used to analyze the scores and a reliability coefficient of 0.75 was obtained. The instrument was administered using face to face approach. Simple percentage and Mean were used to analyze data collected.

**Results and Discussion**

**Research Question 1: What are the ICT facilities available for schools administration in Okene Local Government Area?**

**Table 1:** Available ICT Facilities for school administration

s/n	Items	Yes	%	No	%	Total
1.	There are Computers use for administration of the school	9	30	21	70	100
2	There are projectors for staffs meeting, seminars and workshops	3	10	27	90	100
3	There are internet to advertise the school to the public	8	27	22	73	100
4	There are DVDs/CDs players to record orientation session and staff meetings.	5	17	25	83	100
5.	There are Ipad, tablets and phones to communicate with the staffs and parents in the school.	13	43	17	57	100

Table 1 above revealed that computers are not available for administration of the school with a score of 70%. Projectors are not available for staff meetings seminars and workshops with a score of 90%. Internet are not available to advertise the school to the public with a score of 73%. DVDs/CDs players are not available to record staff meetings and orientation session

with a score of 83%. iPads, tablets and phones are not available to communicate with the staffs and parents in the school with a score of 57%.

**Research Question 2: What is the level of ICT usage for administrative purposes by secondary school principals in Okene Local Government Area of Kogi State?**

**Table 2: Level of ICT Usage for Administration of Public Secondary Schools**

S/N	ITEMS	SA	A	D	SD	MEAN ( $\bar{x}$ )	REMARK
1	The principal uses internet to disseminate information	3	5	12	10	1.3	LOW
2	The principal uses computer for staffs documentations and assessment.	5	8	8	9	2.3	LOW
3	The principal uses the information on DVD/CDs players to make decisions for the effective administration of the school	4	6	9	11	2.1	LOW
4	The principal uses iPads, tablets and phones to interact with the staffs, students and the general public	14	10	4	2	3.2	HIGH
5	The principal uses projector for orientation, seminars and workshop and staff's meeting	9	11	8	2	2.87	HIGH
<b>Grand mean</b>						<b>2.35</b>	

Data from Table 2 revealed that item 1 achieved a mean of 1.3 which shows that principals do not use email to disseminate information. Item 2 revealed that the principal does not use computer for staff documentation and assessment with mean score of 2.3. Item 3 showed that the principal does not use the information on DVD/ CD to make decision for the effective administration of the school with a mean score of 2.1. Item 4 reflect that the principal uses teleconferencing to interact with the Staffs, students and txhe general public with my score of 3.2. Item 5 revealed that the

principal use projector for orientation, seminars, workshops and staff meetings with mean score of 2.87.A grand mean of 2.35 indicated that there is a low level usage of ICT for administration of public secondary schools principals in Okene Local Government Area of Kogi State.

**Research question 3: What are the perceived problems principals would encounter in using ICT for administrative purposes in Okene Local Government Area of Kogi State?**

**Table 3:** *Problems Principals' Encounter in Using ICTs for Administrative purposes*

S/N	ITEMS	SA	A	D	SD	MEAN ( $\bar{x}$ )	REMARK
1	Principals lacks ICT skills and competency on the use of ICT facilities	16	7	4	3	3.16	HIGH
2	There are no technical support for the principal during the use of ICT facilities in his administrative functions	12	6	4	8	2.72	HIGH
3	Principals have a negative perception in the use of ICT facilities for administrative effectiveness of the school	2	6	7	15	1.82	LOW
4	Principals lack confidence in the use of ICT facilities	13	10	1	6	2.99	HIGH
5	The government does not supply ICT facilities needed for the administrative effectiveness of the school	20	7	2	1	3.52	LOW
<b>Grand mean</b>						<b>2.84</b>	

Result from Table 4, item 1 showed that Principals lacks skills and competency on the use of ICT facilities with a mean score of 3.16. Item 2 showed that there are technical supports for the principal during the use of ICT facilities for his administrative functions with a mean score of 2.72. Item 3 showed that Principals does not have a negative perception on the use of ICT facilities for administrative effectiveness of the school with a mean score of 1.82. Item 4 revealed that principals lack confidence in the use of ICT facilities with the mean score of 2.99. Item 5 revealed that the government does not supply ICT facilities needed for the administrative effectiveness of public secondary schools with a mean score of 3.52. A grand mean of 2.84 indicated that Principals do encounter problems while using ICT in administration of public secondary schools in Okene Local Government Area of Kogi State.

