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## Contributions of Digital Technology in the Transformation of Higher Education in Nigeria

By

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### Abstract

This paper explores how the digital age is transforming higher education in Nigeria, with emphasis on the integration of artificial intelligence (AI), personalized learning, and immersive technologies such as virtual reality (VR) and augmented reality (AR). The study aims to examine the potential and challenges of digital tools in reshaping teaching and learning in Nigerian universities. Specifically, the objectives are to analyze how AI-driven platforms support personalized education, assess the impact of VR/AR on experiential learning, and identify the barriers hindering digital adoption in Nigerian higher institutions. The study adopts a qualitative and descriptive methodology, relying on a synthesis of existing literature, institutional reports, and illustrative case studies to examine technological trends and practices in the Nigerian context. Findings reveal that while AI facilitates personalized learning and automation, VR and AR enhance student engagement in medical, engineering, and agricultural education. However, challenges such as digital inequality, inadequate infrastructure, and limited faculty capacity persist. The paper concludes that a comprehensive approach involving policy reform, investment in digital infrastructure, and capacity building is essential to fully harness the potential of digital transformation in Nigerian higher education. It recommends the adoption of blended learning models, structured digital skills training, and strengthened collaboration between government, academia, and the private sector to close the digital divide and promote inclusive, technology enhanced learning environments

**Keywords:** Higher Education, Artificial Intelligence, Personalized Learning, Digital Learning, Nigeria.

### Introduction

The rapid advancement of digital technology is significantly transforming higher education globally, including in Nigeria. Key innovations such as artificial intelligence (AI), personalized learning platforms, virtual reality (VR), and augmented reality (AR) are reshaping how students access knowledge, how educators deliver instruction, and how institutions operate and assess learning outcomes. These technologies have created new opportunities for inclusive, flexible, and data-driven education, particularly through online learning systems and smart analytics. In Nigeria, the digital age has gained even greater relevance in aftermath of

The COVID-19 pandemic, which exposed significant gaps in the preparedness of higher institutions to deliver quality education remotely.

This transformation has brought with it both promise and concern. While AI technologies support personalized learning and automate assessment processes, and VR/AR tools enhance experiential learning in science, engineering, and medical fields, several challenges remain. These include limited access to digital infrastructure, unequal digital literacy among students and faculty, and weak institutional frameworks for integrating technology into pedagogy. Additionally, issues of cybersecurity,

data privacy, and resistance to change continue to hinder the full adoption of digital education across Nigerian higher institutions.

The motivation for this study arises from the observable disparity between the rapid pace of technological advancement and the slow, inconsistent adoption of digital tools in Nigeria's higher education sector. Despite the proliferation of EdTech platforms and AI-powered applications, many Nigerian universities remain under-equipped and under-trained to leverage their full potential. This study, therefore, seeks to examine how the digital age is influencing higher education in Nigeria, with a focus on the opportunities, challenges, and future prospects of AI, personalized learning, and immersive technologies in teaching and learning.

#### **Objectives of the study**

- i. To identify the significance of the use of digital technology in higher institutions in Nigeria;
- ii. to identify the contributions of the digital technology towards higher education in Nigeria, and
- iii. to identify the challenges associated with the use of digital technology by higher institutions in Nigeria.

#### **Digital Learning and Personalized Education**

One of the most significant changes in higher education is the shift from traditional learning to digital learning. Digital learning refers to the use of digital technologies to support and enhance the learning process. It involves utilizing electronic devices, computer software, and the internet to deliver educational content, facilitate communication, and promote interaction among learners. This approach encompasses various

methods, including online courses, blended learning, and the incorporation of digital tools in traditional classroom settings. Digital learning, online courses and blended learning models allow students to access educational content anytime and anywhere, increasing flexibility and inclusion (Means, Toyama, Murphy, & Baki, 2013)). In Nigeria, digital learning has become more relevant, especially following the COVID-19 pandemic, which forced many universities to adopt online education. Platforms such as the National Open University of Nigeria (NOUN) have played a significant role in providing remote education to students across the country. Other universities, such as Ahmadu Bello University (ABU) and the University of Lagos (UNILAG), have also integrated Learning Management Systems (LMS) like Moodle and Google Classroom to enhance digital learning experiences.

AI-powered learning platforms provide personalized education by adapting coursework to individual learning styles, helping students master concepts at their own pace (Luckin, 2021). Several studies have explored AI's impact on academic performance, and the findings are generally positive. For instance, adaptive learning platforms, which adjust the content and difficulty level based on a student's progress, have been shown to improve student performance by providing focused learning experiences (Winkler & Söllner, 2018). Research by Zheng et al. (2020) also found that AI-based interventions could enhance learning outcomes in complex subjects, such as mathematics and science, where students often struggle with abstract concepts. Personalised learning is one of AI's most significant

contributions to education. AI technologies create tailored educational experiences by tracking students' learning behaviours, such as how they engage with materials or their performance on quizzes. In Nigeria, educational technology (EdTech) startups these are companies that use technology to improve learning, such as uLesson and Tuteria which provide learning tools through apps and websites.

uLesson, for instance, offers pre-recorded lessons taught by experts, just like having a personal tutor, after watching a lesson, students can test their understanding through quizzes and AI-powered recommendations is an app that tracks students' progress and suggests topics they need to focus on. It's like a teacher who knows each student's strengths and weaknesses and gives personalized help. This type of adaptive learning ensures that students can progress at their own speed, making education more effective. However, digital learning also requires students to develop self-discipline and digital literacy skills. Many Nigerian students, particularly in rural areas, struggle with self-paced learning due to a lack of familiarity with digital tools and limited access to electricity and the internet. Addressing these challenges requires government intervention in infrastructure development and training programs to improve digital literacy.

### **The Role of Artificial Intelligence and Automation in Nigerian Higher Education**

Artificial Intelligence (AI) is significantly influencing higher education in Nigeria. Artificial Intelligence (AI) is the ability of computers to perform tasks that usually require human intelligence, such as problem-solving, learning,

and decision-making. While an automated grading system is an AI-powered tool that evaluates students' answers, assigns scores, and provides feedback without human intervention. It is commonly used for multiple-choice tests and, with advanced AI, even for essays by analysing grammar, structure, and content. For example, AI-based grading systems help teachers save time by instantly grading exams and giving personalized feedback to students. Automated grading systems help lecturers assess large volumes of assignments efficiently, reducing workload and ensuring consistent evaluations. For instance, institutions like Covenant University and the University of Lagos are exploring AI-driven assessment tools to streamline grading. Intelligent tutoring systems, such as AI-based learning platforms, provide personalized support to students. A practical example is the ULesson app, a Nigerian EdTech startup that uses AI to tailor lessons for students, ensuring they grasp difficult concepts at their own pace. Similarly, chatbots like ChatClass help students and educators with administrative tasks, such as scheduling classes and answering frequently asked questions. A chatbot is a computer program that uses AI to simulate human conversation and assist users through text or voice. While a ChatClass is an AI-powered chatbot that helps students learn by providing interactive lessons, quizzes, and feedback through messaging apps like WhatsApp. It also supports teachers by automating tasks like grading and progress tracking.

AI-powered analytics are being used in universities to monitor student performance and identify those at risk of academic failure, enabling early intervention programs such as mentorship and academic counseling. While

specific information on Ahmadu Bello University (ABU) and Obafemi Awolowo University (OAU) implementing AI-powered analytics is limited, related initiatives demonstrate their focus on data management and student performance analysis.

Obafemi Awolowo University (OAU): In 2024, OAU participated in the ARUA Workshop for Data Teams, aiming to enhance data management practices. The workshop concluded with a commitment from OAU representatives to address existing data management challenges and leverage the insights gained to improve the university's data systems. The leadership of ARUA encouraged OAU to capitalize on available resources and enhance its performance in data management and research capabilities.

Ahadu Bello University (ABU): A study by Yahaya and Yakasai (2019), conducted within the Department of Statistics at ABU, analyzed factors affecting students' academic performance. The researchers employed statistical methods to identify key determinants of academic success, such as class attendance, parental income, and access to study materials, thereby providing insights that could inform intervention strategies. These initiatives reflect a growing recognition of the importance of data analytics in higher education to support student success. However, for detailed information on AI-powered analytics specifically, further research or direct inquiry with the respective universities may be necessary.

However, AI adoption in Nigerian higher education raises concerns about data privacy and ethical use of AI. Many institutions lack strong data protection laws, making student information

vulnerable to breaches. Addressing these challenges requires clear government regulations and strict institutional policies on AI deployment in education.

### **Virtual and Augmented Reality in Nigerian Higher Education**

Virtual Reality (VR) is a technology that creates a computer-generated world where users feel like they are inside and can interact with it. Augmented Reality (AR) adds digital images or information to the real world, improving what we see. Azuma (1997) explains that AR blends virtual objects with the real environment in real-time. Virtual Reality (VR) and Augmented Reality (AR) are gradually making their way into Nigerian higher education. These technologies provide immersive learning experiences, allowing students to engage with complex concepts interactively.

Integrating Virtual Reality (VR) and Augmented Reality (AR) technologies into higher education has significantly enhanced student learning experiences across various disciplines. While specific implementations at Nigerian universities like the University of Ibadan, Federal University of Technology Minna (FUTMINNA), and University of Agriculture Abeokuta (FUNAAB) are not extensively documented, the global application of these technologies provides a compelling framework for their potential benefits. **Medical Education and VR Simulations** VR simulations have revolutionized surgical training by providing immersive, risk-free environments for medical students to practice procedures. For instance, studies have shown that medical students trained with VR

simulations complete standard orthopedic procedures faster and with greater precision compared to those trained traditionally. Several studies have demonstrated that virtual reality (VR) simulations enhance surgical training by enabling medical students to perform orthopedic procedures more quickly and accurately than traditional methods. For example:

- A 2020 randomized clinical trial by Lohre et al. found that senior orthopedic surgery residents trained with immersive VR completed procedures significantly faster and achieved higher Objective Structured Assessment of Technical Skills (OSATS) scores compared to those receiving traditional video instruction.
- A 2019 study by Mao et al. reported that surgical graduate students trained using an immersive VR surgical simulator for pedicle screw placement demonstrated higher accuracy rates (89.6% vs. 60.4%) and faster completion times (2.8 minutes vs. 4.9 minutes) than those trained traditionally. A 2022 study by Woodrow et al. indicated that participants trained with VR completed tasks 19% faster on average and demonstrated improved precision in pin placement angles compared to those using standard study guides.

These findings suggest that VR training can enhance the efficiency and precision of orthopedic surgical procedures among medical trainees.

This suggests that implementing similar VR training programs at institutions like the University of Ibadan could enhance surgical education outcomes.

### **Engineering Education and AR Applications**

In engineering education, augmented reality (AR) offers powerful tools for enhancing student engagement and improving conceptual understanding. By enabling the visualization of complex three-dimensional (3D) models of machines, structures, and engineering systems, AR bridges the gap between theoretical knowledge and practical application. Three-dimensional (3D) models represent objects with depth, width, and height, allowing students to observe and interact with realistic simulations from multiple angles, much like examining a physical object in real life.

A notable example is the *Augmented Tectonics* course at the University of Michigan, where students use AR and mixed reality technologies to interact with virtual construction sites and manipulate architectural models. This immersive approach not only enhances spatial awareness but also improves students' design and problem-solving skills. Although Nigerian universities such as the Federal University of Technology, Minna (FUTMINNA), have yet to fully integrate AR into engineering curricula, adopting similar AR-based educational tools could significantly enrich students' learning experiences by providing interactive, real-time engagement with engineering concepts.

### **Agricultural Studies and VR Simulations**

VR-powered farm simulations offer agricultural students the opportunity to practice modern farming techniques without the necessity of physical presence on a farm. These simulations provide immersive experiences that can enhance understanding of agricultural practices. Implementing such VR tools at FUNAAB could

provide students with valuable practical exposure in a controlled, virtual environment. While direct evidence of these specific applications at the mentioned Nigerian universities is limited, the global success of VR and AR in education underscores their potential benefits. Collaborations with technology providers and investment in these tools could enable Nigerian institutions to offer enriched, interactive learning experiences that bridge the gap between theoretical knowledge and practical application.

Despite its potential, VR and AR adoption in Nigeria is still limited due to high costs, lack of infrastructure, and inadequate power supply. Addressing these barriers will require government and private sector investments in technological infrastructure.

### **Challenges in Digital Higher Education in Nigeria**

Although digital education offers numerous advantages, Nigerian universities face significant challenges:

1. **Digital Divide:** also known as digital inequality, digital education requires reliable access to digital devices and high-speed internet resources that are not equally available to all students. Many students, especially in rural areas, lack access to high-speed internet and digital devices. For instance, students in northern Nigeria often struggle with unreliable internet, making online learning difficult. Universities like the National Open University of Nigeria (NOUN) are attempting to bridge this gap by providing offline learning resources. This disparity can exacerbate existing

inequalities, particularly for students from lower socioeconomic backgrounds or those in developing countries (Sarmah & Baruah, 2021). To address this issue, universities must ensure equitable access to technology and invest in infrastructure that supports the widespread adoption of digital learning without leaving marginalised students behind.

2. **Academic Integrity in Online Assessments:** Online exams are susceptible to cheating and impersonation. Some Nigerian universities now use proctoring software to monitor students during online tests, but enforcement remains a challenge.
3. **Cybersecurity Threats:** Nigerian universities are increasingly targeted by cyberattacks, putting students' personal data at risk. In 2022, some institutions reported hacking incidents that disrupted academic activities. Stronger cybersecurity measures are needed to prevent future breaches.
4. **Faculty Training:** Many lecturers lack the digital skills required to effectively teach online courses. Universities must invest in continuous digital training programs for educators to enhance the quality of online instruction.

### **Conclusion**

The digital revolution is reshaping Nigerian higher education, providing AI-driven automation, immersive learning experiences, and greater accessibility. However, challenges such as the digital divide, cybersecurity threats, and faculty training gaps must be addressed through policy implementation, investments, and collaboration. By leveraging technology effectively, Nigerian universities can provide

students with worldclass education and prepare them for the demands of the modern workforce.

### **Recommendations**

In line with the objectives of this study, the following recommendations are proposed to enhance the effective integration of digital technology in higher education in Nigeria:

#### **1. Addressing the significance of digital technology:**

Higher education institutions in Nigeria should continue to prioritize the integration of digital technologies such as Learning Management Systems (LMS), artificial intelligence (AI), and virtual classrooms. These tools enhance teaching and learning by increasing accessibility, interactivity, and efficiency. Government and institutional stakeholders should recognize digital technology as a foundational element of modern education and ensure its inclusion in national education strategies.

**Enhancing the contributions of digital technology to higher education:** To fully realize the contributions of digital technology, universities should adopt blended learning

models that combine online and face-to-face instruction. They should also incorporate ICT and digital literacy training into all academic programs to prepare students for the global workforce. Furthermore, partnerships with technology companies can help provide up-to-date tools and platforms that support personalized and data-driven learning.

#### **2. Tackling the challenges associated with digital technology:**

To overcome persistent challenges such as digital inequality, inadequate infrastructure, and limited digital competence among faculty, the government must invest in power supply, broadband access, and the provision of affordable devices. Universities should establish continuous professional development programs to equip lecturers with the necessary digital teaching skills. Additionally, policies that address data privacy, cybersecurity, and equitable access should be enacted and enforced.

These recommendations, when implemented, will help Nigerian higher institutions maximize the benefits of digital transformation while addressing existing gaps and preparing students for a technology-driven future

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## **Confronting Quality in the Implementation of Universal Basic Education Program, Challenges and Opportunities in Nigeria**

By

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### **Abstract**

The paper examined basic education as the bedrock of educational system which places high demand on government and stakeholders in providing necessary resources for its implementation. The goals of the Universal Basic Education cover literacy, numeracy, effective communication and scientific knowledge. In the pursuance of these Goals, Curriculum was designed to cover Basic areas of Mathematics English Language, Basic Technology, Civic Education, and Integrated Science with stated implementation strategies. But the policy is affected with Some of the challenges that pose barriers to the effective implementation of the program which include among others, inadequate infrastructural facilities, high level of out of School Children, inadequate funding, poor planning, absence of reliable database, inadequate consultation with relevant stakeholders, conflict of cultural values, inadequate monitoring and motivation of teachers. The paper explicitly discussed the concept of Universal Basic Education, Management as a construct, there by discussing the strategies for quality program that will provide opportunities for Nigerians. The paper recommended that for effective implementation of the policy that will bring about qualitative Education with opportunity for all Nigerians, the Government at all levels should ensure the provision of adequate infrastructure, adequate fund, adequate monitoring, and motivation for Teachers.\_

**Keywords:** *Universal Basic Education, Policy Implementation, Challenges, Opportunities*

### **Introduction**

Nigeria has experienced several educational review, reforms and innovations in its Policies and programs. And lots of inconsistencies exist which has resulted to poor standard in the educational System. Frequent changes in policies and government tend to have negative impact on the educational policies. From 1999 to date the country passed through five different regimes within this period, Nigeria had a litany of Ministers, Governors and Commissioners with different views on how to administer the affairs of Education sector. With such instability in the system of governance, most of the policies were abandoned half way probably because funds were not provided (Joel, Ogi, & Ipke, 2019). Ironically some of the policies such as Universal Basic Education formulated during the year of prosperity, saw their

full implementation during the period of Economic recession, hence there was difficulty in operating such policies ( Amadi ,2007 cited in Joel, ogi, & ikpe. 2019 ) . In any policy or program there are basic requirement stated for each level of Education , this requirement includes Infrastructure, Equipment , Instructional resources, personnel to implement the program , teachers and sporting staff among others . It is rather unfortunate that policy implementation process in Universal Basic Education program is facing allots of challenges. However, in order to confront the quality in the implementation of Basic Education that will promote opportunities in Nigeria, the challenges of its implementation, and way forward to improve the quality, there is need to provide conceptual understanding of some common terms.

### **Policy Implementation**

According to Bello (2022) policy implementation is the process of controlling available materials and functional resources as well as directing human effort to execute formulated major educational policy to achieve stated goals. Management of educational policies is the responsibilities of Federal, State and Local Government, as well as other stake holders who will partner with the Government for effective management of the policies. Various efforts were made to ensure effective implementation of the policies by establishing various administrative mechanism charged with diverse but interrelated functions and responsibilities. Among them are; Nigerian Education Research Development Council (NERDC), National Commission for Nomadic Education (NCNE), National Commission for Mass Literacy, Adult and Non-Formal Education (NMEC), National Teachers Institute (NTI), National Commission for Colleges of Education (NCCE), Teachers Registration Council of Nigeria (TRCN), National Universities Commission (NUC), National Board for Technical Education (NBTE), West African Examination Council (WAEC), National Examination Council of Nigeria (NECO), National Institute for Educational Planning and Administration (NIEPA), National Institute for Nigerian Languages (NINL) just to mention a few.

Basic Education is one of the levels of formal Education and a foundation upon which senior

Secondary Education is build and transition to higher Education. It is the key to the success or failure of the whole system of Education because it is the beginning of Education within the four walls of the schools where Pupil are trained in order to lay a foundation for a greater tomorrow. Nwanko (2016), posits that basic education teaches Literacy, Numeracy, and encourage Cognitive, Effective, and Social Development Basic Education remain the formative and lasting aspect of Education no matter what level of Education an individual acquire. This is because it is the Basic Education levels that learner have the greatest power to effect positive life altering changes. It is the foundation of Education that is available to all citizens within the time range with no restriction to Age, Gender Place and Religious affiliation (Iliasu & Fasasi, 2016)

### **Universal Basic Education**

According to Federal Republic of Nigeria (2013) Universal Basic Education is the Education given to Children age Zero to Fifteen (0—15) years in Nigerian. It involves Six (6) years of Primary School and Three (3) years of Junior Secondary School, Transition from one class to another is Automatic, it is designated to provide greater access to Basic Education and ensure its quality throughout the country. UBE in Nigeria can be limited to the global call for Education for All (EFA) which began in 1988 after the world assessment result for Primary Education across the globe indicating that

countries of the world were lacking behind in providing Basic Education needed for survival and life sustenance (Samuel & Victor, 2020). The first Universal Primary Education (UPE) implemented by Nigerian Government was in 1976. Later then it was brought back in a different nomenclature and officially launched by the then President of Nigeria Olusegun Obasanjo in Sokoto on September 30<sup>th</sup> 1999.

### **Objectives of Universal Basic Education**

According to Federal Republic of Nigeria (2013) in its National Policy on Education (section 2; 11) include the following;

1. Developing in the entire citizenry a strong consciousness for Education and strong commitment to its vigorous promotion.
2. Providing compulsory Free and Universal Basic Education for every Nigerian Child of School Age.
3. Reducing the incidence of Drop out from Formal School System through improve d, relevance, quality and efficiency.
4. Catering through appropriate form of complementary approach for the promotion of basic education and the large need of young person who for one reason or the other have or had to interrupt their schooling
5. Ensuring the acquisition of the appropriate level of literacy, numeracy, communication and the life skills as well as the ethical moral, security and civic values needed for laying of solid foundation for the lifelong learning (FRN, 2013).

The optimum realization of the above objective of Basic Education in Nigeria as a whole is largely dependant on the proper management of the program. And if well implemented could serve as a solid foundation to eradicate illiteracy, ignorance and poverty as well as stimulating and accelerating growth through opportunities and national development.

### **Implementation of Universal Basic Education Policy in Nigeria**

Policy can be seen as official statement determining the plan of action or what the government or organization wants to do. That is the deliberate guidelines or course of action or program of action which government chooses to do or not to do. Jumare. (2018) opined education policy to mean specific goals, program and activities set by political leader or government on education. Policy implementation process deals with the actual process of activities and experiences calculated to accomplished overall systems objective ( Omonge 2013) it's the stage where policy plan were translated into action. Implementation of UBE policy in Nigeria has witnessed some improvement to education in Nigeria, since the program stated as at 2015 Nigeria ranked 103 out of 118 countries in UNESCOS education for all (EFA) development index. But yet much more remain to be done both in quantity and in quality.

However, although there is a clear responsibility and involvement of state actors in terms of implementation and funding there is no evidence Of communication or consultation between

institutions at federal and state level in the designing of UBE program which lead to miss understanding. Later in the implementation phase UNESCO mention that insufficient consultation with the state in designing and implementation, including project selection has been one of the problems in the funding allocation over the years since it's lunched. The management of Universal Basic Education program is coordinated at three level of government in Nigeria with specific agencies or bodies' saddled with such responsibility at each level. It's coordinated by the Universal Basic Education Commission (UBEC) at Federal level. At the State level by the Universal Basic Education Board (SUBEB) and Local Government Education Authority (LGEA) oversee its affairs at Local Government level. However, in spite all the function and responsibility of these agencies the policy implementation process of UBE in Nigeria still faced a lot of challenges which need to be addressed in order to bring about growth and opportunities for national development.

### **Challenges of Universal Basic Education policy implementation in Nigeria**

In confronting quality universal basic education that will bring opportunities in Nigeria there are many challenges that are identified by educational management scholars and practitioners that distract the policy implementation of the Universal Basic Education program in Nigeria as follows;

1. **Poor planning;** To set objectives and how to take decision we need plan: The government does not take its time to properly plan on what it's want to

do. however, Nwanko (2016) observed that proper planning has been found to be the root of success in every educational policy or program he reported that poor planning was one the reasons for the failure of Universal Primary Education (UPE) and the same trend of poor planning followed the introduction of Universal Basic Education (UBE) policy

### 2. **Inadequate infrastructural and instructional facilities**

Infrastructural and learning facilities are essentials to the success of any educational policy implementation process. It is however, pathetic to note that most of such facilities are in short supply, in virtually all UBE school in the country (Fika 2012). Schools are characterized by limited resources and dilapidated buildings, these really affect the policy implementation process of UBE in Nigeria.

### 3. **Inadequate funding:**

A great number of Scholars, Analyst and practitioners have indicated that the root cause of educational crisis in Nigeria is meager financial provision. For many years budgetary allocation for the implementation of education policy including UBE program in Nigeria have been grossly inadequate. To purchase and replace the infrastructural and instructional materials, the money is not available. Bala (2018), Observed that in most cases some authorities divert fund meant for education to other sector of economy. The implication of these is that quality of education will be affected at the expense of poor funding. To bring a clear picture of Nigerians financial budgetary allocation for the past eleven years consider the following

**Table 1: Nigeria Education Budgets from 2011--2021**

SN	Year	% Allocated Fund
1.	2011	9.3%
2.	2012	9.96%
3.	2013	10.1%
4.	2014	10.5%
5.	2015	10.7%
6'	2016	7.92%
7.	2017	7,4%
8.	2018	7.04%
9.	2019	7.05%
10.	2020	6.70%
11.	2021	5.60%

Source; The Vanguard News paper. Nov 2020

The table above showcase lamentable budgetary allocation to Education across the 36 state of the federation and Abuja consequently upon this development implementation of Basic Education Policy in the country is seriously jeopardized.

4. **Inadequate Data Base:** These is inadequate availability of data needed for planning and implementation of the UBE policy where educational statistics is problematic either the Data are
5. not available or falsified. Janguza (2015) observed that when data provided for planning in educational policy or program is inadequate , in accurate and outdated then the implementation process and decision base on such data will be faulty this has been the problems of UBE policy in Nigeria.
6. **Inadequate Monitoring and Supervision:** Monitoring and Supervision in Universal Basic Education program is inadequate, hence adequate monitoring and supervision in educational process provide quality outcome

which reverse is the case in Nigerian Universal Basic Education.

7. **Lack of political will:** Leaders in governance lack political will in the process of UBE implementation in Nigeria. This is evident from the amount of money allocated to the systems in annual budget but they do not have much priority in Education that make them to miss use the fund in other economic sector.
8. **High level of drop out of school children:** Even though Universal Basic Education is free and compulsory, the level of out of school children in basic education in Nigeria has been very alarming. According to a survey carried out by UNICEF (2018) in conjunction with the Nigerian Universal Education Commission observed that number of out of school children in Nigeria increases to 13.2 million which became a challenge to the implementation and success of the program..
9. **Inadequate Quality and Quantity of Staff:** The quality of education is to the large extent depended on the quality of teachers. In spite of well-articulated Goals of Basic Education in

Nigeria, inadequate quality and quantity create a set back to the policy implementation process. Alonge and Iguadala (2018), Observed that in most of Basic Schools in Nigeria, there is a problem of inadequate supply professional and well-Motivated Teachers for effective implementation of quality Education. Teachers' inability to embrace the latest Skills, Method and Technique of Teaching result to negative impact on the implementation of UBE for quality education that would bring Opportunity to Nigerian Citizen.

**10. Inadequate Teachers Motivation and Training;**

Teachers has direct influence on educational achievement, The Guardian (2017), Reported that a Society that refuses to empower Teachers will only be promoting ignorance. However, it can be observed that UBE Teachers are not Adequately Trained with modern Technological change, and not highly motivated. They are faced with the problems of inadequate Salary, promotion and overcrowded Class rooms. It is also observed that the Federal Government has posted many N power Teachers to UBE Schools without Adequate Training on the effective Teaching Technique for Basic Level of Education.

**Strategies for Improving Quality Education in Nigeria**

The broad aim of Universal Basic Education program is to lay a solid foundation for lifelong skills through the inculcation of appropriate learning (FRN 2013). The Successes of the

UBE program largely depends on the availability of qualified Teachers, adequate facilities and fund. Effective management of the facilities with modern Teaching Technique will facilitate qualitative education that may bring about Opportunities to the Nation; Systematic Monitoring and Staff motivation will also enhance Teacher's performance toward successful realization of the Aims of the Universal Basic Education. The policy stipulated the strategies drawing from the implementation guideline as outlined below; As cited by (Arop, et al, 2018).

1. UBE shall be Tuition Free Universal and Compulsory.
2. Schools Libraries, Basic Health facilities, School Counseling, Educational resource centre, Specialist Teachers of Math, science, physical education, should be provided.
3. Teaching should be practical, exploration and experimental method.
4. Medium of instruction in the first three years shall be in the language of the environment.
5. From the 4<sup>th</sup> year English shall be used as medium of instruction. French and other language of the environment shall be tough.
6. Pupils: Teacher ratio shall be 35:1.
7. Progression from one class to another shall be based on continues assessment.
8. Special effort shall be made by all appropriate agencies to encourage parent to send their children to school.

9. Government shall provide basic infrastructure and training for realization of UBE goals at the schools level.
10. Primary schools leaving certificate shall be based on continuous assessment and shall be issued locally by the schools head Teacher.
11. Everything possible shall be done to discourage the incidence of dropout at the primary level. But should that occur, provision shall be made in the context of Adult and Non formal Education, to enable such early leavers to continue with their education.
12. Government welcomes the contribution of Voluntary agencies, communities and private individuals in the re establishment and management of Basic Schools alongside those provided by state as long as they meet the minimum standard laid down by the Federal Government.
13. In recognition of the prominent role of information and communication Technology in advancing knowledge and skill necessary for effective functioning in the modern world. There is urgent need to integrate ICT to Education in Nigeria.
14. Students who complete Junior Secondary School shall be stream in to;
  - i. The senior secondary school.
  - ii. The Technical College.
  - iii. An out of school Vocational Centre.
- iv. An apprenticeship scheme  
The streaming shall be based on the result

of test to determine academic ability, Aptitude and Vocational interest. Meanwhile these strategies have not been fully implemented as a result of numerous challenges which need to be addressed

### **Conclusion**

Basic Education remains the pillar that holds all other level of Education built on it. However, despite the noble goals of Universal Basic Education in Nigeria, the implementation process is bedeviled with several challenges of inadequate Funding, lack of political will by the leaders, inadequate infrastructure; inappropriate monitoring and lack of motivation for Teachers among others, ensuring adequate planning, and implementation through adequate funding by creating separate fund exclusively for Basic Education where its Administrators can have direct access when the need to make expenditure arise, will be the best strategies for achieving quality Basic Education that will enhance better opportunities for all citizens in Nigeria.

### **Recommendations**

Based on the identified challenges that affect the management of the policy implementation process of Universal Basic Education in Nigeria, The following suggestions were put forward for better and quality Education and opportunity for Nigerian Citizen.

1. The Universal Basic Education program should be adequately planned, and adequate projection should be made in

terms of expected enrolments, required qualified Teachers infrastructures and equipment needed. There is urgent need for the review of Universal Basic Education Commission (UBEC) and the state Universal Basic Education Board (SUBEB) program as part of measures to reinvigorate the Basic Education Sector.

2. Educational facilities are imperative to effective policy implementation process .For Educational policy to be effective facilities like Classroom, Laboratory, Library, Vocational equipment among others should be adequately provided.
3. Every Successful Educational policy is capital intensive UBE inclusive. Federal and State Government should allocate enough fund to the Universal Basic Education policy implementation in order to ensure and maintain the quality. This can be done by allocating of at least 26% of the budget to Education as recommended by UNESCO and ensure its prudence usage at the same time with private participation in financing Education. Adeyemi (2011), opines that, as a matter of urgent National importance government should place Basic Education on priority funding list that will be easily access by the Basic Education Administrators for use.
4. Reliable Education Data Stock should be established at all level of Government to avoid the Traditional practices of educational planning without accurate

and up to date data for implementation.

5. There should be proper monitoring and supervision at the Basic Education Level and all other level also be coordinated to ensure a link and continuity in the program review which will reflect the Societal needs.
6. Nigerian Leaders at all levels should develop the required and necessary Political Will for Education. This can be done by given more priority to Education in terms of budgetary allocation implementation of policies and Transparency.
7. Learners should be Adequately Motivated by ensuring that the learning environment is conducive. They should be encouraged by both Teachers and Parent to keep coming to School, School Feeding program should also be used to motivate the Learners to minimize the number of out of school children.
8. Adequate, skilled and qualified Teachers be recruited and those on the Job need to be trained and retrained on the current modern Teaching Techniques.

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**Influence of Education as Component of Quality of Life-on-Life Satisfaction among Civil Servants in Borno State, Nigeria**

By

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**Abstract**

This study assessed the Influence of Education as Component of Quality of Life-on-Life Satisfaction among Civil Servants in Borno State, Nigeria. To achieve this, two objectives were raised and two research questions were tested, while one hypothesis was tested. The study employed correlational research design. The population for this study comprised all Civil Servants working in State Secretariat Maiduguri, Borno State 3,089, while 1,548 was selected as sample size, represented 50% of the population, selected to ensure adequate power for detecting effects while considering resource constraints. Two research instruments; Quality of Life and Satisfaction with Life questionnaires were used. The face and content validities of the two questionnaires were confirmed by Department of Physical and Health Education, University of Maiduguri, while, test-retest-method of reliability was used to establish their reliability coefficients as  $r = 0.81$  and  $r = 0.73$  for both Quality of Life and life satisfaction respectively. The result showed that "mean scores for education component ( $M = 3.85$ ,  $SD = 0.43$ ) exceeded the midpoint (2.5), indicating relatively good health status, whereas life satisfaction scores ( $M = 2.73$ ,  $SD = 0.57$ ) fell below this threshold. The result of the hypothesis showed that there is significant relationship between education and life satisfaction among civil servants in Borno State Nigeria ( $P < 0.05$ ). It was recommended that Government of should improve on wages and salary of civil servants so as to increase their monthly income which will boost their productivity and thereby improve their life satisfaction.

**Keywords:** Influence, Education, Quality of Life, Life Satisfaction

**Introduction**

Quality of life (QoL) is a comprehensive concept which consists of physical and psychological health, economic situations, personal belief and interaction with environment. In contemporary management, the concept of quality of life has been changed to a social issue, while in the past decades only the personal life was emphasized. The quality of life, as a new health indicator, is not only concerned about how long individual can survive, but more concerned about how well individual live (Cummins, 2005). This generic or overall conceptualization of QoL, encompasses both life satisfaction in general and satisfaction with specific life domains. World Health Organization also proposes the concept of health-

related quality of life (HRQoL) to encompass the effects of factors on health. Findings from previous studies among civil servants have shown how HRQoL is associated with disease and psychological problems among others Yildirim, Akinci, Gozu, Sargin, Orbay, and Sargin, (2007) previous studies among civil servants have shown how HRQoL is associated with disease and psychological problems among others Yildirim, Akinci, Gozu, Sargin, Orbay, and Sargin, (2007).

Life satisfaction is an evaluation of individual's life as a whole according to how well individual goals match with his or her achievements. It is a subjective and general estimation of physical well-being, social well-

being and psychological well-being aspects of an individual's current life situation (Denes, Rak and Lee, 2017). Physical well-being of life satisfaction has to do with soundness of body, the way in which body work or function, sharpness of senses (for example, eyes, brain) presence or absence of disease or infirmity. Life satisfactions among civil servants have been identified as a key issue in human resource management as it affects the psychological well-being of people at work. Satisfaction with life represents the cognitive process in which the current situation is appraised by contrasting it with an external basis of comparison according to (Russell, Kelvin & Nicholson, 2012).

Qualitative and quantitative researches show that experts have consensus on factors such as wealth, employment, recreation and leisure, social belonging, physical and mental health, education and religious belief as the major predictor factors of quality of life and life satisfaction (Droonmers, Schrijvers & Machenback, 2001). The mission of quality of life is the creation of life satisfaction for personnel and helping the organization for employee selection and retention. Quality of life is one of the most important factors for human motivation and improving life satisfaction (Adewale & Etang, 2005).

Increasingly education is seen as vital cog in a country's economic engine, both in terms of training, and research and development. One prominent economic rationalist approach human capital theory focuses on returns to investment in education, education and training (human capital) increase worker productivity and hence the value of educated worker. Thus, government, organization or individuals who invest time,

energy, and money into education do so with the expectation of securing a better work and enhanced quality life time earnings. At the individual's level, increasing education (human capital) increases worker productivity and thus gains better employment and income for the individual. It follows that if education affects life chances, then it also has the potential to affect quality of life. The contemporary tendency to view education as remedy for various social and economic ills is testament to its perceived importance to quality of life. It is against this background that this study was carried out to examine influence of education as component of quality of life on life satisfaction among civil servants in Borno State, Nigeria.

### **Hypotheses**

The following hypothesis were tested:

**H<sub>01</sub>:** There is no significant relationship between Education and Life Satisfaction among Civil Servants in Borno State, Nigeria

### **Methodology**

The study employed correlational research design to determine the influence of education, physical and mental health as component of quality of life on life satisfaction among civil servants in Borno State, Nigeria. The population for this study comprised all Civil Servants working in all ministries in Borno State, Maiduguri numbering 3,089 (Borno State Head of service Governor's office, 2021), while 1,548 represents 50% of the population served as sample size (Nwana, 1990). Simple random sampling technique was employed to select 10 Ministries from 20 existing Ministries because; it guarantees that each member of the population has the same probability of selection and inclusion in the sample group. Following that

proportionate stratified random sampling procedure was employed to allocate number of questionnaires administered to each Ministry selected since the population of each ministry differs in number. And finally accidental sampling procedure was employed to select respondents to answer the questionnaires since the participants are available at the time of this study.

The researcher adapted two research instruments, one was the Quality of Life, (WHOQOL) questionnaire of (8) items by World Health Organization (WHO, 2017), and the other was Satisfaction with Life Scale (SWLS) of (8) items which was adapted from Diener, Emmons, Larsen, and Griffin (2015). The study finally used a questionnaire tagged (WHOQOLSWLS) and which contained three sections. Section A contains items that elicited demographic information of the selected civil servants. Section B contains items that elicited information on the quality of life of the selected civil servants (i.e. WHOQOL), and section C contains items that elicited information on the civil servants' life satisfaction (i.e. SWLS). The questionnaire was based on a modified four-point Likert rating scale {Strongly Agree (4), Agree (3), Disagree (2), Strongly Disagree (1)}, for section B items, (Very Much (4), Moderately (3), Slightly (2), Not at All (1), for section C items. The criteria for determining the level health quality and life satisfaction among the participants was obtained by sum up all the scores of the response mode across and divide it by 4. That is,  $4+3+2+1/2= 2.5$ . According to Olaitan (1983), any score above 2.5, was adjudge high level of health quality or life satisfaction, while figure below 2.5 is considered low. Test-retest was used to determine the reliability of the instrument by selecting 20 civil servants from the ministries that

was excluded from the study. The scores were then correlated using Pearson's Product Moment Correlation Coefficient (PPMCC) to establish the reliability coefficient. The reliability coefficients obtained were  $r= 0.81$  for the WHOQOL scale, and  $r= 0.73$  for the SWLS, indicating that the instrument were reliable. Meanwhile, for comparison, the original versions of the WHOQOL and SWLS scales had reliability coefficients of  $r= 0.80$  and  $r= 0.71$ , were obtained respectively. The questionnaire was subjected to face and content validities by the experts in the Department of Physical and Health Education, University of Maiduguri, (Dugdale et al., 2018). The data collected for this study were analyzed using descriptive statistics of frequency counts and percentages to explain the demographic characteristics of the respondents, means and standard deviation [sum of all the means divided by the no items i.e  $70.9/21 = 3.43$ ] was used to answered the research questions. The mean is calculated by sum up the response mode and divided it by number of response mode i.e  $(4+3+2+1/4= 2.5)$ , any score above 2.5, is rated good, while below 2.5 is rated poor, while inferential statistics of Pearson Product Moment Correlation Coefficient (PPMCC) was used to test hypothesis at 0.05 level of significant

**Data Analysis and Presentation of Findings**

**Table 1: Demographic Information of the Respondents**

n= 1,548

S/N	Items	Response	Respondents	Percentage (%)
1.	<b>Gender</b>	Male	859	57.3
		Female	641	42.7
2.	<b>Age</b>	20- 25	60	4.0
		26- 31	85	5.6
		32- 37	98	6.5
		38- 43	231	15.4
		44- 49	460	30.6
		50- 55	403	27.1
		56 and above	163	10.8
3.		<b>Marital Status</b>	Single	37
	Married		989	65.9
	Divorced		211	14.1
	Widowed		263	17.5
4.	<b>Educational Background</b>	Primary School	134	8.9
		Secondary School	164	11.3
		Diploma	370	24.6
		Table (Cont'd.)		
		N.C. E	310	20.6
		Degree	490	32.6
		Masters	27	1.8
		PhD	5	0.3
7.	<b>Employment Status</b>	Permanent & pens.	1300	86.6
		Contract	15	1.0
		Casual	185	12.3
6.	<b>Staff Category</b>	Junior	341	22.7
		Intermediate	735	49.0
		Senior	424	28.3

Data in Table 1 which is on demographic information of the respondents indicated that 859 (57.3%) of the respondents are male, while 641(42.7%) are female civil servants in Musa Usman State Secretariat Maiduguri. Furthermore, the table revealed that 60(4.0%) of the respondents are within the ages of 20- 25 years,

85(5.6%) represent 26-31 years, 98 (6.5%) are within the ages 32-37 years, 231(15.4%) represented the ages of 38-43 years, 460(30.6%) falls within the ages of 44-49 years, 403(27.1%) are also within the ages of 50-55 years, while 163(10.8%) are ages 56 years and above of the respondents.

of 50-55 years, while 163(10.8%) are ages 56 years and above of the respondents. Similarly, 37 (2.5%) of the respondents were single, 989(65.9%) of the respondents were married, 211(14.1%) of the respondents are divorcees, while 263(17.5%) of the respondents are widowed.