**Discussion of the Findings**

The first finding of the study revealed on the available ICT facilities for Principals’

administrative effectiveness in public secondary schools in Okene Local Government Area of Kogi State. The finding showed that ICT facilities are not available for Principals’ administrative effectiveness in public secondary schools in Okene Local Government Area of Kogi State. The finding is in agreement with Adeyemi and Olaleye (2010) which showed that the level of provision of ICT equipment’s to secondary schools in the state is low. Similarly, the finding is supported by Ajayi and Ekundayo (2019) which indicated that ICT facilities are lacking in schools.

The finding showed that the level of principals’ usage of ICT for the administration of public secondary schools in Okene Local Government Area of Kogi State is low. This implies that since ICT facilities are not available in the school, the principals find it difficult to utilize ICTs for the administration of the school. The study is in agreement with the findings of Adeyemi and Olaleye (2010) which showed that the level of principal's usage of ICT for management of the school is low. The study is



also in line with the findings of Ajayi and Ekundayo (2019) which revealed that teachers were to a little extent exposed to the use of ICT. The result is consistent with Egomo, et al (2017) whose study revealed that availability and utilisation of ICT tools is significantly below.

The third finding of the study showed that problems of ICT encountered by the principal during administration of the school ranges from principal lack skills and competency on the use of ICT facilities, poor power supply in the school, no technical support, Principals' negative perception towards the use of ICT, lack of confidence on the use of ICT by the principal, lack of ICT facilities supply by the government etc. All these challenges hinder the effective use of ICT by the principal. The study is in line with the findings of Ajayi and Ekundayo (2019) which revealed challenges of ICT as irregular power supply, inadequate computer literate teachers, cost of equipment, inadequate support. The result is also in line with the findings of Fehintola (2018) which revealed challenges of ICT as follows: inadequate facilities, poor power supply, insecurity of examination material, lack of computer technical know-how. In the same vein the study is in agreement with Egomo, et al. (2017) which showed that competencies in the use of ICT by teachers are discouraging.

### **Conclusion**

The study investigated utilization of information and communication technologies by principals in administration of secondary schools in Okene Local Government Area Kogi State. It was concluded that ICT facilities are not available in public secondary schools in Okene Local Government Area of Kogi State for principal administrative effectiveness and as a result there is a low level of principals' usage of ICT in the administration of public secondary schools in Okene Local Government Area of Kogi State. For effective secondary school administration in Okene Local Government Area, Kogi State, the non-availability of ICTs in schools should be adequately addressed and provisions made to integrate ICTs in administration of secondary schools.

### **Recommendations**

The paper therefore recommended that Government/Ministries of Education/ relevant stakeholders should make ICTs available for principals' utilization.

Government/ Ministries of Education/ relevant stakeholders should sensitized the principals' on the benefits of using ICTs in carrying out their administrative duties in public secondary schools.

There should be ICT centers in all public secondary schools in Okene Local Government Area.

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## Research Collaboration among Teacher Educators: An Assessment of Knowledge Sharing Profile among Academic Staff of Colleges of Education In Kano State Nigeria

By

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### Abstract

This study determined research collaboration among teacher educators: an assessment of knowledge sharing profile among academic staff of Colleges of Education in Kano State Nigeria. Three research questions and one null hypothesis guided the study. The design of the study was descriptive of survey type. The population of the study comprised 480 science based academic staff of Colleges of Education in Kano State out of which sample of 214 was drawn using stratified proportionate sampling technique. The instrument used for data collection was Collaboration Assessment Questionnaire (CAQ) and was validated by 5 experts from Federal College of Education (Technical) Bichi. The reliability of the instrument was obtained using test re-test method via Cronbach statistics that yielded an index of 0.73. Descriptive statistics of mean and standard deviation were used to answer the research questions and the hypothesis was tested using t-test at 0.05 level of significance. The major findings of this study revealed that most of the teacher educators do not share their notes among themselves for critique; teacher educators show high enthusiasm in collaboration and there is no gender difference in knowledge sharing profile among the respondents. The study recommended among others that, management of Colleges of Education in Kano State should create formal opportunities for teacher educators to share their notes and teaching materials for critique.

**Key Words:** Teacher Educators, Research Collaboration, Knowledge Sharing

### Introduction

Teacher collaboration plays a very crucial role in enhancing educational outcomes, particularly in professional development and knowledge dissemination. When educators work collaboratively, they are able to exchange ideas, share resources, and co-develop effective teaching strategies, leading to improved classroom practices and student performance (Vangrieken et al., 2015). Collaboration among educators also facilitates professional growth by allowing teachers to learn from each other's experiences, thereby promoting reflective practices and continuous improvement in pedagogy (Hargreaves & O'Connor, 2018). One of the primary benefits of teacher collaboration is knowledge sharing, which is essential in any educational institution aiming for sustainability and growth. Ronfeldt et al (2015) schools where teachers engage in regular

collaborative efforts tend to report higher levels of student achievement and teacher satisfaction. Collaboration fosters a supportive environment where teachers feel valued and are more likely to experiment with innovative teaching methods. This not only enriches the academic environment but also aids in creating a learning community focused on shared goals (Goddard et al., 2007). Moreover, collaboration encourages the development of leadership skills among teachers, empowering them to take initiative in curriculum development and professional development activities (Fullan & Quinn, 2016).

According to Adedeji & Olaniyan (2011) despite the clear benefits of teacher collaboration, many educational institutions, especially in developing countries like Nigeria, struggle with limited collaboration among teachers. A lack of collaboration can lead to fragmentation within the

educational system, where teachers work in isolation, leading to diminished opportunities for professional development and reduced knowledge sharing. The problem is often exacerbated by institutional barriers such as rigid administrative structures, lack of time for collaborative activities, and insufficient training in teamwork dynamics (Uchendu et al 2013). These barriers contribute to a culture of isolation, where educators may resist change and innovation, which ultimately hinders the overall effectiveness of the education system.

Teacher collaboration, thus, can act as a catalyst for institutional development, enhancing both individual and collective capacities within educational institutions. The motivation for this study stems from the critical role that teacher educators play in shaping the quality of education in Nigeria. The Colleges of Education in Kano State are responsible for training the next generation of teachers and the quality of education they provide is directly linked to the professional capabilities of their academic staff. However, the absence of a collaborative culture among these educators limits their ability to engage in innovative research, which is essential for driving educational reform (Davis & Harris, 2022).

### **Review of Related Literature**

Collaboration among educators is widely recognized as a key factor in improving teaching practices, enhancing student outcomes, and fostering professional development (Smith & Barrett, 2022). According to Johnson and Dolan (2023) research collaboration, in particular, has been shown to foster knowledge sharing, encourage innovation, and enhance the collective expertise of teachers. When educators work together, they can share best practices, pool

resources, and generate new ideas that benefit not only themselves but also the institutions they serve. This collaborative approach enhances academic productivity and creates an environment conducive to continuous learning and improvement (Nguyen, 2021). Teacher collaboration can also improve job satisfaction, reduce burnout, and promote a culture of professional support (Elmore & Fuller, 2021).