The educational background of the respondents shows that most of the respondents had N.C.E, 490(32.6%). The table also indicated that majority of the respondents were intermediate staff 735(49.0%) Servants in Borno State

**Research Questions 1:** What is the quality of education among Civil

**Table 2: Mean and Standard Deviation on Education as Component of Quality of Life S/N Items**

		Mean	SD	Remark
1	I have access to education.	4.01	0.57	Agree
2	My education has helped me in obtaining a job.	4.30	0.28	Agree
3	My education has helped me to attain my career advancement.	4.50	0.48	Agree
4	My education has enabled me to earn good income.	3.90	0.37	Agree
5	My education assists me in my physical health status.	4.03	0.15	Agree
6	I am able to have stable mental health because of my level of education	3.57	0.46	Agree
7	Education has helped me to live in a good environment	3.82	0.19	Agree
8	I have time for recreation and leisure because of my education	2.63	0.97	Agree
<b>Total</b>		<b>3.85</b>	<b>0.43</b>	Agree

Table 2 shows mean and standard deviation scores of education as component of quality of Life. In addition, the Table shows that the respondents rated more of the items above a mean score of 2.50, this implies that level of education among

civil servants in Borno State is considerably high. Furthermore, the grand mean and standard deviation scores of 3.85 and 0.43 are empirical evidence supporting the agreement among the respondent

**Research Questions 2:** What is the level of life Satisfaction Civil Servants in Borno State?

**Table 3: Mean and Standard Deviation on Life Satisfaction**

S/N	Items	Mean	SD	Remark
1	The conditions of my life are excellent	2.38	0.85	Disagreed
2	I am completely satisfied with my life	2.02	0.21	Disagreed
3	So far, I have got the most important things I want in life	2.35	0.68	Disagreed
4	If I could live my life over, I would change nothing	2.01	0.21	Disagreed
5	In most ways, my life is close to my idea	3.14	0.84	Agreed
6	I enjoy life very much	3.69	0.39	Agreed
7	I feel positive about my future	2.00	0.84	Disagreed
8	I experience positive feelings in my life	4.21	0.51	Agreed
<b>Total</b>		<b>2.73</b>	<b>0.57</b>	

Table 3 shows mean and standard deviation scores of life satisfaction. In addition, the Table shows that the respondents rated more of the items below a mean score of 2.50, this implies that level of life satisfaction among civil servants in Borno State is extremely low. Furthermore, the grand mean and standard deviation scores

of 2.73 and 0.57 are empirical evidence supporting the agreement among the respondents.

**Ho1:** There is no significant relationship between Education and Life Satisfaction among Civil Servants in Borno State, Nigeria

**Table 4:**

**Summary of Pearson Product Moment Correlation Analysis between Education and Life Satisfaction among Civil servants in Borno state, Nigeria** **n=1,548**

Variables	Mean	Std. Dev	N	df	r	Prob	Remark
<b>Life Satisfaction</b>	2.72	0.34	1500	1498	0.609*	0.0001	Rejected
<b>Education</b>	3.85	0.48	1500				

df=1498, r=0.447, P1

Result in Table 4 indicated that Life Satisfaction have a mean of 2.72 and standard deviation of 0.34; also education have mean of 3.85 and standard deviation of 0.48. Correlation coefficient (r) value of 0.609 indicated a moderate correlation between education and Life Satisfaction. The low p-value (0.0001) suggested that this correlation is statistically significant, further supporting the rejection of the null hypothesis. This showed that the stated hypothesis that there is no significant relationship between education and Life Satisfaction among Civil servants in Borno state, Nigeria was rejected. Therefore, there is significant relationship between education and Life Satisfaction among Civil servants in Borno state, Nigeria.

The findings of the study showed that there is relationship between education and life satisfaction among Civil servants in Borno state, Nigeria. This can be confirmed as the analysis revealed that more of the items were rated above a mean score of 2.50 by the respondents. According to Adebomi, Ibitoye and Sanni, (2012), education is the process of transforming the totality of human life to a state that makes the individual both responsible and relevant to his or her immediate social environment. The finding of this study correlates with the result of study conducted beyond Nigeria by Giambona, Porcu and Sulis (2014), where they found that analysis synthesizes some relevant facets of subjective well-being, and at the same time it confirms for Italian people the relation between subjective well-being and education.

**Discussion of Findings**

This study determined the relationship between Quality of life and Life Satisfaction among Civil servants in Borno state Nigeria.

Also, the result indicated that if the level of education increases, the likelihood of membership in good well-being latent class also increases, and on the contrary for the poor well-being, higher levels of education improve individual well-being as the probability of membership increases only for people in good well-being latent classes. The findings of the study also similar with the previous study conducted by Samuel, Bergman, and Hupka-Brunner (2013). They found in their study that education was not related to positive affect, but was positively associated with two sub-facets of negative affect (mourning or worries and loneliness or boredom), income might in part explain the association between education and negative affect, and education does not particularly seem to serve as a resource in times of unemployment or retirement (that is, there were no interactions between education and unemployment or retirement regarding well-being). In essence, higher educated people reported fewer negative emotions in everyday life than their lower educated counterparts, but not more positive emotions. The findings underlined that different facets of negative affect, in addition to life satisfaction, are relevant variables related to education and they suggested that education should receive more attention in order to gain a more comprehensive understanding of non-monetary correlates of education. There is significant relationship between education and life satisfaction among Civil servants in Borno state, Nigeria ( $P < .05$ ). This is in agreement with the previous study conducted by Okyay (2009), on the influence of education on life satisfaction of married women,

and reported education was found to have a significant main effect on life satisfaction. It is a major predictor of life satisfaction. The result of this study is also in line with the study conducted in Southern part of Nigeria by (Amaike & Lai, 2014). The author investigated life course perspective and modernization theory of ageing as its theoretical framework to study the relationship between education and life satisfaction among retired civil servant in Lagos state, Nigeria. The results showed significant differences in life satisfaction and living conditions of retirees that had higher educational qualifications compared to retirees that were not as educated. Retirees with higher educational qualifications usually postsecondary school degrees reported better life satisfaction and enjoyed better quality of life than their counterparts with no formal or primary school leaving certificate. Similar to the previous studies (Orviska and Caplanova, 2014; Rözer and Kraaykamp, 2013), it was reported that participants with higher educational degrees tended to have higher life satisfaction and happiness. People with higher education had more health knowledge or a better ability to deal with life problems. The results of their study demonstrated the advantage of education in middle-aged and older adults, rather than in young adults. Due to social development, more than 80% of young adults in their study had undergraduate or postgraduate degrees. However, not all studies support this point. Some studies revealed that education was not significantly related to subjective well-being (Portela, Neira, & del Mar Salinas-Jiménez, 2013), and education may have indirectly affected subjective well-being through health.

**Conclusion**

The study concludes that there is a relationship between education as a component of quality of life and life satisfaction among civil servants in Borno state, Nigeria.

**Recommendations**

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

1. Government of Borno state should improve on wages and salary of civil servants so as to increase their monthly income which will boost their productivity and thereby improve their life satisfaction.
2. Government of Borno state should continuously engage in staff training (education) of workers which is integral part of personnel management and staff welfare programmes in both public and private sectors in Nigeria to improve their educational level.

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**Influence of Emotional Intelligence on the Academic Achievement of Senior Secondary School Students in Kano State, Nigeria**

By

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**Abstract**

The study examined the influence of emotional intelligence on the academic achievement of Senior Secondary School Students in Kano State, Nigeria. Three objectives were formulated to guide the study with one research question and two hypotheses. An ex post facto design was adopted. The total population of the study consisted of 105,585 SS2 students. A sample size of 382 was selected in line with Research Advisors (2006) table for sample size determination. Multi-stage sampling technique was used to select the sample. An adapted Emotional Intelligence scale developed by Schutte (1998) was used as data collection instrument. Face validation of the instrument was conducted by specialists in the field of Psychology, Test and Measurement and Guidance and counseling at the Department of Education, Bayero University, Kano. A divergent construct validity procedure was employed on the adapted instrument. A weak correlation was established. The Emotional Intelligence Scale (EIS) was correlated with achievement Motivation Scale (AMS) a correlation coefficient of .224 was obtained. Cronbach's Alpha was applied to test the internal consistency of the instrument (Reliability). The Alpha index was .937. The findings of the study revealed a significant difference in the mean scores of the academic achievement of students with high and low proportion of emotional intelligence. Also, there is a significant difference in the mean scores of the academic achievement of male and female students in favor of female students. Based on the findings of the study it was recommended that achievable goals should be set for student, learning environment should be safe, inclusive and supportive for students so as to properly address the challenges of low/poor emotional intelligence among learners.

**Keywords:** *Emotional intelligence, Academic Achievement, Ex-post Factor Research Design*

**Introduction**

Emotional intelligence plays a significant role in the academic achievements of senior secondary school students. Research has shown that students with higher emotional intelligence tend to perform better academically Chemundeswari (2013). This is because emotional intelligence enables students to manage their emotions effectively, leading to improved focus, motivation, and self-regulation. Students with high emotional intelligence are better at understanding their strengths, weaknesses, and emotions, leading to improved decision-making and problem-solving skills. Emotional intelligence

helps students to manage stress, anxiety, and distractions, allowing them to stay focused and motivated. Students with high emotional intelligence are more empathetic and better at understanding social cues, leading to improved relationships with peers and teachers Ramana and Devi (2018). Emotional intelligence enables students to build stronger relationships, communicate effectively, and resolve conflicts, all of which contribute to a more positive and supportive learning environment. Emotional intelligence is an important psychological construct which affects the academic performance of our

secondary school students. According to Barlow (2014), emotions are central to learning and teaching and understanding its role in learner's experience is important. Solovey and Mayor (1990) have been the leading researchers on emotional intelligence. They defined it as "the subset of social intelligence that involves the ability to monitor one's own and other's feelings and emotions to discriminate among them and to use this information to guide one's thinking and actions." Emotional intelligence appears to be a core ingredient that, when developed and well employed, has wide ranging benefits for learning, relationships and wellness. Developing emotional intelligence skills can lead to improved academic performance. Therefore, it's essential for educators and policymakers to recognize the importance of emotional intelligence in academic achievement and incorporate emotional intelligence training into school curricula. This study was carried out to examine the influence of Emotional intelligence on the Academic Achievement of Senior secondary school students' in Kano State Nigeria.

#### **Statement of the problem**

The poor academic achievement of senior secondary school students has become the major concern of stakeholders in education. Despite the relentless effort of teachers, counselors and policy makers very little improvement in students' achievement was recorded. Data from the Senior Secondary Certificate Examination (WAEC) shows an alarming rate of poor performance among secondary school students. For example, in 2014 there was mass failure in Mathematics and English Language as only 31.28% candidates obtained credits in five subjects and above,

including Mathematics and English. When compared with the 2012 and 2013 May/June WASSCE result there was a marginal decline in the performance of candidates, which was 38.81% in 2012 and 36.57% in 2013. Similarly in 2018 out of 11,307 candidates that sat for the examination only 1,937 (17.13%) obtained a minimum of credits in five subjects and above, including English Language and Mathematics. 1021 candidates (9.03%) were engaged in examination malpractice.

Similarly, the overall performance in WAEC had fallen 59.22% in 2017 to 39.98% in 2018. In 2019, 36% of the candidates failed to make a credit pass in five subjects, including Mathematics and English; 11.33% out of one million five hundred and ninety-six thousand one hundred and sixty-one (1,596,161) candidates were engaged in examination malpractice. In 2020, there was a 1.06 improvement in performance with the results of two hundred and fifteen one hundred and forty-nine (215,149) students (13.98%) withheld because they were engaged in examination malpractice (WAEC Annual statistics and Reports). Moreover, the qualifying examination that gave students the chance or otherwise to be sponsored by the state government to take the senior school certificate examination records poor performance from students annually. Some of the qualifying examination results in Kano state revealed that the percentage of passes are 2011(23%) 2012 (45%) 2013 (35%) and 2015 (35%) while the percentage of failure is 2011 (76%), 2012 (54%) ,2014 (64%) 2015 (64%) and the worst performance is the 2020 result which recorded (90%) failure in Mathematics and English (KERD Qualify Statistics).

What could be responsible for this poor academic achievement of students? Could the poor academic achievement of senior secondary school students in Kano state be as a result of negative utilization of emotional intelligence. Negative utilization of emotional intelligence makes our secondary school students exhibit negative behaviors, such as delinquency, use of illegal drugs and alcohol as well as increased participation in deviant behaviors like fights and vandalism of school properties. This study examined the influence of emotional intelligence on the academic achievement of senior secondary school students in Kano state, Nigeria.

### **Objectives of the Study**

The objectives of this study are to determine:

- i. The proportion of students with high and low Emotional intelligence among senior secondary school students in Kano state;
- ii. The difference in the mean scores of academic achievements of students with high and low Emotional intelligence among senior secondary school students in Kano State, and The difference in the mean scores of academic achievements of male and female senior secondary school students in Kano State.

### **Research Question**

To guide the proper conduct of this study, the following research question was raised:

- i. What is the proportion of students with high and low Emotional intelligence among senior secondary school students in Kano state?
- ii. What is the difference in the mean scores of

academic achievements of students with high and low Emotional intelligence among senior secondary school students in Kano State, and

- iii. What is the difference in the mean scores of academic achievements of male and female senior secondary school students in Kano State.

### **Research Hypotheses**

The following hypotheses were formulated based on the research objectives:

H<sub>0</sub><sup>1</sup>: There is no significant difference in the mean scores of academic achievement of students with high and low Emotional intelligence among senior secondary school students in Kano State.

H<sub>0</sub><sup>2</sup>: There is no significant difference in the mean scores of academic achievement of male and female senior secondary school students in Kano State.

### **Methodology**

An Ex-post facto research design was adopted in this research. The population of the study consisted of all senior secondary school students (SS2) with a total number 105,586 from 744 government (public) secondary schools. 57,341 are male while 48,245 are female, as provided by the Department of Planning, Research and Statistics, Kano State Senior Secondary Schools Management Board (2020). A total sample size of 382 was selected as recommended by Research Advisors (2006) table for sample selection. Multi stage cluster sampling was used to obtain the sample size for the study. Multistage sampling which is also known as multi stage cluster sampling is a more complex form of cluster sampling which contains two or more stages in sample selection. The state was clustered into

three geographical locations that is Kano north, Kano south and Kano central in order to have wide coverage of the state such that all the zones will have equal representation. First stage was the selection of 5 Zonal directorate using hat and draw method in accordance with the three political zones in Kano State. The names of all the fourteen educational zones were written on a paper closed and put in a hat, the researcher shake and selected the zones without replacement. The second stage is the selection of 10 schools through hat and draw method. One for boys and the other for girls from each of the sampled educational zones in order to ensure gender parity. The third stage was the selection of students using simple random sampling technique. A standardized instrument was used for data collection i.e. An adapted Emotional Intelligence scale developed by Schutte (1998).

The content and face validity of the research instrument was established by experts in the field of Educational Psychology, Test and Measurement and Guidance and Counselling of Bayero University.

In establishing the reliability of the instrument, the researcher used Cronbach's Alpha formula to test the reliability index of the instruments. In establishing the reliability of Emotional intelligence scale. The study used Cronbach Alpha formula to determine the reliability of internal consistency of

the compatibility of the instrument on students of Kano State. The instrument was administered on the pilot study sample Cronbach Alpha value of .937 was obtained which is an excellent indicator of internal consistency. The questionnaire was administered by the researcher together with the form masters as research assistants. The students qualify result of mathematics, English and Civic Education was used to measure their academic achievement. The choice for these subjects was made considering the fact that they are core subjects offered by both science and non-science students. The students qualify result is based on grading system due to the standardized nature of the examination. Therefore, the researcher resolved to use medium score as students average for each grade. Example A1=75-100 its midpoint is =87.5, B2 70- 74 =72, B3 65 -69 =67, C4 60- 64=62, C5 55- 59= 57 C6 50-54 =52, D7 45- 49=47, E8 40- 44=42. F9 0-39 =19.5. The result was collected from their respective schools.

Data were analyzed using descriptive statistics (frequency counts and simple percentages to answer the research questions. Inferential statistics, t-test independent sample was used to test hypothesis 1 and 2. The choice of t- test was made because it is the best statistical tool used in determining if there is difference between the mean of two groups. That is when comparing two groups on one dependent variable.

**Data Presentation and Analysis**

**Table 1 Raw Data Summary on Emotional Intelligence**

Class Interval	Frequency	Cumulative Frequency
121 – 140	11	11
101 – 120	33	44
81 – 100	59	103
61 – 80	120	223
41 – 60	154	377
21 – 40	5	382

Table 1 presents the raw data summary on emotional intelligence scores of Senior Secondary School students in Kano State. From the Table it can be seen that the minimum score fall within the class interval

of 21 – 40 and the maximum within the class interval of 121 –140. The most frequently occurring score falls within the class interval of 41 – 60, as shown on the Table.

**Table 2 Raw Data Summary on Academic Achievement Scores**

Class Interval	Frequency	Cumulative Frequency
68 – 77	36	36
58 – 67	53	89
48 – 57	101	190
38 – 47	192	382

The table above presents the raw data summary of Academic Achievement scores of Senior secondary school students in Kano State. .From the table it can be seen that the minimum score fall within the class interval of 38 – 47. Maximum score fall within the

class interval of 68 –77. The most frequently occurring score fall within the class interval of 48 – 57, as shown on the Table. Data was analyzed using simple percentages to answer research questions and t- test independent sample was also used to test the hypothesis

**Table 3 Proportions of Emotional Intelligence**

	Frequency	Percent	Cumulative percentage
High	196	51.3	51.3
low	186	48.7	100.0
	382	100.0	

From the Table above, 196 students (51.3%) have a high proportion of emotional intelligence while 186 (48.7%) have low proportion. This shows that majority of Senior secondary school students in Kano state have high emotional intelligence

H02 There is no significance difference in the mean scores of the academic achievement of student with high and low proportions of emotional intelligence among senior secondary school students in Kano State. The t test independent sample was used to test the Hypothesis at the 0.05 level of significance

**Table 4 t-test for Independent Sample of Students Emotional Intelligence.**

		N	x	std. dv	df	T	p
Proportion of Emotional Intelligence							
Acad.	High	196	54.90	10.131	380	11.335	.000
Achiev.	Low	186	45.53	5.065			
Total		382					

The result on the Table above indicates a significant difference in the mean score of the academic achievement of students with high and low proportions of emotional intelligence among senior secondary school students in Kano state. Students with a high proportion of emotional intelligence were having a mean score of 54.90 and those with a low proportion of emotional intelligence a mean score of 45.53, respectively. The computed result from the t- test analysis revealed that  $t = 11.335$ ,  $p = 0.00 < 0.05$  level of significance, meaning that the obtained mean scores for the academic achievement differ by the proportion of emotional intelligence.

Thus, based on the obtained result the stated null hypothesis was therefore rejected. Therefore, there is a statistically significant difference in the mean scores of the academic achievement of students with high and a low proportion of emotional intelligence among senior secondary School students in Kano state in favour of students with high emotional intelligence.

H02. There is no significant difference in the mean score of the academic achievement of male and female senior secondary school students in Kano State The. t- test independent sample was used to test the Hypothesis at the 0.05 level of significance.

**Table 5 t-test for Independent Sample for Male and Female Students**

	Gender	N	X	std. dv	df	t	p
Acad achieve	Male	274	45.59	5.021	380	27.039	.000
	Female	108	62.37	6.448			
	Total	382					

The result on the Table above indicates a significant difference in the mean score of the academic achievement of male and female senior secondary school students in Kano state. Male students have a mean score of 45.59 and female students were having a mean score of 62.37, respectively. The computed result from t-test analysis revealed that  $t = 27.039$ ,  $p=0.00 < 0.05$  level of significance meaning that the obtained mean scores for the academic achievement significantly differ by gender. Thus, based on the obtained result, the stated null hypothesis was therefore rejected. Therefore, there is statistically significant difference in the mean scores of academic achievements of male and female Senior Secondary School students in Kano state in favour of female students.

**Summary of Findings**

1. 51.3% of Senior Secondary School Students in Kano State have a high proportion of emotional intelligence, while 48.7% have a low proportion of emotional intelligence.
2. There is a significant difference in the mean scores of the academic achievement of students with high and low proportions of emotional intelligence among senior secondary school students in Kano state in favor of those with high emotional intelligence

3. There is a significant difference in the mean scores of the academic achievement of male and female senior secondary school students in Kano state in favor of female students.

**Discussion of Findings**

There is a significant difference in the mean scores of the academic achievement of students with high and low proportions of emotional intelligence among senior secondary school students in Kano state in favor of those with high emotional intelligence. The research findings agrees with that of Owan (2022) in his study titled Emotional intelligence and students Academic Achievement in Chemistry in senior Secondary Schools, In Obudu local government area of Cross River State. Data was collected using a ten item questionnaire. Data were analyzed using Anova and t- test. The findings of the study revealed that there is significant influence of emotional intelligence on Academic achievement of of senior secondary school students. The research findings agrees with that of Mohzan, Hassan. Abd Halil (2013), who conducted a study on the influence of emotional intelligence on the academic achievement of Students of the education faculty University of Technology Mara. The findings of the study reveal students of the

faculty of education UITM Shah Alam had a high level of emotional intelligence ( $m = 5.268, sd = 0.726$ ). Secondly the respondent also were reported to have high level of emotional intelligence for all the four domains investigated in the study with ( $n = 5.542, SD = 0.874$ ) for self – emotion. Appraisal ( $m = 5.107, SD = 0.956$ ) for others emotion appraisal, ( $m = 5.419, (SD = 1.027)$ ) for understanding of emotion and ( $m = 5.003, SD = 1.136$ ) for regulation of emotion. The research findings agree with the findings of Chamundeswari (2013) in a study, titled Emotional intelligence and academic achievement among students at the higher secondary level of Kumar India. The findings of the study revealed a significant differences in emotional intelligence and academic achievement among students in different categories of schools at the higher secondary level.. The research findings agrees with the postulations of the ability theory of emotional intelligence, which states that one's emotional intelligence reflects a person's actual mental ability. The findings also agrees with the postulations of Elger's (2007) theory of performance that effective performance is influenced by the Performer's mindset, This is manifested in the mean scores of the academic achievement of students with high proportions of emotional intelligence. Those with high proportions of emotional intelligence are academically better than students with low proportions of emotional intelligence. The study revealed a significant difference in the mean score of the academic achievement

among male and female students, with female students outperforming male students. The findings agree with that of Oscar and Angel (2017) in a study, titled Gender Difference in Adolescents Academic Achievement .Data were obtained using ESOCIO(Social Survey 2010 Education and Housing) and analyzed using t-test for independent sample. The findings of the study revealed that girls are academically better than boys. Similarly, boys are more prone to misbehavior than girls also, boys are more prone to misbehavior than girls also boys rely mostly on their initial learning to pass. Similarly, the research findings also agrees with that of Parajuli and Thapa (2017) They conducted a study to examine Gender differences in the academic performance of public and private students of Lekhnath Municipality in Kaski..The study found significant gender differences in the academic performance of students, with female students scoring first division and above (71.67%) compared with their male counterparts (70.83%). In their findings, they established a significant difference in the mean score of the academic achievement of male and female students with female students outperforming the male students. The findings also agrees with that of Nnamani, and Oyibe (2017), who conducted a study on gender and academic achievement of secondary school students in social studies in Abakaliki urban area of Ebonyi State. The finding of the study revealed that the mean achievement score of female students was higher than the mean achievement score of male students. With females having a mean of

3.53 and a standard deviation of 11.357 and males a mean score 1.218 and standard deviation of 9.575. The research findings disagree with that of Asante, Ackah and Frimpong (2023) who conducted a study on gender differences in academic performance of students studying science technology Engineering and Mathematics (STEM) subjects at the University of Ghana. The overall results show that the academic performance of male is better than that of female 1.73 and findings also agree with the postulations of Elger (2007) Theory of performance that worthy accomplishments are produced from high-level performances.

### **Conclusion**

It is concluded that Emotional intelligence influence the academic achievement of senior secondary school students in Kano state. Majority of the Senior secondary school students in Kano state have a high proportion of Emotional intelligence. Students with a high proportion of Emotional intelligence are significantly better in academic achievement

than student with a low Emotional intelligence. Female students are significantly better than male in academic achievement.

### **Recommendations**

- 1) Achievable goals should be set for student, learning environment should be safe, inclusive and supportive for students so as to properly address the challenges of low/ poor emotional intelligence among learners
- 2) Secondary School students should be given equal educational opportunities and support by their significant others, such as parents, teachers, administrations and policy makers. This will enhance their good emotional skills and intelligence.
- 3) Male students should be encouraged to concentrate more in their studies and perform better or as their female counterparts.
- 4) Equal educational opportunities and supports should be given to students without any form of gender stereotype by their significant others such as parents, teachers, administrations and even Policy makers

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## Poverty among Parents of Children with Special Needs: Challenges and Way Forward

By

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### Abstract

The paper discusses the effects of poverty on the parents of children with special needs and the role of special education in addressing the identified concept. It is evidently clear that poverty has been the major stumbling block towards achieving the sets goals of individuals especially in academic, vocational and personal-social. This can be achieved through provision of adequate educational opportunities for children with special needs and other vocational skills in order to improve the economic status and fight against poverty. This paper examines the intersection of poverty and special needs, with the aim of identifying how special education can serve as a means of mitigating poverty-related disadvantages. It also suggests that government take responsibility of working relentlessly in an attempt to determine ways to restructure education with significant focus on the educational needs for children with special needs, policy makers must also look at poverty itself rather than at specific problems that could result from poverty so as to enable them benefit from the teaching-learning processes. Recommendations were also provided in order for the children to explore their potentials for the benefit of society.

**Keywords:** Poverty, special needs education, parents, inclusive education, policy, vocational training

### 1.0. Introduction

Poverty eradication is one of the seventeen Sustainable Development Goals (SDGs) to be achieved by 2030. Poverty significantly limits access to education, especially for vulnerable populations. At the same time, education is a powerful tool for breaking the cycle of poverty, particularly for families of children with special needs. Within this context, one of the pledges of the Dakar Framework for Action-Education for All: meeting our collective commitment- was “to promote EFA policies within a sustainable and well – integrated sector framework clearly linked to poverty elimination and development strategies” Compared to their more privileged peers, children with special needs often face additional disadvantages. They are more likely to experience poor health, delayed language

development, and limited readiness for school socially, emotionally, and physically. If their disabilities position and different day-to-day experience are not taken into consideration by school education, it is no wonder that things are going to be unable to benefit fully from the school system and such deteriorated their poverty condition.

Parents are the primary socializing agents for their children, in addition to providing basic necessities such as shelter, food, and clothes, parents transmit cultural and educational values and help children to adapt to social demands and opportunities. Research shows that, there is a growing relationship between poverty and disability. The effects of the home, school, and family factors such as income and parents

education are found in many educational systems across different environment. Therefore, poverty has a compounding effect on parents especially with regards to providing quality education to their children with special needs. Thus, this paper examines the Poverty among Parents of Children with Special Needs: Challenges and Way Forward.

### **1.1 Poverty**

Poverty has been characterized in a number of ways. According to the current discourse, a family is regarded to be in poverty if the combined income of all its members is below the federal poverty threshold. The lowest amount of money considered required to attain a sufficient quality of life in a certain nation is known as the poverty line. People are said to be in poverty if their income is less than this \$2.15 criterion. In its broadest definition, poverty is a state in which people are severely deprived of necessities such as food, clean drinking water, shelter, health care, education, and information (United Nations, 2015). Income and access to essential services are the main indicators of poverty in Nigeria. The National Bureau of Statistics (2020) reports that more than 40% of Nigerians make less than ₦137,430 (about \$381) annually, underscoring the pervasive socioeconomic difficulties that many families face. However, poverty in Nigeria is a multifaceted issue that goes beyond economics. Poor living circumstances, limited involvement in decision-making processes, social marginalization, and lack of access to basic services are all included (World Bank, 2022). These drawbacks are exacerbated for parents of

special needs children, making them even more vulnerable. Children that need extra help because of developmental, intellectual, emotional, or physical problems are referred to as having "special needs." These problems may include, but are not limited to, cerebral palsy, Down syndrome, autism spectrum disorders, hearing impairments, and learning challenges, according to the World Health Organization (2021). Although these disorders are becoming more well recognized in Nigeria, there are still very little resources available for assessment, diagnosis, and intervention, especially in rural regions (Adejumo & Umezina, 2020). In the areas of social inclusion, healthcare, and education, children with special needs frequently encounter obstacles. These obstacles impact not just the kids but also their families, particularly the parents who are typically the primary caregivers. These children usually have more demanding care needs, including therapy sessions, specialized education, medical visits, and round-the-clock supervision, all of which put extra strain on the parents (Famodun, 2022). Understanding how various disadvantages—such as poverty, gender, and disability—interact to create distinct experiences of marginalization is made easier with the help of the inter-sectionality framework. Poverty does not exist in a vacuum for Nigerian parents of special needs children; rather, it interacts with the responsibilities of providing care for children with special needs. Social stigma, mental pain, and financial burden are all greatly exacerbated by this intersection. For instance, a research by Daniel et al. (2021) found that the

demanding nature of caregiving forced many mothers in southwest Nigeria who were raising children with disabilities to quit their paid jobs. In addition to lowering household income, this also made them more psychologically vulnerable and less in control of their own lives. In a different case study, Oluchukwu (2020) noted that a lack of inclusive school infrastructure and financial constraints prevented many parents from enrolling their kids in suitable educational environments. Furthermore, these difficulties are made worse by Nigeria's lack of a strong social safety net. Despite the existence of laws like the Discrimination Against Persons with Disabilities (Prohibition) Act of 2018, their execution is generally uneven and inadequately funded, providing impacted families with minimal assistance (Federal Republic of Nigeria, 2018).

A cycle of disadvantage is produced by the combined burden of poverty and providing care for people with disabilities. Long-term financial instability, poor mental health, limited access to healthcare and education, and interrupted employment are common components of this cycle. The experiences of Nigerian parents of children with special needs can be precisely evaluated and comprehended within this framework.

Effects of Poverty on Parents of Children with Special Needs in Nigeria

**i. Economic Impact**

In Nigeria, having a child with special needs has a significant financial impact, often straining already struggling families. Both direct and indirect expenses for health care, education,

transportation, and lower income are included in the burden. These financial difficulties are overwhelming for many parents, particularly those with little education or work prospects, further impoverishing them. The following are additional consequences associated with economic impact:

**a. Cost of Healthcare and Specialized Services**

Children with special needs may need ongoing medical care, which may include consultations with specialists, surgeries, therapies, as well as medicines and assistive technology. The inadequacy of Nigeria's public healthcare system often compels parents to seek costly private alternatives (Ameh & Adesina, 2020). The majority of parents pay for these services out of pocket since they lack full health insurance coverage. According to a recent study by Edewor and Akinsulore (2021), 68% of Nigerian parents with disabled children said they spend more than one-third of their monthly income on medical bills. This disproportionately high expense makes it difficult for low-income households to pay for other necessities like food, housing, and their other children's schooling.

**b. Educational Costs and Barriers**

Despite Nigeria's efforts to promote inclusive education through national frameworks and laws, many public schools are still ill-prepared to serve students with special needs. Parents are consequently frequently forced to look for private special schools, which are not only scarce but also costly. Because it costs more to retain specialist staff, tailored education, and therapeutic resources, these schools usually

charge higher prices (Oni, 2020). Transportation costs can be expensive, especially in rural or semi-urban locations, even when such schools are accessible. To go to the closest suitable facility, a parent in a far-flung village might have to make a long journey. These additional costs frequently result in school dropout or non-enrollment for the child with special needs for families already experiencing financial difficulties.

***c. Loss of Employment and Productivity***

Because raising a child with special needs frequently requires full-time attention, one or both parents usually the mother may be unable to pursue hobbies that provide revenue. In order to care for others, many women say they have had to abandon their occupations or cut back on their working hours (Yusuf & Oyetunde, 2019). Households that are already below the poverty level may suffer greatly from this income loss. Additionally, Nigerian employers hardly ever offer flexible work schedules or leave for caring, which makes it challenging for working parents to juggle their caregiving and employment obligations. The problem is made worse by the lack of state-funded respite services, which leaves families with few alternatives for assistance.

***d. Long-term Financial Insecurity***

Many families experience long-term financial insecurity as a result of the combined impact of health care expenses, educational fees, and income loss. These families frequently turn to unofficial loans, charitable donations, or religious support organizations in the absence of regular government welfare or disability benefits. These sources are inadequate and

inconsistent, though. Parents of disabled children voiced concerns about their own and their children's futures (Udo and Nnamani, 2022). Since all of their resources were directed toward the child's immediate care, many said they had neither retirement plans nor savings. As a result, the financial cost goes beyond the here and now and into the future.

***e. Governmental and Policy Gaps***

The National Commission for Persons with Disabilities (NCPWD) and the National Policy on Persons with Disabilities both exist, however implementation is still lacking. Disability programs frequently lack appropriate funding, and corruption and bureaucratic inefficiencies hinder the distribution of money that are allotted (Adebayo & Ibrahim, 2023). Furthermore, social protection programs like the National Social Safety Nets Project (NASSP) and the Conditional Cash Transfer (CCT) program have not been adequately modified to take into account the unique requirements of families with disabled children. These disparities draw attention to a crucial area of concern and need a more inclusive approach to policymaking that takes into account the additional financial strain these parents bear.

***ii. Emotional and Psychological Impact***

Beyond the obvious financial strains, raising a kid with special needs has significant psychological and emotional repercussions, particularly when poverty is added to the situation. Parental emotional tolls can include social disengagement, melancholy, anxiety, and chronic stress. These impacts are

exacerbated in Nigeria due to sociocultural pressures, inadequate mental health services, and low disability awareness among the general public.

**a. Chronic Stress and Parental Burnout**

Providing care for a child with a disability is an ongoing, demanding activity that calls for consistent mental and physical energy. This can result in long-term stress and, ultimately, burnout when combined with financial difficulties. Nigerian parents of children with special needs frequently report experiencing burnout, which is characterized by emotional tiredness, a diminished sense of accomplishment, and feelings of powerlessness (Chukwuma & Olatunji, 2021). Because caregiving is a 24-hour job, parents frequently experience sleep loss, physical exhaustion, and emotional exhaustion. When a child has several disabilities or significant developmental delays, this can be particularly severe. More than 70% of caregivers in a research by Adedokun and Nwankwo (2022) indicated moderate to high levels of psychological anguish, with the degree of suffering highly correlated with household income levels and the absence of institutional assistance. Depression and Feelings of Helplessness Parents who experience both financial hardship and emotional isolation frequently frequently experience symptoms of depression. In many Nigerian communities, the social stigma associated with disability can result in social isolation, humiliation, and guilt, all of which worsen caregivers' mental health (Okoroafor & Ahmed, 2020). Numerous moms are falsely blamed for their child's illness, which can result in emotional detachment and

internalized guilt. Furthermore, parents hardly ever receive professional counseling or psychiatric assistance because of limited access to mental health services, particularly in rural areas. Nigerian public health policy continues to place a low priority on mental health, and the few services that are offered are frequently found in urban areas and are too expensive for low-income families to afford (Adeyemi et al., 2021).

**b. Marital Strain and Family Breakdown**

The pressure of raising a kid with special needs can alter family dynamics, particularly spouse relationships. In many Nigerian households, the emotional and physical responsibility of care disproportionately falls on the mother, frequently without enough assistance from the father. Resentment, neglect, or even divorce may result from this imbalance. According to a study by Ojo and Olayemi (2019), 35% of moms of children with intellectual disabilities were either divorced or going through a lot of marital strife because of the demands of caring for their children. Tensions can also occur in extended families, particularly when expectations for traditional gender roles are not fulfilled and financial resources are scarce. Mothers are left to care for the family alone in dire circumstances when men completely desert them.

**c. Social Isolation and Stigmatization**

One of the most enduring issues impacting families and children with special needs is stigma. Discriminatory attitudes and behaviors are frequently the result of cultural beliefs in Nigeria that attribute disability to spiritual or supernatural origins. Parents can face mockery

and sympathy, social and religious rejection, or exclusion from their groups (Bello et al., 2023). Parents may suffer psychologically from this social seclusion, particularly if it results in loneliness. Their coping skills are further limited by the lack of social support networks, which exacerbates emotions of abandonment and loneliness. Many parents suffer in silence because there are no forums for exchanging stories or offering emotional support.

***d. Coping Strategies and Psychological Resilience***

Notwithstanding these difficulties, a lot of parents create individual and group coping strategies. These include turning to tight family relationships, participating in unofficial support groups, and seeking spiritual strength through religious activities. For example, some parents find meaning and purpose in their caregiving roles, which makes them more psychologically resilient (Nwachukwu & Adebayo, 2020). These unofficial methods, however, are insufficient to replace formal psychological assistance. Therefore, reducing the emotional and psychological toll that these families endure requires bolstering mental health services, raising disability awareness, and encouraging inclusive community activities.

**iii. Social and Cultural Factors**

The experiences of parents parenting children with special needs are greatly influenced by social and cultural factors in Nigeria, particularly in areas of poverty. These elements affect how people view disability, how families are supported or not and how

people behave in social situations. Disability is frequently misinterpreted, misrepresented, or seen through a superstitious lens in many Nigerian communities, which results in social exclusion, stigma, and prejudice. These cultural misunderstandings, when combined with inadequate social support networks, increase the financial and emotional strain already placed on low-income families.

***a. Cultural Perceptions of Disability***

In Nigeria, people with disabilities are often understood through spiritual or metaphysical frameworks, especially in rural and traditionally inclined areas. Some people think that divine punishment, ancestral curses, or parental misdeeds are the causes of impairments (Ibrahim & Onwumere, 2020). The entire family is frequently marginalized as a result of this view, not just the child. Both family members and neighbors regularly condemn and shun mothers, questioning their morality or reproductive decisions (Eze & Obasi, 2021). Due to these beliefs, many families first turn to traditional medicines or spiritual healers, which makes it difficult for them to seek prompt medical or educational solutions. In addition to making the child's condition worse, this delay makes parents feel guilty and powerless.

***b. Stigmatization and Discrimination***

In Nigeria, social stigma is still a major problem for parents of special needs children. The general public's ignorance, fear, and lack of awareness of disabilities are the main causes of the negative attitudes that the public has about disabilities. According to Akinyemi and Hassan (2019), parents report encountering discrimination in public places such as marketplaces, educational

institutions, places of worship, and medical facilities. Especially for women, these interactions cause social disengagement and humiliation. According to a study by Umeh and Ejiogu (2022), 74% of moms with disabled children reported that their child's presence had caused them to be excluded from social groups or community events. In addition to causing emotional isolation, this kind of exclusion denies families access to community-based support networks that could lessen their financial and mental strain.

***c. Gender Roles and Patriarchal Expectations***

In Nigeria, women are mostly responsible for providing care due to traditional gender conventions. Mothers of children with disabilities are therefore frequently left to handle the emotional, financial, and physical burdens of caregiving alone. Fathers might completely stop being involved in parenting or leave the family (Okonkwo & Yusuf, 2020). This gendered disparity reflects broader patriarchal norms in Nigeria, which disproportionately assign caregiving responsibilities to women. When a woman is unemployed or financially reliant on a husband or extended family, the load increases, leaving her helpless and more susceptible to abuse or neglect.

***d. Community Support Structures***

Despite the widespread stigma, some social structures particularly those based on religious or ethnic affiliations can provide assistance to families who are having difficulties. As part of their religious duties, several Christian and Islamic organizations urge charity deeds toward

families with children with disabilities (Lawal & Ogbonna, 2023). But rather than being grounded in a rights-based understanding of inclusion, this assistance is irregular, unofficial, and frequently motivated by sympathy. Additionally, urbanization, economic pressure, and shifting social standards are eroding extended family systems, which were traditionally a reliable source of support in African countries. Nuclear families, especially those impacted by poverty and disability, are left without the usual safety nets as a result of this reduction.

***e. Lack of Public Awareness and Advocacy***

The lack of statewide disability awareness programs and inclusive education has fostered damaging stereotypes and misconceptions. Public ignorance results in a shortage of inclusive policies at the local level, poor implementation of existing legislative frameworks, and inadequate advocacy for disability rights (Adebayo & Oladimeji, 2021). In addition to isolating disabled children, this circumstance disregards the needs of those who care for them, who must negotiate a culture that does not recognize or comprehend their difficulties. Despite their increasing numbers, advocacy groups' power and reach are still quite small. In the absence of robust community involvement and public education initiatives, social perceptions of disability will persist in impeding attempts to integrate and assist impacted families.

***iv. Education and Access to Services***

In order to assist the development of children with special needs and lessen the burden on their parents, it is imperative that they have access to

schooling and basic services. However, these potential are severely constrained in Nigeria by structural obstacles stemming from poverty, poor policy execution, and infrastructural deficiencies. Accessing inclusive education, healthcare, social assistance, and early intervention programs is extremely difficult for parents of special needs children, especially those from low-income families. These restrictions make the strains already faced by low-income families even worse.

***a. Educational Barriers***

The provision of inclusive and accessible education for children with disabilities remains a challenge for the Nigerian educational system. Nigeria joined the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) and established the Inclusive Education Policy, but due to a lack of infrastructure, limited money, and a shortage of educated workers, grassroots implementation is still lacking. Particularly disadvantaged are parents who live in rural and economically underdeveloped areas. Lacking ramps, specialized learning resources, or qualified special education teachers, many schools are ill-prepared to meet the unique needs of children with disabilities. Because of this, parents are frequently compelled to either keep their kids at home or look for pricey private schools that they cannot afford. Just 12% of special needs children in low-income households in Lagos State were enrolled in any kind of formal schooling, (Olaniyan & Salami, 2021).

***b. Healthcare Inaccessibility***

Early intervention and general development for children with disabilities depend on health services such occupational therapy, speech therapy, physiotherapy, and psychological counseling. Unfortunately, many low-income families cannot get these programs or cannot pay them. Families in rural areas have few or no options for reliable care due to a lack of specialists and inadequate government health infrastructure (Umeh & Maduekwe, 2020). Furthermore, disability-related interventions are rarely covered by national health insurance programs, leaving the parents to bear the entire financial burden. As a result, many disabled children remain undiagnosed and untreated for long stretches of time, which exacerbates their diseases and increases parental hopelessness.

***c. Lack of Early Intervention Programs***

It is well acknowledged that enhancing developmental outcomes for children with special needs requires early intervention. However, early intervention programs are not readily accessible in Nigeria, especially outside of urban areas. When offered, these programs are frequently privately operated and too expensive for the majority of low-income families (Ibrahim & Lawal, 2019). A child's capacity to engage in social and academic activities is further restricted when developmental impairments worsen in the absence of early diagnosis and specialized care. This contributes to parental hopelessness and increases reliance on informal, often ineffective, care strategies.

***d. Bureaucratic and Policy Constraints***

Even if there are progressive laws in place, such

as the Discrimination Against Persons with Disabilities (Prohibition) Act, which was signed into law in 2019, its implementation is still disjointed and mostly symbolic. Due to a lack of government outreach and public education, many parents are not aware of their legal rights or how to obtain disability support services (Okoli & Adegbite, 2023). Additionally, the provision of social services intended to assist families with children who have disabilities is hampered by underfunding, corruption, and bureaucratic obstacles. When trying to obtain basic services like school placement, therapy referrals, or disability registration cards, parents are frequently left to negotiate an opaque system where they may encounter rejection, false information, or lengthy wait times.

***e. Transportation and Physical Accessibility***

Transportation is another often-overlooked obstacle to service access. Low-income families live distant from a number of governmental and private service facilities, such as hospitals and special schools. Families are deterred from obtaining assistance by the expense of transportation and the physical inaccessibility of these places, such as the absence of wheelchair ramps or accessible restrooms (Anyaele & Ede, 2021). In addition to impeding children's growth, this puts extra strain on parents who might have to carry their kids or use limited funds for transportation.

## **1.2 Coping Mechanisms and Parental**

### **Resilience**

In Nigeria, parents of children with special needs frequently encounter insurmountable social, financial, and emotional obstacles,

especially when poverty is present. Nonetheless, a lot of parents show incredible fortitude by figuring out how to adjust and deal with their situation. Individual situations, cultural backgrounds, and resource availability all influence coping strategies. Many parents learn coping mechanisms to deal with stress, look for support, and find purpose in their caring responsibilities in spite of the challenges they encounter. These tactics, which fall into three categories—psychological coping, social coping, and the utilization of personal resources—all support the resilience that many families display.

#### **a. Psychological Coping**

The internal mental techniques parents employ to deal with stress, worry, and the emotional strains of providing care are referred to as psychological coping. Due to a lack of resources for outside assistance, many parents in poverty turn inward and rely on their own fortitude, optimism, and reassessment techniques. Among the psychological coping strategies, religious and spiritual coping stands out as a dominant theme in Nigerian families.

#### **b. Religious and Spiritual Coping**

Religion has a significant influence on how parents cope in Nigerian society. Many families seek solace, fortitude, and hope in spiritual and religious rituals. Religious beliefs give parents a framework for understanding their difficulties, whether through Christian liturgy, Islamic prayers, or other customs. Belief in a greater purpose or supernatural explanation for their child's condition is fostered by faith, which also offers emotional support and a sense of community. Indeed, 65% of Nigerian parents of

children with special needs reported using religion as a primary coping mechanism (Umeh & Ejiogu, 2022). Religious coping frequently promotes emotional endurance and offers psychological respite.

**c. *Psychological Reappraisal and Optimism***

To find meaning and purpose in their parenting activities, some parents employ cognitive techniques like positive reappraisal and reframing. Parents can change their attention from the difficulties to the advancement by concentrating on their child's accomplishments, no matter how minor. Additionally, optimism aids in reducing the psychological burden of providing care. According to a study by Adebayo and Okunoye (2021), moms of special needs children who had high levels of optimism and self-efficacy reported feeling more satisfied in their caregiving roles and were better able to handle stress.

**d. *Social Coping***

Seeking assistance from others to lessen the difficulties of providing care is known as social coping. Relying on informal networks, such friends, neighbors, or extended family, for practical or emotional assistance is a common social coping strategy for parents of special needs, especially in impoverished environments.

**e. *Informal Support Networks***

Extended families are frequently important support systems in Nigeria. The primary caregiver often receives care, financial help, and emotional support from grandparents, uncles, aunts, and elder siblings. An important advantage of Nigerian extended families is their

interconnection, which acts as a protective barrier against the loneliness and isolation that many parents might otherwise experience. This aid is not always provided, though, especially where poverty has caused family disintegration or when other personal or cultural problems prevent intergenerational support (Chukwuma & Olatunji, 2021). Joining support groups for parents of children with special needs might provide comfort to some parents in urban locations. These groups give parents a secure setting in which to talk about their experiences, share knowledge, and get emotional support. These groups are becoming more numerous, despite their small size, and are frequently assisted by non-governmental organizations (NGOs) that support the rights of people with disabilities and provide caregiving education. According to Okonkwo and Yusuf (2020), many parents report feeling less alone and more connected when they participate in these groups.

**Utilization of Personal Resources**

The individual qualities or characteristics that parents can rely on to help them deal with their difficulties are referred to as personal resources. In addition to material resources like savings, networks, and information access, these resources can also be intangible traits like perseverance, resolve, and problem-solving abilities.

**f. *Resilience and Adaptability***

Resilience, the capacity to bounce back from hardship and adjust to shifting conditions is one of the main components of coping. According to Nwachukwu and Adebayo (2020), resilient parents are frequently distinguished by their capacity to see obstacles

as chances for personal development, their ability to remain optimistic, and their adaptability when overcoming problems. Resilient parents are invaluable in Nigeria, where there is frequently a dearth of institutional support, as they navigate day-to-day living and fight for their children's rights.

**g. Resourcefulness and Advocacy**

Some parents are able to fight for their children's rights, especially those who have more knowledge or greater access to information. They might advocate for more inclusive educational services, look for scholarship opportunities, or take part in advocacy campaigns. These parents navigate a system that is frequently inaccessible by using their inventiveness. For example, when mainstream education proves unattainable, some families often pooled resources within their local communities to engage special education tutors or establish informal schools (Akinyemi & Hassan, 2019). Using government programs or foreign non-governmental organizations that support families of children with disabilities is another aspect of advocacy.

**1.3 Policy Implications**

The socioeconomic and policy climate of Nigeria is closely linked to the experience of poverty among parents of special needs children. Significant gaps in the policy landscape still exist, despite efforts to address the situation through social programs and legislative frameworks.

**a. Policy Gaps and Deficiencies**

The National Policy on Disability and the

Discrimination Against Persons with Disabilities (Prohibition) Act (2019) are two examples of policies that the Nigerian government has passed with the intention of improving the lives of people with disabilities. Although these policies are positive steps, there are still many obstacles to overcome in their implementation, especially when it comes to reducing poverty for parents of special needs children.

**b. Inadequate Enforcement of Disability Laws**

Disability-related laws, such the Discrimination Against Persons with Disabilities (Prohibition) Act, are in place, but state and local governments still struggle to enforce them. Numerous families still experience prejudice in the workplace, healthcare system, and educational system, with little assistance or remedy. According to Adebayo (2020), parents of disabled children in the majority of rural Nigerian communities are either ignorant of these legal protections or lack the resources to implement them. The promise of these legislations is still mostly unmet in the absence of strong enforcement measures.

**c. Lack of Disability-Focused Social Welfare Programs**

Social welfare programs are intended to support disadvantaged populations, such as families with children with impairments, in many nations. However, these initiatives are scarce and frequently underfunded in Nigeria. For example, government-run disability benefits are infrequent and do not sufficiently target the most disadvantaged groups. The

majority of families in poverty are left to fend for themselves without any official aid, with just a small percentage receiving benefits from state-sponsored disability programs (Olatunji & Ogunyemi, 2021).

**d. Insufficient Integration of Disability and Poverty Alleviation Policies**

Even though there are programs to reduce poverty, including the National Social Investment Program (NSIP), they don't fully take into account the unique needs of families with special needs. These programs frequently ignore the particular financial hardships and psychological stress that these families face. Furthermore, families of children with disabilities receive fragmented support as a result of the various ministries' lack of cooperation (Ajayi & Adamu, 2022). Parents receive inadequate support as a result of this lack of integration, which deprives them of the tools they need to properly care for their kids.

**1.4 Conclusion and Suggestions**

This paper examines the effects of poverty on the parents of children with special needs, based on the discussions it concludes that; poverty is one of the variables that determine the way people treat children with the special needs in any given community. For example, when poverty got extreme some parents of children with special needs may not have any hope for them; talk less about their educational needs. Additionally, parents can focus on their special needs children when their fundamental requirements such as food and shelter are provided. If these are not addressed, however, the focus may shift from the education of these children to how to meet their daily needs. Many

educators and social scientists agree that the sooner exceptionality is identified and an education, therapy, or assessment program is initiated, the better the children's success will be. However, as parents are impacted by poverty, it will be extremely difficult to provide this for children with special needs. A number of important suggestions are made in order to foster an atmosphere that is more encouraging for these families.

**a. Strengthening Legal Frameworks and Enforcement**

The Nigerian government must fortify the Discrimination Against Persons with Disabilities (Prohibition) Act's enforcement procedures and associated policies in order to enhance the application of disability laws. This entails stepping up public awareness initiatives, educating law enforcement, and creating transparent avenues for reporting discrimination in the workplace, healthcare system, and educational system. To guarantee that funds are allotted for the efficient application of these regulations, particularly in rural regions, the federal and state governments ought to work together. Also, Expanding and better integrating social welfare programs for families of children with special needs into the current frameworks for reducing poverty is necessary.

**b. Promoting Inclusive Education at the Local Level**

Making sure that schools implement inclusive education methods is necessary to increase access to education for kids with special needs. To make sure that schools have the resources they need, including special education teachers,

therapy services, and easily available learning materials, the government should provide them more money, especially those in rural areas. Teachers at all levels should be required to complete inclusive education-focused teacher training programs in order to guarantee that special education students are integrated into regular classrooms whenever feasible.

***c. Enhancing Collaboration between Stakeholders***

To make sure that resources are used efficiently to support families of children with special needs, government departments, non-governmental organizations (NGOs), and international partners urgently need to coordinate more closely. This entails creating a formal referral system that connects families to financial, medical, and educational resources as well as a consolidated database for families in need of assistance. An atmosphere where parents of children with special needs feel empowered and supported requires a comprehensive approach to policy implementation that incorporates poverty alleviation and disability rights.

***d. Encouraging Public-Private Partnerships***

Public-private partnerships (PPPs) may be a useful tactic for enhancing service delivery for families of children with disabilities, especially in light of the Nigerian government's financial limitations. The government can collaborate with NGOs, community organizations, and private sector players to create service centers, raise awareness, and offer financial support for children with disabilities. Additionally, public-private partnerships can encourage innovation in developing affordable solutions that impoverished families can afford.

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## Residents Perception on Disease Transmission Due to Poor Solid Waste Management in Kano Metropolis

By

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### Abstract

This study investigated residents' perception on disease transmission due to poor solid waste management in Kano metropolis, Kano Nigeria. One research question was raised and well one hypothesis was tested. The population of the study comprised all residents of eight LGAs of Kano of Metropolis with a total population of 4,648, 400 Out of which sample of 372 were selected using multi- stage sampling. The instrument for data collection was researcher developed questionnaire based on four liker scale , the instrument were validated by experts in of department of human kinetics and health education and subjected to pilot testing after which reliability coefficient  $r=0.71$  was obtained. Descriptive statistics of frequency counts and percentage was used to describe the demographic information of the respondent, one sample t-test was used to test formulated hypothesis at 0.05 level of significance. The findings of the study revealed that residents in Kano metropolis perceived that disease transmission as health effects of poor solid waste management ( $t= -13.73$  at  $df=371$ ,  $p<0.01$ ).it was concluded that residents in Kano metropolis perceived disease transmission as health effect of poor solid waste management. Government and relevant stake holders should formulate and implement strategies for educating residents of Kano metropolis on health effect of poor solid waste management using media sources such as radio, television and social media

**Keywords:** Residents, Perception, Disease Transmission, Solid Waste, Waste Management

### Introduction

Waste management is critical yet often overlooked factor in public health. Improper disposal of waste whether solid or liquid creates a breeding ground for pathogens, contaminates air and water sources, and contributes to the spread of infectious diseases. From cholera outbreaks linked to contaminated water to respiratory illnesses caused by toxic fumes from waste burning, the association between waste and disease is undeniable. Understanding these links is crucial in developing effective strategies to mitigate health risks and protect communities from preventable illnesses. (Daramola, 2016)

Solid waste refers to the refuse generated from households, industries, agriculture, and commercial activities. As urbanization and population growth escalate, the volume of waste generated worldwide

has significantly increased. However, in many regions, particularly in developing countries, solid waste management systems are either nonexistent or poorly executed. This negligence creates numerous environmental and health hazards and diseases that demand urgent attention (United Nation Development Programme, 2020).

Solid waste management refers to the systematic administration of activities related to the collection, transportation, processing, recycling, and disposal of solid waste materials. It aims to minimize environmental impact, promote sustainability, and ensure public health and safety (Nathanson 2022)

Residents' perception of disease transmission as a health effect of poor solid waste management varies based on factors such as awareness, education, and direct exposure to waste-related health issues. Studies indicated that improper waste disposal can lead to the spread of infectious diseases, such as malaria, typhoid fever, and respiratory illnesses (Abila & Kantola 2013)

Suleman and Darko (2015) highlighted that inadequate solid waste management in sub-Saharan African countries remains a significant societal challenge, the waste generated not only threatens effective urban management but also tarnishes the visual appeal of cities and towns. Furthermore, it poses health risks to residents by blocking drainage systems, which leads to erosion and flooding, and by providing breeding grounds for mosquitoes, thereby contributing to severe public health concerns across the region. Waste handlers and pickers may contract and transmit infections through exposure to human and animal excreta or medical waste within the waste stream.

Improperly managed solid waste can pollute groundwater and surface water, it also contributes to the release of greenhouse gases and other air pollutants, as noted by (Ezechi and Nwabuku 2017). Poor solid waste management poses significant health and environmental challenges in Kano Metropolis, a rapidly urbanizing region in Nigeria. Despite allocating a significant portion of environmental budgets to waste management, Kano Metropolis struggles with ineffective

systems that collect only a fraction of the waste generated. Heaps of decomposing solid waste are commonly found in open spaces such as streets, markets, drainage systems, and abandoned buildings, creating ideal breeding grounds for disease vectors like mosquitoes and rodents. These conditions exacerbate public health risks, including the spread of diseases such as malaria, cholera, and typhoid fever (Orhorhoro, Ikpe & Tamuno, 2016)

The improper disposal of solid waste also leads to the contamination of water sources, as leachates seep into surface and groundwater, exposing the population to waterborne diseases (Ezechi & Nwabuku, 2017). Furthermore, the accumulation of waste in drainage systems results in blockages that cause flooding, which compounds health risks by spreading pathogens. (Suleman & Darko 2015) noted that waste handlers and pickers are particularly vulnerable to health hazards, as they may contract and transmit infections through exposure to human and animal excreta or medical waste within the waste stream.

Although a substantial share of environmental budgets in Kano Metropolis is devoted to waste management, the system remains inefficient, collecting only a small portion of the waste produced (Karshima, 2016). Rapid population growth, weak urban planning, and poor policy enforcement have compounded the problem, making solid waste a pressing public health concern that requires immediate and decisive action.

Poor solid waste management poses a serious public health threat, as it facilitates the spread of numerous diseases. Inadequate collection, treatment, and disposal of waste create favorable conditions for disease vectors such as rodents, insects, and other pests, which can transmit pathogens responsible for illnesses including cholera, malaria, dengue fever, and other vector-borne diseases (World Health Organization, 2024).

Furthermore, indiscriminate waste dumping in open spaces or water bodies contaminates both water and soil. Such practices can pollute drinking water sources, triggering outbreaks of waterborne diseases like cholera and typhoid. Soil contamination, in turn, can affect agricultural produce, increase the risk of foodborne illnesses when contaminated crops are consumed. In addition, open burning of waste releases hazardous chemicals and particulate matter into the air, contributing to respiratory problems and other health complications for communities living near disposal sites (Ziraba, Haregu, & Mberu, 2016). *Emerging and Reemerging Disease of Poor Solid Waste Management*

Poor solid waste management is widely recognized as a contributing factor to the emergence and reemergence of various infectious diseases. In Kano Metropolis, improper disposal practices often result in the accumulation of waste in open spaces, providing ideal breeding grounds for vectors such as mosquitoes, rats, and flies. These vectors can transmit harmful pathogens to humans, leading

to illnesses ranging from malaria and dengue fever to cholera and other waterborne or vector-borne diseases.

Residents perceive that inadequate waste management not only facilitates the spread of pathogens but also contaminates water sources, exacerbates environmental degradation, and increases the risk of outbreaks. Such conditions present a significant public health concern, aligning with global evidence that poor waste disposal practices are closely linked to the transmission of emerging and reemerging diseases (WHO, 2015).

Despite government efforts to improve waste management in Kano State, observations indicate that within Kano Metropolis, the local government areas of Tarauni, Dala, Fagge, Nasarawa, and Gwale remain the dirtiest, largely due to high rates of indiscriminate solid waste disposal. Poor waste management in these areas has degraded environmental quality, creating favorable breeding grounds for disease vectors responsible for illnesses such as malaria, dysentery, respiratory tract infections, diarrhea, and cholera. This situation not only poses serious public health risks but also diminishes the aesthetic value of affected communities.

According to *Vanguard Newspaper* (2021), an outbreak of cholera affected 41 out of 44 local government areas in Kano State, with 5,221 reported cases and 169 recorded deaths. The outbreak was attributed to poor environmental sanitation and ineffective solid waste management practices.

**Hypothesis**

Ho<sup>1</sup> Poor solid waste management will not be perceived by Residents to significantly caused disease transmission in Kano metropolis

**Methodology**

This study adopted a descriptive survey design, which, according to Nojdi and Bwala (2003), involves the systematic collection and description of data to highlight the characteristics, features, or facts about a given population. The study population comprised all residents of eight Local Government Areas (LGAs) within Kano Metropolis, with a projected population of 4,648,400 (National Population Commission, 2022). A sample of 384 residents was selected for the study.

A four-stage multistage sampling technique was employed to obtain participants. In the first stage, four LGAs were randomly selected by balloting from the eight LGAs in the metropolis. In the second stage, two political wards were randomly selected from each chosen LGA, resulting in a total of eight wards. In the third stage, purposive sampling was used to select settlements where the ward head’s residence was

located. In the final stage, systematic sampling was applied starting from the ward head’s house, two houses were skipped before selecting the next, and this procedure continued until the required sample size was reached.

**Result**

Data were collected using a self-developed, modified Likert-scale questionnaire with four response options: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). The instrument’s face and content validity were established by five experts from the Department of Human Kinetics and Health Education, Bayero University, Kano.

A pilot study involving 20 participants from Bichi Local Government Area was conducted to determine the instrument’s reliability using the split-half method. Data were analyzed using frequency counts and percentages to describe respondents’ demographic characteristics, while inferential statistics (one-sample t-test) were employed to test the hypothesis at a 0.05 level of significance. All statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS).

**Table 1 One sample t-test summary on residents’ perception on disease transmission as health effects of poor solid waste management in Kano Metropolis**

Variable	N	$\bar{x}$	SD	T	Df	Pro.
Disease transmission	372	2.50	.813	-13.73	371	.001

The above table (4.3) present the result of one sample t-test on the residents’ perception on disease transmission as health effects of poor

solid waste management in Kano metropolis. The result indicate that t-value of 13.73, df 371 (p<0.01) which is significant. The null hypothesis is therefore rejected on the account

that there is significant perception on disease transmission as health effects of poor solid waste management. This revealed that residents in Kano metropolis significantly perceived that disease transmission is health effects of poor solid waste management.

### **Discussion of Findings**

The study revealed that residents of Kano Metropolis perceive disease transmission as a major health consequence of poor solid waste management. They identified the creation of breeding sites for mosquitoes, pests, and other medically important vectors as a critical pathway for the spread of diseases. Such conditions were seen as contributing significantly to the prevalence of illnesses including cholera, polio, Lassa fever, skin irritation, dysentery, and respiratory infections, among others.

These findings align with those of Kaoje (2017), who investigated residents' perceptions of poor solid waste disposal practices in Sokoto Metropolis, Nigeria. Kaoje reported that many residents engaged in indiscriminate waste disposal and lacked awareness of its environmental and health implications, posing serious risks to public health. Similarly, the results are consistent with Muhiddin (2017), whose study on community perceptions of solid waste management in Dhaka, Bangladesh, found that residents generally exhibited low

concern regarding waste management practices, with minimal attention given to waste reduction or reuse. Both studies underscore the persistent global challenge of low public awareness and poor waste management practices, which continue to threaten environmental quality and public health.

### **Conclusion**

Residents of Kano Metropolis recognize disease transmission as a significant health consequence of poor solid waste management, acknowledging its role in creating conditions that facilitate the spread of various infectious diseases.

### **Recommendations**

It is recommended that the government, in collaboration with relevant stakeholders, develop and implement targeted public awareness campaigns to educate residents of Kano Metropolis on the health risks associated with poor solid waste management. These campaigns should utilize diverse communication channels, including radio, television, and social media platforms, to ensure wide reach and engagement. Additionally, environmental education particularly on solid waste management should be integrated into school curricula at all levels to foster early awareness and promote long-term behavioral change.

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**Influence of Teacher Qualification on Test Administration Competence in Kano Municipal Educational Directorate, Kano State, Nigeria**

By

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**Abstract**

This study investigates the influence of teacher qualification on test administration competence in the Kano Municipal Educational Directorate, Kano State, Nigeria. A correlational survey design was employed. The population consisted of all teachers in the Directorate, with a sample selected using multi-stage cluster sampling. Data were collected using a validated Teacher Test Administration Competence Questionnaire (TTACQ), which demonstrated a reliability coefficient (Cronbach's alpha) of 0.82. The instrument measured competence across planning, administering, and scoring/interpretation domains. Data analysis used descriptive statistics, Pearson correlation, and regression analysis. The study found that teachers with higher qualifications demonstrated significantly higher competence levels in test administration (Mean = 77%, SD = 8.4). A positive correlation ( $r = 0.64$ ,  $p < 0.05$ ) was found between qualification level and competence, explaining 41% of the variance in competence scores. It was concluded that teacher qualification is a significant predictor of competence in test administration. Upgrading teacher qualifications through continuous professional development can enhance assessment practices. Based on the finding, the study recommended that education authorities should support teachers in obtaining higher qualifications, provide structured training in assessment literacy, and ensure ongoing monitoring of test administration practices.

**Keywords:** *Teacher Qualification, Test Administration, Competence, Assessment Literacy*

**Introduction**

Effective test administration is essential for ensuring the validity and reliability of assessment results. Teacher competence in administering tests influences the fairness, accuracy, and credibility of educational measurement outcomes. Teacher qualification encompassing both academic degrees and professional certifications has been linked to various aspects of instructional quality. Highly qualified teachers are generally more adept at designing, administering, and interpreting assessments in ways that align with established standards. This study examines the relationship between teacher qualification and test administration competence in Kano

Municipal Educational Directorate. The goal is to provide empirical evidence to guide teacher professional development and policy interventions.

In the schooling system, there was need to make decisions concerning students' learning behavioural outcomes. These decisions were made based on data available from students' learning outcomes. The process of generating these data is assessment. Assessment of student learning provides evidence so that educational decisions can be made. Educational decisions which require information about the success of learning depend upon valid measures to inform those who make the decisions. Since school

learning programmes were expected to provide students with the capability to complete various tasks successfully.

Testing provides information about the examinee's abilities and performance. It also enables meaningful observation and comparisons to be made of the kind of behavior learners acquire during teaching-learning process (Child, 1997; Farrent, 2000). Students' assessment was an integral part of teaching and learning. Teachers play an important role in this process. Therefore, their competency, knowledge and skills in classroom assessment practices were very essential. Teachers are considered as the cornerstone for bringing change and preparing students for future endeavours. Being the hub of any educational system, teachers play vital roles in the development of new generation. Teachers are the real nation builders. They serve as crucial yardsticks that measure the achievements, aspirations and potentialities of a nation. They were the centre of any educational system, the success or otherwise of the system rest on them. The leaders and nation builders of tomorrow were the product of today's teachers. Therefore, it needs no description that the teaching and learning process is something that ought to be handed to those people who were professionally trained to be teachers, those people who have acquired the appropriate knowledge, values and skills needed to become effective teachers.

Assessment competence includes planning, administering, scoring, and interpreting test results (Nitko & Brookhart, 2014). Teacher qualification is a critical factor in the acquisition of these skills (Darling-Hammond, 2017). Empirical studies have found positive

relationship between teacher qualification and assessment practices. For example, Adewale (2019) observed that teachers with postgraduate qualifications scored significantly higher in assessment literacy than their counterparts with only a first degree. The conceptual framework for this study is grounded in Shulman's (1986) model of pedagogical content knowledge, which integrates subject knowledge, pedagogical skill, and assessment competence. Test administration refers to the procedure of actually presenting the learning task that the examinees were required to perform in order to ascertain the degree of learning that has taken place during the teaching and learning process (Ogunnniyi, 2004 cited in Sani, 2019). The test administration procedure is as important as the process of constructing the test. This is because the validity and reliability of a test score can be greatly tempered with when the test was poorly administered. When test administrators were not conversant with the principles of test administration, the overall aim of examination process was defeated. More often than, not, the examiner and the examinees suffer the consequences. A valid and reliable result may only be obtained if; among other thing the test was carefully administered. By implication, the quality of test administration ensures its validity and reliability. Therefore, a number of scholars such as Gronlund and Linn (2000), Oyedeji and Ogunbanjo (2000) have documented vast and interesting literatures regarding principles of test administration and good testing practices in schools. Gronlund and Linn (2000) cited in Sani, (2019), for example, suggest that test can be successfully administered by any reliable teacher or test administrator, as long as the prescribed testing

procedures are rigorously followed. They maintained that test administration became simple if: the examinees were motivated to do their best; test administration directions were followed closely; time is accurately kept; any significant events that might influence test scores were recorded; and testing materials were collected promptly. Therefore, for a test to be good and effective, it must have certain qualities. The most important were validity and reliability. Validity can be defined as the extent to which a test is truthful, accurate and relevant in measuring traits that it is supposed to measure. It is the ability of a test to measure what is expected to measure. A test is said to be valid only if it became appropriate to the level of the testees and satisfies the comprehensiveness of course content. Reliability is the extent to which a test score is free from measurement errors. It is the confidence that a teacher has where test score earned a good representation of a child's actual knowledge of the content. It is important for teachers to determine how consistent the scores can be used wisely to make instructional decisions about students. It is also important to know that no matter how good, valid and reliable a test is, it will not produce the desired outcomes if it was poorly administered.

Literature has shown that test administration competence is very essential in educational assessment as they affect the validity and reliability of such tests. Therefore, to administer a good test, classroom teachers should possess the competence for giving clear directions on how the test should be administered. The above competency was said to have been affected by teacher's characteristics such as educational background,

qualification, working experience, discipline and gender as in the research conducted by Muhammad (2017) found out that teachers qualification has no influence on test administration competence, some studies showed otherwise. These found out that qualification has influence on teachers test administration competence. For example, Thomas and Olugbenga (2012), Mamman (2023) and Sani (2019) found out that difference was observed in teachers competence in test administration by educational qualification.

### **Effective Test Administration**

Good testing practice rest in the hands of the examiner, who should ensure the testing exercise, run smoothly. The period before the test, during the test and after the test should be effectively managed to realize a highly efficient testing period.

### **Period Before the Test**

The test administrator may also be responsible for preparing the students for the assessment to give their maximum performance on an educational assessment, those who are responsible for administrating the assessment must provide item with basic information that they require, including when the assessment will be administered, the content and abilities that will be assessed, what the assessment will emphasize, the standard or level of performance will be scored, and how the result of the assessment will be used to make decisions (Nitko, 2004 cited in Sani, 2019). It is Pearson's view that the best preparation that teachers can provide to their students for a standardized educational achievement test is to focus instruction on the local curriculum rather than on the formal and content of a specific test. Schools may also prepare students for a standardized assessment by

teaching goals test-taking skills, such as paying attention to oral and writing directions, writing responses or making answers neatly, and using assessment time wisely to complete all the required tasks (Nitko, 2004 & Osterhof, 2001 cited in Sani, 2019).

**1. Period During the Test**

The proper preparation for examinations may not produce the desired results if the conditions during the test are mishandled. It is the cardinal duty of the administrators or institutions to ensure that conditions during testing ensure successful testing (Gronlund & Linn, 2000 cited in Sani, 2019).

**2. Period After the Test**

Orderliness is needed for a successful testing process until all the test materials are securely in the hands of the test administrators. Sani (2019) identified that, the following are expected after the completion of the examination:

- i. All test materials and documents, both used and unused should be collected and accounted for. They may be kept in a secured and locked facility.
- ii. Count through candidates' scripts to ensure their numbers corresponds with the names on the examination attendance register. Counting also, eliminates scenarios where attendance register shows students attended an examination but his or her script is not

available.

There was growing concern regarding test administration competence among teachers. According to Sani (2019) very few teachers in Kano State were competent in test administration. As a consequence, students' academic performance was affected. In addition, from the researcher's personal experience, senior secondary school teachers in Kano Municipal Educational Directorate, Kano State, used to cause distractions during test administrations. Some of them used to beat, insult and harass their students. As a result, some students cry. This unfortunate situation distracts the attention, concentration, mindset and interest of the students to continue writing the test/exam properly and efficiently. As would be expected, this rude behavior of teachers may affect the students' scores and performance. Based on this problem, this sought to achieve two objectives. To find out: whether senior secondary schools' teachers in Kano Municipal Educational Directorate, Kano State differ in test administration competence in terms of level of teaching qualification (NCE and graduate).

**Hypothesis**

There is no significant difference in test administration competence mean score of NCE and graduate senior secondary schools' teachers in Kano Municipal Educational Directorate, Kano State

**Table 1:** T-test for Independent Sample in Teachers' Competence in Test Administration by Levels of Teaching Qualification (NCE and graduate)

<b>Level of Teach. Qualification</b>	<b>Number of Teachers</b>	<b>Mean Competence Score</b>	<b>S.D</b>	<b>t.cal.</b>	<b>Df</b>	<b>P-value (2-tailed)</b>
Graduates	200	1.82		2.901	276	.004
NCE	78	1.65	.479			

Sig. at  $P \leq 0.05$

Table 1 above shows that the description of mean scores of teacher's competence in test administration by level of teaching qualification (NCE and graduate). The p-value of .004 is less than 0.05 level of significance with degree of freedom 276. Thus, the null hypothesis, which stated that, there is no significant difference in test administration competence between NCE and Graduate senior secondary schools' teachers in Kano Municipal Educational Directorate, Kano State, is therefore rejected and concluded that significant difference exists in test administration competence between NCE and graduate teachers.

The mean competence score for the sample was 77% (SD = 8.4), indicating a generally high level of competence. Teachers with postgraduate qualifications had a mean score of 81%, compared to 74% for those with only a first degree. Pearson correlation analysis revealed a significant positive relationship between teacher qualification and competence ( $r = 0.64$ ,  $p < 0.05$ ). Regression analysis showed that qualification level explained 41% of the variance in competence scores ( $R^2 = 0.41$ ).

#### **Discussion of Findings**

The findings confirm previous research indicating that higher teacher qualifications are associated with better assessment practices. This may be due to increased exposure to educational measurement theory and practical assessment skills during advanced training. The practical significance of the 77% competence level lies in its implications for assessment fairness and reliability. However, the gap between qualification levels suggests that teachers with lower qualifications may need targeted professional development. Possible reasons for the relationship include differences in

assessment literacy training, familiarity with testing standards, and confidence in administering assessments.

#### **Conclusion**

Teacher qualification is a significant predictor of competence in test administration within the Kano Municipal Educational Directorate. Efforts to raise qualification levels could enhance the quality and fairness of educational assessments.

#### **Recommendation**

1. Support teachers in pursuing higher academic and professional qualifications.
2. Organise regular workshops focused on assessment literacy and test administration procedures.
3. Implement mentoring programs where experienced teachers coach less qualified colleagues.
4. Establish a monitoring framework to ensure compliance with standardised test administration protocols.
5. Integrate assessment competence training into teacher induction programs.

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## Integrating Climate Change Education into Curricula: Challenges and Best Practices

By

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### Abstract

Climate change poses a significant threat to the planet, necessitating urgent educational reforms to equip future generations with the knowledge and skills required to address environmental challenges. Integrating climate change education (CCE) into curricula presents opportunities for fostering climate literacy, critical thinking, and sustainable practices. However, its implementation faces several challenges, including curriculum limitations, inadequate teacher training, political and ideological resistance, lack of resources, and low student engagement. This paper explores these challenges and presents the best practices for effective CCE integration. Strategies such as interdisciplinary approaches, teacher capacity building, policy support, innovative pedagogies, and student-centered engagement are examined. The study also highlights successful case studies from countries that have effectively incorporated climate change education into their national curricula. The findings emphasize the need for comprehensive educational reforms that prioritize environmental education, ensuring that students are well-equipped to contribute to sustainable solutions.

**Keywords:** *Climate change education*, curriculum integration, environmental literacy, sustainability education, interdisciplinary learning

### Introduction

Climate change is one of the most pressing global challenges, affecting ecosystems, economies, and human societies. Climate change poses serious threats to Nigeria, especially in agriculture, health, and the environment. In agriculture, it disrupts food production through erratic rainfall, droughts, and floods. In health, it increases the spread of diseases and worsens malnutrition. Environmentally, it leads to desertification, deforestation, and coastal erosion. These impacts make communities more vulnerable and strain national resources. Therefore, integrating climate change knowledge and skills into school curricula is essential to raise awareness, build resilience, create green job opportunities, and support Nigeria's sustainable

development goals. Rising global temperatures, extreme weather events, biodiversity loss, and environmental degradation necessitate urgent action. The United Nations Framework Convention on Climate Change (UNFCCC, 2015) and the Intergovernmental Panel on Climate Change (IPCC, 2021) highlight education as a critical tool for mitigating and adapting to climate change. Education plays a crucial role in equipping individuals with the knowledge, skills, and values needed to address environmental challenges and foster sustainable development (UNESCO, 2020).

Climate Change Education (CCE) is increasingly recognized as a vital tool for equipping learners with the scientific knowledge, critical thinking abilities, and sense of responsibility required to

address the climate crisis (Anderson, 2019; UNESCO, 2021). However, the integration of CCE into school curricula remains uneven and often inadequate, particularly in developing countries like Nigeria. In most cases, climate change topics are embedded superficially within subjects such as geography or biology without being addressed as a cross-cutting issue, leading to fragmented and insufficient understanding among students (Olukanni & Adebayo, 2020).

Teachers often lack the professional training, confidence, and pedagogical support to teach climate change effectively. Many have not received formal education in climate science or participatory teaching methods, which hinders their ability to engage students meaningfully (Ajiboye & Silo, 2018). Furthermore, the scarcity of locally relevant, age-appropriate, and scientifically accurate teaching materials compounds the problem, as most available resources are based on foreign contexts that may not reflect the lived realities of Nigerian students (Okorie et al., 2022).

Policy support for CCE is also weak. There is little coordination between education and environmental agencies, resulting in minimal incorporation of CCE into national education strategies (Federal Ministry of Education [FME], 2016). In rural and low-income areas, schools often lack electricity, internet access, and basic classroom infrastructure, making it difficult to implement interactive or technologically supported climate lessons (UNICEF, 2020). Additionally, teaching is mostly theoretical and lacks action-based learning such as

environmental clubs, tree planting, or community resilience projects, which are crucial for empowering learners with real-world solutions (Adeniran et al., 2021).

Widespread misconceptions about climate change persist among students and teachers alike. Some view it as a distant or foreign issue, while others interpret it through religious or cultural lenses, which weakens scientific engagement (Nwankwo & Ifeanyi, 2019). Compounding these challenges is the absence of robust monitoring and evaluation mechanisms to measure the effectiveness of CCE initiatives and improve them over time (UNESCO, 2021).

Given Nigeria's high vulnerability to climate change—especially in sectors like agriculture, public health, and natural resource management—it is critical to strengthen and institutionalize climate education. By embedding CCE more deeply in school systems and addressing systemic challenges, Nigeria can build a generation of informed, skilled, and proactive citizens capable of driving sustainable development and climate resilience.

### **Research Problem**

As climate change continues to pose a major global threat to ecosystems, economies, and human wellbeing, education has become a vital tool for equipping young people with the knowledge, skills, and values needed to understand and respond to this crisis (UNESCO, 2021; Anderson, 2019). While the importance of Climate Change Education (CCE) is widely acknowledged, its integration into school curricula across the world remains uneven and

inadequate. Many countries, particularly in the Global South, including Nigeria, face significant challenges in embedding CCE meaningfully into formal education systems. These include limited curriculum content, lack of teacher training, insufficient resources, and weak institutional support (Olukanni & Adebayo, 2020; Okorie et al., 2022). Additionally, socio-cultural beliefs, low policy prioritization, and infrastructural deficits further constrain implementation, especially in under-resourced communities

Despite these barriers, some countries and education systems have adopted innovative and inclusive approaches to climate education using project-based learning, localized content, and cross-disciplinary integration—to achieve more impactful outcomes (Adeniran et al., 2021).

### **Research Questions**

1. What are the primary challenges preventing the integration of climate change education into curricula?
2. How can interdisciplinary and innovative teaching methods improve climate literacy?
3. What role do policy and institutional frameworks play in advancing CCE?

### **Methodology**

This study adopts a qualitative research design grounded in documentary analysis to explore the integration of climate change education (CCE) into formal curricula. This approach is appropriate for examining policy trends, institutional responses, and educational practices across national and international contexts (Bowen, 2009). It allows for an in-depth understanding of

both the content and context of CCE-related initiatives, particularly in relation to curriculum development, implementation barriers, and best practices.

### **Literature Review: Climate Change Education (CCE)**

Climate Change Education (CCE) is increasingly viewed as a crucial tool in equipping individuals with the knowledge, skills, and motivation needed to address the global climate crisis. As defined by UNESCO (2021), CCE is not limited to teaching climate science; it encompasses environmental literacy, ethical awareness, civic responsibility, and the development of adaptive and mitigation strategies. Scholars agree that CCE should empower learners to engage critically and proactively with real-world environmental challenges (Anderson, 2019; Monroe et al., 2017).

### **Goals of Climate Change Education**

The primary goals of CCE align with global sustainability frameworks, including the United Nations Sustainable Development Goal (SDG) 13: Climate Action and SDG 4: Quality Education (United Nations, 2015). The objectives of CCE include: Climate Literacy; Ensuring that students understand the causes, effects, and solutions to climate change, Critical Thinking; Encouraging analytical skills to assess climate-related data and policies. Action-Oriented Learning; Motivating students to take part in local and global sustainability efforts. Interdisciplinary Knowledge; integrating climate science with social sciences, economics, and policy studies. Ethical and Civic

Engagement; Promoting a sense of responsibility towards environmental stewardship (Monroe et al., 2019).

Key Components of Climate Change Education includes various pedagogical and content-based elements that enhance student understanding and engagement. These components can be categorized into three core areas: Scientific Knowledge; The greenhouse effect and climate systems (IPCC, 2021). Human contributions to climate change (carbon emissions, deforestation, and industrialization). Impact of climate change on ecosystems, biodiversity, and human societies. Socio- Economic and Ethical Dimensions; Climate justice and the disproportionate impact on marginalized communities (Hickman et al., 2021). Economic implications of climate change, including green jobs and sustainable industries. Ethical considerations in environmental decision-making and policy formulation. Practical and Solution-Oriented Approaches; Sustainable lifestyle choices (renewable energy, waste reduction, eco- friendly transportation). Community engagement and activism (environmental clubs, advocacy campaigns).

Policy and governance education (understanding climate treaties, international agreements).

CCE is most effective when it combines scientific literacy, ethical considerations, and practical action, ensuring that students become proactive agents of change (Stevenson et al., 2017).

However, a critical review of the literature reveals that while international consensus on the importance of CCE is growing, its implementation

and effectiveness remain inconsistent and deeply contested. Through thematic analysis of current literature, three core themes emerge: curriculum integration and fragmentation, capacity and pedagogical challenges, and policy-practice gaps.

### **Curriculum Integration and Fragmentation**

The integration of CCE into school curricula varies widely across countries and regions. In some educational systems, climate change is treated as a cross-cutting theme embedded within multiple subjects (e.g., science, geography, and civics), while in others, it is relegated to isolated modules or overlooked entirely (Kagawa & Selby, 2010; Olukanni & Adebayo, 2020). For example, in countries like Finland and Costa Rica, CCE has been systematically embedded across grade levels and learning domains, fostering a coherent approach to environmental citizenship (UNESCO, 2021). In contrast, Nigerian curricula largely mention climate change only in passing, often as part of geography or agricultural science, without structured depth or progression (Okorie et al., 2022). This fragmented approach limits learners' ability to connect climate concepts across disciplines or apply them to real-life issues.

The literature further notes that curriculum overload and inflexible national syllabi often prevent teachers from exploring climate issues more thoroughly (Adeniran et al., 2021). Thus, while the call for holistic CCE integration is strong, its practical implementation is hindered by structural rigidity and a lack of curricular coherence.

**Capacity and Pedagogical Challenges** Another consistent theme is the challenge of teacher preparedness. Numerous studies report that teachers particularly in developing countries lack adequate training in both climate science and participatory pedagogies suited for CCE (Anderson, 2019; Ajiboye & Silo, 2018). In Nigeria, for instance, pre-service and in-service teacher education programs rarely include modules on climate change, and teachers often lack the confidence or materials to deliver CCE effectively (Olukanni & Adebayo, 2020). Even where climate change appears in the curriculum, poor pedagogical delivery weakens its impact.

CCE demands active learning methods such as project-based learning, experiential education, and critical inquiry (Monroe et al., 2017). However, in low-resource settings, reliance on rote memorization and textbook-based instruction makes these approaches difficult to implement. Furthermore, limited access to teaching aids, ICT tools, and practical field experiences constrains educators' ability to link theory to real-world climate action (UNICEF, 2020). This pedagogical gap not only affects student engagement but also prevents the development of problem-solving and civic skills necessary for climate leadership.

### **Policy-Practice Gaps**

Although many national governments have committed to incorporating CCE through policies aligned with the Sustainable Development Goals (especially SDG 4.7 and SDG 13), the literature reveals a significant gap between policy rhetoric and practical

implementation (UNESCO, 2021; Kwauk et al., 2021). Policies often lack detailed guidance, funding, or mechanisms for enforcement. In Nigeria, for example, the National Climate Change Policy recognizes education as a tool for adaptation, yet there is no dedicated strategy for operationalizing CCE across the education sector (Federal Ministry of Education, 2016).

Additionally, institutional silos between ministries of education, environment, and science hinder coordination. As a result, even where national frameworks exist, schools and teachers lack the operational support to translate them into classroom practice. Several studies also note the absence of monitoring and evaluation mechanisms to track CCE outcomes or refine content based on contextual needs (Adeniran et al., 2021; Kwauk et al., 2021).