However, the lack of effective collaboration poses significant challenges, especially in educational settings where teacher educators often work in isolation (Davis & Harris, 2022). In many cases, educators miss opportunities to engage in meaningful exchanges that could improve their instructional strategies and academic research. The absence of collaboration hinders professional growth and innovation, as educators are left to rely solely on their experiences, which may be limited. Furthermore, without a collaborative culture, knowledge sharing becomes fragmented, leading to inefficiencies in achieving common educational goals (Lai & Roulston, 2020). In this context, the problem of insufficient research collaboration is exacerbated by barriers such as lack of communication, institutional support, and time for meaningful engagement (O'Connell et al., 2022).

In Nigeria, particularly in the Colleges of Education in Kano State, the issue of research collaboration among teacher educators seems to be understudied. Despite the growing emphasis on knowledge sharing and teamwork in global education, the academic staff in these institutions faces numerous challenges that limit their ability to engage in collaborative research activities (Adamu &

Suleiman, 2023). These challenges include inadequate infrastructure, lack of institutional policies that promote collaboration, and a culture that does not sufficiently encourage knowledge sharing. Understanding the knowledge-sharing profiles of academic staff and the factors that influence research collaboration is critical for developing strategies that foster more collaborative environments. Hence, this study aims to assess the knowledge-sharing practices among academic staff of Colleges of Education in Kano State, Nigeria, focusing on the current state of research collaboration and identifying areas for improvement.

Studies have emphasized the essence of collaboration teaching approach for effective knowledge sharing and skill acquisition. Decuyper (2023) reported that collaborative responsibilities in team teaching are connected to emotional and professional support for teachers, reflective dialogue, professional and personal growth and learning gains for students. Similarly, Salmon (2019) in his study 'Learning collaboration and collaborate to learn: teacher positioning and student participation in an online project' found that teacher collaboration and positioning of teachers in online educational project can improve student participation and learning outcome. Wang and Smith (2024) reported that student performance is enhanced when learners are exposed to teaching approaches that involved multiple instructions. Collaborative teaching approach has been observed to offer learners opportunities to explore different style by different educators.

Most of these studies were either at Secondary School level of not even within the shore of Nigeria and particularly the colleges of education system.

Despite the recognized importance of collaboration among teacher educators in enhancing teacher preparation and education quality, research suggests that academic staff in Colleges of Education in Nigeria, including those in Kano State, often work in isolation, hindering effective knowledge sharing and collaboration (Adeyemi, 2018; Olaitan, 2020). This lack of collaboration can lead to; decreased student learning outcomes and academic achievement (Darling-Hammond, 2006), limited opportunities for professional growth and development among teacher educators (Guskey, 2002). Furthermore, the limited research on knowledge sharing profiles among academic staff in Colleges of Education in Kano State (Abdulkarim, 2019) highlights the need for an in-depth assessment of the current state of collaboration and knowledge sharing among teacher educators in this context. This study aims to address this knowledge gap by investigating the collaboration and knowledge sharing profiles of academic staff in Colleges of Education in Kano State, with a view to identifying strategies for enhancing collaboration and improving teacher education outcomes.

### **Research Objectives**

1. To determine the extent of Collaboration in teaching among teacher Educators in Colleges of Education in Kano State.
2. To find the gender difference in Collaboration among teacher Educators in

Colleges of Education in Kano State

3. To determine the constrains to Collaboration in teaching among teacher Educators in Colleges of Education in Kano State.

### **Research Questions**

1. What is the extent of collaboration among teacher Educators in Colleges of Education in Kano State?

What is the gender difference in collaboration among teacher educators in Colleges of Education in Kano State?

2. What are the constrains to collaboration in teaching among teacher Educators in Colleges of Education in Kano State?

### **Research Hypothesis**

1. There is no significant difference in collaboration among male and female teacher educators in Colleges of Education in Kano State.