### **Synthesis and Gaps**

The literature confirms that while the global discourse on climate education is advancing, its practical integration into educational systems particularly in the Global South remains limited by systemic, pedagogical, and institutional constraints. There is a growing consensus on the need for localized, interdisciplinary, and action-oriented CCE models, but these are rarely implemented at scale. The reviewed literature also shows a lack of comparative studies that assess what works across different contexts, especially in low-income countries. Furthermore, more research is needed on student outcomes, teacher agency, and community-linked learning within CCE frameworks.

## **Discussions**

The reviewed literature offers compelling insights into the growing significance and evolving dynamics of Climate Change Education (CCE) across the globe. However, as promising as the concept is, the realities of its implementation reveal significant challenges that must be addressed to move from policy declarations to impactful educational outcomes. This discussion critically engages with the three key themes that emerged from the literature; curriculum integration and fragmentation, capacity and pedagogical challenges, and the persistent gap between policy and practice and reflects on their implications for educational systems, particularly within the context of Nigeria and other developing nations.

First, curriculum integration remains one of the most widely discussed yet inconsistently addressed aspects of CCE. While countries like Finland and Italy have successfully embedded climate change topics across multiple disciplines thus promoting a systemic, interdisciplinary understanding the same cannot be said for many countries in the Global South, where climate change appears only sporadically in national curricula. In Nigeria, for instance, climate education is often limited to mentions within geography or agricultural science courses without a clear framework that connects topics across disciplines or grade levels. This fragmented integration results in learners developing only a partial understanding of the climate crisis. Without explicit and structured inclusion across subjects like social studies, civic education, and economics, students are unlikely

to appreciate the interconnectedness of environmental, social, and economic systems that climate change affects. Moreover, the literature points to a critical weakness in curriculum flexibility. National syllabi in many developing contexts are rigid and overloaded, leaving little room for educators to include or expand on topics like climate change. Teachers often feel constrained by exam-focused teaching models that prioritize rote learning over critical and applied thinking. In such settings, even when teachers are motivated to integrate climate education, they may lack the time, autonomy, or institutional support to do so meaningfully. This situation calls for a complete rethink of curriculum design, moving towards a more holistic, student-centered, and problem-solving oriented approach that allows for the integration of global challenges like climate change into everyday teaching.

The capacity and pedagogical limitations of teachers constitute another major barrier to the effective implementation of CCE. Numerous studies reviewed converge on the point that teacher training on climate-related content and methods is grossly inadequate, particularly in the Global South. In Nigeria, both pre-service and in-service teacher education programs rarely include climate literacy as a core component. As a result, many teachers lack the content knowledge, confidence, and pedagogical tools necessary to teach CCE effectively. Even when curriculum mandates exist, the absence of trained facilitators severely undermines learning outcomes. This leads to what could be termed a "policy vacuum" at the classroom level—where

policies may be in place, but teachers are not empowered to translate them into transformative learning experiences. Furthermore, climate change education demands active, experiential, and participatory learning methods. Pedagogical strategies such as inquiry-based learning, community projects, fieldwork, and the use of digital simulation tools are frequently cited as best practices. Yet, these strategies remain largely inaccessible to many schools, especially in rural or under-resourced areas. The lack of access to internet-enabled devices, laboratories, teaching aids, and real-world learning opportunities creates a clear divide between ideal pedagogy and the realities of most classrooms. Without deliberate investment in school infrastructure and teacher development, the promise of CCE will remain largely unfulfilled. There is also the issue of language and cultural appropriateness: educational materials on climate change are often borrowed from Western contexts, limiting their relevance to local environmental and socio-economic realities. The third major issue is the disconnect between climate education policy and practical implementation. Many governments, including Nigeria's, have developed climate change policies that acknowledge the importance of education. However, these policy frameworks often lack the necessary implementation guidelines, funding allocations, or institutional structures to ensure effective rollout at the school level. The absence of cross-sectoral collaboration especially between ministries of education, environment, and science—further weakens the integration of CCE into

CCE into national development agendas. Schools are often left without clear directives or support, making it difficult for headteachers and educators to act on climate-related education policies. This policy-practice gap underscores the need for coordinated governance, where educational policies on climate change are aligned with actionable steps, timelines, and accountability mechanisms.

Additionally, monitoring and evaluation (M&E) systems for CCE are almost non-existent in many countries. This means there is little to no tracking of how climate change education is delivered, what impacts it is having on student learning, or how teachers are implementing it in practice. Without a robust feedback mechanism, it becomes difficult to improve program design or adapt content to specific regional needs. The lack of M&E also limits the ability of policymakers and researchers to generate evidence on what works, what doesn't, and why. Consequently, educational reform efforts remain uninformed, fragmented, and unsustainable in the long run.

Importantly, the literature also calls attention to the role of youth agency and local knowledge systems in CCE. Many global case studies highlight how student-led initiatives, indigenous environmental practices, and community-based learning have added depth and relevance to climate education efforts. However, these dimensions are often missing from formal education systems in the Global South. Incorporating local environmental realities and indigenous climate knowledge not only enriches curriculum content but also strengthens cultural relevance and

community buy-in. In Nigeria, for example, traditional agricultural practices and community adaptation strategies offer rich learning opportunities that are yet to be formally documented or utilized in classrooms. In summary, the discussion reveals that while there is growing international consensus on the urgency and value of climate change education, its implementation is constrained by systemic curriculum limitations, inadequate teacher capacity, and weak policy coherence. These challenges are particularly acute in low-income contexts like Nigeria, where resource constraints and institutional fragmentation are major obstacles. Moving forward, effective CCE must go beyond the inclusion of climate topics in textbooks. It requires a transformation of education systems—redefining learning goals, investing in teacher empowerment, aligning policies with classroom realities, and making learning relevant to students' lived experiences. Only then can CCE fulfill its mission of nurturing informed, skilled, and responsible global citizens capable of driving climate action in their communities and beyond.

### **Recommendations**

To ensure that climate change education (CCE) is effectively integrated into global education systems, policymakers, educators, and institutions must adopt comprehensive strategies that address existing challenges and leverage best practices. The following recommendations were suggested:

#### **Curriculum Reform and Integration**

Climate change education needs to be woven more intentionally and visibly into school

curricula at all levels. It shouldn't just be a topic in science class, but something that shows up in economics, civic education, social studies, and even vocational training. This kind of integration helps students connect the dots between what they learn in school and what they see happening in the world around them.

#### **Strengthen Teacher Training and Professional Development**

Teachers are central to how climate change education is delivered. Without adequate training, they may lack both the confidence and the knowledge to teach it effectively. There's a clear need for regular professional development workshops, refresher programs, and updated materials that equip teachers to explain climate science in ways that resonate with local realities.

#### **Develop Locally Relevant and Culturally Meaningful Teaching Materials**

Too often, climate change materials are drawn from foreign contexts, making them less relatable for students. Teaching resources should reflect local languages, environmental challenges, and cultural understandings. Incorporating indigenous knowledge and real-life community stories will make learning more engaging and impactful.

#### **Promote Experiential and Action-Oriented Learning**

Learning about climate change should go beyond textbooks. Schools should actively involve students in hands-on projects tree planting, recycling programs, climate advocacy campaigns that help turn theory into real-life problem solving. These experiences not only deepen understanding but build responsibility and leadership.

### **Enhance Policy Coordination and Institutional Support**

For climate education to succeed, different arms of government education, environment, and science need to work together. Without clear coordination and shared goals, good policies often remain on paper. Strong institutional collaboration can ensure consistent implementation, better planning, and real accountability.

### **Allocate Resources and Improve Infrastructure**

It's not realistic to expect quality climate education without the necessary tools. Many schools, especially in rural areas, still lack basic infrastructure like power, internet, and science labs. Governments and development partners must invest more in equipping schools and supporting climate education programs on the ground.

### **Set Up Monitoring and Evaluation Systems**

There's currently very little data on whether climate change education is making a difference. Ministries of education should establish monitoring systems that help track progress—such as how well climate topics are being taught, how prepared teachers feel, and what students are actually learning.

### **Empower Youth and Engage Communities**

Young people are not just students they're also change makers. Schools should encourage youth to take leadership in climate action and engage their communities. Collaborating with local groups and NGOs can give students a sense of purpose and show them that their voices and actions matter.

### **Conclusion**

Climate Change Education (CCE) is no longer a luxury it's a necessity. It gives young people the tools they need to understand our changing world and prepares them to be part of the solution. While there's growing recognition of its importance, turning that awareness into real classroom change remains a major challenge, especially in countries like Nigeria. As this paper has highlighted, the barriers to effective CCE are many fragmented curricula, unprepared teachers, under-resourced schools, and policy gaps. But these are not insurmountable. They require a collective effort one that involves curriculum designers, educators, policymakers, communities, and the learners themselves.

CCE must go beyond transferring facts about the environment. It should inspire critical thinking, local action, and a sense of shared responsibility. When tailored to local contexts and delivered in an engaging, inclusive way, climate education becomes a powerful driver for both resilience and innovation.

For countries like Nigeria, investing in climate education is investing in the future. It's a step toward building a generation that not only understands the climate crisis but is ready and equipped to lead efforts to address it starting right from their schools and communities.

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## **Essentials of Remedial Teaching for Pupils with Special Needs: The Process of Learning How to Learn**

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### **Abstract**

This paper presents the basic processes of academic remediation for pupils with special needs. It begins by highlighting the impacts of special needs conditions on both the learning process and the learning outcomes. Essential features of remedial teaching and special education were also presented. Remedial teaching comprises six steps with systematically pre-planned activities aimed at overcoming the learning difficulties faced by some learners. At each step of the remediation process emphasis was given to learners with special needs. The vital components of the remedial teaching presented here include initial identification of the specific skills deficit that a pupil struggles with their mastery. The process also include; thorough analysis of the learning deficit, planning, implementation, evaluation and progress monitoring. Additionally, the paper discussed the sequential and logical presentation of the learning concept to be remediated. It also suggested the importance of teaching the enabling skills or prerequisite strategies that will facilitate successful learning. Technological applications and multi-mode presentation were also emphasized as part of the remediation effort

**Keywords:** Remedial teaching, special learning needs, identification, problem analysis

### **Introduction**

It is essential to make adaptations in the entire remediation process in order to accommodate the peculiarities of pupils with special learning needs and also to reduce their impacts on the learning process and learning outcomes. Hallahan, Kauffman and Pullen defined Special education as specially designed instruction that meets the unusual needs of an exceptional student and that might require special materials, teaching techniques, or equipment and/or facilities. Related services special transportation, psychological assessment, physical and occupational therapy, medical treatment, and counseling—might be necessary if special education is to be effective. The single most important goal of special education is finding and capitalizing on exceptional students' abilities (2015). Also emphasizing its importance, Hallahan,

Kauffman and Pullen (2015) asserted that the best general education cannot replace special education; special education is more precisely controlled in pace or rate, intensity, relentlessness, structure, reinforcement, teacher pupil ratio, curriculum, and monitoring or assessment. Remedial instruction serves as a valve for the students who are behind the expected level of achievement. It involves diagnosis of specific difficulties, providing suitable remedial measures and support to improve the identified learning problem. Schwartz (2012, p.6) defines remedial teaching as, specific educational interventions aimed at addressing learning needs of a targeted group of children who are lagging behind academically or not mastering specific competencies in the early grades.

According to Aquino J. S. (2017), the goal of remedial teaching is to strengthen a learning skill or correct a problem area.

Individualized teaching of pupils who are having difficulty in specific topic areas is used in remedial teaching methods and practices. Basic abilities that provide the foundation for studying a subject in more depth are taught in remedial activities, and such skills must be gained before pupils may build a deep comprehension of the study topic.

The need for remedial teaching for people with special needs can be understood considering a report by UNESCO (2018), in 49 countries across the globe it was found that 24% of children with disabilities are less likely to complete primary education. This may not be unrelated to their peculiar needs which necessitate a call for provision of adequate support that will address their unique needs. Children with special needs have inherent weaknesses in learning. This depends on severity and whether the condition is congenital or adventitious among several other factors. This may make them lag behind if intervention measures are not put in place. The remedial plan for children with special needs should incorporate some strategies that will consider their unique learning needs in terms of materials, medium of instructions, problem identification and analysis, teaching strategies, setting objectives, evaluation, and progress monitoring respectively. Materials, medium of instructions, problem identification and analysis, teaching strategies, setting objectives, evaluation, and progress monitoring respectively.

### **Impacts of Special Need Condition on Learning Process and Performance**

It is widely accepted that special need conditions have an impact on both the learning process and the learning outcomes. This justifies the need for making remedial arrangements and putting extra effort to overcome these challenges. UNESCO, (2016) stated that, there is clear evidence that those with Special Educational Needs and Disabilities (SEND) have lower educational outcomes. Similarly, UNICEF (2021) reiterated that students with special educational needs and disabilities have poorer educational outcomes compared to their typically developing peers.

The following scenario explains what impacted learning negatively for the special needs population. The difficulties or impacts come from multiple sources, for example, in a class of 20 children 5 of which have hearing impairment. After teaching a concept and conducting an evaluation, a child with hearing impairment and another one without any disability failed the test several times despite repeated regular effort put forth by the teacher. In this case, remedial teaching should be the next line of action. The process will help identify the problem by firstly asking why failing only this concept and why only these two children? In other words, what is going on with these two learners and also what is so special about this particular concept? Here it can be deduced that the remedial plan is not about the child being a special need or normal. It is rather about failure or struggling to learn a concept or solve a problem and all the efforts revolve around that.

Perhaps a possible complication will surface when dealing with the child with a special need condition and at the same time with learning difficulties. For example, the child with hearing impairment, as in the above scenario. The remediation focus will be on finding out what portion of the learning problem resulted from his special need condition and what other portion was due to other factors. In other words, to which degree the situation was impacted by his hearing impairment or from other factors like poor learning environment, faulty teaching, inadequate, and inappropriate teaching materials etc. It is expected of the remedial teacher to consider these impacts throughout the remediation process. This was corroborated by Talafha (2022) as he reported that there are multiple factors that negatively affect learning of children with disabilities. He mentioned issues related to the child's emotional and physical wellbeing, ineffective teaching and poor learning environment.

### **Some Determining Features of Remedial Teaching and Special Education**

There are more similarities between remedial teaching and special education than disparities. Both programs are well structured and organized. The main focus of the former is remediation of specific learning or skill deficits regardless of the learner's disabling condition. While the main focus of special education is to overcome or manage the learning needs brought about by the special needs condition of the learner. In addition to other researchers, Hallahan, Kauffman and Pullen (2015) and Heward (2013) presented determining features of special education, while Vaughn and Bos (2015) pointed out identifying features of remedial teaching. The defining traits were compared in table 1:

**Table 1: Special versus Remedial Teaching**

<b>S/No</b>	<b>Special Education</b>	<b>Remedial Teaching</b>
1.	Special education is a field of study or discipline. Is an ongoing program and is wide in scope.	Remedial teaching is just an intervention process. It is a relatively short term process which is terminated whenever the set remediation goals are achieved.
2.	Special education is specifically designed for people with disabilities or special needs. It goes hand in hand with related services.	A child with or without special needs can receive remedial intervention.
3.	Special education is not restricted to any curriculum content. It covers the academic, social, and occupational life of people with special needs.	Remedial teaching is not about teaching a concept afresh, it is rather about re-teaching in a different way to remediate difficulties encountered in earlier attempts. It mainly targets basic literacy and numeracy skills; reading, writing and arithmetic.
4.	It requires earlier identification, assessment and documentation (data-driven) of both the disabling condition and how it affects the learning process of the child. This is referred to as Individualized Educational Program-IEP.	Data is initially collected (data-driven) by the teacher about why, how, and when does the child exhibit such a learning problem and then plan and implement the remediation.
5.	It is individually planned; child focused in terms of instruction, materials, and needs.	It also requires individualized attention, adapted and flexible effort to suit each child. A small group of one to three pupils can be formed.
6.	It is specialized in terms of instruction, adaptations, related services and assistive technology.	Special strategies are utilized such scaffolding, drill, multisensory technique, cognitive strategy, collaborative learning and technology etc
7.	It is intensive, precise targeted instruction designed to gain necessary skills and strategies.	It also encourages over-learning and excessive exposure to learning materials. As it also focuses on specific skill deficits.
8.	It is goal-directed which focuses on individual goals and objectives necessary for students' success.	Learning tasks are graded and logically divided into portions that serve as objectives towards the main goal.
9.	It employs research based methods.	It also encourages the use of empirically based strategies.
10.	It is guided by students' performance. The single most important goal of special education is finding and capitalizing on exceptional students' abilities.	It is also teach-test in nature, where the process goes like a cycle or spiral.
11.	It is mainly based on learning needs due to disability or special need conditions. It caters for the diverse categories of persons with special needs.	It focuses on learning problems due to multiple factors, not necessarily a disability.

By observing the table above the similarities and dissimilarities can be clearly deduced and it is clear

that the two programs are more similar than otherwise. They both aim to overcome certain

obstacles to learning.

### **The Process of Remedial Teaching**

There are various frameworks for conducting remedial teaching which depict various aspects of the process. This paper adopted a framework in which the remediation steps were presented in the form of a cycle-chart which contains a sequence of activities or tasks. This conforms to how Maawa and Cruz (2019) described it, "successful remedial instruction is a type of clinical teaching. It is a spiral of assessment-instruction-reassessment".

The instructional cycle or spiral begins with,

(a) problem identification, (b) analysis of the problem, (c) planning, (d) execution (teaching), (e) evaluation and a; (f) follow-up which may terminate the process or restart it all over again depending on the outcome.

#### **a) Identification of the learning problem**

A problem exists whenever a discrepancy is perceived between what a student does (achieved) and what was expected of him to do (achieve). The focus of the disputes must shift to whether the problem, once identified, is important enough to take action (Brown- Chidsey & Andren 2013). Initially data should be collected based on individual needs and from multiple sources upon which remediation plan will be designed. Objectives are logically set and evaluation to ascertain progress or otherwise must be part of the process. In addition to considering other environmental factors, identification should also focus on the impact of special need conditions on learning. Identification of children with special educational needs should be based on the difficulties they experience in school, rather than impairments or medical conditions they suffer from. In other words, it

is the impacts that disability has on the child's life that will receive much attention instead of the impairment.

An approach to identify the problem involves following steps:

1. Identify the struggling learners
2. Locate the errors
3. Determine the child's current level of performance.
4. Specify the target level or the objective the child should have achieved.
5. Determine the discrepancy and its significance (the problem) in relation to child's learning.

Also, at this stage there is need for adaptation and accommodation that will help prevent learners with special needs to be at disadvantage. In general, appropriate assessment for exceptional learners is cardinal to avoid disadvantaging them (Muzata, 2015). For example, assessment accommodations for the deaf may include; extended time or duration for writing test items or examinations (American Institute for Research, 2014). Another accommodation of children with hearing impairment during identification is to consider the degree of the hearing loss. They can benefit from hearing aids and other technological innovations to minimize the impact of hearing loss. This category of pupils usually has multifaceted needs due to delays related to language and communication, cognitive and social areas.

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#### **b) Analysis of the problem**

Analysis here does not refer to assessment of learner's achievement for grading purpose. It is an assessment for intervention purposes. It aims at specific difficulties of the learner through conducting a suitable diagnostic test alongside other procedures. An intake conversation, checklist, tests and/or observations usually take place. Heward (2013) suggested that the teacher conducts rigorous examinations to determine specific strengths, limitations, and learning styles. This information will be used to build customized treatments and instructional strategies to match the child's individual requirements.

The remedial teacher conducts analysis of the identified problem. Answers to questions like

why, when and how, should be carefully explored. For example, why does the child have difficulty in pronouncing six syllable words? When does the pronunciation issue occur? For example, it occurs only when it involves certain sounds or when certain sounds appear next to each other. Then how does it occur? Here the teacher describes what is going on with the learner when he attempts to pronounce it, for example, maybe there are omissions of some sounds. Perhaps he uses mechanisms such as avoidance, mute, or displaying tantrum; or he only encounters difficulties when asked to solve a multiplication or other abstract arithmetic problems. At this stage the success or otherwise of the remediation depends on how the problem is properly analyzed. It is also important to detect the skill deficit that gives rise to the learning difficulties. Was it due to poor memory? Was it related to a short attention span, low self-esteem, or nervousness? Or was it due to inappropriate teaching conditions or methods? Brown- Chidsey and Andren (2013) suggested that teacher-made or standardized tools can be used to get insight about the progress of the students and cumulative profile of the learners may be prepared to understand the nature of difficulties, treatment given, and progress noticed.

Again, for children with special learning needs, for example hearing impairment or speech and language disorders, it is expected of the teacher to consider how the hearing loss might have contributed to the learning difficulty. Information about the level of hearing loss in addition to when it was acquired will be essential because some children with hearing impairment can have some

learning advantages over others. Although they belong to the same category, what works for one child may not work for another. In other words, the analysis of the learning problem should go hand in hand with the analysis of the child's special needs condition and how it affects his or her learning. Among the several techniques for conducting analysis are direct observation checking academic record, interview (with parents, teachers, peers and child himself). Using diagnostic tests will make things easier for the teacher as it will help him pinpoint or detect specific skill deficits. One more important aspect at this remediation stage is to read extensively about the learning and the social characteristics of the special needs category the child belongs to. Each category of special needs has its own specific traits in relation to learning, social, and other dimensions. The remedial teacher must refer to all these issues at this analysis stage in order to have a clear picture of what is going on with the child's learning process.

The following measures can be helpful in doing the analysis:

1. Determine the pattern or the specific nature of learning difficulties that were identified under the problem identification above

2. Determine the factors responsible for the learning difficulties.

c) Adopt multiple strategies and get information from various sources to support your hypothesis about the causal factors of the problem

#### **d) Planning of the Remediation**

Plan of the remediation refers to the teacher's detailed written guide which includes what is supposed to be learned, how it is going to be taught, using which materials, methods, and strategies, and how it should be evaluated. Successful planning depends on proper identification and analysis of learning difficulties. The plan comprises the essential remedial components systemically broken in a sequential, and logical manner. Each step of the plan can serve as an objective which contains some related tasks or activities in the form of a chain that are to be achieved before proceeding to the next one. The plan also comprises the materials, evaluation and strategies that were confirmed to be relevant to the individual child's current needs. The carefully formulated objectives should also be operationally defined so its attainment can clearly be measured at a later time. This can help in tracing changes or improvements in the remedial intervention.

The trend now is towards digital inclusion so it is imperative to make sure it is embedded in the remedial teaching plan. The remedial teacher should make the plan as flexible as possible. Hallahan et al. (2015) opined that educators must modify their teaching techniques, resources, and assessments to meet the requirements of individual students. For example, when planning remedial lessons for a child with emotional and behavioral disorders it is necessary to consider how the condition contributes to his or her learning difficulties.

The steps below provide additional planning guidelines:

1. Prepare relevant teaching materials and strategies
2. Carefully set the main objective
3. Break down the main objective into smaller achievable units
4. Choose suitable evaluation techniques

**e) Execution of the Plan (Teaching)**

The contents of the plan discussed above must be implemented with high fidelity. It is recommended that whatever is in the plan must be implemented but this should not affect the flexible nature of the remedial teaching that allows for modification for the most relevant options. The process goes only with what works for the learner and the situation at hand. A stated objective can be achieved by adoption of various strategies, methods, and materials. The most important is to achieve the targeted skills. Corrective learning and teaching should be an essential part of this implementation stage. In other words teach-test, teach-test techniques should be used by the teacher. Abraham (2019) pointed that new learning will take place until wrong learning has been cancelled and corrected in a particular area of learning. In general, appropriate strategies have to be designed as per the types of errors are concerned.

The implementation (teaching) of the remediation can be summarized in the following steps:

- (1) Work according to the set objectives and as per the nature of the difficulties.
- (2) Teach using specific methodology and techniques.
- (3) Get feedback from the students and find out the weaknesses.
- (4) Re-teach the same with modification assessment.

- (5) Assess the final performances.

The following strategies will also be helpful in the implementation stage:

1. **Flexible Approaches:** remedial teachers can modify teaching materials, procedures, and assessments to match the needs of individual students. Differentiated instruction enhances engagement and maximizes student growth by allowing for personalized learning experiences (Tomlinson, 2014).

2. **Multi-sensory technique:** this has been shown to improve phonemic awareness, decoding skills, and reading comprehension. This strategy is especially useful for children with learning difficulties who may struggle to process knowledge using typical teaching methods (Hallahan et al., 2015).

3. **Computer Assisted Instruction:** Well-designed CAI programs can provide students with learning difficulties with dynamic, engaging, and adaptable learning experiences that are tailored to their specific needs (Snyder & Huber, 2019).

4. **Using different models:** Remedial teachers are required to use different models that include paired-course models, extended instructional time models, accelerated learning program models as well as technology-mediated support models (Daugherty, 2018).

5. **Make the process interesting:** according to Chikwature and Oyedele (2016), the most important thing is to help students cultivate an interest in learning and gain a sense of satisfaction and achievement during the learning process

1. **Active engagement and providing corrective feedback:** when conducting a remediation, Vaughn and Bos (2015) presented several remediation strategies such as explicit, immediate and ongoing corrective feedback, systematic direct instruction, and providing reinforcements.

2. **Repeated exposure:** Vaughn and Bos (2015) also discussed provision of adequate exposure to the learning material and enough time to learn; multisensory, drill and practice, over learning, intensive, and scaffolding techniques.

3. **Individualized teaching:** Vaughn and Bos (2015) also pointed out that remedial teachers use individualized sessions or small groups of no more than two or three students. It is also encouraged to use a reflective problem-solving orientation to teaching. This helps in reflecting on what a teacher does, consulting with others to seek better information and practices, and making adjustments.

#### **f) Evaluation**

Evaluation as part of the remediation plan can be carried out in two ways. Firstly in a formative way which means it should be ongoing in the sense that each task should be considered as an objective on its own and as such it must be evaluated. If it is achieved the teaching should then progress to the next task (objective). The second type of evaluation should be in summative form where all the interrelated tasks will be evaluated as a single entity. Here the child is requested to perform them when blended together. For example, phonemic approach firstly, the word is segmented into its basic

composite sounds which are to be pronounced separately and as different learning objectives. Finally, the word will be pronounced as a single entity. Here receiving or giving feedback enables both the teacher and the learner to be aware if their responses are correct or whether modification is needed. Feedback also informs the teacher about the level of difficulty or simplicity of the learning tasks.

The following measures will help in the adaptation for the evaluation purposes:

1. Adapt the process of evaluation to accommodate the special needs conditions of the learners. For example pupils with visual impairment may be required during the evaluation to use slate and stylus or braille instead of regular writing techniques and they can also take oral tests instead.
2. Eliminate any inherent disadvantages otherwise the outcome of the evaluation may not be reliable and will not represent the actual ability or performance of a learner.
3. Make the procedure more accessible to learners with special needs by allowing alternative mediums of responses.
4. Provide relevant assistive technology to simplify the procedure.

#### **g. Progress Monitoring- (Follow Up)**

This part of the remediation process requires the teacher to track or monitor the entire remedial teaching effort in order to make sure the acquired skills or the remediated deficits are no longer affecting the learner's progress. Sometimes follow up are meant to ensure generalization and as proof against a relapse.

According to Stecker et al., (2017) regular monitoring identifies areas for improvement, and regions in need of additional support, and drives instructional decision- making. It may also lead to the termination of the remedial teaching cycle or its continuation until success is achieved.

In practice a follow up can take many forms, but hence remedial teaching is an activity-based teaching approach it is also recommended to use evaluation activities that involve real application of knowledge. This helps with recalling, retention, giving corrective feedback, and generalization. One effective follow up method is activity-based evaluation. UNESCO (2017) suggested that this technique is an effective strategy to foster the desired skills and competencies. For example after passage of a certain period, a child who was taught subtraction can be made to engage in a real life activity such as shopping in a nearby corner store in which he will be required to actually apply what he had earlier learned. This shopping scenario should be carefully scripted to exactly commensurate with his ability and what he had acquired during the remedial lesson. Follow up does not mean content revision or restricted to conducting a classroom test or exercise.

### **Conclusion**

Remedial teaching is beneficial to all struggling learners regardless of having special needs conditions or not. What usually calls for academic remediation is when a child struggles with learning a specific skill to the extent she or he is left behind. Children with special learning needs were reported to have multiple inherent disadvantages caused by their various special need conditions. The remedial process includes; problem, analysis, planning,

implementation, evaluation, and progress monitoring. Remedial teaching is well structured, data driven, intensive, explicit, and flexible in nature. Each step of the process is an important and indispensable and inseparable part of a whole. The task to be learned is logically broken and logically arranged so that they serve as objectives and as a scaffold towards achieving the main target of overcoming the learning or skill deficit. Some features of the remedial teaching made it stand out from the regular teaching as it is analytic, data driven, and customizable, flexible in nature.

### **Recommendations**

Teachers planning a remedial lesson that involved pupils with special needs should consider the following suggestions:

1. Teachers should be trained on all the requirements for remedial teaching to keep them up-to-date with contemporary practices in the field. Remedial teachers should emphasize issues such as data collection and analysis of the learning problem and also pay attention to the learners' strengths and weaknesses.
2. The process should be made as flexible as possible and also should be presented in a logically arranged manner.
3. It should incorporate relevant materials and technological applications that will help compensate for their learning deficiency and their disabling conditions.
4. Teachers should make adaptations at each plan stage to accommodate the peculiarities of the special needs learners

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**Effect of Differentiated Instructional Strategy on Academic Achievement in Biology among Secondary School Students in Gwale Zonal Education Directorate, Kano State-Nigeria**

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**Abstract**

The study examined the effect of differentiated instructional strategy on academic achievement in biology among secondary school students in Gwale Education Directorate, Kano state- Nigeria. The research design employed was Quasi- experimental which involves pre-test, post-test. A sample of 248 SSS 11 Biology students were drawn from the population of 5830 which comprised of four senior secondary schools with 122 male and 126 female students. The study was guided by two objectives, two research questions and two null hypotheses. Biology Achievement Test was used to collect data for the study with reliability coefficients of 0.7 using PPMC. Mean and Standard Deviation were used to answer research questions while Z-test was used to test the null hypotheses. The findings of the study revealed that students taught with Differentiated Instructional Strategy performed better than those taught using lecture method and there was no significant difference between the mean achievement scores of male and students. Based on the findings, it was recommended that biology teachers should use differentiated instructional strategy in teaching biology.

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**Keyword:** *Differentiated Instructional Strategy, Academic Achievement, Biology, Secondary School*

**Introduction**

Science as the bedrock on which modern day technological breakthrough is hinged is required for any nation to experience economic development. Science education is the teaching and learning of science to school children, college students' or adults within the general public. Science education prepares leaders for science education roles in secondary and higher education. Science education is the field of science that is concerned with sharing of science content, social sciences pedagogy in order to provide expectations for the development of understanding part of scientific community (Jablon, 2020). The importance of science education to individual and the society at large is acknowledge worldwide and it

composed of the following field; Physics, Chemistry, Mathematics and Biology. Science education in Nigeria is taught through core subjects namely; physics, chemistry, geography and biology (Nwachukwu, 2014).

Biology as a separate science was developed in the nineteen century as scientist discovered that organisms shared fundamental characteristics. Biology can be defined as the study of life, structure, function, growth, origin, evolution, distribution, interrelationship, problems such as diseases and adaptation of things and proposes solutions where possible (Miller & Levine, 2014). Biology education is important for any growing economy like that of Nigeria. Biology education as a discipline in our tertiary institutions prepares teachers on how to teach biology in our senior secondary schools.

Biology education is the application of principles of education in teaching and learning of biology. It is the art of teaching and training in order to inculcate or transfer the knowledge of biology to students (Okenyi, 2014). The teaching and learning of biology is confronted with challenges such as improper choice of instructional material by teachers, appropriate teaching methods to be used and assessment strategies to determine students' achievement especially in secondary schools where the foundation is laid (Azure, 2015). To teach biology effectively, teacher needs to employ methods including students-centred method of teaching that are activity-oriented. One of these students-centred methods is differentiated instruction strategy.

Differentiated instruction (DI) is one of the students-centred approach which is concerned on what and how students learn and demonstrate the learning experience. Tomlinson (2015) states that one of the One of the most important indicators of student's performance is academic achievement (Hassan, Al-Abyadh & Abdel Hafeez, 2022). Academic achievement depends on several factors among which are method of instruction, teacher competency and learning environment. Academic achievement and gender has continued to be an issue of concern to educational sector (Egya & Uzoечи 2016).

Gender is derived from the Latin noun, which means kind or group and today the connection of gender is being untidily used to denote the different and unequal perceptions, views, roles,

propagators of DI describes it as tailoring instruction to meet individual needs through differentiating content, process, products or the learning environment. According to Weselby (2014) differentiated instruction is teaching the same materials to all students using a variety of instructional strategies or it may require the teacher to deliver lessons at varying levels of difficulty based on the ability of each students. Differentiated instructional strategies are tiered assignments, choice boards, compacting, interest centres/groups, flexible grouping and learning contract s. Tiered assignments are designed to teach the same skill but have students create a different product to display their knowledge based on their comprehension skills (Perez, 2019). The goal of differentiated instructional strategy is to ensure at all students' are involved and engage in the learning regardless of their skill level or learning style. With differentiated learning strategy teachers can tailor their instruction to meet the diverse needs of their students and increase academic achievement. Academic achievement is the result of the complex interplay of the psychological, economic and social factors that contribute to student's optimal growth.

relevance or reward a society assigns to the two sex categories (male and female). Researches on gender and academic achievement such as that of Goni, Ali, Wali and Bularafa (2015) observed that boys achieved better than girl while Adebajo (2019); Okwara, Anyagh and Ikyaan, (2017) reported that gender have no significant influence on academic achievement of students in biology. Studies held by Okeyefi, (2014); Okorei & Eze, (2016) found that female student performed better than male counterparts. These contradictory results showed that the issue of gender in students' academic achievement in biology has not yet been resolved.

**Statement of the Problem**

Most secondary schools experience problems that manifest itself in the form of poor academic achievement of student. Students’ poor academic achievement in biology has been an issue of concern attracting the attention of several researchers and science educators. Several factors have been attributed to the poor academic achievement in biology, such as inadequate curricular content, difficult concepts, overloaded time table, teacher related problems, inadequate preparation on the part of the students, teaching method and large classes. Jepketer, 2017 and Jolif (2018) are of the view that the problem of poor academic achievement has to a large extent attributed to ineffective teaching method employed by the teachers’

especially traditional/conventional method employed by teachers. Poor academic achievement of students in biology is as a result of traditional approaches used by teachers by keeping the students’ passive listeners and allowing them to receive the instructor’s knowledge without increasing their degree of involvement with the subject. Biology is an embodiment of difficult concepts which include evolution, genetics, ecological management, nutrition in plants and animals, alimentary canal, nutrient cycling in nature, conservation of natural resources, dentition and digestive system. Despite the importance of biology as a core subject taught in schools, available statistics from the annual reports of West Africa Examination Council (WAEC) showed that students’ academic achievement is not encouraging as shown in Table 1.1

**Table 1.1 Biology Students Performance in WAEC in Some Selected Schools in Gwale Education Directorate from 2018-2022 in Kano state**

Year	No. of Registered Students	No. of Students Passed	% of Students Passed	No. of Students Failed	% of Students Failed
2018	5222	3020	58	2202	42
2019	5768	3110	54	2658	46
2020	6249	3250	52	2999	48
2021	6795	3325	49	3470	51
2022	4635	2785	60	1850	40

**Source:** Kano Education Resource Department (KERD), 2023.

From table 1.1 we can see the performance of biology students is not encouraging looking at the percentage of students that passed and failed. The percentage of failure is increasing every year with exception of the year 2022. The ineffectiveness of the teacher as regards to the method of teaching employed in the classroom interaction with the students could be responsible for the observed poor performance

of biology students in Kano state. Isa, Mamman, Badar and Bala (2020) opined that improvement in the academic achievement of students is dependent on the method of teaching. The researchers selected to work on methodology of the teachers because a teacher is the key player in the teaching and learning activities because they adhere to the program and give students all the necessary information throughout the course of the school year. Olawole (2019) recommended the use of differentiated instruction as a method of teaching to

bring about improvement in the academic achievement of students. Therefore, it is based on this background that the researcher saw the need to find out the effect of differentiated instructional strategy on the academic achievement towards biology among secondary schools students in Gwale Education Directorate, Kano state because research has shown that students learn in several ways, which lead to academic achievement. Differentiated instructional strategy is flexible and adapts its approaches based on the needs of individual students, the content being taught and the overall classroom dynamics. Adjusting teaching method to accommodate students learning preferences helps to increase academic achievement (Malacapy, 2019).

### **Research questions**

The following research questions are formulated to guide the study

- i. What is the difference in the mean academic achievement scores of Biology students taught nervous system with differentiated instructional strategy and those taught with conventional lecture method in Gwale Education Directorate, in Kano state?
- ii. Is there any significant gender difference in the academic achievement on biology students when taught nervous system using differentiated instructional strategy in Gwale Education Directorate Kano state?

### **Hypotheses**

Ho1: There is no significant difference in biology students' academic achievement mean score taught nervous system with differentiated instructional strategy and those taught with conventional lecture methods in senior secondary schools of Gwale Education Directorate, Kano state.

Ho2: There is no significant difference between the academic achievements mean scores of male and female biology students taught nervous system using differentiated instruction strategy in Gwale Education Directorate Kano state.

### **Methodology**

A quasi- experimental design which involves pre-test, post-test was used. A sample of 248 SSS 11 Biology students were drawn from the population of 5830 which comprised of four senior secondary schools with 122 male and 126 female students. The study was guided by two objectives, two research questions and two null hypotheses. Biology Achievement Test was used to collect data for the study with reliability coefficients of 0.7 using PPMC. Mean and Standard Deviation were used to answer research questions while Z-test was used to test the null hypotheses at 0.05 level of significance.

### **Result and Discussion**

The data was presented according to the Research Questions and Hypotheses stated in chapter one. The data was obtained using Biology Achievement Test (BAT).The results obtained from the pre-test of students in the experimental and control groups are presented in Table 4.1

**Table 1: Analysis of Pre Test Means and Standard Deviations Scores of Experimental and Control Groups**

Groups	N	Mean	SD	Mean Difference
Experiment	111	11.84	2.931	0.48
Control	137	11.36	2.930	

Table 1 revealed that the pre-test means and standard deviation of students in the experimental group were 11.84 and 2.931 and control group were 11.36 and 2.930 respectively. The pre-test mean performance difference was 0.48. This implies that the two groups were compatible and comparable for the experiment.

**Answering Research Question and Testing Hypothesis**

In this section the research questions were answered and the null hypotheses were tested

**Research Question 1:** What is the effect of differentiated instructional strategy on biology students’ academic mean score when taught nervous system among secondary school students of Gwale Education Directorate, in Kano state?

In order to answer research question one the post-test score of students in experimental and control groups were subjected to descriptive statistic in form of Means and Standard Deviation. This is presented in Table

**Table 2: Analysis of Post-Test and Standard Deviations scores of the Experimental and Control Groups**

Groups	N	Means	SD	Mean Difference
Experimental	111	29.82	6.099	4.09
Control	137	25.73	6.452	

Table 2 revealed that the mean and standard deviations of post test scores for experimental group was 29.82 with the standard deviation of 6.099 while control group had a mean of 25.73 with standard deviation of 6.452 respectively. The mean difference between the two groups is 4.09 which show that the two groups were different in academic achievement. The result shows that the experimental group taught biology with differentiated instructional strategy achieved academically higher than their counterparts in the control group taught using

conventional lecture method of teaching. To test if the difference is significant or not, the corresponding null hypothesis was tested.

**Hypotheses Testing:** The hypotheses formulated for the purpose of this research were tested at 0.05 level of significance

**Null Hypothesis 1:** There is no significant difference in biology students’ academic achievement mean score taught nervous system with differentiated instructional strategy and those taught with conventional lecture methods in senior secondary schools of Gwale Education Directorate, Kano state.

**Table 3: Independent Sample Z – test for Post-Test Mean Achievement Scores of the Control and Experimental Groups**

Group	N	Mean	SD	DF	Z-Value	P-Value	Decision
Experimental	111	29.82	6.099	246	5.086	0.000	Rejected
Control	137	25.73	6.452				

Table 3 shows the independent sample Z-test analyses for post-test mean achievement scores of experimental and control groups, the observed p-value is 0.000 which is less than 0.05 with df = 246, therefore the null hypothesis is hereby rejected because the observed p-value is less than the significant level p-level (0.05). Hence, there is significant difference between the mean achievement scores of Secondary School Biology Student’s taught using Differentiated Instructional Strategy and those taught using conventional lecture method in favour of experimental group (z- cal= 5.086, df=246, p=0.000<0.05).

**Research Question Two:** Is there any significant difference in the mean academic achievement score between male and female biology students’ taught nervous system with differentiated instructional strategy?  
In order to answer research question two the post test scores of the experimental group were subjected to descriptive statistics in form of Mean and Standard Deviations. This is presented in table 4.

**Table 4: Mean Achievement Scores of Male and Female Biology Students’ Taught Using Differentiated Instructional Strategy.**

Gender	N	Mean	SD	Mean Difference
Male	55	30.16	5.54	0.68
Female	56	29.48	6.63	

Table 4 indicated that the mean achievement score of male students is 30.16 with standard deviation of 5.54 while that of the female students is 29.48 and standard deviation of .63. The mean difference between the two groups (male and female) is 0.68.

This shows that there is a little difference. The mean and standard deviation of the male and female students are 5.54 and 6.63 respectively. These show that they are closely related

**Hypothesis Two:** There is no significant difference between the academic

achievements mean scores of male and female students taught nervous system using differentiated instructional strategy

**Table 5: Independent Sample Z-test Analysis for the Achievement Scores of Male and Female in the Experimental Group**

Gender	N	Mean	SD	DF	Z-Cal.	P-Value	Decision
Male	55	30.16	5.54	109	0.59	0.56	Retained
Female	56	29.48	6.63				

Table 5 shows the independent sample Z-test analysis for the achievement scores of male and female Biology students taught using Differentiated Instructional Strategy. The observed p-value is 0.56 is greater than 0.05 with df=109. The null hypothesis is retained because the p-value is less than the significant level p-value (0.05). Therefore, there is no significant difference between the academic achievements mean scores of male and female students taught nervous system using differentiated instructional strategy. Therefore Differentiated Instructional strategy is gender friendly based on their academic achievement.