### **Methodology**

The study focused on assessment of the extent of collaboration among teacher educators and was delimited to Science Teacher Educators in Colleges of Education in Kano State. The research design employed for this study was descriptive of survey type. This design is appropriate for this study because it makes it possible to collect data quickly and affordably from a large population. The population of this study comprised of all the science teacher educators (male and female) in all the Colleges of Education in Kano State totalling four- hundred and eighty (480). The sample size was determined by subjecting the total population to Raosoft@sample size calculator at 0.05 level of significance. The recommended sample size was 214. To select the sample, the study employed stratified proportionate sampling techniques to select 80 females and 134 males (See Table 1).

**Table 1**  
*Population of Science Teacher Educators in Colleges of Education in Kano State*

S/N	Colleges	Male	Female	Total
1	FCE(T) BICHI	94	26	120
2	FCE KANO	98	34	132
3	SRUOE KUMBOTSO	100	30	130
4	KASCARS KANO	78	20	98
	TOTAL	370	110	<b>480</b>

**Source: Field Survey: July, 2024**

The instrument for data collection was a Collaboration Assessment Questionnaire (CAQ) using Google form. The CAQ consisted of two sections. Section A requested for respondents' demographic information while Section B comprised twenty items on collaboration indices developed on a 5-point Likert's scale of strongly agreed, agreed, undecided, disagreed and strongly disagreed and were further graded as 5,4,3,2 and 1 respectively. Face and content validity of the instrument were done by 5 experts in Science and Curriculum Education from the Federal College of Education (Technical) Bichi, Kano. Their suggestions and advice were incorporated into the final draft of the instrument before pilot testing. CAQ was pilot tested using test-retest reliability method that yielded a coefficient of

0.73 using Cronbach Alpha statistics. Letters of introduction were written and taken by the researchers to the Management of the selected Colleges to seek permission for the study and participants were assured of the confidentiality of the information provided. The instrument was administered by the researchers with the help of four (4) research assistants each representing a college. Descriptive statistics of frequencies and percentage were used to describe the bio-data of the respondents while inferential statistics of t-test was used to analyse the hypothesis at 0.05 level of significance. The benchmark was set at 3.0. That is, any item response that is greater than 3.0 was considered agreed while any item response lesser than 3.0 was considered disagreed. Statistical Package for Social Science (SPSS) version 25 was used

## Result

**Table 2**  
*Analysis of Research Questions*

S/N	Items	SA	A	U	D	SD	$\bar{X}$	SD	Decision
1	I am involved in team teaching with Colleagues	90	52	10	02	00	4.49	0.68	Agree
2	I produce my lecture note alone even when team teaching	58	58	06	28	04	3.90	1.17	Agree
3	Lectures in team teaching often share there note for critique among them selves	06	36	22	42	48	2.42	1.26	Disagree
4	I don't like teaching some course with other lecturers	10	40	26	36	40	3.63	1.30	Agree
5	Most department allow team teaching only if there are surplus staff	64	54	16	18	02	4.04	1.05	Agree
6	Lack of trust among teachers hinders team teaching in teaching	34	76	16	26	02	3.74	1.03	Agree
7	Different teaching styles and approaches create barriers to team teaching	48	64	12	26	04	3.82	1.13	Agree
8	Limited resources and infrastructure hinder collaborative teaching	16	42	20	40	36	3.75	1.35	Agree
9	Lack of support from school administration constrains team teaching	12	50	22	50	20	3.90	1.22	Agree
10	Personal biases and stereotypes affect team teaching among teachers	12	76	18	26	22	3.19	1.23	Agree
11	I frequently share teaching resources with my colleagues	50	68	12	18	06	3.93	1.10	Agree
12	I regularly participate in joint planning and preparation with other teachers	38	84	14	08	08	3.89	1.01	Agree
13	I often engage in peer mentoring and support with my colleagues	44	74	20	10	04	3.95	0.96	Agree
14	I collaborate with other teachers to develop new teaching strategies	54	74	16	08	02	4.10	0.88	Agree
15	Ido not frequently communicate with my colleagues to discuss teaching challenges	70	70	08	02	04	4.30	0.84	Agree
16	I regularly participate in professional development activities with other teachers	64	72	10	08	00	4.25	0.79	Agree
17	I often work with other teachers to develop and implement new curriculum ideas	04	60	30	18	42	3.70	1.29	Agree
18	I have a strong sense of trust and respect for my colleagues	76	60	06	10	02	4.29	0.91	Agree
19	I feel encouraged by my school administration to collaborate with my colleagues	54	70	06	08	06	3.96	1.10	Agree
20	I believe that team teaching with colleagues improves my teaching practice	48	80	10	16	60	4.04	0.89	Agree



The result of in Table 2 revealed a strong consensus among academic staff in Colleges of Education in Kano State regarding importance of collaboration and knowledge sharing. The overwhelming majority (19 out 20 items) agreed with the statement related to collaboration and knowledge sharing, with mean scores greater than 3.0. This indicates a high level of enthusiasms and commitment to collaborative practice among the respondents. However, lone dissenting item (3) received a mean score of 2.42, indicating a disagreement with the statement. This suggests that while

respondents generally value collaboration, there may be specific contexts or circumstances where they are less likely to engage in collaborative practices. Generally, from the above Table, there is indication that there is collaboration and knowledge sharing among the academic staff that are science based in Colleges of Education in Kano State.

**Hypothesis Testing**

**H0:** There is no significant difference in collaboration among male and female teacher educators in collages of education in Kano State.

**Table 3**

*Comparison of Male and Female Teacher Educators Knowledge Sharing Profile*

	Gender	N	Mean	S. D.	Df	T	P
Score	Female	53	72.06	6.13	152	1.52	0.13
	Male	101	73.79	7.01			

From Table 3,  $df = 152$ ;  $t = 1.52$ ,  $p > 0.05$  this shows that there is no significant difference in collaboration among male and female teacher educators in College of Education in Kano State. Hence, the null hypothesis is retained.

1. Most of the teacher educators do not share their notes among themselves for critique
2. Teacher educators show high enthusiasm in collaboration
3. There is no gender difference in knowledge sharing profile among the respondents

**Discussion**

The study investigated the knowledge sharing profile of academic staff in Colleges of Education

in Kano State. The outcome of the study revealed that most teacher educators do not share their notes among themselves for critique. Despite the well-documented benefits of collaboration in academic settings, evidence suggests that many teacher educators are reluctant to share their teaching materials, such as lecture notes, with their peers for critique. This reluctance can be attributed to several factors, including fear of judgment, concerns over intellectual property, and a lack of trust among colleagues (Lai & Roulston, 2020). According to Adamu and Suleiman (2023), teacher educators in Nigeria, particularly in Colleges of Education, often work in isolation, which limits opportunities for constructive peer feedback. The absence of a

structured, collaborative culture within these institutions further contributes to this phenomenon. When educators do not share their notes and other teaching resources, they miss out on valuable insights that could improve their instructional practices and foster professional growth (Johnson & Dolan, 2023). The resistance to sharing notes also highlights the need for institutional support mechanisms that promote collaborative peer review and feedback. Creating a safe space where educators feel comfortable sharing and objectively criticizing each other's work is crucial for building a more collaborative academic environment (Smith & Barrett, 2022). Without such practices, educators may struggle to refine their teaching strategies, ultimately limiting the quality of education provided to students.