**Discussion of Findings**

The study investigated the effect of differentiated instructional strategy on the academic achievement towards biology among secondary school students in Gwale Education Directorate, Nigeria. Two groups were involved in the study assigned into experimental and control groups and their equivalent were determined using pre-test. The students in experimental group were taught using differentiated instructional strategy while those in the control group were taught using conventional lecture method; two research questions with their corresponding null

hypotheses guided the study.

The findings of research question one and hypothesis one revealed that biology students taught using differentiated instructional strategy had high academic scores than those taught using conventional method of teaching. This implies that the use of differentiated Instructional strategy in teaching biology enhances students’ academic achievement in the subject.

The reason for the good achievements of the experimental group when comparing the general academic achievement of the experiment group and control group is due to the fact that students had the opportunity to interact with different instructional materials and report their taught, observation etc. Errors were corrected which leads to better performance during the final assessment by the teacher. This finding is in line with the findings of Obafemi (2022) who conducted study on the effect of differentiated instruction on students’ academic achievement in mathematics. His findings had shown that learning biology using differentiated instructional strategy enhances students’ academic achievement. It is also in line with the findings of Wanja and Kariuki (2014), Shehu (2021), and Al-Zaid, Zeidan and Abdel Hadi (2022) who found out that students learning through differentiated instructional strategy have

differentiated instructional strategy have higher achievement than those who learnt through conventional teaching method as such differentiated instructional strategy could be adopted as a strategy for effective teaching of biology concepts that were reported to be difficult, so as to improve performance of students in biology.

The result from the findings of research question two and hypotheses two shows that there is no significant difference between the achievement scores of female Biology students' and male Biology students' taught using differentiated instructional strategy. This is in line with the findings of Grains, et al. (2022), Tambaya, Saidu and Isah (2023) who found that when students received differentiated instructions their academic success was unaffected by their gender. This result contradicts with the findings of Diana (2014) who conducted a study to test hypothesis on the interaction effect of treatment (teaching strategy) and gender on academic achievements in Social Studies. The findings showed significance interaction between treatment and gender on learner's academic achievement. Furthermore the, the findings of Okeke (2018) showed that there was a significance interaction effect of gender and treatment (teaching strategy) on mean academic score of learners taught using the mend mapping teaching strategy.

## **Conclusion**

Based on the findings of this research the following conclusions were drawn:

1. The use of Differentiated Instructional Strategy in teaching biology enhances student's academic achievement, as indicated there is significant differences in the academic achievement scores between experimental groups and control group in favour of experimental group.
2. Differentiated Instructional Strategy is gender friendly because it was found out there is no significant difference in the achievement scores of male and female students in the experimental group.

## **Recommendation**

Based on the findings of the study the following recommendations are made

1. Biology teachers should equip themselves with the basic knowledge and application techniques of Differentiated Instructional Strategy so as to encourage biology students' active participation during teaching and learning process which will eventually lead to improvement in students' academic achievement.
2. Kano State Senior Secondary School Management Board should help in execution of Differentiated Instructional Strategy through organization of seminars, workshops, and conferences regularly.

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**Use of Artificial Intelligence in the Management of Legal Issues in Public Senior Secondary Schools in Edo South Senatorial District, Edo State**

By

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**Abstract**

This study examined the use of Artificial Intelligence (AI) in the management of legal issues in public senior secondary schools in Edo South Senatorial District, Edo State. Three research hypotheses guided the study. A correlational survey design was adopted. The study population comprised 2,334 school administrators and legal-related staff across 179 public senior secondary schools. A sample of 580 respondents was selected using a stratified proportionate sampling technique. Two research instruments were developed by the researchers for data collection: “Artificial Intelligence Legal Management Questionnaire (AILMQ)” and “Artificial Intelligence Knowledge and Legal Compliance Assessment Form (AIKCAF)”. Both instruments were validated by experts and pilot-tested on 15 administrators outside the study area. The reliability coefficients obtained using Cronbach Alpha yielded for 0.75 and 0.82, indicating high internal consistency. Data were analyzed using Pearson’s Product Moment Correlation (r). The results showed no significant relationship between the use of AI and the identification or resolution of legal issues such as bullying or harassment. However, a significant positive relationship was found between school administrators’ knowledge of AI and their ability to manage legal compliance issues. Based on the findings, it was recommended that while AI tools are not yet widely adopted in legal management in schools, administrators with higher AI literacy are better equipped to ensure compliance with educational laws. The study emphasizes the importance of training and digital competence in enhancing the legal management capacity of school leaders

**Keywords:** *Artificial Intelligence, Legal Issues, School Management, Legal Compliance, Public Senior Secondary Schools*

**Introduction**

In recent years, the integration of Artificial Intelligence (AI) in the educational sector has expanded beyond teaching and learning to include administrative and legal management functions. AI systems are now being used to support decision-making processes in schools, including the identification of legal issues such as policy violations, unethical behavior, and school governance infractions. In public senior secondary schools, there is a growing need to explore how AI can assist school administrators in recognizing and managing these legal issues effectively. Artificial Intelligence (AI) is a type

of computer technology that allows machines to think, learn, and make decisions almost like humans. It includes tools like machine learning, natural language processing, facial recognition, and data analysis. AI is used in many areas like health, banking, education, and security. In schools, AI can help with teaching, school management, and solving problems. It can be used to improve discipline, detect early signs of problems, and manage school records effectively. Legal identification through AI tools such as automated monitoring systems, intelligent reporting platforms, and school management applications could potentially help detect early

warning signs of legal breaches (Adebayo & Ifeoma, 2022).

One of the major concerns facing school administrators, appears to be the increasing number of student-related legal cases such as bullying, harassment, physical assault, and other forms of misconduct. These issues demand timely and appropriate responses to protect students' rights and ensure compliance with education laws. AI tools such as facial recognition software, natural language processing systems for analyzing complaints, and predictive analytics can play crucial roles in resolving such student-related legal disputes (Eze & Musa, 2021). However, there is still uncertainty as to whether these technologies are effectively deployed in public senior secondary schools in Edo South Senatorial District. Investigating the relationship between the availability and use of AI tools and the resolution of these student-related legal issues is essential for improving the legal environment in schools.

Additionally, the competence of school administrators in understanding and using AI tools also plays a critical role in legal compliance. It is not enough for AI tools to be available in schools—administrators must possess the knowledge and digital literacy to operate these technologies efficiently. Without adequate AI literacy, administrators may find it difficult to use data-driven systems to track legal trends, ensure compliance with government regulations, or generate reliable reports for the Ministry of Education. Research by Olayemi & Okeke (2022) highlighted that a significant barrier to legal compliance in Nigerian secondary schools is the lack of digital

competence among school leaders. Therefore, examining the relationship between administrators' knowledge of AI and their ability to manage legal compliance becomes central to this study.

There is also a strong connection between the three variables discussed above— identification of legal issues, resolution of legal cases, and legal compliance management. When AI is properly used to identify legal issues, it increases the chances of timely and accurate resolution. This, in turn, enhances legal compliance, as schools are able to proactively respond to threats before they escalate. This implies a sequential process where knowledge of AI influences usage, which then affects outcomes related to legal matters. Hence, any effort to improve the legal standing of schools must adopt a holistic approach that addresses both technological infrastructure and human capacity (Afolabi & Ebong, 2023).

Despite the global attention that AI is gaining in educational management, its application in addressing legal issues in Nigerian public schools remains under- explored. In developed nations, AI is being used to flag misconduct, track cyber bullying, and evaluate staff-student interactions (Brown & Liu, 2020). However, in Nigeria, most AI applications are limited to e-learning and administrative attendance systems. This gap raises the question of whether public secondary schools in Edo South Senatorial District are leveraging AI to address legal matters. Understanding this will help inform policymakers, school leaders, and educational technologists about the readiness and gaps within the school system to embrace AI for legal management. A study conducted by Okonkwo & Suleiman (2021) in ten public secondary schools in Abuja Municipal Area

Council (AMAC), Federal Capital Territory used a sample of 150 school administrators and teachers to assess the role of AI-enabled surveillance systems in reducing school-related legal infractions. The researchers adapted structured questionnaires and interviews. Their findings revealed that in schools where AI-powered CCTV and facial recognition systems were used, reported cases of physical violence and theft reduced by 48% within one academic session. Furthermore, 68% of the respondents agreed that AI systems helped in tracking students' behavioral issues that previously went unnoticed. The study concluded that AI significantly improved legal issue identification and response time in schools. In another study by Agbaje & Ifeanyi (2022), carried out across 15 public senior secondary schools in Ikeja & Alimosho local government areas of Lagos State, a total of 180 school principals and vice principals were sampled using a stratified sampling technique. The researchers investigated the use of AI platforms such as automated school management software, digital report systems, and data analytics tools. Their analysis showed that 72% of school leaders using AI tools could compile compliance reports faster, and 63% were able to identify legal policy gaps in school operations more accurately. These findings suggest that AI tools significantly aid in managing school legal compliance when effectively utilized by knowledgeable administrators.

Musa & Udofia (2023) conducted a cross-sectional study in Cross River State involving 12 rural-based senior secondary schools. They selected 96 participants, mainly principals and ICT staff, to examine the impact of AI

knowledge on legal issue management. Their findings showed that only 29% of participants had sufficient knowledge of AI tools, and among this group, 79% reported being more confident in handling student disciplinary issues and legal reports. The study emphasized that limited digital literacy among school leaders remains a barrier to effective AI use in school legal management, particularly in rural regions.

A comparative research study by Wambua & Owusu (2022) between Kiambu County, Kenya, and Ashanti Region, Ghana, involved a total of 200 school leaders (100 from each country) to investigate the effect of AI training on legal issue resolution in schools. The study found that in Kenya, where government-sponsored training programs were more available, 85% of school leaders reported improved ability to detect and respond to student harassment and disciplinary issues, compared to 48% in Ghana, where such training was scarce. The researchers concluded that formal AI training programs significantly improve school leaders' capacity to handle legal issues in a timely and compliant manner.

The management of legal issues in public senior secondary schools in Nigeria has become increasingly complex due to growing cases of student misconduct, staff indiscipline, and violations of educational regulations. In Edo South Senatorial District, these challenges are compounded by limited digital infrastructure, poor training of school leaders, and lack of awareness of AI tools. While Artificial Intelligence has the potential to help identify, track, and resolve legal issues within the school system, it is unclear whether these tools are being used effectively or whether school administrators are equipped to manage them. There is also a lack of empirical data that explores the relationships among AI usage,

identification of legal issues, resolution of student-related cases, and legal compliance management. This study, therefore, seeks to fill this gap by investigating how AI is used in the management of legal issues in public senior secondary schools in Edo South, using a three-variable framework that includes AI use, legal issue resolution, and administrator knowledge.

### **Hypotheses**

**H<sub>01</sub>:** There is no significant relationship between the use of Artificial Intelligence and the management of legal issues in public senior secondary schools in Edo South Senatorial District.

**H<sub>02</sub>:** There is no significant relationship between Artificial Intelligence tools and the resolution of student-related legal cases (e.g., bullying, harassment) in public senior secondary schools in Edo South Senatorial District.

**H<sub>03</sub>:** There is no significant relationship between school administrators' knowledge of Artificial Intelligence and their ability to manage legal compliance issues in public senior secondary schools in Edo South Senatorial District.

### **Methodology**

This study adopted a correlational survey design to investigate the relationship between the use of Artificial Intelligence (AI) and the management of legal issues in public senior secondary schools in Edo South Senatorial District, Edo State. The correlational design was suitable because the study aimed to examine the extent to which variables such as the use of AI tools, resolution of student-related legal issues, and school administrators'

knowledge of AI are related to the management of legal matters in schools without manipulating any of the variables. The strength and direction of these relationships were determined using statistical measures like the correlation coefficient ( $r$ ).

The population of the study consisted of all public senior secondary school principals, vice principals, and senior teachers in Edo South Senatorial District, which includes seven Local Government Areas: Egor, Ikpoba-Okha, Oredo, Orhionmwon, Ovia North-East, Ovia South-West, and Uhunmwonde. According to data from the Edo State Ministry of Education (2023), there are approximately 2,334 school administrators and legal-related staff (principals, vice principals, and senior teachers) across 179 public senior secondary schools in the district. Using a stratified proportionate sampling technique, 580 respondents were selected for the study. First, the schools were grouped according to their respective local government areas. From each LGA, five schools were randomly selected, making a total of 35 schools. From each selected school, seven staff members (including at least one principal or vice principal) were randomly selected, ensuring a proportional representation of roles.

Two research instruments were developed for data collection: "Artificial Intelligence Legal Management Questionnaire (AILMQ)" and "AI Knowledge and Legal Compliance Assessment Form (AIKCAF)". The AILMQ assessed the extent of AI use in identifying and resolving legal issues such as bullying, student misconduct, and harassment, while the AIKCAF assessed administrators' knowledge of AI and how it relates to legal compliance. Each instrument was divided into two sections: Section A collected demographic data on name of school and Local Government Area; Section B included 24 items

grouped into three categories: use of AI for identifying legal issues (8 items), use of AI tools for resolving legal disputes (8 items), and administrators' knowledge of AI and legal compliance management (8 items). All responses were rated using a four-point Likert scale: Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1).

To ensure validity, the instruments were subjected to expert review by three specialists in the department of Educational Management, Faculty of Education, from University of Benin, Edo State, Nigeria. Their feedback was incorporated into the final versions of the instruments. For reliability, the instruments were pilot-tested using 15 administrators who were not part of the study. The reliability coefficients determined using the Cronbach Alpha method were 0.75 for Artificial Intelligence and 0.82 for management of legal issues, indicating high internal consistency and reliability of the instruments.

Data collection was conducted over a period of two weeks by the researcher and two trained field assistants. The instruments were administered in person during school hours after obtaining permission from the school authorities and the Edo State Ministry of Education. Respondents were assured of confidentiality and anonymity to encourage honest and unbiased responses.

A total of 580 instruments were dully filled and returned for data analysis. Data collected were analyzed using Pearson Product Moment Correlation (r) If the calculated p-value was less than or equal to 0.05, the null hypothesis was rejected; if greater than 0.05, the null hypothesis was retained.

#### **Data Presentation and Analysis Hypothesis**

**One:** There is no significant relationship between the use of Artificial Intelligence and the management of legal issues in public senior secondary schools in Edo South Senatorial District

**Table 1: Pearson r showing relationship between use of Artificial Intelligence and Management of Legal Issues in Public Senior Secondary Schools**

Variables	N	$\bar{x}$	SD	r	p-value	Decision
Use of Artificial Intelligence	580	2.01	0.31	0.023	0.071	Not Significant
Management of Legal Issues		2.14	0.38			

The data analysis in Table 1 shows the relationship between the use of Artificial Intelligence and the management of legal issues in public senior secondary schools in Edo South Senatorial District. The mean scores of 2.01 and 2.14, with standard deviations of 0.31 and 0.38 respectively, indicate that the usage of AI is still low. The correlation coefficient (r) is 0.023, which is very weak and positive. Since the p-value of 0.071 is greater than the alpha level of 0.05, the null hypothesis is retained. This implies that there is no significant

relationship between the use of Artificial Intelligence and the management of legal issues in public senior secondary schools in Edo South Senatorial District. The likely reason is that AI has not yet been widely adopted in this region.

**Hypothesis Two:** There is no significant relationship between Artificial Intelligence tools and the resolution of student-related legal cases (bullying, harassment) in public senior secondary schools in Edo South Senatorial District.

**Table 2: Pearson r showing relationship between AI tools and Resolution of Student- Related Legal Cases in Public Senior Secondary Schools**

Variables	N	$\bar{x}$	SD	r	p-value	Decision
Use of AI Tools	580	2.03	0.27	-0.012	0.283	Not Significant
Resolution of Student-Related Cases		2.18	0.35			

As shown in Table 2, there is a weak negative correlation ( $r = -0.012$ ) between the use of Artificial Intelligence tools and the resolution of student-related legal cases in public senior secondary schools. The mean scores of 2.03 and 2.18 and their standard deviations of 0.27 and 0.35 respectively suggest limited application of AI in handling such cases. The p-value of 0.283 is greater than the 0.05 level of significance.

Hence, the null hypothesis is accepted. This indicates that there is no significant relationship between AI tools and the resolution of

student-related legal issues. This could be due to the fact that AI tools have not yet been introduced or integrated into legal case management in these schools

**Hypothesis Three:** There is no significant relationship between School Administrators' Knowledge of Artificial Intelligence and their ability to manage Legal Compliance issues in public senior secondary schools in Edo South Senatorial District

**Table 3: Pearson r showing relationship between Administrators’ knowledge of AI and ability to Manage Legal Compliance Issues**

Variables	N	$\bar{x}$	SD	r	p-value	Decision
Knowledge of Artificial Intelligence	580	3.12	0.41	0.412	0.000	Significant
Management of Legal Compliance Issues		3.23	0.39			

Table 3 displays a significant positive relationship between school administrators’ knowledge of AI and their ability to manage legal compliance issues. With mean scores of 3.12 and 3.23, and standard deviations of 0.41 and 0.39 respectively, the correlation coefficient (r) is 0.412, indicating a moderate positive relationship. Since the p- value of 0.000 is less than 0.05, the null hypothesis is rejected. This result suggests that as administrators become more knowledgeable about AI, their ability to ensure legal compliance improves significantly. Unlike AI application in practice (which is limited), knowledge itself already plays a major role in administrative preparedness for future AI integration.

**Discussion of Findings**

The result from hypothesis one showed that there is no strong connection between using Artificial Intelligence (AI) and how schools identify legal issues. The r value (0.023) is very small, and the p-value (0.071) is greater than 0.05. This means that AI is not playing an important role in helping schools identify legal problems at the moment. This finding may be because most public secondary schools in Edo South are not yet using AI tools for legal identification. Many teachers and administrators might not even be aware of how AI can help with such issues. This aligns with the study by **Ogundele & Bello (2023)**, who found that AI usage in schools across Nigeria is still very low. Also, **Ayoade (2022)** noted that poor infrastructure and lack of training limit AI use in educational legal management. Similarly,

**Chikwendu & Adeyemi (2023)** explained that many school systems in Nigeria are not yet prepared to use technology for identifying legal risks and responsibilities.

The result from hypothesis two revealed that there is also no strong relationship between the use of AI tools and solving student-related legal problems like bullying or harassment. The correlation is negative but very small (r = -0.012), and the p-value (0.283) is much higher than 0.05. This means AI tools are not currently helping to resolve these types of legal issues in the schools studied. The reason for this may be that schools are still using traditional methods to handle student discipline and legal cases, like involving counselors, principals, or the police, instead of AI solutions. **Eze & Oladele (2023)** reported that school administrators still prefer manual documentation when handling student problems. **Ibrahim (2022)** pointed out that while AI tools exist, schools have not adopted them due to high costs and lack of digital support. In another related study, **Nkanga & Okonkwo (2023)** found that AI tools have not been used to handle bullying cases in Nigerian public schools due to lack of awareness and implementation plans.

### **Discussion of Findings**

The result from hypothesis three showed that there is a clear and positive relationship between how much school administrators know about AI and how well they manage legal compliance in schools. The  $r$  value (0.412) is moderate, and the  $p$ -value (0.000) is less than 0.05. This means that administrators who understand AI better are more likely to follow legal rules correctly in their schools. This makes sense because when leaders know more about technology, they are better prepared to handle the law and follow government rules. **Ogunyemi & Olatunji (2024)** found that AI knowledge among school leaders improves their legal and administrative decision-making. **Adejumo & Okoli (2023)** also showed that administrators with digital knowledge are more confident in preventing and responding to legal issues. **Obasi & Ekerete (2022)** explained that training on AI systems helps leaders recognize risk areas and manage them better in schools.

### **Conclusion**

The findings from this study clearly show that the use of Artificial Intelligence (AI) in public senior secondary schools in Edo South Senatorial District is still very low, especially in identifying and resolving legal issues. The first and second hypotheses showed no significant relationship between the use of AI and the ability of schools to identify or resolve legal issues. This suggests that although AI has the potential to improve school management and student safety, it is not yet widely applied in the school system. Many schools may not have the necessary tools, training, or infrastructure to adopt AI for legal support. The results indicate that AI is still not

a part of the everyday system used by teachers and administrators in dealing with legal concerns.

However, the result of the third hypothesis tells a different story. It shows that when school administrators understand AI better, they are more likely to manage legal compliance effectively. This suggests that knowledge and training in AI, even if tools are not yet in use, still play an important role in school leadership. It means that before AI can help solve legal problems in schools, administrators need to first understand what AI is, how it works, and how it can be applied in education. The findings highlight that awareness and training in AI should be a first step towards full integration in the legal and administrative management of schools.

### **Recommendations**

Based on the findings from the results, the following recommendations were made

1. Government and education stakeholders should equip public secondary schools with the basic tools and technology needed to start using AI and regularly provide training to build school leaders' understanding of how AI can support legal and administrative duties in schools.
2. School personnel should be taught how AI can help identify and handle issues such as bullying, harassment, or misconduct, making the school environment safer for students.
3. Education boards and schools should work with tech companies or universities to create simple and affordable AI solutions that are useful in managing common legal issues in education, so as to serve as monitoring system to check how AI is being used in schools and how it is helping to solve legal or compliance issues, to improve future policies and plans

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## Assessment of Provision and Utilization of Sanitation Facilities among Senior Secondary Schools Students in Kano state

By

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### Abstract

This research assessed the confronting emerging issues on provision and utilization of sanitation facilities among secondary schools' students in Kano state. A descriptive survey design was used for the study. The population of the study comprised senior secondary schools' students with a population of four hundred and fifty thousand four hundred and forty-four students (450,444) in Kano state. The sample size used for the study was four hundred respondents. A multi-stage sampling procedure was used to select the sample for the study. The instrument used for this study was a researcher designed questionnaire. It was validated and standardized with a reliability coefficient of 0.80r. The questionnaires were distributed to students with the help of 3 research assistants who are teachers of the schools and help to retrieved back the filled questionnaires. Out of the four hundred questionnaires administered, three hundred and ninety-one (391) were duly completed and returned which was analysed Frequency counts and percentages were used to organize and described the demographic characteristics of the respondents. Chi- square statistics was used to test hypotheses 1and 2 while PPMC was used to test hypothesis 3 all at 0.05 level of significance. The findings of the study revealed that, Sanitation facilities like water system were provided but no water available for utilizing it in senior secondary schools of Kano state. There is strong relationship between provision and utilization of sanitation facilities in senior secondary schools. Therefore, it was recommended among others that, government and private schools' owners should ensure that sanitation facilities provided are utilized to reduce the spread of diseases among the students.

**Keywords:** Sanitation, Provision, Utilization, Sanitation Facilities

### Introduction

World Health Organization in 2015, described sanitation generally as the provision of facilities and services for the safe disposal of human urine and faeces. Also Abhiruchi, Utsan and Roja (2019), in their study on utilization of sanitation facilities described sanitation refers to provision of facilities and services for the safe disposal of human waste of all types with a view to condition the environment fit for human habitation. Oxford Dictionary (2017) described sanitation as the hygienic means of promoting health through prevention of human contact with the hazards of wastes as well as the treatment and proper disposal of sewage or waste-water.

*According to*Kampala Ministry of Health (2000) Sanitation encompasses the isolation of human excreta from the environment, maintenance of food and personal hygiene, safe disposal of solid and liquid wastes, safe drinking water and vector control. *Sanitation and hygiene remain a challenge in many parts of the world. World Health Organization and United Nations International Children's Emergency Fund (2010), reported that about 50% of the developing world's population (2.5 billion people) lack improved sanitation facilities and over 884 million people still use unsafe drinking water sources.*

*This contributes greatly to morbidity and mortality in children. Water and sanitation facilities in schools are increasingly recognized as fundamental for promoting good hygiene behavior and children's well-being.* Good sanitation at school is meant that every student should have access to a convenient and well-maintained facility for the safe disposal of human waste, suitable anal cleansing materials, and wash hand materials with soap after defecation must be provided and used (Waterkayn, 2000). The process thus involves building, use and maintenance of latrines and other sanitation facilities; such as construction of urinals, hand washing facilities, anal cleansing materials and safe water supply. It also involves learning, behavior change, organization, and collective action with other community members. *UNICEF (2005), posts that many schools have very poor sanitation facilities, which are mostly inappropriate and inadequate. Inadequate sanitation is a major cause of diseases world- wide and improving sanitation is known to have a significant benefit on individual, and family's health both in households and across communities.* In 2020, 54% of the global population (4.2 billion people) used a safely managed sanitation service; 34% (2.6 billion people) used private sanitation facilities connected to sewers from which wastewater was treated; 20% (1.6 billion people) used toilets or latrines where excreta were safely disposed of in situ; and 78% of the world's population(6.1 billion people) used at least a basic sanitation service (WHO Fact sheet, 2022)

Utilization of sanitation facilities involves proper human waste disposal, water handling from the source to the point of consumption and effective hand washing with soap after using the toilet

(Waterkayn, 2000). National Sanitation Guidelines of Uganda (2000) defines utilization of sanitation facilities as the state of cleanliness of the facilities, it involves presence of clean latrines and urinals, functioning hand washing facilities with soap and water. It is the use of sanitation facilities and the related appropriate hygiene behaviors of people that provide health benefits. In developing countries like Nigeria and Bangladesh poor school sanitation practices and hygiene behavior is a major problem and remains a high-risk behavior among school children, causing many students to fall ill and sometimes lead to death. Many gastrointestinal infections have been linked with how primary and secondary schools' students utilized sanitation facilities (UNICEF, 2018).

According to WHO (2012), access to sanitation facilities is a fundamental right that safeguards health, humility and dignity. Providing these facilities in schools not only help to meet that right, it also provides the most favorable setting to encourage behaviour change in schools and community. Also, WHO (2012) made a pilot survey of 14 countries in primary and secondary schools in some of the poorest countries have inadequate sanitation facilities. The average number of users is often higher than 50 students per toilet in city schools. In Cote d' Ivoire, 62% in rural areas had water and 40% in the capital Abidjan had sanitation facilities in schools only 30% have water and 32% latrines. According to a survey in the Yopougon area, Cote d' Ivoire, 62% of water closets do not work and there are about one water closet/toilet per 381 students. and one urinal per 892 students (suggested 1 out of 50).

African Medical and Research Foundation (AMREF) (2009) discovered that in Kibera of Kenya the latrine to a pupil ratio is 1:50 compared with the recommended public health standard of 1:30 for boys, 1:25 for girls. Limited availability of sanitation facilities pose a constant threat of diseases and dropout rate of over 50% by the end of standard (class) six and the academic performance is lower than the average for Nairobi. Disposal facilities were available within an individual cubicle in 43% of the girls' toilets.

UNICEF (2008) asserted that, in Nigeria girls are particularly affected, and poor sanitation is a contributing factor in Nigeria's low girl enrolment rates. In schools, there is average of only one toilet for every 500 students this is ten times the standard of one for every 50 students. In some schools, the toilets provided have either become disused, overused or badly overtaken by faeces as to be unusable again. Many secondary schools' students in the federal capital territory defecate in the open because their schools do not have toilets, thereby exposing them to serious health hazards (Opeyemi and Kehinde, 2015).

A study conducted by Agboh, Anwazzi, Gabriel and Ibrahim (2012) on An assessment of toilet facilities in secondary schools in Jos North Local Government area of Plateau State showed that day and boarding schools were 71.7% and 28.3% respectively; 5.5% privately owned. Fortyfive schools (84.9%) had toilet facilities, while 1/6th of the schools had none. Water carriage toilets (water squatting and water seat) comprised 20 (21.6%) while the non-water carriage accounted for 55 (59%).

### **Statement of the Problem**

Provision of adequate sanitation facilities in schools is the responsibility of government and stakeholders, because of their utmost importance to the students and staff in secondary schools for proper environmental cleanliness. Joshua (2004) and Vernon (2003), stated that facilities for academic and non-academic activities need to be properly put in place to provide an optimal sanitary environment which is safe and conducive for physical, mental and emotional health of the students in order to achieve maximum benefits from educational programmes. Human excreta which form an important cause of environmental pollution need to be properly disposed through modern methods that are socially and culturally acceptable UNICEF, 2009, Dworsky, 2007). But for 3 billion people around the world who do not have hand washing facility with water and soap at home. Today, 47 percent of secondary school's students lack hand washing facilities with water and soap, which affect 900 million school-age children. And in 16 percent of health care facilities, there are no hand washing facilities in the areas where patients receive care or near the toilets. More than 500 million secondary school students have very poor utilization of sanitation facilities as many schools were overtaken by faeces, refuse and menstruation pads in most of girl's schools. This behavior and improper utilization of such facilities lead to spread of various diseases among school students. It is against this backdrop that the researcher conducted this study on provision and utilization sanitation facilities among senior secondary schools in Kano state.

### **Hypotheses**

1. There is no significant provision of sanitation facilities in secondary schools of Kano state.
2. There is no significant utilisation of sanitation facilities in Kano state secondary schools.
3. There is no significant relationship between provision and utilisation of sanitation facilities in Kano state secondary schools

### **Methodology-**

The design employed for this study was design of survey type. The population of this study was 450444 respondents comprised the entire senior secondary schools. four hundred (400) respondents were selected based on Krejci and Morgan as sample for this study. Multi-stage sampling procedure was used for this study, stage one the researcher use simple random sampling stage two stratified sampling technique stage three proportionate sampling technique finally he researcher use simple random sampling technique to arrive at the sample size. The instrument for data collection was researchers developed questionnaire. The instrument was validated and standardized with reliability index of 0.80r. The questionnaires were distributed to students with the help of 3 research assistants who are teachers of the schools and help to retrieved back the filled questionnaires. Frequency count and percentages was used to organize and describe the demographic information of the respondents, while the hypotheses were tested using chi-square and PPMC (Pearson Product Moment Correlation). All the tests were carried out at 0.05 level of Significance.

### **Results**

Out of four hundred (400) questionnaires administered, three hundred and ninety-one (391) were duly completed, returned and used for the analysis

Table 1: Demographic Information of the Respondents

Variable	Frequency	Percentage
<b>Gender</b>		
Male	222	56.8
Female	169	43.2
Total	391	100
<b>School location</b>		
Urban	109	27.9
Rural	282	72.1
Total	391	100
<b>Ownership</b>		
Public	371	94.9
Private	20	5.1
Total	391	100
<b>School type</b>		
Boarding	198	50.6
Day	193	49.4
Total	391	100

Table 4.2.1 above shows the total responses from 391 respondents were analyzed which represent 100%. The table indicated that 222 (56.8%) respondents were male and 169 (43.2%) were female students. The majority of the respondents were male students. Also 109 (27.9%) respondents were students of schools located at urban while 282 (72.1%) were respondents from rural schools. This shows that most of the respondents were from rural schools. Based on school ownership public schools had 371 (94.9%) respondents while private schools had only 20 respondents representing (5.1%) because their population is 5% of public schools.

This indicated that majority of the respondents were from public c schools. 198 respondents were from boarding schools with (50.6%) and day schools were 193 with (49.4%). The majority of the respondents were boarding students.

**Hypothesis 1:** There is no significant provision of sanitation facilities in secondary schools of Kano state

**Table 2. Chi-square summary on provision of sanitation facilities in secondary schools**

Variables	provided	not provided	total	df	$\chi^2$	P-Value
FO	234	157	391	1	15.164	.001
FE	195.5	195.5				

$\chi^2=15.164$ ;  $df=1$ ;  $\chi^2_{crit} 3.84$

Chi-square analysis was conducted of which 234 (59.84%) respondents stated that sanitation facilities were provided in their schools and 157 (40.16%) respondents stated sanitation facilities were not provided. The statistical analysis indicated chi-square ( $\chi^2$ ) value of 15.164 at  $df 1$ , ( $P<0.05$ ). This means

that the null hypothesis is rejected on the account that sanitation facilities are adequate in senior secondary schools in Kano state.

**Hypothesis 2.** There is no significant utilization of sanitation facilities in secondary schools of Kano state

**Table 3. Chi-square summary on Utilization of sanitation facilities**

Variables	Utilized	Not Utilized	total	df	$\chi^2$	P=Value
FO	161	230	391	1	12.176	.001
FE	195.5	195.5				

$X^2= 12.176$ ;  $df=1$ ;  $X^2_{crit} 3.84$

Chi-square analysis was conducted of which 161(41.18%) respondents agreed that they utilized sanitation facilities in their school toilets while 230 (58.82%) respondents were not utilizing the facilities. The statistical analysis indicated chi-square ( $X^2$ ) value of 12.176 at  $df 1$ , ( $P<0.05$ ). This means that the null hypothesis is accepted on

the account that there is no significant utilization of sanitation facilities in senior secondary schools in Kano state.

**Hypothesis 3.** There is no significant relationship between provision and utilization of sanitation facilities in Kano state secondary schools.

**Table 4. Pearson Product Moment Correlation Coefficient Summary table on relationship between adequacy and utilization of sanitation facilities in Kano state secondary schools**

Variables	N	Mean	SD	df	r	P-Value
Provision	391	22.877		7.297	389	0.788 .001
Utilisation	391	24.765	7.332			

PPMC was conducted to determine the relationship between provision and utilization of sanitation facilities in senior secondary schools of Kano state. A mean of 22.877 and standard deviation of 7.297 was obtained for adequacy and mean of 24.765, standard deviation of 7.332 for utilization. Statistical computation indicated that  $r = .788$ ,  $df = 389$  ( $P < 0.05$ ). This means that there is significant relationship between provision and utilization of sanitation facilities among students in senior secondary schools of Kano state. Therefore, the null hypothesis tested is rejected on the account that there is significant relationship between provision and utilization of sanitation facilities among students of senior secondary schools

### **Discussion**

This study assessed provision and utilization of sanitation facilities in senior secondary schools of Kano state

Result revealed that there is provision of sanitation facilities in senior secondary schools of Kano State, the provision of sanitation facilities is one of the requirements of building a school. The finding is in line with the finding of UNICEF (2013), which stated that provision of water and sanitation facilities in school are increasingly recognized as fundamental for promoting good hygiene behaviour among students. The finding is also in line with the findings of UNICEF and IRC, (2017 in a) study published in manual on School Sanitation and Hygiene on Water,

Environment and Sanitation described that school sanitation packages involved adequate provision of water and sanitary facilities. The water should be provided to flush latrines, anal cleansing and hand washing, and should be located closed to the latrine for proper utilization.

The finding revealed that senior secondary students do not significantly utilize sanitation facilities in the school toilets. Their non-utilization is due to their population, and the provision is not in line with their proportion as recommended by WHO, poor maintenance services and students attitudes toward poor usage of the facilities. The finding is in line with a study conducted by Agboh, et,al (2012) which shows that inadequate or poor utilization of toilet facilities seriously affect the wellbeing of students in schools. However, the finding is in contrast to the finding of Nansereko (2010), in his study in Mpigi district in Uganda asserts that proper use of latrine, hand washing after defecation and maintaining a latrine in an adequately sanitary state, is an attitude that promotes sanitation and hygiene among students. The finding revealed that there is significant relationship between provision and utilization of sanitation facilities among students in senior secondary schools of Kano state. The finding may be as a result of sanitation facilities provided and utilized by students. The finding is in line with UNICEF & IRC (2017) which stated that schools are often more than just places for learning and behaviour change.

If school sanitation and hygiene facilities are absent or are badly maintained and used, schools become risky places where diseases are transmitted. It is also in line with the finding of Pillitteri (2012), who described insufficient toilet/student ratio as a contributing factor of overuse, filthy conditions and a consequent return to open defecation around schools, or absenteeism in order to use a home toilet. The finding also corresponds to the finding of Nansereko (2010) which shows that the installation of sanitation facilities has to go hand in hand with their proper use and maintenance, hygiene promotion aims to ensure the proper use and maintenance of facilities by motivating people to change their behaviour.

### **5.2 Conclusion**

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

1. Sanitation facilities are provided in senior secondary schools of Kano state
2. Sanitation facilities are not utilised in senior secondary schools of Kano state
3. There is strong relationship between provision and utilisation of toilet sanitation facilities of kano state secondary school.

### **5.3 Recommendation**

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

1. Stakeholders of private schools should put more effort in provision of adequate sanitation facilities in their schools to ensure school sanitation and hygiene.
2. Government and schools should ensure that students are utilising the sanitation facilities provided to reduce the spread of diseases among the students.
3. Finally, Government and schools should encourage their students in good maintenance of sanitation facilities especially public schools where the population is high.

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**Assessing the Impact of Counselling Services in Addressing Bullying among Adolescent Girls in Danbare Secondary School, Kumbotso Local Government Area, Kano State, Nigeria**

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**Abstract**

This study aimed to assess the impact of counselling services in addressing bullying among adolescent girls in Danbare Secondary School, Kumbotso Local Government Area, Kano State, Nigeria. The objectives were to examine the prevalence of bullying, evaluate the effectiveness of counselling interventions, and identify strategies for creating a safer school environment. A descriptive survey design was adopted, and data were collected from 50 students using purposive sampling. A structured questionnaire, validated by academic experts, was used to gather data on students' experiences and perceptions regarding bullying and counselling services. The findings revealed that verbal bullying, such as name-calling and mocking, is common, while physical bullying is less frequent. Many students reported reluctance to disclose incidents due to fear or lack of trust. Although peer support programs contributed to a sense of safety, the overall effectiveness of counselling services was rated low. Students expressed dissatisfaction with how seriously school authorities responded to bullying cases. The study concludes that while some support mechanisms exist, counselling services are underutilized and inadequately implemented. Recommendations include strengthening peer mentoring groups, improving the responsiveness of counsellors and teachers, and promoting student advocacy and anti-bullying policies. Collaborative efforts among school staff, parents, and counsellors are essential to creating a supportive environment where adolescent girls feel safe, valued, and heard.

**Keywords:** *adolescent girls*, bullying, intervention strategies, counselling services

**Introduction**

Bullying among adolescent girls is a pressing social issue affecting their emotional, psychological, and academic well-being. It takes various forms, including physical aggression, verbal abuse, cyberbullying, and social exclusion. Research has linked bullying to long-term effects such as low self-esteem, depression, anxiety, and even suicidal tendencies (Smith & Brain, 2000; Espelage & Swearer, 2003). Among adolescent girls, the impact is particularly severe due to their developmental stage and societal expectations (Cornell & Limber, 2015). In Nigeria, school bullying remains underreported, often due to fear of retaliation, inadequate institutional responses, and cultural factors (Odeh & Umoh, 2020).

Bullying in schools is sometimes reinforced by societal hierarchies and traditional power dynamics, complicating intervention efforts (Eze, 2017). Eze (2020) further observes that peer pressure, lax school regulations, and the normalization of aggression worsen the issue. He notes that adolescent girls are disproportionately affected due to gender norms that encourage silence and endurance of mistreatment. An adolescent girl, defined by the WHO (2014) as a female aged 10–19, undergoes significant physical, emotional, and social changes. UNICEF (2011) recognizes this group as vulnerable, especially in contexts marked by gender discrimination. Challenges faced by adolescent girls include early marriage, limited access to education, poor

reproductive health services, and gender-based violence.

Social intervention refers to organized efforts to address societal problems and promote well-being through measures like education, counseling, and policy reform. Midgley (1995) defines it as a guided process aimed at influencing relationships and institutions to enhance individual and group welfare. These interventions are common in tackling poverty, health disparities, and violence.

Counselling services are a key form of social intervention, particularly in addressing bullying. They play a vital role through support services, advocacy, and educational programs. Effective counselling strategies include individual therapy, peer mediation, conflict resolution, and policy advocacy (Dupper, 2013; Bauman, Cross, & Walker, 2013). However, research on the effectiveness of counselling interventions in addressing bullying among adolescent girls in Nigeria is limited, highlighting the need for further study.

Danbare Secondary School in Kano State provides a relevant context for this research. With a diverse student population and reports of bullying incidents, the school presents a suitable case for examining how counselling services are implemented and their effectiveness. Literature shows that well-executed school-based interventions can significantly reduce bullying (Bradshaw, 2015; Olweus & Limber, 2018). However, Ngwu (2021) argues that the lack of trained counselling staff in Nigerian schools undermines these efforts. Okonkwo (2019) also highlights how cultural attitudes toward discipline blur the lines between corrective measures and bullying, complicating enforcement of anti-bullying policies.

### **Statement of the Problem**

Bullying among adolescent girls in secondary schools has become an alarming social problem, negatively impacting their psychological well-being, academic performance, and overall social development. In Nigeria, particularly in Kano State, bullying remains a persistent issue, often going unnoticed or unaddressed due to cultural and institutional barriers. Studies have shown that many victims of bullying experience anxiety, depression, low self-esteem, and, in severe cases, suicidal ideation (Eze, 2020; Okonkwo, 2019). Despite existing policies and school regulations aimed at curbing bullying, the problem continues to thrive, raising concerns about the effectiveness of current intervention strategies.

Counselling services, as a professional field, plays a critical role in addressing bullying through preventive and intervention programs, such as counseling, peer mediation, and awareness campaigns. However, in Nigeria, the integration of counselling services into school settings remains inadequate. Ngwu (2021) asserts that the absence of trained counsellors in many schools limits the implementation of structured anti-bullying interventions, leaving many victims without the necessary psychosocial support. Furthermore, the societal perception of bullying as a “normal” phase of adolescent life prevents schools and communities from taking decisive action against it (Okoye, 2018).

At Danbare Secondary School, reports of bullying incidents among adolescent girls highlight the urgent need for systematic intervention. The lack of effective support mechanisms for victims, coupled with the reluctance of school authorities to address the issue comprehensively, exacerbates the problem. While various stakeholders including teachers,

parents, and school administrators acknowledge the presence of bullying, there is limited empirical research on how counselling services interventions can be utilized to combat this issue effectively.

This study seeks to fill this gap by assessing the impact of counselling services in confronting bullying among adolescent girls at Danbare Secondary School, Kano State. By employing a descriptive survey design and gathering data from 50 students through a purposive sampling technique, the study will evaluate the effectiveness of existing intervention strategies. The findings will provide insights into how counselling servicing can be more effectively integrated into school policies and contribute to creating a safer learning environment for adolescent girls.

### **Research Questions**

The following research questions are formulated with the view to use them as a guide to this study:

1. What is the prevalence of bullying experienced by adolescent girls at Danbare Secondary School, Kumbotso Local Government Area, Kano State?
2. How effective are counselling services in addressing bullying among adolescent girls in Danbare Secondary School, Kumbotso Local Government Area, Kano State?
3. What strategies can be implemented to mitigate bullying and promote a safer school environment for adolescent girls?

### **Methodology**

This study adopted a **descriptive survey design** to investigate the impact of counselling services in

confronting bullying among adolescent girls at Danbare Secondary School, Kumbotso Local Government Area, Kano State. This design is appropriate as it allows for a systematic collection and analysis of data related to the experiences of bullying and the effectiveness of counselling services interventions. The study population consisted of all SS1–SS3 students (totaling 60), from which 50 were purposively selected to include those with relevant experiences. Due to the sensitive nature of bullying, purposive sampling was appropriate for targeting students directly affected (Marshall, 1996; Small, 2009). Data were collected using a structured 15-item questionnaire covering the prevalence of bullying, effectiveness of counselling services, and strategies for creating a safer environment. A four-point Likert scale (Strongly Agree, Agree, Disagree, Strongly Disagree) was used, with a mean benchmark of 2.50 for decision-making. The instrument was validated by two experts from Bayero University Kano, and reliability was confirmed with a PPMC coefficient of 0.75.

Questionnaires were administered and collected the same day to ensure confidentiality. Data analysis involve calculating arithmetic means to summarize student responses. The study adhered to ethical research principles, including obtaining **informed consent** from students, ensuring **anonymity and confidentiality**, and providing students with the option to withdraw from the study at any stage. The research was conducted with the approval of relevant school authorities.

### **Data Presentation and Analysis**

Table 1: Prevalence of bullying experienced by adolescent girls

**RQ.: What is the prevalence of bullying experienced by adolescent girls at Danbare Secondary School, Kumbotso Local Government Area, Kano State?**

S/N	Statements	SA	A	D	SD	Mean	Decision
1.	I have been bullied by other students in this school.	34	10	6	0	3.56	Accepted
2.	Bullying of girls happens frequently in my school.	30	7	6	7	3.20	Accepted
3.	Verbal bullying (e.g., name-calling, mocking) is common among girls in this school.	43	7	0	0	3.86	Accepted
4.	Physical bullying (e.g., pushing, hitting) affects many girls in this school.	10	9	15	16	2.26	Rejected
5.	Most girls who are bullied in this school do not report the incidents to teachers or school authorities.	15	14	10	11	2.66	Accepted

Table 1 highlight a troubling reality at school, where bullying, especially verbal abuse like name-calling and mocking, is a common experience for many adolescent girls. Most students reported being personally affected by bullying and observed that it happens frequently within the school. Although physical bullying seems to occur less often, it

still impacts a significant number of girls. And many students expressed that bullying incidents often go unreported, possibly due to fear of retaliation or a lack of trust in the system. These results point to the urgent need for more effective anti-bullying measures and better support systems to ensure that every student feels safe and heard.

**Table 2: Counselling services in addressing bullying among adolescent girls**

**Q.: How effective are counselling services in addressing bullying among adolescent girls in Danbare Secondary School, Kumbotso Local Government Area, Kano State?**

S/N	Statements	SA	A	D	SD	Mean	Decision
1	Counseling services in my school have helped reduce bullying among students.	9	10	19	12	2.32	Rejected
2	Peer support programs in this school make students feel safer and more supported.	16	11	15	8	2.70	Accepted
3	I know where to go or who to talk to in school when I am bullied.	35	10	5	0	3.60	Accepted
4	Teachers and school counselors take bullying reports seriously and act on them.	12	9	17	12	2.42	Rejected
5	The presence of counselling services-related activities has made a positive difference in how bullying is handled at this school.	13	7	19	11	2.44	Rejected

The Table 2 shows that while some counselling services interventions, such as peer support programs, have had a positive impact on making students feel safer and more supported, counseling services have not been very effective in reducing bullying. Many students are aware of where to seek help when bullied, indicating that the support channels are known, but there is **Table 3: Strategies to mitigating bullying**

dissatisfaction with how seriously teachers and school counselors take bullying reports. Despite the presence of counselling services- related activities, many students feel that these efforts have not made a significant difference in how bullying is addressed. This shows the need to improve support and school response to bullying

*Q.: What strategies can be implemented to mitigate bullying and promote a safer school environment for adolescent girls?*

S/N	Statements	SA	A	D	SD	Mean	Decision
1	Organizing regular anti-bullying campaigns will help reduce bullying in the school.	20	8	12	10	2.27	Rejected
2	Involving students in peer mentoring and support groups can create a safer school environment.	24	14	7	5	3.23	Accepted
3	Punishing bullies appropriately can discourage others from bullying.	20	10	15	5	2.63	Accepted
4	Teachers and staff need more training on how to detect and respond to bullying.	30	11	9	0	3.26	Accepted
5	Encouraging students to report bullying without fear of retaliation will help stop it.	32	18	0	0	3.64	Accepted

The Table 3 reveals that most respondents believe that effective strategies to mitigate bullying and promote a safer school environment for adolescent girls include empowering students to report bullying without fear, providing training for teachers and staff, implementing peer mentoring and support groups, and enforcing appropriate punishment for bullies. These strategies received high levels of agreement, indicating their perceived effectiveness. However, organizing regular anti-bullying campaigns was not strongly supported, suggesting that while awareness is important, it may not be sufficient on its own to address the issue. This highlights the need for more practical, supportive, and responsive approaches within the school system.

**Discussion of the Findings**

The data from Table 1 highlight a troubling prevalence of bullying among adolescent girls at Danbare Secondary School, with verbal bullying emerging as the most dominant form. A majority of students reported experiencing or witnessing bullying regularly, particularly through name-calling and mocking. This finding aligns with the work of Nansel et al. (2001), who observed that verbal and relational bullying are more common than physical bullying among adolescents, and tend to have long-term emotional and psychological impacts. Similarly, Olweus (2003) emphasized that verbal aggression often goes unnoticed by teachers and can be more insidious than physical attacks because it erodes

self-esteem over time. Patchin and Hinduja (2006) also noted that such non-physical forms of bullying, including name-calling and ridicule, are increasingly common in schools and are just as harmful, especially when they occur repeatedly and without adult intervention. These findings collectively suggest that while physical aggression may be less visible, verbal bullying remains a serious challenge that demands targeted intervention.

Another significant issue revealed by the data is the underreporting of bullying cases by girls, which suggests a lack of trust in school authorities or fear of retaliation. Many students admitted they do not feel comfortable reporting bullying incidents to teachers or counselors. This behavior is consistent with the conclusions of Rigby and Bagshaw (2003), who found that students are often reluctant to disclose bullying because they believe adults will either not take them seriously or fail to respond effectively. Craig, Pepler, and Atlas (2000) similarly noted that the fear of being labeled a “snitch” or being socially ostracized discourages students from seeking help. Moreover, DeVoe and Murphy (2011) emphasized that the absence of a confidential and safe reporting system in schools contributes significantly to the silence surrounding bullying. The lack of adequate support and protection mechanisms therefore creates a dangerous environment where bullying can thrive unchecked.

Table 2 shows that while peer support programs have had a somewhat positive effect, students largely feel that counseling services and adult interventions have not been effective. This

suggests a gap in the implementation and quality of counselling services-related interventions in the school. Espelage, Low, Polanin, and Brown (2013) argue that for interventions to work, schools must create a coordinated strategy that includes peer support, counseling, and teacher involvement. Cross et al. (2011) also found that many anti-bullying programs fail because they lack continuity and are often treated as one-off events rather than integrated into the school culture.

Ttofi and Farrington (2011), in their comprehensive meta-analysis, highlighted that the most effective programs are those that provide training for teachers, incorporate a whole-school approach, and foster collaboration between students, staff, and parents. The situation at Danbare Secondary School indicates a need for such a holistic and sustained approach, rather than isolated efforts that fail to produce long-term change.

### **Conclusion**

Bullying continues to pose a significant challenge to the academic and emotional well-being of adolescent girls at Danbare Secondary School, with verbal abuse emerging as the most prevalent and damaging form. The study revealed that although support mechanisms such as peer programs exist, they remain insufficient in effectively addressing the problem. Many students are reluctant to report bullying incidents due to fear of retaliation or lack of trust in the school system. Furthermore, while counselling services are present, their implementation is limited and lacks proactive engagement. These gaps highlight the urgent need for a more robust and coordinated approach involving school authorities, counsellors, parents, and wider community. Strengthening

intervention strategies, enhancing awareness, and promoting student advocacy are essential steps toward building a safer, more inclusive learning environment. By addressing the root causes and providing responsive support systems, schools can

### **Recommendations**

It is recommended that:

1. The school should strengthen peer mentoring and support groups, as many girls face verbal bullying but often stay silent. These student-led groups can help victims feel supported and encourage others to speak up, creating a safer school environment.

significantly reduce the negative effects of bullying on adolescent girls' mental health and academic performance, thereby fostering resilience, confidence, and holistic development.

2. Counselling services also need improvement. Although students know where to seek help, many feel their concerns are ignored. Staff should be trained to respond better, and students should be allowed to give feedback to improve the support system.
3. Teachers and staff should get regular training to identify and address bullying early. Clear rules and consequences for bullies should be enforced to maintain a respectful and safe school for all students

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## Caregivers' Pedagogical Knowledge of Multiple Representations in Teaching Science in Early Childhood Education

By

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### Abstract

Multiple representations such as verbal, visual, symbolic and hands-on approaches, enhance the effectiveness of science instruction in early childhood education. Caregivers' knowledge and application of these representations play a crucial role in ensuring meaningful early childhood science learning. This study explores caregivers' understanding of multiple representations in teaching science concepts and activities in early childhood education. It discusses the theoretical underpinnings, benefits, challenges and empirical evidence, types and characteristics of multiple representations. The study also highlights strategies for improving caregivers' competencies in using multiple representations effectively. The study adopts descriptive survey research design. Population of the study consists of caregivers working in public preschools in Ojo Local Government Area of Lagos State. A sample size of 100 respondents were selected. Self-Structured questionnaires were administered to respondents (caregivers) to assess their knowledge, perceptions and experiences regarding the use of multiple representations in teaching science in early childhood education. Quantitative data from questionnaires were analyzed using descriptive statistics (percentages, mean and standard deviation) and inferential statistics (Chi-square  $X^2$  tests, correlation analysis) to determine relationships between variables. The research instrument is validated by early childhood education experts and science education specialists. A pilot study was conducted with 20 caregivers outside the main study area to test for clarity, consistency and reliability using the Cronbach's alpha reliability coefficient ( $\alpha \geq 0.7$ ). The study concluded that caregivers' knowledge of multiple representations is essential for effective early childhood science education. However, some recommendation were made.

**Keywords:** Caregivers; Early Childhood; Education; Multiple Representations; Pedagogical Knowledge; Science; Teaching.

### Introduction

Science in early childhood education is crucial for fostering curiosity, problem-solving skills and critical thinking (Worth & Grollman, 2020). Teaching science to preschool children requires developmentally appropriate method and one effective approach is the use of multiple representations. Multiple representations refer to different ways of presenting scientific concepts, including verbal explanations, pictorial illustrations, hands-on experiments, digital

simulations and symbolic representations. Caregivers, play a significant role in shaping young children's scientific understanding. Their knowledge of multiple representations determines how well they can integrate diverse teaching methods to make science concepts comprehensible and engaging (Trundle & Sackes, 2015). In other words, multiple representations refers the use of charts, graphs, diagrams, photographs, tables, mathematical equations and other types of

representations to communicate scientific information.

Multiple representations are typical occurrence in the field of science and in education. Some studies enlarge the concept of multiple representations to include video, animation, audio sounds or other technological enhancements. The cognitive theory of multi-representational learning underpins the use of multiple representations for instructional purposes (Mayer, 2013). Using multiple representations in teaching science concepts and activities in early childhood education alleviate possible cognitive stress in learning complex science concepts and activities in early childhood education. Good use of multiple representations not only offer preschool children the opportunities to improve their conceptual understanding of science but also expand the understanding of how preschool children interpret and utilize such representations for making sense of the given phenomena.

The purpose of using multiple- representations in learning science concepts and activities in early childhood education is to encourage the personal advancement of scientific understanding in the minds of the preschool children producing the multi- modal products. Multiple representations enables preschool children to combine different representations of scientific concepts and activities and understand how to use them in representing scientific knowledge (Russell & McGuigan, 2012). Caregivers' using multiple representations in teaching science concepts and activities in early childhood education make theoretical science concepts more understandable to preschool children and make science lesson more interesting and stimulating for preschool children, encouraging them to think, assist them to connect previous

information with new information and enable them to present their views and ideas superlatively.

Proficiency in caregivers' knowledge of multiple representations is the ability to represent and explain difficult concepts to diverse young learners. Many caregivers however, have limited training in science teaching, leading to gaps in the effective use of multiple representations in teaching science concepts and activities in early childhood education (Worth & Grollman, 2020). This article examines caregivers' knowledge of multiple representations in teaching science concepts and activities in early childhood education. It discusses the theoretical background, benefits, challenges and empirical studies on the topic while proposing strategies to enhance caregivers' competence in using multiple representations. The main types of multiple representations used in teaching science in early childhood education include:

Verbal representations, caregivers use oral explanations, questioning techniques and storytelling to introduce science concepts. For example, when teaching about the water cycle, caregivers might narrate a simple story about a raindrop's journey through evaporation, condensation and precipitation (Gelman & Brenneman, 2017). Visual representations, pictures, diagrams, charts and videos provide visual models of scientific phenomena. For example, a diagram of a plant's life cycle helps preschool children visualize growth stages, reinforcing learning through imagery (Treagust & Tsui, 2013). Hands-on representations, hands-on learning through experiments, manipulative objects and real- life experiences deepens preschool children's understanding of science concepts and activities. For instance, using a magnifying glass to observe leaves enables

preschool children to explore texture and patterns, fostering observational skills.

Digital and technological representations, digital resources such as educational apps, animations and interactive simulations support science learning by making abstract concepts more tangible. Research shows that digital tools enhance engagement and retention in early science education (Siraj-Blatchford & Whitebread, 2019). Symbolic representations, symbols, graphs and simplified equations introduce scientific relationships in a child-friendly manner. For example, using arrows to represent forces in a simple push-and-pull activity helps preschool children understand cause-and-effect relationships (Leuchter et al., 2014).

The main characteristics of multiple representations used in science teaching in early childhood science education include: Variety of modality, multiple representations involve different modalities, including visual (diagrams, pictures, & animations), verbal (oral explanations, storytelling) and kinesthetic (hands-on activities, role-playing) formats (Treagust & Tsui, 2013). This variety ensures that preschool children with different learning styles can grasp scientific ideas effectively. Complementary functions, each representation serves a unique role in enhancing preschool children's understanding of science concepts and activities. For example, a picture of a plant complements a real-life observation, reinforcing knowledge through different perspectives. The interplay of various representations strengthens conceptual clarity. Progressive complexity, effective multiple representations follow a structured progression from simple to complex. For instance, preschool children may first explore solid and liquid states of water through sensory play before being

introduced to pictorial diagrams of the water cycle. This stepwise approach fosters deeper comprehension. Interactivity and engagement, representations in early childhood science teaching should be interactive. Using hands-on activities like building simple models or manipulating objects enhances engagement and retention (Fleer, 2019). Digital tools, such as interactive simulations, further promote exploration.

Cognitive bridging, multiple representations help preschool children bridge the gap between abstract scientific ideas and their everyday experiences. For instance, using toy cars to demonstrate motion concepts allows preschool children to connect physics principles with familiar objects. This approach makes abstract content accessible. Support for inquiry-based learning, representations are effective when used in inquiry-based settings, where preschool children explore scientific questions and make discoveries. For example, drawing observations from a nature walk and comparing them with real photographs promotes scientific reasoning. Multisensory integration, preschool children learn best when multiple senses are engaged. Science representations in early childhood education should integrate visual, auditory and tactile elements to reinforce understanding (Mayer, 2013). For instance, a caregiver might combine a song about plant growth with actual planting activities. Adaptability and differentiation, multiple representations can be tailored to accommodate diverse learning needs. Caregivers can modify representations to suit preschool children with different cognitive abilities or language skills, ensuring inclusive science learning.

The strategies to improve caregivers' ability to use multiple representations in science teaching in early

childhood education include: Professional development programmes, regular workshops and training sessions on multiple representations can build caregivers' confidence and skills in science instruction (Siraj- Blatchford & Whitebread, 2019). Resource provision, providing preschools with teaching aids, digital tools and hands-on learning materials ensures that caregivers can implement multiple representation effectively

Collaborative learning, encouraging peer mentoring and lesson-sharing among caregivers fosters a supportive teaching environment where educators exchange ideas and best practices. Policy support, governments and educational institutions should integrate multiple representation training into early childhood teacher education programmes (Murphy et al., 2019).

Caregivers' ability to use multiple representations effectively influences preschool children's scientific understanding and engagement. When caregivers integrate verbal, visual and hands-on approaches, preschool children develop deeper conceptual knowledge (Trundle & Sackes, 2015). Despite the benefits, many caregivers face challenges in using multiple representations effectively, such challenges include: Limited training in science education (Murphy et al., 2019).; Lack of resources such as visual aids, laboratory materials and digital tools; Time constraints due to rigid curricula and administrative demands fear of science misconceptions affecting their confidence in teaching.

### **Theoretical Framework**

The use of multiple representations in science education is rooted in various educational theories:

Piaget's Cognitive Development Theory: Jean

Piaget's theory emphasizes that young children learn best through sensorimotor and preoperational experiences (Piaget, 1952) reprinted (2021). At this stage, children struggle with abstract reasoning but can understand concepts through hands-on experiences and visual representations. Multiple representations, such as using real objects, diagrams and interactive activities, align with Piaget's view that learning should progress from concrete to abstract. Caregivers use multiple representations such as real objects, visual aids, role play, storytelling, drawings and simple symbols to match children's developmental stage and support their understanding of scientific concepts. These representations help children, bridge the gap between concrete experiences and emerging symbolic thinking, allowing them to internalize and make sense of new information. By providing science content through varied formats, caregivers align with Piaget's principle that cognitive development is supported by active, sensory- rich and developmentally appropriate learning experiences.

Bruner's Modes of Representation (1966) reprinted (2020), identified three modes of representation, enactive (action-based), iconic (image-based) and symbolic (language- based). Effective science teaching incorporates all three modes, allowing children to manipulate objects (enactive), observe pictures or models (iconic) and describe their experiences (symbolic). In early childhood science education, caregivers use multiple representations that align with these modes to support concept development. Enactive: Children engage in hands-on experiments (e.g., mixing water and soil to observe mud), helping them learn through doing. Iconic: Caregivers use pictures, videos or diagrams

to represent scientific ideas visually, such as showing the stages of plant growth. Symbolic: Simple language, labels and songs are used to help children begin associating symbols with concepts (e.g., calling H<sub>2</sub>O "water"). By integrating these modes, caregivers scaffold learning in a way that matches children's developmental readiness, allowing them to move from concrete experiences to more abstract understanding.

Vygotsky's Sociocultural Theory: Vygotsky (1978) reprinted (2023) emphasized the role of social interaction and scaffolding in learning. Caregivers act as facilitators, using multiple representations to bridge the gap between what children already know and new scientific concepts. Tools such as storytelling, experiments and digital simulations provide the necessary scaffolds for children to construct scientific understanding. In early childhood science education, caregivers use multiple representations such as pictures, models, gestures, storytelling, real objects and digital tools, to scaffold children's understanding of scientific concepts. These varied representations serve as mediational tools that align with Vygotsky's view that learning is enhanced through the use of culturally and socially meaningful artifacts. By using multiple forms of representation, caregivers help children construct meaning within their Zone of Proximal Development (ZPD), gradually moving from assisted performance to independent understanding. For example, when teaching the concept of rain, a caregiver might combine a video (visual), a water cycle song (auditory), a drawing activity (kinesthetic) and a hands-on experiment. This approach not only supports diverse learning styles but also reflects Vygotsky's emphasis on interactive, tool-mediated learning grounded in social and

cultural contexts.

### **Statement of the Problem**

Traditional methods of teaching science concepts and activities in early childhood education are not adequate to meet the needs of the considerably expanded early childhood science education curriculum and to satisfy scientifically-aware groups of preschool children. This has led to the decline in the scientific knowledge and its application to the real life situations and children moving away from science classes to arts or commercial classes when they get to secondary school level, because of poor science background resulting from the ineffectiveness in teaching of science concepts and activities in early childhood education, which is the foundation of their science learning and education in general. It is against this backdrop that this study seeks to investigate caregivers' knowledge of multiple representations in teaching science concepts and activities in early childhood education.

### **Research Questions**

1. How do teaching with multiple representations influence caregivers' Content Knowledge (CK) of science concepts and activities in early childhood education?
2. How do teaching with multiple representations influence caregivers' method of teaching science concepts and activities in early childhood education?
3. How do teaching with multiple representations influence caregivers' Pedagogical Content Knowledge (PCK) of in early childhood education?

### **Hypotheses**

1. Teaching with multiple representations have no influence on caregivers' Content Knowledge (CK) of science concepts and activities in early childhood education.

2. Teaching with multiple representations have no influence on caregivers' method of teaching science concepts and activities in early childhood education.

3. Teaching with multiple representations have no influence on caregivers' Pedagogical Content Knowledge (PCK) of science concepts early childhood education. The questionnaire is made up of three (3) sections; each section and activities in early childhood education.

### **Methodology**

This study adopts a descriptive survey research design, which is suitable for investigating caregivers' knowledge of multiple representations in teaching science concepts and activities in early childhood education. The design allows for data collection from a large population, providing insights into existing trends, challenges and opportunities in early childhood education. Population of the study consists of caregivers working in public preschools in Ojo Local Government Area of Lagos State. These caregivers are responsible for implementing science-related activities in early childhood education settings and play a key role in shaping preschool children's scientific understanding. A simple random science concepts and activities sampling technique was used. A sample size of 100 respondents (100 caregivers) were selected to provide a balanced and

comprehensive analysis. Both primary and secondary data were collected. Self Structured questionnaires were administered to respondents (caregivers) to assess their knowledge, perceptions and experiences regarding the use of multiple representations in teaching science in contains five items, making a total of 15 items in all. The questionnaire used Four (4) points Likert response scale of Strongly Agreed (SA), Agreed (A), Disagreed (D) and Strongly Disagreed (SD).

Relevant curriculum documents, textbooks and policy reports were reviewed to determine how multiple representations is been implemented in early childhood science education. Quantitative data from questionnaires were analyzed using Chi-square. The research instrument is validated by early childhood education experts and science education specialists to ensure content validity. A pilot study was conducted with 20 data collection. caregivers outside the main study area to test for clarity, consistency and reliability using the Cronbach's alpha reliability coefficient ( $\alpha \geq 0.7$ ). Pearson product moment correlation was used to test for the reliability of the instrument which gave a reliability index of 0.79 that was used to consider the instrument reliable for the study. Ethical approval was sought from relevant educational institutions.

### **Analysis of Hypothesis 1**

Participants' confidentiality and anonymity is maintained and informed consent is obtained before

**Data Presentation and Analysis**

**Table 1: Multiple Representations and Caregivers' Content Knowledge of Teaching Science Concepts and Activities**

Options	Responses	X <sup>2</sup> cal	X <sup>2</sup> tab	Df	Sig. Level	Remark	Decision
SA	82						
A	90						
D	59						
SD	19	51.64	21.03	12	0.05	X <sup>2</sup> cal > X <sup>2</sup> tab	Reject Null Hypothesis
<b>Total</b>	<b>250</b>						

Source: Field survey, 2025

Table 1 above revealed that the computed value of chi-square or chi-square calculated (X<sup>2</sup> cal) is 51.64, at 0.05 level of significance (that is p = 0.05), the critical value of chi- square tabulated X<sup>2</sup> tab, (X<sup>2</sup> cal 51.64 > X<sup>2</sup> tab 21.03). Based on decision rule, the square or chi-square tabulated (X<sup>2</sup> tab) is 21.03. The computed value of chi-square or chi- square calculated (X<sup>2</sup> cal) is greater than the corresponding critical value of

chi-square or chi- null hypothesis which states that teaching with multiple representations have no influence on caregivers' Content Knowledge (CK) of science concepts and activities in early childhood education, is rejected; therefore, this means that teaching with multiple representations influences caregivers' Content Knowledge (CK) of science concepts and activities in early childhood education

**Analysis of Hypothesis 2**

**Table 2: Multiple Representations and Caregivers' method of Teaching of Science Concepts and Activities**

Options	Responses	X <sup>2</sup> cal	X <sup>2</sup> tab	Df	Sig. Level	Remark	Decision
SA	69						
A	80						
D	72						
SD	29	50.24	21.03	12	0.05	X <sup>2</sup> cal > X <sup>2</sup> tab	Reject Null Hypothesis
<b>Total</b>	<b>250</b>						

Source: Field survey, 2025

Table 2 above revealed that the computed value of chi-square or chi-square calculated (X<sup>2</sup> cal) is 50.24, at 0.05 level of significance (that is p = 0.05), the critical value of chi- square or chi-square tabulated (X<sup>2</sup> tab) is 21.03. Therefore, the computed value of chi- square or chi-square calculated (X<sup>2</sup> cal) is greater than the corresponding critical value of chi- square or chi-square tabulated X<sup>2</sup> tab, (X<sup>2</sup> cal 50.24 > X<sup>2</sup> tab 21.03).

Based on Hypothesis decision rule, the null hypothesis which states that teaching with multiple representations have no influence on caregivers' method of teaching science concepts and activities in early childhood education, is rejected; therefore, this means that teaching with multiple representations influences education. caregivers' method of teaching science concepts and activities in early childhood

**Table 3: Multiple Representations and Caregiver’s Pedagogical Content Knowledge of Teaching Science Concepts and Activities**

Options	Responses	X <sup>2</sup> cal	X <sup>2</sup> tab	Df	Sig. Level	Remark	Decision
SA	89						
A	80						
D	41						
SD	40	52.25	21.03	12	0.05	X <sup>2</sup> cal > X <sup>2</sup> tab	Reject Null Hypothesis
<b>Total</b>	<b>250</b>						

Source: Field survey, 2025

Table 3 above revealed that the computed value of chi-square or chi-square calculated (X<sup>2</sup> cal) is 52.25, at 0.05 level of significance (that is p = 0.05), the critical value of chi-square or chi-square tabulated (X<sup>2</sup> tab) is 21.03. The computed value of chi-square or chi-square calculated (X<sup>2</sup> cal) is greater than the corresponding critical value of chi-square or chi-square tabulated X<sup>2</sup> tab, (X<sup>2</sup> cal 52.25 X<sup>2</sup> tab 21.03). Based on decision rule, the null hypothesis which states that teaching with multiple representations have no influence on caregivers’ Pedagogical Content Knowledge (PCK) of science concepts and activities in early childhood education, is rejected; therefore, this means that teaching with multiple representations influences caregivers’ Pedagogical Content Knowledge (PCK) of science concepts and activities in early childhood education.

**Discussion of Findings**

The result obtained in the analysis of hypothesis one revealed that the null hypothesis which states that teaching with multiple representations have no influence on caregivers’ Content Knowledge (CK) of science concepts and activities in early childhood education, is rejected; therefore, teaching with multiple representations influences caregivers’ Content Knowledge (CK) of science concepts and activities in early childhood

education. As the caregivers continue to teach science concepts and activities in early childhood education using multiple representations, they are disposed to learning new things, new ways of manipulating the representations for easy usage, new ways of introducing the representations to preschool children for easy understanding of the science concepts and activities. Regular use of multiple representations by caregivers in teaching science concepts and activities is a replica of regular training, which place enhance their self-development and build their confidence and skills, until they become perfect in the use of multiple representations and in teaching science concepts and activities in early childhood education. This is consistent with Siraj-Blatchford & Whitebread, (2019) as they affirm that regular workshops, training and usage of multiple representations can build caregivers' confidence and skills in science instruction (Siraj-Blatchford & Whitebread, 2019).

To clearly align this with research question one, teaching with multiple representations significantly influences caregivers’ content knowledge of science concepts and activities in early childhood education by fostering deeper conceptual understanding which help caregivers visualize and internalize abstract scientific ideas and aid in highlighting different aspects of a

concept, making the understanding of science more robust and integrated. It supports active learning and reflection, when caregivers engage with varied representations, they are more likely to reflect on their own understanding of science concepts and science activities. This process leads to a deeper reconstruction of knowledge, as highlighted by Kress et al. (2015), who noted that multimodal teaching encourages educators to actively engage with and reinterpret scientific phenomena in meaningful ways.

In facilitating cognitive flexibility and knowledge transfer, multiple modes of representation allow caregivers to see the same concept in different ways, which improves their ability to transfer knowledge across contexts. As noted by Treagust, Duit, and Fischer (2017), this leads to better instructional decisions and adaptability when teaching diverse learners. In increasing confidence and engagement, caregivers who teach with multimodal approaches report increased confidence in teaching science. Fleer (2020) explains that representational tools, such as play-based models and digital media, help early childhood educators make science approachable, thereby enhancing their engagement and confidence.

The result obtained in the analysis of hypothesis two revealed that the null hypothesis which states that teaching with multiple representations does not enhance caregivers' method of teaching of science concepts and activities in early childhood education, is rejected; while the alternative hypothesis which states that teaching with multiple representations enhance caregivers' method of teaching science concepts and activities in early childhood education, is

accepted. This means that teaching with multiple representations builds caregivers' skills, confidence and know-how on the use of the representations, as affirm by Blatchford & Whitebread, (2019). Therefore, if their skills in the usage and manipulation of the representation are improved, definitely, their methods of teaching science concepts and activities will be improved and keep improving as they continue in teaching with the representations.

To clearly align this with research question two, teaching with multiple representations influences caregivers' methods of teaching science concepts and activities in early childhood education by promoting flexible, child-centered and conceptually rich pedagogical approaches; encourages inquiry-based and play-oriented methods, where caregivers design activities that allow preschool children to explore scientific ideas through various modes. Fleer (2020) explains that when caregivers use visual, tactile and digital tools together, they shift from rote instruction to play-based and inquiry-driven strategies that reflect how preschool children naturally learn. In supporting differentiation and inclusive teaching, using multiple representations enables caregivers to adapt science instruction to diverse learning styles and developmental needs of preschool children.

According to Prain and Tytler (2022), this approach empowers caregivers to design multimodal learning environments that accommodate linguistic, cognitive and sensory differences among preschool children. In enhances caregivers' instructional flexibility, teaching science through varied representations trains caregivers to be more responsive and creative. Studies by Tang, Delgado and Moje

(2020) show that caregivers who integrate multiple modes of communication (e.g., modeling with gestures and visual aids) tend to scaffold preschool children's learning more effectively, adapting instruction based on children's reactions and understanding. In strengthens conceptual integration in teaching practice, caregivers who employ multiple representations tend to interconnect science content across activities. Ainsworth and Van Labeke (2017) emphasize that multiple representations use supports conceptual cohesion, leading caregivers to design lessons that unify phenomena like plant growth or states of matter using storytelling, drawing, physical manipulation and explanation. These studies confirm that multiple representations not only improve content delivery but also transform caregivers' teaching methods into more engaging, inclusive and effective science instruction in early childhood education.

The result obtained from the analysis of hypothesis three revealed that the null hypothesis which states that teaching with multiple representations does not enhance preschool children's understanding of science concepts and activities in early childhood education, is rejected; while the alternative hypothesis which states that teaching with multiple representations enhance preschool children's understanding of science concepts and activities in early childhood education, is accepted. This means that teaching with multiple representations really improves preschool children's understanding of science concepts and activities in early childhood education and also enhance their engagement and participation in early childhood science classes. This agrees with Flear (2019) that using hands-on

activities like building simple models or manipulating objects while using multiple representations enhances preschool children's engagement and retention (Flear, 2019) and digital tools, such as interactive simulations, further promote exploration. He also affirm that hands-on learning through experiments, manipulative objects and real- life experiences deepens preschool children's understanding of science concepts and activities. For instance, using a magnifying glass to observe leaves enables preschool children to explore texture and patterns, fostering observational skills (Flear, 2020). Furthermore, Leuchter et al., (2014) affirms that symbols, graphs and simplified equations introduce scientific relationships in a child- friendly manner. For example, using arrows to represent forces in a simple push-and-pull activity helps preschool children understand cause-and-effect relationships. All these affirmations by various authorities shows that teaching with multiple representations enhance preschool children's understanding of science concepts and activities in early childhood education.

To clearly align this with research question three, teaching with multiple representations influences caregivers' pedagogical content knowledge of science concepts and activities in early childhood education by improving their ability to connect content knowledge with developmentally appropriate teaching strategies. This strengthens integration of content and pedagogy, multiple representations help caregivers understand science concepts deeply and translate them into accessible forms for preschool children. According to Prain and Tytler (2022),

constructing and using varied representations encourages educators to think critically about how and why children learn, fostering strong pedagogical content knowledge that aligns content with instructional strategies. To improve explanation and communication skills, using multiple representations requires caregivers to explain science concepts in different ways, verbally, visually and physically, which expands their understanding and refines their teaching practice. Tang, Delgado and Moje (2020) found that this multimodal engagement enhances caregivers' ability to tailor explanations to preschool children's cognitive levels, a key feature of pedagogical content knowledge.

In encouraging reflection and instructional decision-making, multiple representation encourages caregivers to reflect on preschool children's learning needs and their own instructional decisions. Fleer (2020) notes that when caregivers use tools like role play, diagrams and physical models in science teaching in early childhood education, they develop better insight into how preschool children understand scientific ideas, thus refining their pedagogical strategies. In building capacity for scaffolding and differentiation, Caregivers with strong pedagogical content knowledge can scaffold science learning more effectively. Ainsworth and Van Labeke (2017) argue that working with multiple representations enhances caregivers' ability to anticipate misconceptions, adjust tasks and select appropriate representational tools for varied learners. These studies affirm that multiple representation is not just a teaching strategy, it is a developmental tool that directly strengthens caregivers' pedagogical content knowledge for

science instruction in early childhood education.

### **Conclusion**

Caregivers' knowledge of multiple representations is essential for effective early childhood science education. Integrating verbal, visual, symbolic and hands-on representations, help caregivers enhance preschool children's scientific understanding. Challenges such as limited training, lack of resources and time constraints hinder the effective use of multiple representations. Strengthening caregivers' professional development, providing teaching resources and fostering collaborative learning can improve science teaching in early childhood education. Future research should explore longitudinal studies on caregivers' professional development in multiple representations to assess its long-term impact on early science education.

### **Recommendations for Policy and Practice**

Based on the findings of this study, the following policy and practice recommendations are proposed to improve caregivers' knowledge and use of multiple representations in teaching science concepts and activities in early childhood education.

1. In integration of multiple representations in early childhood education policy, the National Association for Education of Young Children (NAEYC) policies should emphasize the use of multiple representations in teaching science concepts and activities in early childhood education. Besides, national education policies should ensure that multiple representation techniques are inclusive for children with special needs (e.g., using tactile models for visually impaired children, sign language for hearing-

impaired children and simplified visuals for children with learning disabilities). Policies should support public-private partnerships to provide low-cost or free access to digital educational tools that promote multiple representations in science teaching, in early childhood education.

2. Governments should mandate continuous professional development (CPD) training programmes for caregivers that focus on using visual, verbal, gestural and interactive methods to teach science concepts and activities effectively, to enable caregivers update their skills periodically. Ministries of education should underpin professional development programmes for caregivers on multiple representations in science teaching in early childhood education. Governments should also increase funding for early childhood science education to provide caregivers with teaching materials such as models, charts, interactive tools and digital resources.

3. Training of caregivers should be included in early childhood education certification programmes, ensuring that all caregivers understand and apply multiple representations in teaching science concepts and activities, to preschool children. Preschools and early childhood education centers should be supported with grants to purchase science kits, microscopes, magnifying glasses and child-friendly lab equipment for practical learning.

4. To develop science-enriched early childhood curriculum, government should revise national curricula to include structured guidelines on multiple representations for teaching science to preschool children. Curriculum frameworks should specify the use of visual models, hands-on experiments, storytelling and play-based learning to teach science concepts and activities in early childhood education. Science learning in early childhood should be age-appropriate, exploratory and connected to real-life experiences to make concepts more relatable.

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**Traditional Medicine for Community Health Improvements among Academic Staff in Niger State, Nigeria**

By

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**Abstract**

The study was on traditional medicine for community health improvements among academic Staff of Tertiary Institutions in Niger State, Nigeria. The objective of the study was to assess the impact of Traditional Medicine for community health improvements among academic staff of tertiary institutions in Niger State. The study employed survey research design with the population of 4,304, comprising of 4,104 academic staff of tertiary institutions, and 200 Officials of TM Association. The sample size for the study was 302, comprising of 287 academic staff of tertiary institutions and 15 Officials of TMA in Niger State. The study employed multi-stage sampling techniques. Questionnaire and interview schedule. The two instruments were validated by four experts and pilot tested, the reliability co-efficient value obtained was 0.81, while the interview was subjected to trustworthiness test. The data from the questionnaire were analyzed using mean and standard deviation. The interview results were transcribed thematically. The study conclude that TM plays a crucial role in the community health management of academic staff in Niger State, offering an accessible, cost-effective, and culturally significant alternative to conventional healthcare. The findings of the study revealed the impact of traditional medicine for community health improvements in Niger State to include the effectiveness of the TM in curing diseases, more accessibility, it affordability in managing health related challenges, its low cost in managing health related issues, and low toxicity in terms of utilization. It was recommended that Government should allocate resources for research on the effectiveness of traditional medicine, particularly its impact on specific diseases prevalent in the community

**Keywords:** *Academic Staff, Community Health, Improvements, Traditional Medicine*

**Introduction**

Traditional medicine (TM), also known as ethno-medicine, folk medicine, native healing, or complementary and alternative Medicine (CAM), is the oldest form of health care system that has stood the test of time. It is an ancient and culture-bound method of curing that humans have used to cope and deal with various diseases that have threatened their existence and survival. Hence, TM is broad and diverse. Consequently, different societies have evolved different forms of indigenous healing methods that are captured under the broad concept of TM, like the Chinese, Indian and African traditional medicines.

Traditional medicine (TM) has played a significant role in global healthcare systems, particularly in developing nations where access to modern healthcare is limited. Globally, the Beijing Declaration on Traditional Medicine (2008) reaffirmed the importance of T&CM, urging member states to recognize its role in healthcare delivery and support its integration into health systems (WHO, 2008). Similarly, the United Nations Sustainable Development Goal (SDG) 3, which aims to ensure healthy lives and promote well-being for all at all

ages, emphasizes the importance of utilizing all available resources, including TM, to achieve health-related targets (United Nations, 2015). Azaizeh, Fulder, Khahl, and Said, (2003) reported that about 80% of the world population depends on traditional medicine for their health care.

The potential contribution of traditional medicine knowledge to locally managed, sustainable and cost-effective survival strategies should be promoted in the development process. In recognition of the vast potential of traditional medicine and its immense contribution to the continent's sustainable development in the wealth and well-being of her people, poverty alleviation, wealth and job creation, the African Union declared the period of 2001- 2010 as the decade for African Traditional Medicine with a directive that research on African traditional medicine be made a priority.

In Nigeria, TM has a long history, deeply rooted in the cultural and spiritual beliefs of its people. Despite the widespread availability of modern healthcare services, many Nigerians, including highly educated individuals, continue to patronize traditional medicine due to its perceived affordability, accessibility, and cultural relevance (Adesina, 2020).

Niger State, located in the north- central region of Nigeria, is a microcosm of the country's diverse cultural and healthcare landscape.

The state is home to various ethnic groups, each with distinct traditional medical practices. Studies have highlighted factors such as affordability, proximity, trust in traditional practitioners, and dissatisfaction with orthodox healthcare as key drivers of TM utilization in Nigeria (Ozioma & Chinwe, 2019).

In Niger State, traditional medicine is the major source of health management particularly among the rural people in spite of the growth of religious enlightenment and western civilization in the areas of modern technology and orthodox medicine. For many people in Niger State including the educated individuals, who facilitate learning for the Purpose of creating awareness among people in the communities, traditional medicine is the mainly available, accessible and affordable source of health care.

In Nigeria, the patronage of TM among academic staff in tertiary institutions presents a unique perspective. Academic staff, often regarded as the custodians of knowledge and rationality, may choose TM for various reasons. This trend has implications for community health improvement, as the acceptance of TM by such influential groups could shape broader societal attitudes toward traditional medicine.

However, their engagement with TM reflects the enduring influence of cultural and traditional practices in health-seeking behaviors, even among highly educated populations (Ezeome & Anarado, 2016). This phenomenon raises questions about the factors driving the patronage of TM and its perceived role in community health improvements. For academic staff in tertiary institutions, the use of TM may also reflect a dual allegiance to modern scientific principles and indigenous cultural values.

This duality underscores the need for understanding of the factors influencing TM patronage among this group. Moreover, examining the impact of TM on community health improvements can provide valuable insights into its potential role in achieving universal health coverage and addressing health inequities in Nigeria (WHO, 2019).

This, if properly addressed, will throw more light to the communities in understanding the potential of traditional medicine and its contributions to health improvement in general. This study thus; examined the impact of traditional medicine for community health improvement among academic Staff of Tertiary Institutions in Niger.

### **Statement of the Problem**

The patronage of traditional medicine remains a significant aspect of healthcare practices in many African societies, including Nigeria. Traditional medicine, encompassing herbal remedies, spiritual healing, and indigenous practices, has been a longstanding pillar of healthcare delivery, particularly in areas where access to modern medical services is limited or inadequate (WHO, 2021).