Another major outcome of the study is that teacher educators show high enthusiasm in collaboration. Despite the challenges associated with collaboration, many teacher educators demonstrate a high level of enthusiasm for working together, particularly when institutional support is in place. Enthusiasm for collaboration stems from the recognition that working with colleagues can lead to more innovative teaching practices, enhance professional

development, and improve research outcomes (Nguyen, 2021). This is in consonance with Elmore and Fuller (2021) that argue that when educators are given opportunities to collaborate, they often embrace these opportunities with enthusiasm, recognizing the value of sharing knowledge and learning from one another. Also, the study is in agreement with the findings of the study conducted by

O'Connell et al. (2022), that teacher educators expressed a strong desire to engage in collaborative research projects but cited institutional barriers such as limited time, resources, and support as significant obstacles. Nonetheless, when these barriers are removed or minimized, educators are more likely to participate in collaborative efforts and exhibit enthusiasm for such initiatives. The desire for collaboration is also linked to the potential for improved student outcomes, as teachers understand that working together can lead to the development of more effective teaching methods and instructional materials (Johnson & Dolan, 2023).

The result of the hypothesis tested also revealed that there is no significant difference in collaboration among male and female teacher educators in Colleges of Education in Kano State although the standard deviation of male is 7.01 which is slightly greater than that of female of 6.13 and yet the male collaboration significantly better than that of female teacher educators. This finding agrees with that of Ayeba (2017) who reported that from his result there is no significant difference in collaboration between male and female teachers, similarly another study conducted by Oluwunmi & Adesina (2020) revealed that no significant difference in collaboration between male and female teachers and in his study it was concluded that teacher educators' collaboration practices are influenced by factors such as shared goals, mutual respect and trust rather than gender. However, the findings of Eze and Okoro (2018) is contrary to this finding which in his result reported that there is a significant

difference in collaboration between male and female teacher educators, with female teacher exhibiting higher levels of collaboration than their male counterparts.

Besides, there is no gender difference in knowledge sharing profiles. Research has shown that gender does not play a significant role in determining the knowledge-sharing profiles of teacher educators. Both male and female educators are equally likely to engage in knowledge-sharing activities, provided that the institutional environment supports such collaboration (Adamu & Suleiman, 2023). In a study examining knowledge-sharing practices in educational settings, Davis and Harris (2022) found no statistically significant gender differences in the willingness to share information, collaborate on research, or participate in peer-review processes. This finding suggests that factors other than gender, such as institutional culture, access to resources, and individual professional development goals, are more influential in shaping knowledge-sharing behaviors. The absence of gender differences in knowledge sharing is encouraging, as it indicates that collaboration can be promoted across the board, without the need to address gender-specific barriers. According to Smith and Barrett (2022), the key to fostering effective knowledge sharing lies in creating a supportive environment where all educators, regardless of gender, feel empowered to engage in collaborative activities. This includes providing access to resources, offering professional development

opportunities, and ensuring that there are platforms for peer exchange and feedback.

### **Conclusions**

Based on the findings of the study, the following conclusions were drawn that:

1. In spite of the numerous benefits of peer review, most teacher educators do not share their notes among themselves for critique. This indicates a gap in collaborative teaching practice, which could limit opportunities for improving teaching materials and methods.
2. Teacher educators display a high level of enthusiasm for collaborative activities. This is an encouraging sign, as it demonstrates their willingness to work together in other professional areas, potentially improving the quality of education and innovation within their institutions.
3. There is no significant gender difference in the knowledge-sharing profiles of the teacher educators. This suggests that both male and female educators engage equally in knowledge-sharing practices, indicating a balanced academic environment.

### **Recommendations**

Based on the outcome of the study, the following recommendations were drawn that:

1. Management of Colleges of Education in Kano State should create formal opportunities for teacher educators to share their notes and teaching materials for critique. This could be facilitated through regular departmental meetings or collaborative teaching workshops, aiming to improve the quality of content delivery.
2. Given the high enthusiasm for

collaboration, Colleges of Education should institutionalize more structured collaborative initiatives such as research teams, joint seminars, or interdisciplinary projects. This will harness educators' enthusiasm into productive, result-oriented outcomes.

3. There is need for promoting gender-

inclusive knowledge sharing platforms. Institutions should continue to promote inclusive and equitable platforms that encourage educators of all genders to share knowledge freely. Specific initiatives like mentorship programs and knowledge-sharing platforms can further enhance this positive trend.

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