Despite advancements in biomedicine, many individuals continue to rely on traditional medicine due to cultural beliefs, affordability, accessibility, and perceived effectiveness (Omoniyi & Adeleke, 2020). Specifically, in Nigeria, Owumi and Taiwo (2012) averred that the Nigerian Primary Health Care is catering for less than 20% of potential patients, while traditional medicine caters for between 70 and 80 percent of various categories

of Nigerians for the prevention, diagnosis and treatment of social, mental and physical ailments. In Niger State, despite the provision of modern healthcare delivery services in the communities, people still patronize traditional services for their personal, family and community well-being. In Niger State, Nigeria, tertiary institutions house a unique group of individuals who are not only highly educated but also influential in shaping public opinion and behaviour. The academic staff often faces unique health challenges due to their work demands, stress, and lifestyle choices. However, their patronage of traditional medicine, whether as a complement to or substitute for modern healthcare, remains underexplored. Understanding this phenomenon is critical, given its potential implications for community health improvements, the integration of traditional medicine into formal healthcare systems, and the achievement of broader public health goals. The problem, therefore, lies in the need to assess the impact of such practices on community health improvements

### **Research Question**

The following research question guided the study:

1. What is the impact of traditional medicine for community health improvements among academic staff of tertiary institutions in Niger State, Nigeria?

### **Theoretical Framework**

This study employed Health Belief Model developed by Rosenstock in 1950 as its theoretical framework. The HBM was developed initially in the 1950s by social psychologists in the U.S. The HBM suggests that a person's belief in a personal threat of an illness or disease together with a person's belief in the effectiveness of the recommended health behavior or action will predict the likelihood the person will adopt the behavior.

## **Literature Review**

### **Theoretical Framework**

This study employed Health Belief Model developed by Rosenstock in 1950 as its theoretical framework. The HBM was developed initially in the 1950s by social psychologists in the U.S. The HBM suggests that a person's belief in a personal threat of an illness or disease together with a person's belief in the effectiveness of the recommended health behavior or action will predict the likelihood the person will adopt the behavior. The HBM derives from psychological and behavioral theory with the foundation that the two components of health-related behavior are: The desire to avoid illness, or conversely get well if already ill; and,

- 1) The belief that a specific health action will prevent, or cure, illness. The Health Belief Model is relevant to the current study based on the fact that the components and constructs of the model relatively emphasize on the utilization of particular action or treatment to prevent or cure an illness. This in line with the concept under study which is concerned with the utilization of particular health action (TM), to avoid or prevent illness, or at the same time cure the illness.

### **Concept of Traditional Medicine**

Traditional medicine refers to the traditional medical practices rooted in the cultural heritage and indigenous knowledge of a community. These practices often include the use of herbal remedies, spiritual healing, and culturally specific health rituals (World Health Organization 2013). Traditional medicine refers to the sum total of knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement, or treatment

of physical and mental illness (Oguntade, 2011). Concept of Community Health

**Community health** refers to the field of public health focusing on improving the health and well-being of individuals within a specific geographic area, emphasizing prevention, health promotion, and equitable access to evidence-based practices (Kindig & Stoddart, 2003). Community health improvement involves efforts to enhance the well-being of populations through coordinated interventions targeting health determinants, disease prevention, healthcare services (Turnock, 2016). It is a multidisciplinary field encompassing social, economic, and environmental determinants of health. McKenzie, Pinger, and Kotecki (2005) define community health as the health outcomes of a group of individuals, including the distribution of such outcomes awithin the group, and the social, economic, and environmental factors that influence these outcomes.

### **Concept of Community Health Improvements**

Community health improvement refers to a collective approach to enhancing the health and well-being of individuals within a defined community. It involves identifying and addressing social determinants of health (SDOH), improving access to care, and fostering collaborative interventions (Frieden, 2010). The main goals include reducing disease prevalence, improving health literacy, and promoting preventive healthcare measures. Effective community health strategies rely on multi-sectoral partnerships, community engagement, and and access to healthcare services. In Nigeria, several studies have explored the frameworks, challenges, and opportunities for improving community health.

### **Effectiveness of Traditional Medicine for Community Health Improvements**

The impact and effectiveness of traditional medicine for community health improvement In Nigeria can be examined in several ways:

## **Effectiveness of Traditional Medicine for Community Health Improvements**

The impact and effectiveness of traditional medicine for community health improvement In Nigeria can be examined in several ways: accessibility, cost-effectiveness, and cultural relevance.

**1. Accessibility and Availability** Traditional medicine is often more accessible than modern healthcare, particularly in rural areas where there is a shortage of healthcare professionals and facilities. Herbal medicine, traditional healing practices, and spiritual healing are widely available and practiced in these regions. Since many Nigerians still live in remote areas with inadequate transportation infrastructure, the proximity of traditional healers to the community makes it easier for individuals to receive treatment for common ailments (Ekop, 2019).

### **2. Cost-Effectiveness**

Traditional medicine is often more affordable than conventional healthcare, which can be expensive for many Nigerians, especially those living in poverty. While formal healthcare services may involve out-of-pocket payments for consultations, diagnosis, and treatments, ensuring that people are more likely to seek help from traditional healers rather than formal healthcare settings (Ekop, 2019).

### **Methodology**

Treatment, traditional medicine usually involves minimal costs for herbal remedies or spiritual consultations (Okafor et al., 2020). This cost-effectiveness has made traditional medicine an essential healthcare option for millions of Nigerians who cannot afford modern healthcare services.

### **1. Cultural Relevance and Trust**

One of the primary reasons for the continued use of traditional medicine is its deep connection to the cultural practices and beliefs of many Nigerian communities. Indigenous healers, often respected community members, are trusted figures who understand the socio-cultural dynamics of their

patients. The use of traditional medicine is not only seen as a medical treatment but also as a spiritual and cultural experience that aligns with the patient's worldview and belief system (Okafor et al., 2020). This cultural relevance fosters trust and adherence to. Descriptive survey research design was employed for this study. The population for the study was four thousand, three hundred and four (4,304), comprised four thousand, one hundred and four (4,104) academic staff of tertiary institutions in Niger State, and two hundred (200) officials of TM.

The sample size for the study was 302, comprising of 15 officials of TCMA, and 287 academic staff of tertiary institutions in Niger State. The study employed multi-stage sampling technique involving simple random sampling, area or cluster sampling, proportionate sampling and purposive sampling techniques.

Two instruments were used for this study, this included the questionnaire for the academic staff of tertiary institutions, while interview was used for the officials of traditional medicine association. The instruments were administered to the **N=282** respondents by the researcher with the help of trained research assistants. Five (5) mortality from the administered questionnaire were experienced. The data collected were analyzed using descriptive statistics. Frequency count and simple percentage were used for demographic aspect of the respondents while mean and standard deviation were used for the research questions with the criterion mean of 2.50.

However, the results of the interview were transcribed verbatim. In the process, themes and sub-themes were also developed and analysed. Furthermore, the respondents who were 15 selected officials of traditional medicine associations were coded as P1, P2, up to P15 for identification and ease of reference purposes.

**Results**

The results are presented as follows:

**Table 1:** Responses on the impact of traditional medicine for community health improvements N=282

S/N	Impact of Patronage	SA		A		D		SD		X̄	SD	Rank	Decision
		F	%	F	%	F	%	F	%				
1	Patronage of TM ensures effective cure of diseases	108	38.30	101	35.81	54	19.15	23	6.74	2.96	.837	4	Accepted
2	Patronage of TM impacts on health improvement as it guarantees easy access of family members	111	39.36	99	35.11	54	19.15	18	6.38	2.98	.806	3	Accepted
3	Patronage of TM improved overall health of community members	180	63.83	79	28.02	18	6.38	5	1.77	3.67	.691	1	Accepted
4	TM is easily identified and self-healing	152	53.90	90	31.91	32	11.34	8	2.84	3.43	.703	2	Accepted
5	Patronage of TM is low cost/cost saving and makes it affordable for community members	102	36.17	100	5.46	53	8.79	27	9.58	2.87	1.313	6	Accepted
6	Patronage of TM ensures low toxicity and less side effect	98	34.75	108	38.30	47	16.67	29	10.28	2.92	.772	5	Accepted

Table 1 indicated that mean scores for the entire items (1, 2, 3, 4, 5 and 6) in the table are above 2.50 which is the criterion mean set up for acceptance or rejection of item for this study. This indicated that the respondents agreed with the statement that TM is effective for treatment of different types of diseases with mean score of 2.96, accessibility of TM with 2.98, acceptability of TM with mean score of 3.67. The table further revealed that affordability of TM had the mean of 3.43, low cost/cost saving with mean score of 2.87, and low toxicity of TM had the mean score of 2.92. The analysis of the results further indicated that the respondents agreed with all the items in the table.

It can be discerned from the table that the impact of traditional medicine for community health improvements among academic staff of tertiary institutions in Niger State include the

effectiveness of the TCM in curing diseases, more accessibility, its acceptability for health management, its affordability in managing health related challenges, its low cost/cost saving in managing health related issues, and low toxicity in terms of utilization.

**Transcription and Analysis of the Results of Interview**

**Theme:** Impacts of traditional medicine on community health improvements in Niger State. This refer to the contributions made by the traditional medicine in terms of its usage to avoid illnesses, prevention from been contacted with illnesses or been cured if one is already ill, all for health improvements.

Effectiveness of the TM in curing diseases, more accessibility by community members for health management is the key impact **P4**, no need for the patient to suffer much before having contact with traditional healers,

likewise the hospital which involves a lot of stress. Either academic staff or not we give equal treatment.

**P13:** It is affordable in managing health related challenges, its cost low compare to the orthodox. With little amount of money, a patient can be treated in which the remaining money can be used for many other purposes.

**P6:** Traditional medicine has low toxicity in terms of utilization. It doesn't have much side effect the users. Despite the fact that some of the traditional medicines are not having permanent measuring tool, it is safer and less harmful. In short it has helped many in the community in curing many illnesses.

The expression by the respondents proved that traditional medicine has contributed much to the well-being of the entire community due to its affordability, low cost, low toxicity among others.

### **Summary of Findings**

The finding of study revealed that:

That the impact of traditional medicine for community health improvements among academic staff of tertiary institutions in Niger State include the effectiveness of the TM in curing diseases, more accessibility, its acceptability for health management, its affordability in managing health related challenges, its low cost/cost saving in managing health related issues, and low toxicity in terms of utilization. The finding of the interview was in line with that of the questionnaire.

### **Discussion of Findings**

The impact of traditional medicine on community health improvements among academic staff of tertiary institutions in Niger State

This study is on the patronage of traditional medicine and its role in community health improvement among academic staff of tertiary institutions in Niger State, Nigeria, highlights several important findings. The academic staff utilizes a wide variety of traditional medicines which is seen to have a positive impact on community health by being more accessible, affordable, and effective in managing various health challenges, with minimal toxicity compared to conventional treatments. Traditional medicine plays include the effectiveness of the TM in curing diseases, more accessibility, its acceptability for health management, its affordability in managing health related challenges, its low cost/cost saving in managing health related issues, and low toxicity in terms of utilization. These were also revealed by the officials of TM during the interview as the impacts of TM. This finding was at high agreement with the opinion of World Health Organisation (2003), which reported that they are detested by orthodox medical practitioners for their lack of standardization of the dosage regimen, unwanted side effects that arise from the varied nature of combined elements, injuries resulting from mechanical procedure of treatment and increased diagnostic and treatment failures that follow poor training of most providers.

### **Conclusion**

A crucial role in the community health management of academic staff in Niger State, offering an accessible, cost-effective, and culturally significant alternative to conventional healthcare. However, its potential could be maximized if supported by research, government recognition, and integration into formal healthcare systems. Addressing the identified challenges will be key to enhancing the contributions of traditional medicine to community health improvement.

### **Recommendations**

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

1. Niger State Government and other policy makers should allocate resources for research on the effectiveness of traditional medicine, particularly its impact on specific diseases prevalent in the community. This research can strengthen the credibility of traditional medicine and provide evidence for its use in mainstream healthcare.
2. Niger state government should as a matter of urgency use awareness as an instrument for sensitizing the community members to adopt the use of traditional medicine as it has low toxicity in terms of utilization.

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## **Education, Learning and Active Ageing in Nigeria: Implication for Work and Life**

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### **Abstract**

Education, learning, and active ageing are crucial elements for fostering sustainable development and improving the quality of life, particularly in the context of Nigeria, where socio-economic challenges and demographic shifts are becoming increasingly prominent. As the country grapples with a growing elderly population, there is a pressing need to reimagine educational strategies and learning opportunities that cater not only to the youth but also to older adults. This paper examined the intersection of education, lifelong learning, and active ageing in Nigeria, emphasizing the competencies required for both work and life. It also examines the role of inclusive education systems, vocational training, and community-based learning initiatives that empower older adults to remain productive and engaged members of society. By focusing on the development of skills, adaptability, and resilience, this paper advocates for policies that promote continuous learning throughout the life cycle, providing older Nigerians with the tools to navigate modern work environments and social participation. Ultimately, the integration of lifelong learning and active ageing strategies can contribute to enhancing the well-being of older individuals, fostering intergenerational solidarity, and driving socio-economic growth in Nigeria

**Keywords:** *Lifelong learning, Active Ageing, Competences for Work Life*

### **Introduction**

As societies globally experience demographic shifts and populations age, the importance of education and learning in supporting active ageing has come to the forefront. The concept of active ageing, which involves enhancing quality of life and maintaining participation in work and social activities as one ages, necessitates the development of competences that support both personal and professional growth throughout the life course (World Health Organization, 2002). Education and lifelong learning are fundamental pillars for fostering active ageing, particularly in a country like Nigeria, where there is a pressing need for the development of skills and competences to support older individuals in both professional and personal realms. The Nigerian population is younger than many developed countries, but as the country's older population grows, it is imperative to create opportunities that

enable these individuals to remain productive, socially engaged, and mentally active throughout their later years (National Population Commission, 2021). Education, lifelong learning, and active ageing are crucial elements in the development of individuals and societies, and they are particularly significant in Nigeria due to the country's demographic transition and socio-economic challenges. In Nigeria, where education and skill-building have been recognized as crucial elements of social and economic development, the competencies gained through education and learning are essential for older adults' continued contribution to the workforce and to their communities. These competencies are not only relevant for securing employment but also for maintaining personal well-being, social connectedness, and overall quality of life in older age.

The phenomenon of ageing has of recent been the focus of the international community, particularly regarding its economic, social, political, and scientific and human rights dimensions. Economic and social changes, urbanization, migration and technology in Nigeria have contributed greatly to the loss of capacities and the deprivations to which older persons are exposed. This has reduced the support which the family of older persons, especially their children and the community has been able to provide for them. The resultant effect of these changes leads to deprivation, social exclusion, and loneliness among the older persons in the country (National Policy on Ageing, 2020).’

This paper explores the interconnections between education, learning, and active ageing in Nigeria, focusing on the competences required for older adults to remain active in work and life. It examines the challenges and opportunities associated with promoting lifelong learning among Nigeria’s older population and discusses how education systems and policies can be adapted to support active ageing. Through a comprehensive understanding of the relationship between education, learning, and active ageing, this paper aims to highlight the importance of equipping older Nigerians with the tools needed to thrive in both professional and personal spheres as they age.

The Global pledge of the 2030 Agenda to ‘leave no one behind’, has given the world an unparalleled opportunity to promote inclusion of older people and population ageing in international as well as national development agenda. The sustainable development agenda 2030 and African Union agenda 2063 frameworks commit to the principles of people – centred, human rights and universality to ensure that access to opportunities and potentials of people of all ages are harnessed in an environment, where

people of all ages including older people receive their rights and entitlements related to health, social, economic, political and cultural spheres in order to ensure equality and prosperity of all (National Policy on Ageing, 2020).

The demand within the fundamental principles of global and regional resolutions; Agenda 2030, AU Agenda 2063, placed on African governments to adopt the right based and life-course approach to formulate innovative and sustainable framework of inclusion. The 2030 Sustainable Development Agenda and its envisioned inclusiveness with a pledge to live no one behind, offers a promise that every goal target and indicator should be held up with a human right lens and across the life course and the commitment of leadership to its implementation should be reflected in inclusive major groups and other stakeholders’ institutional engagement mechanisms.

WHO global strategies on Health and Ageing, the Protocol to the African Charter on Human and People’s Rights of Older persons and the Sustainable Development Goals (SDGs)-Agenda 2030, traditional myths and stereotypes about ageing and exclusion of older persons in development are challenged with a redefinition of ageing not as decline and burden but as living and social capital with a focus on healthy ageing and maintenance of functional capacity along the life course. Policy and services advancing health and income security through age bands to the continuing engagement of older persons as social force for development, in an age friendly communities become imperative. Other instruments which provide guide for responsive care of older persons globally include: UN Universal Declaration of Human Rights – 1948, African Charter of Human and People’s

Rights–1981, International Covenant on Civil and Political Rights (ICCPR) 1966, International Covenant on Economic, Social and Cultural Rights (ICESCR) 1966, UN Declaration on Rights to Development –1986, The Convention on Elimination of all Forms of Discrimination against Women (CEDAW) – 1979, The Convention against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment (CAT) – 1984, The International Labour Organization Conventions, UN Standard Rules on Equalization of Opportunities for Persons with Disabilities -1996 etc. These instruments lay credence to the effort in Nigeria for the development of a policy that would clearly articulate the issues pertaining to older persons in the country with specific objectives and strategic interventions to address them.

Nigeria is a signatory to a number of the global commitments and instruments which protects the rights and guide responsive inclusion and programming for older persons. The Constitution of the Federal Republic of Nigeria 1999, as amended provides protection for persons of all ages. Other legal instruments in the country that could be used to protect the rights of older persons are Violence against Persons Prohibition Act (VAPP) 2015 and the Discrimination against Persons with Disabilities Prohibition Act (2018). The National Policy on ageing (2020) is developed to address the special needs and harness opportunities in the increasing number of older persons in Nigeria. The policy is premised on the 1999 Constitution of the Federal Republic of Nigeria (as amended) which guarantees the rights of everyone in Nigeria.

### **Conceptual Clarifications**

#### **1. Education in Nigeria: An Overview**

Education in Nigeria is a fundamental tool for national development, and the government has

made significant strides in improving access to education. However, challenges remain, particularly in the face of socio-economic disparities and regional inequalities. The education system in Nigeria struggles with overcrowded classrooms, inadequate facilities, and a shortage of qualified teachers (Adeleye, & Oluwole, 2020). These issues are particularly felt in rural areas, where infrastructure and educational opportunities are limited.

In the context of older Nigerians, access to formal education is often hampered by systemic barriers such as age discrimination and limited resources. Many older adults in Nigeria did not have the opportunity to attend school during their youth due to historical, social, or economic factors. As a result, educational programs targeted at older populations are sparse, and older Nigerians often face challenges in acquiring new skills or improving existing ones.

#### **2. Lifelong Learning in Nigeria**

Lifelong learning is the continuous, voluntary pursuit of knowledge for personal or professional development. It encompasses formal, non-formal, and informal learning throughout an individual's life, and is critical to enabling older adults to adapt to the changing demands of the workplace and society. According to the European Commission (2018), lifelong learning can reduce the risk of social exclusion, promote well-being, and enhance the overall quality of life for older people.

Lifelong learning has become an essential element of contemporary education policy globally, including in Nigeria. This approach emphasizes the need for continuous education throughout an individual's life, not only to enhance employability but also to empower

individuals to participate actively in society. The Nigerian government has recognized the importance of lifelong learning, with policies such as the National Policy on Education (NPE), which advocates for adult education and continuous skill development (Federal Ministry of Education, 2013).

### **3. Active Ageing in Nigeria: An Overview**

Active ageing refers to the process of optimizing opportunities for health, participation, and security in order to enhance the quality of life as people age (World Health Organization [WHO],

2002). In Nigeria, active ageing faces significant barriers, including limited access to healthcare, age discrimination in employment, and a lack of social support for older people. The World Health Organization (2022) has highlighted that older adults in sub-Saharan Africa, including Nigeria, often experience marginalization and exclusion from various societal activities, despite the fact that many older adults continue to possess valuable skills and knowledge.

Several initiatives have been introduced to promote active ageing in Nigeria, such as the establishment of organizations focused on senior citizens' welfare and various social pension programmes. Educational and training programmes designed for older adults play a crucial role in promoting active ageing by helping individuals stay informed, acquire new skills, and maintain mental and physical health. These programmes aim to empower elderly people by providing them with the knowledge to make informed decisions about their health and lifestyles, as well as to enhance their sense of self-worth and independence.

Several programmes and services have been implemented in Nigeria to promote active ageing among older adults. These initiatives are generally

spearheaded by non- governmental organizations (NGOs), governmental agencies, and international organizations.

### **I. The National Senior Citizens Centre (NSCC)**

The National Senior Citizens Centre, established in 2017 by the Nigerian government, aims to ensure the well-being of senior citizens through various initiatives, including educational and training services. One of the Centre's core functions is to provide older adults with opportunities to acquire new skills, particularly in areas like technology and entrepreneurship. Through workshops and training sessions, the NSCC seeks to improve older people's financial independence and promote their participation in the digital economy (Alabi & Ijaluola, 2020).

### **II. Lifelong Learning Programmes**

Lifelong learning, which emphasizes the need for continuous education regardless of age, is another avenue through which Nigeria promotes active ageing. Universities and adult education centres offer courses tailored to older adults, covering subjects such as health management, personal development, and cultural enrichment. (Adebayo & Akinwale, 2021).

### **III. Community-Based Programmes**

Local governments and community organizations play a significant role in promoting active ageing through grassroots programmes. These programmes often focus on improving the physical health of older adults through activities like exercise classes, walking groups, and nutrition education. These community-based services also offer educational workshops on topics such as managing chronic diseases, maintaining a healthy diet, and preventing falls (Ayandokun et al., 2022).

#### **IV. NGO and Private Sector Contributions**

Non-governmental organizations (NGOs) and private sector entities also contribute to promoting active ageing in Nigeria.

Organizations like the Ageing With Grace Initiative and Help Age Nigeria provide educational and social services that support older adults in living active, dignified lives (Help Age Nigeria, 2019). These services include physical fitness programs, wellness checks, and skill-building workshops that allow older individuals to continue contributing meaningfully to society (Ogunleye, 2020).

#### **V. Vocational Training Programmes**

Vocational training programmes are offered to help older people remain economically active by teaching them new trade skills or enhancing existing ones. For example, initiatives have trained older Nigerians in crafts, tailoring, and agricultural practices that align with their physical capacity and economic opportunities (Olusanya, 2020).

#### **VI. Digital Literacy Programmes**

Another vital component of training for active ageing in Nigeria is digital literacy programs. With the rise of technology, older adults are often left behind in terms of accessing digital resources. Programs aimed at improving digital literacy, such as teaching older adults to use smartphones, computers, and navigate the internet, enable them to remain informed, socially connected, and even participate in online economic activities (Ige, 2021).

#### **Competences for Active Ageing**

To effectively participate in work and life as they age, individuals must acquire a wide range of competences. These competences include a range of skills, attitudes, and behaviors that promote health, personal development, and community

involvement in older age.

#### **1. Health Literacy and Self-Care Competence**

Health literacy is an essential competence for active ageing. It encompasses the ability to access, understand, and use health-related information to make informed decisions about one's health. According to Nutbeam (2000), health literacy involves not only reading and understanding health information but also applying that knowledge to make effective decisions and engage in health-promoting behaviors. This competence is vital as individuals age because managing chronic conditions, understanding medication regimens, and making lifestyle choices that promote health are key to maintaining independence and quality of life.

Furthermore, self-care competence is crucial in active ageing. It includes the ability to manage one's own health through appropriate exercise, nutrition, mental health care, and stress management. Studies suggest that individuals who are competent in self-care experience improved health outcomes and are more likely to engage in preventive health behaviors (Bauer et al., 2014). Self-care competence supports physical well-being and reduces the burden on healthcare systems, contributing to more sustainable ageing.

#### **2. Lifelong Learning and Cognitive Competence**

Cognitive competence, which includes the ability to think critically, solve problems, and adapt to new information, is essential for active ageing. Lifelong learning plays a central role in maintaining cognitive competence as individual age. According to the European Commission (2012), engaging in continuous learning activities

helps older adults to stay mentally agile, adapt to changes, and remain competitive in the job market. Learning new skills, such as digital literacy, has been shown to support cognitive functioning and increase confidence among older adults (Czaja et al., 2006).

In addition, cognitive competence enables older adults to navigate the complexities of modern life, including digital technologies, social relationships, and community involvement. The ability to adapt to new technologies is particularly important in the context of an increasingly digital world, as those who remain tech-savvy are better positioned to remain active in society and the workforce.

### **3. Social Competence and Community Engagement**

Social competence is another key element of active ageing. It refers to the ability to interact effectively with others, build and maintain social relationships, and participate in community life. Research by the World Health Organization (2002) highlights the importance of social engagement in promoting mental and physical well-being in later life. Older adults who are socially active tend to experience less depression, anxiety, and isolation, while also enjoying a higher quality of life.

Community engagement fosters a sense of belonging and purpose. Older adults who contribute to society through volunteering, caregiving, or participating in social groups often report better mental health and greater life satisfaction (Berkman et al., 2000). In this regard, social competence supports the development of strong social networks and the ability to engage in meaningful activities that improve overall well-being.

### **4. Economic Competence and Financial Management**

Economic competence is critical for active ageing, as financial security is essential for maintaining independence and quality of life. As individuals age, they often face reduced income, limited employment opportunities, or the need to manage retirement savings. The ability to manage personal finances, make informed financial decisions, and plan for the future is central to ensuring economic security in older age. Economic competence also involves understanding the broader economic systems that impact older adults, such as housing, pensions, and social security, and how to navigate these systems effectively.

### **5. Emotional and Psychological Competence**

Emotional competence involves the ability to manage one's emotions, cope with stress, and maintain mental resilience in the face of life's challenges. This competence is crucial for adapting to the transitions and losses that often accompany ageing, such as retirement, the loss of loved ones, or changes in health. According to Carstensen et al. (2003), older adults tend to focus on emotional well-being and prioritize positive experiences as they age. Emotional competence enables them to manage these transitions and maintain a positive outlook on life.

### **6. Civic and Political Participation**

Civic competence refers to the knowledge and skills necessary for engaging in civic life, including voting, volunteering, and participating in community decision-making. As people age, it is important for them to remain involved in political and social processes to ensure that their needs and rights are represented. The ability to advocate for oneself and others, engage in policy

discussions, and contribute to social change is crucial for fostering active ageing.

Active participation in political and civic activities has been linked to improved life satisfaction and a sense of purpose among older adults (Morrow-Howell, 2010). By remaining engaged in community issues and social movements, older individuals can help shape policies that affect their well-being and contribute to a more inclusive society.

### **The Implications of Education, Learning and Active Ageing to work and Life**

The concepts of education, learning, and active ageing have significant implications for work and life, particularly in the context of an ageing population and the changing dynamics of the workforce. As individuals live longer and stay healthier for longer periods, the need for lifelong learning and continued education becomes paramount for maintaining employment and improving quality of life in later years. The following are key implications of these concepts:

#### **1. Lifelong Learning and Workforce Participation**

As people age, many will need to remain in the workforce longer due to financial necessity or the desire to stay mentally and physically engaged. Education and learning play a crucial role in this context, as they enable older individuals to acquire new skills, adapt to changing job demands, and maintain productivity in the workforce. According to UNESCO (2015), lifelong learning not only enhances the employability of older workers but also promotes their personal development and engagement in society. In particular, learning initiatives targeted at older adults help them adjust to technological advancements, making them more competitive in the job market.

#### **2. Adaptability to Technological Changes**

The increasing use of digital technology in the workplace is one of the most significant challenges for older workers. As workplaces become more reliant on digital tools, older individuals who have not been exposed to these technologies may find themselves at a disadvantage. Education and training programs that focus on digital literacy are essential for enabling older workers to adapt to technological changes. In a study by Jantti (2018), it was found that older workers who engage in digital literacy programs experience greater job satisfaction and better work performance, highlighting the role of education in adapting to a digitalized work environment.

#### **3. Mental and Physical Wellbeing**

Active ageing involves not only the ability to remain economically active but also the promotion of mental and physical health. Learning and education can serve as key components in this process. According to Boudiny (2013), continuous engagement in learning can improve cognitive function, reduce the risk of dementia, and foster emotional well-being, thus enabling individuals to lead more fulfilling lives. Engaging in educational and learning activities has been linked to better overall health outcomes in older adults, leading to reduced healthcare costs and improved quality of life.

Furthermore, the workplace itself can benefit from the presence of older employees who remain mentally and physically active, contributing to a more diverse and inclusive environment. Active engagement in learning and work may also lead to greater job satisfaction, which is positively correlated with reduced stress and improved work-life balance.

### **3. Economic Implications and Workforce Sustainability**

The need for continued participation of older adults in the workforce is also economically significant. As the global population ages, the ratio of working-age individuals to retirees continues to decrease, putting pressure on pension systems and healthcare services. Education and learning initiatives targeted at older adults can help mitigate these challenges by encouraging longer workforce participation. According to the OECD (2019), policies that promote lifelong learning and active ageing help individuals remain productive and self-sufficient for a longer period, thus contributing to the economic stability of countries with ageing populations.

By providing opportunities for older adults to continue learning and working, governments and organizations can ensure that older individuals remain financially independent and able to contribute to the economy. This also reduces the burden on social security systems by promoting an older workforce that remains financially productive and capable of sustaining themselves well into later life.

### **4. Social Implications and Quality of Life**

Education and active ageing initiatives have profound social implications. For many older individuals, remaining engaged in the workforce or continuing education can provide a sense of purpose, reduce feelings of isolation, and foster greater social interaction. According to the National Institute on Aging (2018), staying active through learning and work improves life satisfaction, increases social connectivity, and reduces loneliness.

Additionally, older adults who engage in community-based educational programs often experience greater social integration, which positively impacts both their mental and physical health.

Moreover, lifelong learning provides older adults with the skills to continue contributing to society in non-work settings, such as volunteering or mentoring, thereby strengthening social ties and fostering intergenerational cooperation. The ability to maintain social networks and participate in meaningful activities also helps older adults maintain their dignity and independence, contributing to a higher quality of life.

### **Conclusion**

Education and lifelong learning are indispensable for supporting active ageing, as they provide older adults with the competences necessary to remain engaged in both work and life. Cognitive, emotional, social, and technical competences enable older individuals to maintain their independence, enhance their well-being, and contribute meaningfully to society. However, addressing the barriers to learning that older adults face is crucial for ensuring that all individuals can fully benefit from educational opportunities throughout their lives. By prioritizing these competences and fostering an inclusive learning environment, societies can promote a more active, healthy, and fulfilling life for older individuals.

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Exploring the Rights and Educational Needs of Persons with Disabilities in the Context of Islam:  
Emerging Challenges and Opportunities

By

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Abstract

This paper examines Islamic teachings on disability through a conceptual lens, drawing upon primary sources such as the Qur'an and Sunnah, and secondary scholarly interpretations. It situates these teachings within contemporary debates on disability rights and inclusion, especially in Muslim-majority societies like Nigeria. The paper highlights the ethical, legal, and educational provisions Islam offers for persons with disabilities (PWDs), and contrasts these with exclusionary historical perspectives in pre-Islamic and Western societies. Key challenges, particularly in the realm of religious education for the hearing impaired, are critically examined. The paper concludes with actionable recommendations aimed at enhancing inclusion and fulfilling Islamic obligations of justice, compassion and equity.

**Keywords:** *Islam*; Disability Rights; Inclusive Education; Hearing Impairment; Nigeria; Qur'an; Sunnah

Introduction

Globally, the rights and needs of persons with disabilities (PWDs) have garnered increasing attention across both secular and religious spheres. According to the World Health Organization (WHO, 2023), over 1.3 billion people approximately 16% of the global population live with significant disabilities. This makes them the world's largest minority group (International Labour Organization [ILO], 2014). In developing countries such as Nigeria, persons with disabilities often experience systemic barriers to accessing healthcare, education, employment, and full social inclusion (Ogunjuyigbe & Adeyemo, 2019). Disability is defined by the Centers for Disease Control and Prevention (CDC, 2020) as a condition of the body or mind that limits participation in typical daily activities. Importantly, it is recognized as a natural aspect of the human condition one

that nearly everyone will encounter, temporarily or permanently, particularly with age (Nebi, 2011). However, despite advancements in global disability rights, PWDs remain marginalized especially in contexts where religious, legal, or cultural frameworks are not sufficiently inclusive or supportive.

Against this backdrop, Islamic tradition offers significant moral and theological resources for promoting inclusion. As a comprehensive way of life, Islam emphasizes justice, dignity, and equality for all, including persons with disabilities. Primary sources such as the Qur'an and the Sunnah affirm these principles. For instance, Surah 'Abasa (80:1–10) recounts the Prophet Muhammad's respectful encounter with a blind man an event that challenged prevailing attitudes and underscored the value of all

individuals regardless of physical condition. Scholars like Shraiky (2022) assert that Islamic ethics neither marginalize nor stigmatize the disabled; rather, they establish frameworks of protection and care. Contrary to certain interpretations in Christian theological history where disability was sometimes viewed as punishment for sin (Creamer, 2009) Islam adopts a rights-based and inclusive approach. While the Bible references several persons with disabilities (e.g., Samson, Mephibosheth, Zechariah), Islamic teachings are distinctive in integrating legal, spiritual, and communal obligations toward PWDs.

This paper explores how Islamic theological foundations intersect with the rights and educational needs of persons with disabilities, focusing particularly on those with hearing impairments in Muslim-majority contexts like Nigeria. Through a conceptual analysis of scripture and jurisprudence, supplemented with empirical field observations and roundtable discussions, this study aims to uncover both persistent barriers and emerging opportunities for religious inclusion. By bridging classical Islamic thought with contemporary disability rights discourse, the study contributes to a holistic, faith-informed approach to disability justice.

Therefore, the general focus of this paper dwells or revolves around examining the Islamic theological foundations derived from the Qur'an, Sunnah, and scholarly interpretations regarding the rights and dignity of persons with disabilities (PWDs), and critically assess historical and cultural perceptions of disability, especially in pre-Islamic and classical Western societies, and how Islam reframed these narratives to analyze the accessibility and inclusivity of Islamic religious education for persons with hearing

impairments, with particular attention to observations and lived experiences in northern Nigeria. This will give chance for identifying emerging challenges and practical gaps in the religious and educational inclusion of PWDs, especially among Muslim communities, and it will provide actionable recommendations that bridge Islamic moral teachings with contemporary disability rights frameworks and inclusive education policies. This clarifies the scope of the study faith-based, rights-focused, and education-related, and it shows lived experiences and how Northern Nigerian context is all about on PWDs issues.

### **Historical Perceptions of Disability in Pre-Islamic and Western Societies**

Understanding how disability was historically perceived in both pre-Islamic and classical Western contexts is essential to appreciating the transformative role of Islam in shaping inclusive principles. Prior to the advent of Islam, persons with disabilities were largely marginalized and stigmatized in many societies. In pre-Islamic Arabia, individuals with physical or cognitive impairments such as blindness, lameness, or chronic illness were often excluded from communal gatherings, viewed as burdens, or even hidden from public view due to social shame and perceived impurity. This pattern of exclusion was not unique to Arab society. In ancient Greece and Rome, disability was commonly interpreted as a sign of divine punishment or natural inferiority. According to Shraiky (2022), some children born with visible deformities were victims of infanticide, based on cultural beliefs that associated disability with misfortune or spiritual contamination. The Spartan model, for instance, explicitly endorsed the

elimination of children deemed physically unfit, reflecting a harsh utilitarian logic of societal strength over individual rights.

Even respected philosophers of the classical era contributed to the marginalization of PWDs. Plato, as noted by Dillon (2016), considered persons with disabilities as detrimental to the ideal structure of the Republic, promoting the idea that a just society should be free from individuals perceived as physically or mentally deficient. Such views laid a theoretical foundation for widespread social exclusion and institutional neglect in later Western thought.

Three prevailing attitudes characterized these historical paradigms:

1. **Social Exclusion:** PWDs were systematically removed from public life and communal interactions, often denied participation in civic, religious, or educational activities.
2. **Religious Discrimination:** In some ancient religious traditions, the presence of a disabled person in sacred spaces was believed to desecrate the site, leading to their exclusion from temples and rituals.
3. **Cultural Stigmatization:** Disability was frequently viewed as a mark of divine disfavor, personal sin, or spiritual weakness labels that reinforced negative stereotypes and justified discrimination.

These historical attitudes form a stark contrast to Islamic teachings, which emerged as a counter-narrative rooted in justice, compassion, and social responsibility. Islam's foundational texts and prophetic practices challenged these assumptions, affirming the dignity and rights of all individuals, regardless of physical ability. This contrast sets the stage for a deeper analysis of how

Islam redefined the societal treatment of persons with disabilities and laid ethical foundations for inclusive community life.

### **Educational Rights for Persons with Hearing Impairments in the Nigerian Islamic Context**

Among the various categories of persons with disabilities (PWDs), those with hearing impairments face distinct challenges in accessing Islamic religious education particularly in Nigeria, where socio-cultural and infrastructural limitations persist. Despite broader international and national discourses on inclusive education, many Muslims with hearing impairments in northern Nigeria, especially women, remain underserved and excluded from structured religious learning environments. This section draws on empirical insights gathered through community observations and informal roundtable discussions with Deaf Muslims in Kano State. Participants shared deeply personal accounts that highlighted gaps in religious knowledge and the consequences of systemic neglect. For example, several young women disclosed limited or no understanding of basic Islamic rulings concerning purification (ṭahārah), menstrual hygiene, and sexual ethics. Due to communication barriers and the absence of sign language-trained religious educators, they often learned through informal family practices, which were either incomplete or inaccurately conveyed.

In practice, most persons with hearing impairments are excluded from formal Islamic learning structures. Kano State one of the most populous Muslim-majority regions in Nigeria hosts only two recognized institutions offering some form of religious education to the hearing impaired: Tudun Maliki Special School and a private Islamic

center in Goron Dutse. These facilities, however, remain insufficient both in number and in scope. Moreover, existing programs often lack integration with mainstream Islamic education curricula and suffer from a shortage of qualified teachers proficient in Nigerian Sign Language (NSL).

Language inaccessibility, social stigma, and low parental engagement compound the issue. Religious sermons (ta'alimat), Qur'an exegesis, and public Islamic lectures rarely include interpreters. While there have been isolated efforts such as introducing interpreters during Friday khutbah or Ramadan tafsir these are inconsistent and often limited to basic concepts, without extending to more complex aspects of Islamic jurisprudence or theology. One elderly participant, herself Deaf, shared that neither she nor her daughter's husband had ever been taught about the ritual obligations following menstruation or sexual intercourse (ghusl). Their understanding was limited to cultural norms of routine bathing, revealing how knowledge gaps perpetuate unintended violations of religious duty.

The educational neglect of this population also has broader social consequences. Reports from field engagement indicated increased vulnerability among Deaf young women to drug use, illicit relationships, and early pregnancies often linked to a lack of religious and moral guidance. Without structured support systems rooted in Islamic teaching, these individuals are left to navigate complex spiritual and social expectations on their own. These empirical observations validate the assertion by Ghaly (2010) that disability inclusion in Muslim-majority societies remains an under-researched and under-implemented priority. In the context of hearing impairment, the situation is not only one of accessibility but also of

epistemological justice: the rights to know, interpret, and live one's faith fully and accurately.

### **Islamic Foundations and Legal Recognition of Persons with Disabilities**

Islamic theology offers a distinct moral and legal framework for understanding and accommodating disability one rooted in the Qur'an, the Sunnah, and centuries of jurisprudential development. Central to this framework is the affirmation of human dignity ('karāmah') and the ethical imperative of justice ('adl') and compassion ('rahmah') toward all individuals, regardless of physical or cognitive differences. The Qur'an makes explicit references to various forms of disabilities visual, physical, and cognitive and consistently reinforces messages of spiritual equality. One of the most cited examples is in Surah 'Abasa (80:1–10), where the Prophet Muhammad (peace be upon him) is gently corrected by God for initially turning away from a blind man, 'Abdullah ibn Umm Maktum. This incident, while not a rebuke, underscores the theological principle that disability is not a sign of inferiority but a circumstance that demands heightened care and respect.

Islamic law (Shari'ah) recognizes that individuals with disabilities may require tailored obligations. For instance, those unable to perform ablution (wuḍū') in the usual manner are permitted alternative methods (e.g., tayammum); those who cannot stand during ṣalāh may sit or lie down (Khan, 2020). This reflects a principle of reasonable accommodation that is deeply embedded in classical Islamic jurisprudence.

Furthermore, Prophet Muhammad (peace be upon him) actively involved persons with disabilities in civic and religious life. He appointed

‘Abdullah ibn Umm Maktum, a blind man, as a mu’adhdhin (caller to prayer) and assigned him governance duties during his absences. Similarly, Amr ibn al-Jamuh, despite his physical disability, participated in the Battle of Uhud with the Prophet’s permission demonstrating that ability is not a fixed criterion for dignity, honor, or participation in communal life (Al-Aoufi et al., 2012; Ghaly, 2010). Beyond prophetic precedent, Islamic governance under caliphs like Umar ibn Al-Khattab and Umar ibn Abdul Aziz institutionalized disability support. Umar ibn Al-Khattab arranged housing and assistance for blind individuals to facilitate mosque attendance, while Umar ibn Abdul Aziz initiated policies assigning helpers to persons with disabilities and allocating public funds for their welfare (Keshky & Lewis, 2020). Islamic ethics also promote the view that assisting individuals with disabilities is not merely social work, but an act of worship (‘ibādah). Islam (2019) emphasizes that serving the needs of marginalized groups fulfills core spiritual obligations, echoing the prophetic teaching that “the best among you are those who benefit others.”

Despite this rich theological and legal foundation, contemporary application remains uneven. Many Muslim-majority societies including Nigeria struggle to translate these principles into inclusive educational policy, accessible religious infrastructure, and trained leadership. This gap between doctrine and practice underscores the need for renewed *ijtihad* (independent reasoning) and institutional commitment to disability justice.

### **Contributions of Scholars with Disabilities in Islamic History**

Islamic intellectual history features numerous scholars and leaders who lived with disabilities yet made profound contributions to

theology, jurisprudence, literature, and public life. These figures are not merely exceptions or anomalies they embody a deep-rooted Islamic ethic that disability does not diminish one’s intellectual, spiritual, or social value. Their lives serve as both inspiration and evidence of how Islamic societies historically accommodated, respected, and empowered persons with disabilities (PWDs).

1. Muhammad bin Sirin (Deaf): An eminent scholar of Hadith and dream interpretation, he overcame significant communication barriers to contribute meaningfully to Islamic sciences. His legacy illustrates the adaptive learning environments that existed in early Muslim communities.

2. Bashir bin Burd (Blind): A prominent poet of the Abbasid era, Bashir was known for his eloquence and sharp literary critique. Despite his blindness, he became one of the leading literary voices of his time, proving that disability did not hinder intellectual creativity.

3. Abu Al-Ala Al-Ma’arri (Blind): A philosopher and poet, Al-Ma’arri authored complex literary works such as *Risalat al-Ghufran*, showcasing how visual impairment did not obstruct philosophical depth or rhetorical mastery.

4. Mustafa Sadiq Al-Rafi’i (Hearing Impaired): Often referred to as a “miracle of Arabic literature,” Al-Rafi’i lost his hearing as a child but went on to become a prolific writer, advocating for language preservation and cultural reform in Egypt.

5. Taha Hussein (Blind): Known as the “Dean of Arabic Literature,” Hussein redefined Arabic prose and advocated strongly for universal education. Blind since early childhood, he earned

a doctorate from the Sorbonne and influenced national education policy in Egypt.

6. Sheikh Abdulqadir Mu'azu (Nigeria): After losing his sight in early adulthood, Sheikh Abdulqadir authored over 100 Islamic books and educated thousands in Plateau State, Nigeria. His life exemplifies the continuity of scholarly excellence among PWDs in contemporary Africa.

7. MAVIN Graduates (Nigeria): In 2021, the Muslim Association of the Visually Impaired of Nigeria (MAVIN) celebrated its first group of visually impaired students who completed Qur'anic memorization using Braille. This milestone reflects modern efforts to revive traditional Islamic commitments to accessibility.

These examples are more than anecdotes; they underscore Islam's historical capacity to foster inclusive learning and leadership environments. They also highlight the vital role of tailored educational resources such as Braille Qur'an texts, sign language interpreters, and adaptive pedagogies in sustaining inclusion. In contemporary terms, the achievements of these individuals challenge prevailing stereotypes and reveal a powerful model of resilience and institutional responsibility. Their stories can be mobilized not merely as heritage, but as guiding frameworks for present-day reforms in Islamic education and community development.

### **Contemporary Developments in Nigeria: Emerging Initiatives and Lingering Gaps**

In recent years, a growing number of efforts in Nigeria have attempted to address the educational and spiritual marginalization of persons with disabilities (PWDs) within Islamic contexts. These initiatives, though often fragmented and under-resourced, demonstrate a gradual shift toward more inclusive religious practice and learning, particularly for

individuals with visual and hearing impairments. A notable example is Tudun Maliki Special Education School in Kano State, which introduced a dedicated Islamic studies class for Deaf students in 2020. The program aims to provide foundational knowledge of religious practices such as ṣalāt (prayer), wuḍū' (ablution), and the ethical teachings of Islam through the use of Nigerian Sign Language (NSL). Similarly, a private Arabic-Islamic school in Dala, Kano, began incorporating inclusive religious instruction for Deaf learners. However, such efforts remain localized, often dependent on the passion of individual educators or donor funding, and lack standardization or curriculum oversight.

In 2025, the Huffazul-Qur'an Promoters Foundation launched a Qur'an memorization initiative using Braille technology. This effort enables visually impaired students to read and memorize the Qur'an independently an initiative that aligns with Islamic injunctions on seeking knowledge and participating in communal worship. Complementing this effort is the work of the Muslim Association of Visually Impaired of Nigeria (MAVIN), which has successfully produced several graduates proficient in Qur'anic recitation via Braille formats (Salawu, 2021). Despite these promising developments, systemic challenges persist. Most Islamic institutions lack the infrastructure, trained personnel, or curricular resources to cater to learners with disabilities. Many imams, Qur'anic instructors, and religious teachers have never received formal training in disability-inclusive pedagogy. Sign language interpreters are often absent from major religious events, and few mosques are equipped with visual aids or mobility-friendly infrastructure.

Moreover, inclusive religious education remains largely reactive rather than strategic. As Ghaly (2010) and Keshky & Lewis (2020) argue, there is a pressing need for institutional frameworks that go beyond sporadic inclusion toward deliberate, policy-driven access and participation for all. In Nigeria, where Islamic teachings hold substantial moral authority, faith-based disability inclusion can play a pivotal role in reshaping societal attitudes and promoting inclusive citizenship. To sustain progress, these scattered efforts must be consolidated into a nationwide strategy involving government bodies, Islamic organizations, disability advocacy groups, and educational institutions. The goal should not be mere access, but meaningful participation and empowerment through religious literacy, moral guidance, and social inclusion.

### **Conclusion**

This study has explored how Islamic theological principles, historical precedents, and contemporary realities converge around the rights and educational needs of persons with disabilities (PWDs). Drawing on both conceptual insights and empirical observations from the Nigerian context, the paper demonstrates that Islam offers a robust ethical and legal framework for the inclusion of PWDs one grounded in the Qur'an, Sunnah, and the actions of the Prophet Muhammad (peace be upon him) and his companions. Unlike many pre-Islamic and classical Western traditions

By bridging classical Islamic thought with present-day disability rights discourse, this paper contributes to a growing body of scholarship committed to building inclusive religious education systems. It affirms that true Islamic societies are those in which every

that framed disability in terms of impurity, punishment, or weakness, Islamic teachings emphasize dignity, justice, and compassion. Examples such as 'Abdullah ibn Umm Maktum and Amr ibn al-Jamuh illustrate that disability is not a barrier to leadership, knowledge, or societal participation. Similarly, the legacy of scholars like Taha Hussein, Mustafa Al-Rafi'i, and Sheikh Abdulqadir Mu'azu reflects the continuing relevance of Islamic inclusivity across centuries and geographies.

Empirical insights from Kano State underscore the persistent educational and spiritual exclusion of persons with hearing impairments. While initiatives such as Braille Qur'an memorization, sign language integration in Islamic schools, and the efforts of organizations like MAVIN are commendable, they remain insufficiently institutionalized. Most religious institutions still lack accessible infrastructure, trained educators, or tailored curricula. Therefore, the challenge is not merely theological or moral it is strategic and structural. Islamic teachings already affirm the rights and dignity of PWDs; what is urgently needed is the translation of these principles into practical, sustainable, and inclusive systems. This requires collaboration among religious leaders, policymakers, educators, and disability advocates to create frameworks that honor the spirit of Islamic justice and respond to contemporary needs.

individual, regardless of physical ability, has the opportunity to learn, worship, contribute, and flourish with dignity.

### **Recommendations**

In light of the conceptual findings and empirical insights discussed, the following

recommendations are proposed to strengthen the religious, educational, and social inclusion of persons with disabilities (PWDs) within Islamic contexts particularly in Nigeria:

1. Enhance Disability Awareness among Religious Leaders

Islamic scholars, imams, and Qur'anic teachers should be equipped with training on disability rights and inclusive religious education. Sermons, Friday khutbahs, and public da'wah efforts should challenge stigma and affirm the dignity of PWDs as established in the Qur'an and Sunnah.

3. Integrate Inclusive Curriculum in Islamic Education

Islamic schools (madāris), study circles (halāqāt), and weekend schools should adopt teaching methods that include Braille texts, sign language, visual aids, and assistive technologies. This would ensure that learners with visual or hearing impairments can access foundational Islamic knowledge.

4. Institutionalize Religious Interpretation Services

Mosques, Islamic centers, and religious conferences should consistently provide sign language interpretation and other accommodations. These services must go beyond general sermons and include tafsīr (Qur'anic exegesis), fiqh (jurisprudence), and Islamic ethics.

5. Establish Inclusive Islamic Learning Centers

Dedicated Islamic centers or 'majalis' should be established for persons with hearing or visual impairments, particularly in underserved regions. These centers should combine Islamic literacy with vocational skills, life guidance, and psychosocial support.

6. Promote Community-Based Support Systems

Families and community members should be sensitized to their responsibilities in supporting religious education for children with disabilities. Parental workshops, peer education, and community mentorship programs can bridge existing knowledge gaps.

7. Support Policy Development and Funding

Governments and Islamic organizations should collaborate to create national and state-level frameworks for inclusive Islamic education. This includes budgeting for accessible infrastructure, educator training, and inclusive curricula development.

8. Encourage Further Research and Documentation

More empirical and interdisciplinary studies are needed to explore how Islamic principles can inform disability-inclusive development. Academic institutions and Islamic universities should prioritize research on Islam and disability from African and global perspectives.

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**Relationship Between Parenting Styles and School Engagement Among Senior Secondary School Students in Kumbotso Local Government Area, Kano State, Nigeria**

By

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**Abstract**

The study examined the relationship of parenting styles and school engagement among senior secondary school students in Kumbotso Local Government Area, Kano State, Nigeria. 5 objectives, 1 research question and 4 research hypotheses were stated to guide the study. A correlational design was employed for the study. The population of the study constitutes all the SS III students in the study area who studied in 2023/2024 academic session, numbered: 2,752; out of who 346 subjects were selected to partake in the study; using a multi-stage sampling procedure. Scale of Parenting Style (SPS) and School Engagement Measure (SEM) served as the instruments for the study; with .74 and .91 Cronbach Alpha Reliability Coefficients. The research question was answered using percentages, mean and SD, while the 4 hypotheses were tested using PPMC. Results of the study disclosed that the students have high level of school engagement (84.98%,  $\bar{x}$ = 81.58, SD=9.12). And that the three variables of parenting style were strongly and positively correlated with school engagement ( $P$ = .001,  $P$ = .000 and  $P$ = .003  $r$ , = .601,  $r$ = .985 and  $r$ = .324. While neglectful parenting style has negative impact on school engagement ( $P$ = .000 and  $r$ , = -.341). It was recommended (among others) that the best parenting style recommended for the parents in order to motivates higher levels of school engagement among the students, is authoritative (democratic) parenting style.

**Keywords:** School Engagement, Parenting Styles, Secondary Schools Students

**Introduction**

Education stands as the most pivotal social investment any nation can make, fostering lifelong learning and paving the way for comprehensive societal growth. By equipping individuals with the knowledge to perform diverse tasks, honing their skills, and facilitating socialization, education enables each person to realize their fullest potential. It empowers learners to set ambitious goals and chart paths toward success, cultivating resourceful citizens who drive national advancement. Without a robust educational foundation, the maximum development of human resources remains an unattainable (Mathai and Vijayakumari, 2021)

Schools function as the foremost formal institutions responsible for delivering structured education and nurturing student development. Beyond imparting academic content, they serve as centers of discipline, secondary homes for children, and environments for assimilating newcomers. Schools prepare students for future careers, instill social and moral responsibilities, and help shape character. Critical to this ecosystem are teachers and parents, who collaborate to identify individual talents, guide educational trajectories, and provide the moral and

psychological support necessary for well-rounded growth. A harmonious parent–teacher–child relationship significantly uplifts students’ mental and physical well-being, boosting their confidence and personality development. (Mathai and Vijayakumari, 2021)

In Nigeria, however, many parents struggle to maintain meaningful connections with their children’s schooling due to demanding lifestyles and extensive social commitments. This growing isolation hampers parents’ ability to closely monitor academic progress, address educational needs, and foster positive attitudes toward school engagement. As a result, students may experience diminished motivation, lower attendance, and suboptimal academic performance. Research indicates that the quality of parental involvement—whether nurturing or neglectful—directly influences how engaged children remain in their schooling, ultimately shaping their educational outcomes. (Muhammad and Abdullahi, 2023)

Parenting style, a concept that has evolved since the 1920s, encapsulates how parental attitudes, practices, and emotional expressions collectively shape children’s social and instrumental competencies. Early investigations highlighted the profound impact parents have on children’s development through both overt behaviors and subtle nonverbal cues. Baumrind, Maccoby, and Martin’s seminal work further refined this construct by examining the emotional climate in which these behaviors occur. Parenting style thus reflects the degree of warmth, responsiveness, and control parents exhibit, creating a home environment that either supports or hinders a child’s emotional and cognitive growth. (Darling, 1999 cited in Aboh, 2018; Mathai and Vijayakumari, 2021; Aboh, 2018)

Building on this framework, four distinct parenting styles emerge. **Authoritarian parents (autocratic)** emphasize strict rules and punitive measures, expecting unquestioned obedience and often relying on forceful discipline to enforce absolute standards of behavior. **Authoritative parents (democratic)** balance high nurturance with moderate control, setting clear, mature expectations while encouraging dialogue, negotiation, and independent thinking. **Permissive parents (Laissez- faire)** adopt a friend-like approach, offering warmth and acceptance but rarely imposing structure or monitoring, which can lead to insufficient guidance and boundaries. **Neglectful parents (Uninvolved/I don’t care)** demonstrate low responsiveness and control, failing to provide both the emotional support and behavioral direction essential for healthy child development. Each style creates a unique interaction pattern that profoundly influences children’s social, emotional, and academic trajectories. (Baumrind, Maccoby and Martin, 1971 in Mathai and Vijayakumari, 2021; Lagu, 2018; Phelan, 2010 in Lagu, 2018; Kelly, 2004 in Muhammad and Abdullahi, 2023; Milos, 2010 in Lagu, 2018)

School engagement encompasses the multifaceted ways students connect with the educational process, spanning emotional, social, and cognitive dimensions. Historically, “engagement” denoted moral or legal obligations, but Alexander Astin’s pioneering work reframed it as the physical and psychological energy students invest in learning experiences. Engagement is reciprocal: institutions commit resources and pedagogical efforts while students dedicate time and focus to purposeful activities. Emotionally engaged students exhibit curiosity, persistence, and enthusiasm; behaviorally engaged students participate in school norms and

extracurriculars; cognitively engaged students deploy strategic, self-regulated learning tactics. This synergy bolsters academic achievement, fosters lifelong learning dispositions, and underpins a thriving educational community. (Astin, 1984 cited in Abla and Fraumeni, 2019; Abla and Fraumeni, 2019; Gray and Diloreto, 2016; Mathai and Vijayakumari, 2021; Fredrick, Blumenfeld and Paris, 2004).

### **Review of Empirical Studies**

Majority of the researchers have ventured into various researches on the connection among parenting styles and academic achievement, with very few on connecting it with school engagements. In view of this; Fernandez et al (2018) presented that paternal parenting style has a greater explanatory power than maternal style for overall adolescent's school engagement and academic performance. And that explanatory power of rigid discipline is either very low in terms of behaviour, affective and overall school engagement. They further made known that, whatever the case, paternal effect is clearly more statistically important for school engagement than the rigid establishment and enforcement of rules and demands. Mathai and Vijayakumari (2021) disclosed no significant difference in school engagement of secondary school students with indulgent and authoritative or negligent/authoritarian parenting styles. Similarly groups with authoritative parenting styles and authoritarian parenting styles do not differ in their school engagement; groups with negligent parenting styles do not differ in their school engagement. But a significant difference in school engagement of secondary school students was found between students who perceived their parents as authoritative and negligent.

Aboh (2018) discovered that warmth parent- child relationship makes a statistically positive significant contribution in predicting the academic engagement. Also, the autonomy parenting style did not make statistically significant contribution in predicting academic engagement. In the other hand, demandingness parenting styles made a statistically significant positive contribution in predicting academic engagement. Mo and Singh (2008) confirmed the importance and significance of parental involvements in students' school engagement and performance. Hence, parental aspirations had a direct effect on students' cognitive and emotional engagements. Parent-child relationship had a direct effect on all three types of students' school engagement. And parental involvement in school had direct effect on school cognitive development.

Muhammad and Abdullahi (2023) revealed that there is significant relationship between both the authoritative, authoritarian and permissive parenting styles and academic achievement of the subjects. (Tolinski 2015 cited in Aboh 2018) narrated that both parent- child relationship and teacher-student relationship were significantly associated with school engagement scores, and have a significant contribution to academic engagement.

It is in the light of the above background that the researchers were motivated to examine the relationship between parenting styles and school engagement among senior secondary school students. Due to the fact that most of such studies were done in European and Asian countries, as well as very few in southern part of Nigeria, where attributes, characteristics and experiences differ to some extent. Hence, the present study has innovations.

**Research Question**

1. What is the level of school engagement among senior secondary school students in Kumbotso Local Government Area?
2. What is the relationship between authoritarian parenting style and school engagement among senior secondary school students in Kumbotso Local Government Area?
3. What is the relationship between authoritative parenting style and school engagement among senior secondary school students in Kumbotso Local Government Area?
4. What is the relationship between permissive parenting style and school engagement among senior secondary school students in Kumbotso Local Government Area?
5. What is the relationship between neglectful parenting style and school engagement among senior secondary school students in Kumbotso Local Government Area?

**Research Hypotheses**

- HO1: There is no significant relationship between authoritarian parenting style and school engagement among senior secondary school students in Kumbotso Local Government Area.
- HO2: There is no significant relationship between authoritative parenting style and school engagement among senior secondary school students in Kumbotso Local Government Area.
- HO3: There is no significant relationship between permissive parenting style and school engagement among senior secondary school students in Kumbotso Local Government Area.

HO4: There is no significant relationship between neglectful parenting style and school engagement among senior secondary school students in Kumbotso Local Government Area.

**Methodology**

A correlational research design was employed to examine relationships among four parenting styles (authoritarian, authoritative, permissive, and neglectful) and students' school engagement. The study population comprised all 2,752 Senior Secondary III students in the 21 public schools of Kumbotso Local Government Area (Kumbotso Zonal Education Directorate, 2024). A multistage sampling approach—cluster and proportionate sampling to select six schools, followed by simple random sampling within each—yielded 346 respondents (Research Advisors, 2006). Two instruments were adapted: the 40-item Scale of Parenting Style (SPS), based on Gafoor and Kurukkan's 2014 adaptation of Baumrind (1971) and Maccoby and Martin (1983), and the 19-item School Engagement Measure (SEM) by Fredericks et al. (2005). The SPS subscales (10 items each) and SEM dimensions (behavioural, emotional, cognitive) both used a 5-point Likert scale.

**Data Presentation and Analysis**

Confirmatory factor analysis and prior validity coefficients (.70–.80 criterion validity for SPS; composite reliability .94 for SEM) supported their construct validity (Mathai and Vijayakumari, 2021). Face validity was confirmed by two research experts and two educational psychologists from Federal University, Dutsin-Ma and Federal University of Education Kano, and pilot testing on 20 SS II students produced Cronbach's alpha values of .74 (SPS) and

.91 (SEM), indicating acceptable internal consistency.

Data collection occurred over six working days, with researchers and six school-based research assistants administering both questionnaires concurrently and collecting them on the spot. Researchers spent seven days coding and entering responses. SPS scores

ranged from 10 to 50 per parenting style; SEM scores ranged from 19 to 95, with scores of 57 and above indicating high school engagement. Descriptive statistics (percentages, means, standard deviations) addressed the research question, and four hypotheses were tested via Pearson's product-moment correlation in SPSS version 20 at the .05 significance level

**Table 1: Level of School Engagement among Senior Secondary Schools Students**

Variables	N	Percentage	Mean	SD
<b>High School Engagement</b>	294	84.98%	81.5727	9.11516
<b>Low School Engagement</b>	52	15.2%	57.6506	6.37167
<b>Total</b>	346	100%		

Table 1 shows that the students with high school engagement were the majority 294, representing 84.98% ( $\bar{x} = 81.5727$ ;  $SD = 9.11516$ ) while students with low level of school engagement accumulated for 52,

representing 15.02% ( $\bar{x} = 57.6506$ ;  $SD = 6.37167$ ). Hence senior secondary school students in Kumbotso Local Government Area have high level of school engagement

**Table 2: Correlation of Authoritarian Parenting Style and School Engagement of Senior Secondary Schools Students**

Pearson Correlation	Authoritarian P.S.	N	R	P
	School Engagement	346	.601**	.001

\*\* Correlation is significant at the < .05 level of significance (2-tailed)

The above table disclosed a significant relationship between authoritarian parenting style and school engagement of senior secondary school students in Kumbotso Local Government Area ( $r = .601$ ,  $p = .001$ ,  $P < .05$ ). While the P-value of .001 is lower than the .05 level of significance, the null

hypothesis one is hereby rejected, implying that there is a significant relationship between authoritarian parenting style and school engagement. Hence, authoritarian parenting style is positively predicting the school engagement of the students.

**Table 3: Correlation of Authoritative Parenting Style and School Engagement of Senior Secondary Schools Students**

Pearson Correlation	Authoritative P.S.	N	R	P
	School Engagement	346	.985**	.000

\*\* Correlation is significant at the < .05 level of significance (2-tailed)

The above table disclosed a significant relationship between authoritative parenting style and school engagement of senior secondary school students in Kumbotso Local Government Area ( $r = .985$ ,  $p = .000$ ,  $P < .05$ ). While the P-value of .000 is lower than the .05 level of significance, the null

hypothesis two is hereby rejected, implying that there is a significant relationship between authoritative parenting style and school engagement. Hence, authoritative parenting style is positively predicting the school engagement of the students.

**Table 4: Correlation of Permissive Parenting Style and School Engagement of Senior Secondary Schools Students**

Pearson Correlation	Permissive P.S.	N	r	P
	School Engagement	346	.324**	.003

\*\* Correlation is significant at the  $< .05$  level of significance (2-tailed)

The above table disclosed a significant relationship between permissive parenting style and school engagement of senior secondary school students in

Kumbotso Local Government Area ( $r = .324$ ,  $p = .003$ ,  $P < .05$ ). While the P-value of .003 is lower than the .05 level of significance, the null

**Table 5: Correlation of Neglectful Parenting Style and School Engagement of Senior Secondary Schools Students**

Pearson Correlation	Neglectful P.S.	N	r	P
	School Engagement	346	-.341	.000

\*\* Correlation is significant at the  $< .05$  level of significance (2-tailed)

The computed result from the above table disclosed that an inversely negative relationship exists between neglectful parenting style and students' school engagement ( $r = -.341$ ,  $P = .000$ ,  $P < .05$ ). With the 0.05 level of significant is greater than the .000 P- value, the null hypothesis four is hereby rejected. Hence, neglectful parenting style is negatively predicting the students' school engagement. By implication, the higher the level of neglectful parenting style, the lower will be the students' level of school engagement.

parenting styles) and school engagement. And this is in accord with the revelations of Fernandez et al (2018), Mathai and Vijayakumari (2021), Mo and Singh (2008), Aboh (2018), Tolinski (2015) in Aboh (2018) and Muhammed and Abdullahi (2023); who all reported that both the authoritarian, authoritative and permissive parenting styles have a strong positive relationship with school engagement, and do predicts higher students' school engagement and academic achievement. Nevertheless, the present study disagreed the postulations of Aboh (2018) who made known that the authoritarian parenting style did not make statistically significant contribution in predicting academic engagement. hypothesis one is hereby rejected, implying that there is a significant relationship between permissive parenting style and school engagement. Hence, permissive parenting style is positively predicting the school engagement of the students.

**Discussion of Findings**

The findings (1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup>) of the present study uncovered a significant positive relationship between the three variables of parenting style (authoritarian, authoritative and permissive

Table 5: Correlation of Neglectful Parenting Style and School Engagement of Senior Secondary Schools Students

Pearson Correlation	Neglectful P.S.	N	r	P
	School Engagement	346	-.341	.000

\*\* Correlation is significant at the < .05 level of significance (2-tailed)

The computed result from the above table disclosed that an inversely negative relationship exists between neglectful parenting style and students' school engagement ( $r = -.341$ ,  $P = .000$ ,  $P < .05$ ). With the 0.05 level of significant is greater than the .000 P- value, the null hypothesis four is hereby rejected. Hence, neglectful parenting style is negatively predicting the students' school engagement. By implication, the higher the level of neglectful parenting style, the lower will be the students' level of school engagement.

### Discussion of Findings

The findings (1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup>) of the present study uncovered a significant positive relationship between the three variables of parenting style (authoritarian, authoritative and permissive parenting styles) and school engagement. And this is in accord with the revelations of Fernandez et al (2018), Mathai and Vijayakumari (2021), Mo and Singh (2008), Aboh (2018), Tolinski (2015) in Aboh (2018) and Muhammed and Abdullahi (2023); who all reported that both the authoritarian, authoritative and permissive parenting styles have a strong positive relationship with school engagement, and do predicts higher students' school engagement and academic achievement. Nevertheless, the present study disagreed the postulations of Aboh (2018) who made known that the authoritarian parenting style did not make statistically significant contribution in predicting academic engagement.

In the other hand, the fourth finding of this study indicates that a neglectful parenting style has an inverse relationship with school engagement of the students.

And that it is negatively contributing to low academic engagement among the students. Henceforth, the present finding align with the revelation of Mathai and Vijayakumari (2021) who documented that neglectful parenting style leads to lower school engagement.

The present study also, shows that authoritative parenting style ( $r = .985$ ) made the strongest contribution in explaining the students' higher level of school engagement more than authoritarian ( $r = .601$ ) and permissive ( $r = .324$ ) parenting styles. This is in agreement with the finding of Mathai and Vijayakumari (2021) who made known that parents having authoritative and indulgent parenting style contribute more to school engagement. It is also in line with the finding of Fernandez et al (2018) who found that paternal effect (authoritative) is clearly more statistically important for positive school engagement among the students more than the rigid establishment and enforcement of rules and demands (authoritarian parenting style). However, the present study is not in the same position with the finding of Aboh (2018) who revealed that demandingness (authoritarian) parenting style made a statistically strongest significant positive contribution in predicting academic engagement.

### Conclusion

Reference to the findings of this study, it was concluded that, senior secondary schools students in Kumbotso Local Government Area have high level of school engagement. And that, the authoritarian, authoritative and permissive parenting styles do positively related to, and can predict higher level of school engagement among the students; with authoritative parenting style

contributing the largest share in explaining the students' positive higher school engagement. Finally, the neglectful parenting style is negatively predicting and related to lower level of school engagement among the students.

### **Recommendations**

Based on the findings and conclusions of the study, it was recommended that:

1. The best parenting style recommended for the parents in order to motivate higher levels of school engagement among the students, is authoritative (democratic) parenting style.
2. Parents should adopt any of (authoritarian, authoritative and permissive) the parenting styles as a method of rearing their children; for better school engagement and academic achievement.
3. The neglectful parenting style should be avoided among the parents in order to produce a productive citizen to man the national and state: agencies, organizations, ministries, boards, and parastatals; for better economic and social development.
4. Good communication link/channels should be employed by the school management, in which parents should be notified either on terminal bases, at the end of each session, or on special cases; about the students' school engagement or academic achievement levels.
5. The school management should task the teachers to identify the neglectful parents, invite them and arranges special trainings for them; to make them be aware of the negative impact of their attitudes and behaviors towards their children's school engagement and subsequent academic achievement; and help them to change their parenting style.

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## Cyber Security: A Panacea for Integrity and Safe Usage among Facebook Users in Kano Metropolitan

By

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### Abstract

Facebook is a social media platform used for various purposes, including socialising, connecting with friends and family, conducting business, and entertainment. The widespread presence of social media in modern society emphasises the vital importance of cybersecurity for users, especially on platforms like Facebook. Users often share large amounts of personal information without fully understanding the potential risks, such as data breaches and identity theft. This paper is conceptual and examines the role of cybersecurity measures in reducing these risks. It highlights the importance of cybersecurity in protecting users' sensitive and private information, evaluates the current state of cybersecurity in the context of Facebook use, and identifies the cyber threats faced by Facebook users. Additionally, the paper explores strategies for improving cybersecurity to ensure more effective and secure Facebook usage and outlines best practices for safeguarding personal data. The challenges faced and potential solutions are also discussed. The paper concludes that implementing strong cybersecurity measures is essential for Facebook users, particularly in the Kano Metropolitan area

**Keywords:** *cyber security*, Facebook users, integrity and safe usage, Kano Metropolitan,

### 1. Introduction

Facebook is an online social networking platform that enables individuals and organisations to create profiles, build connections, share ideas, post updates, comment, react, and participate in discussions. It allows users to join groups, follow pages of interest, promote businesses, and stay informed about social, political, and entertainment trends worldwide. In the digital age, Facebook has revolutionised information sharing and social interactions. Facebook users comprise a diverse group who use the platform for various purposes, such as socialising and connecting with friends, family, and acquaintances. Additionally, they enjoy entertainment features like videos, live streams, and gaming. Many users also use Facebook for business and marketing, including promoting products and services, targeted advertising, and sponsored content. (Alharbi & Tassaddiq, 2021).

Furthermore, Facebook users expand their professional networks, join groups, and attend online events to connect with like-minded individuals. It also serves as an educational platform, providing access to online courses, tutorials, and resources on various topics (Sulaiman & Aziz, 2022). Users join groups and forums centered on shared interests, hobbies, or causes to build communities and connect with others. Some users showcase their artistic, musical, or writing talents on Facebook to gain visibility and attract opportunities.

However, increasing reliance on the platform has heightened cybersecurity risks. According to Von Solms & Van Niekerk (2013), cybersecurity risks relate to the potential loss or harm related to technical infrastructure or the use of technology within an organization, including data breaches,

identity theft, and misinformation. Limited awareness and protective measures leave users vulnerable, raising concerns about information integrity and responsible usage.

## **2. Overview of Cybersecurity and Its Importance for Facebook Users**

The pervasive nature of social media in contemporary society underscores the critical importance of cybersecurity for individuals, particularly in the context of platforms like Facebook. People frequently share significant amounts of personal information, often without fully grasping the potential risks involved, including data breaches and identity theft. Research indicates that awareness of information privacy and security measures correlates with users' behaviour concerning data disclosure on social media sites. It has been found that factors such as privacy and security awareness greatly influence this conduct, suggesting that individuals are more likely to take precautions when they understand the threats associated with their online presence (Amorim & Hendrix, 2013). Moreover, the dynamics of modern information sharing are complicated by malicious actors who exploit these networks for nefarious purposes, illustrating that the stakes have never been higher for safeguarding personal information (Safe L., 2022). Thus, fostering a culture of cybersecurity consciousness is essential for protecting digital identities in the modern age.

### **3. Current State of Cybersecurity among Facebook Users in Kano Metropolitan**

The situation of online security among Facebook members in Kano Metropolitan reflects a precarious environment, marked by increasing

exposure to threats and a lack of sufficient safeguards. Many individuals interact on the site without fully appreciating the consequences of their digital footprints, making them vulnerable to numerous risks such as data leaks and identity fraud. The general state of information protection in this context shows multiple challenges, including heightened susceptibility, weak protective practices, low digital literacy, simple passwords, and minimal use of two-factor authentication — all of which increase exposure to attacks.

Social engineering tactics like impersonation are frequently employed to deceive account holders. Many people continue to use social media without comprehending the possible impact of their online activities. Auta (2022) found that 68% of Facebook members rely on basic or repeated passwords across multiple platforms, while only 12% have enabled two-factor authentication. In the same study, over 55% admitted to having little or no knowledge of common online safety practices, such as spotting phishing attempts or verifying suspicious contacts. The findings also revealed that impersonation remains widespread, highlighting how inadequate awareness and poor security habits heighten risk. This limited understanding leaves account owners exposed to identity theft, data leaks, and other cyber incidents.

A recent study by Safe (2022) indicates that the situation is further worsened by the activities of malicious groups, including extremist organizations, which exploit social media to spread harmful content and misinformation. Such misuse of online channels underscores the complex interplay between data protection, individual

privacy, and freedom of expression.

#### **4. Role of Cybersecurity in Safeguarding Facebook Use.**

In the contemporary digital landscape, characterized by rapid technological advancements and increasing reliance on social media platforms like Facebook, the role of cybersecurity has become increasingly pivotal in safeguarding user information and promoting safe online engagement. Effective cybersecurity measures are essential to protect personal data from various threats, such as hacking, phishing, and identity theft, which can lead to significant financial and emotional ramifications for users. By implementing robust security protocols, including encryption, multi-factor authentication, and regular system updates, cybersecurity not only fortifies individual privacy but also fosters a culture of trust among users. This trust is vital in encouraging active participation and engagement within online communities, particularly in regions like Kano Metropolitan, where digital literacy varies. Therefore, a comprehensive approach to cybersecurity not only protects user data but also enhances the overall online experience, empowering users to navigate the digital realm confidently and responsibly.

#### **5. Cyber Threats Faced by Facebook Users in Kano Metropolitan.**

In an era where social media platforms, particularly Facebook, have become integral to daily communication and information sharing, users in Kano Metropolitan face a myriad of cyber threats that jeopardise their privacy and security. These threats range from identity theft and phishing scams to more insidious forms of cyber propaganda

utilized by extremist groups. The adoption of modern technology by such groups has shifted their communication dynamics, allowing them to disseminate content continuously and influence user perceptions effectively. Social media has transformed the strategies employed by terror organisations, compelling users to navigate a complex landscape of information where the boundaries between genuine and malicious content blur significantly (Mittal, 2024). This interplay of technology and terrorism underscores the urgent need for robust cybersecurity measures tailored to safeguard user information while also addressing the implications of privacy laws.

#### **6. Strategies for Enhancing Cybersecurity for Facebook Users**

Ensuring robust cybersecurity for Facebook users in Kano Metropolitan requires a multi-faceted approach that emphasizes user awareness and platform improvements. One critical strategy involves enhancing the public's understanding of privacy settings and security measures available within the platform. Many users lack awareness of the tools designed to protect their personal information. A study conducted by Olayiwola (2023) indicates that, while users of Facebook recognize the risks associated with sharing information online, knowledge of effective protective measures remains limited. For that reason, Alqahtani (2024) is of the view that social media providers must invest in educational initiatives that promote cybersecurity awareness, addressing both perceived benefits and risks associated with social media use. This is particularly vital as technological advancements enable more efficient information dissemination,

which can inadvertently expose users to vulnerabilities. By fostering a culture of security consciousness, users can better navigate their online interactions, thereby safeguarding their personal information more effectively. Best Practices for Personal Data Protection.

Data protection means securing personal or sensitive information from unauthorised access, misuse, or loss. It involves legal, technical, and organisational measures to ensure that data is collected, stored, and used responsibly and securely (Aldaz 2020).

In today's digital landscape, especially on social media platforms like Facebook, best practices for personal data protection are vital for safeguarding users in Kano Metropolitan. Alharbi (2021) argues that Facebook users should prioritise strong password management, which involves creating unique, robust passwords for each account and enabling two-factor authentication to add an extra layer of security. Additionally, it is important to regularly review privacy settings and permissions, as many users unknowingly make their information visible to wider audiences by default. Users should also be educated about phishing attacks and how to spot suspicious links or requests for information, a strategy that aligns with the emerging concerns highlighted in discussions about social media's role in contemporary terrorism narratives.

Lastly, fostering a culture of awareness regarding the implications of data sharing can empower users to manage their information prudently, reflecting the insights presented in various studies on digital behaviour and privacy.

## **6. Challenges Faced by Facebook Users in Kano Metropolitan**

One of the foremost challenges confronting efforts to enhance cybersecurity and information integrity among Facebook users in Kano Metropolitan is

- i. **The low level of digital literacy.** Many users lack the fundamental knowledge required to navigate social media platforms safely, including identifying phishing scams, managing secure passwords, and avoiding suspicious links. This makes them vulnerable to various forms of cyberattacks. Compounding this issue is the limited awareness of Facebook's privacy and security settings. Users often do not optimize these features, making them easy targets for identity theft, data breaches, and unauthorized access to personal accounts.
- ii. **Proliferation of misinformation and fake news.** Facebook users frequently encounter and unknowingly share inaccurate or deliberately false content, especially during periods of political tension or public emergencies. This not only undermines the credibility of information circulating on the platform but also poses threats to public order and trust. Unfortunately, these risks are intensified by weak legal frameworks and ineffective enforcement mechanisms in Nigeria. The limited capacity of law enforcement agencies to prosecute cybercrimes or implement cyber safety regulations effectively allows malicious actors to operate with impunity.
- iii. **Inadequate institutional support and coordinated awareness campaigns.** Educational institutions, government agencies, and civil society organizations in Kano

Metropolitan are not adequately engaged in promoting cybersecurity education or public sensitization efforts. This creates a vacuum that is often filled with ignorance or misinformation.

- iv. **Heavy reliance on mobile devices for Facebook access.** Often over unsecured public networks, users are exposed to threats such as spyware, malicious applications, and Wi-Fi hijacking.
- v. **Socio-cultural and linguistic barriers also contribute to the challenges.** Some users, particularly women and the elderly, may find it difficult to understand cyber safety information that is not tailored to their linguistic or cultural contexts. This leads to digital marginalization and increases their vulnerability to exploitation (Hadi & Yahaya, 2020).
- vi. Moreover, users are frequently victims of **Psychological manipulation and online scams:** where fraudsters employ social engineering tactics, emotional appeals, or impersonation to deceive victims into revealing confidential information ( Finally, the scarcity of localized research and empirical data on cyber threats specific to Kano Metropolitan means that interventions are often generic and not tailored to the unique cyber behaviour patterns and risks facing local Facebook users. Addressing these multifaceted challenges requires a concerted effort involving education, policy reform, technological solutions, and grassroots awareness initiatives.

## **7. Conclusion**

Facebook is a leading global social networking platform that enables individuals and organizations

to connect, share information, and build communities for social, educational, and commercial purposes. Its diverse features, including personal profiles, groups, pages, and entertainment tools, have transformed how people interact and exchange information in the digital age. While Facebook offers numerous benefits for socializing, business promotion, networking, and learning, its extensive use also increases users' exposure to various cybersecurity risks such as data breaches, identity theft, misinformation, and exploitation by malicious actors.

Cybersecurity is, therefore, vital for social media users. Awareness of privacy settings, strong passwords, and protective measures significantly influences safe online behaviour. However, in Kano Metropolitan, Facebook users face unique challenges: low digital literacy, poor password practices, limited use of two-factor authentication, and vulnerability to social engineering tactics such as impersonation. These issues are worsened by extremist groups exploiting social media to spread propaganda and misinformation.

To address these threats, robust cybersecurity measures are needed, including user education, platform improvements, and strong legal frameworks. Best practices like regular privacy checks, secure passwords, and phishing awareness are essential for protecting personal data. Local factors such as socio-cultural barriers, reliance on mobile devices over unsecured networks, and inadequate institutional support further complicate cybersecurity efforts in Kano Metropolitan.

Effective solutions require coordinated digital literacy programs, stronger law enforcement capabilities, integration of cybersecurity education

in school curricula, and sustained public awareness campaigns. Localized research is also needed to design context-specific interventions and policies that protect Facebook users and promote responsible, safe online engagement.

**8. Recommendations:**

To effectively address the challenges of cybersecurity and information integrity among Facebook users in Kano Metropolitan, a multi-pronged and context-sensitive approach is essential:

- i. Comprehensive digital literacy programs. Should be designed and implemented at the community, institutional, and governmental levels. These programs must be tailored to the sociocultural realities of Kano and delivered in accessible languages to ensure inclusiveness, particularly for vulnerable groups such as women, youth, and the elderly. Schools, libraries, and community centres should serve as hubs for promoting safe online practices and educating users about how to identify cyber threats, manage their privacy settings, and avoid misinformation.
- ii. Law enforcement agencies and the judiciary should be equipped with the tools, training, and resources required to investigate and prosecute cyber-related offences effectively. There is an urgent need to strengthen the enforcement of existing cybercrime laws and develop new policy frameworks that are responsive to the evolving nature of digital threats. Collaboration between regulatory bodies, such as the National Information Technology Development Agency (NITDA) and the Nigerian Communications Commission (NCC), will be vital in ensuring

that Facebook and other digital platforms are held accountable for user safety.

- iii. Integrating cyber safety education into school and university curricula will play a key role in preparing future generations to navigate the digital space responsibly. Educators should be trained to incorporate modules on cyber ethics, data protection, and responsible social media use into existing programs, especially at the secondary and tertiary levels within the region.
- iv. Public awareness campaigns should also be prioritized, using both traditional and digital media to reach a broad audience. Religious institutions, Market associations, and local influencers can serve as effective channels for disseminating messages on cyber hygiene and information integrity. Such campaigns should focus not only on risks but also on empowering users to take proactive steps in protecting themselves online.
- v. There is a pressing need for localized and data-driven research to understand the specific nature of cyber threats facing Facebook users in Kano. Universities, research and institutions should conduct studies on user behaviour, common scams, misinformation patterns, and digital vulnerabilities. Findings from such research should inform the design of targeted interventions, ensuring that policies and programs are grounded in evidence and reflect the lived experiences of users

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**Evaluating Senior Secondary School Teachers' Test Administration Knowledge in Minjibir Education Directorate, Kano State, Nigeria**

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**Abstract**

The study aimed to Evaluate Senior Secondary School Teachers' Test Administration Knowledge in Minjibir Education Directorate, Kano State, Nigeria Five objectives, one research question was guided the study together with four corresponding null hypotheses. Survey research design was employed in the study with population estimate of 280 senior secondary school teachers from Minjibir Education Directorate, Kano State. One hundred and sixty-nine (169) teachers were used as the sample size as suggested by research advisors table for determination sample size (2006). Multi-stage cluster sampling techniques were used in selecting the sample size. A researcher-made test titled: Teachers' test administration knowledge (TTAK) designed on dichotomous response format of true or false was used as data generation instrument. Content and face validity was ascertained for the (TTAK) with correlation coefficient of 0.96. the value for the (TTAK) was found to be 0.69. The research question posed was answered using frequency count and percentage. Four hypotheses were tested using independent sample T-test and (ANOVA). The study revealed that majority (62.7%) of teachers in Minjibir Education Directorate possessed test administration knowledge regardless of teaching qualification, working experiences, gender and location of the senior secondary school teachers in Minjibir Education Directorate, Kano State, Nigeria. It recommended that, government and stakeholders to be organizing workshops, seminars and conferences periodically for teachers so as to retain their knowledge on test administration.

**Keywords:** *Evaluating Knowledge, Test, Administration, & skills*

**Introduction:**

Schools are established for the purpose of teaching and learning. In order to determine if or not learning has taken place, teachers try to evaluate learners. This process of evaluating is what is commonly known as Assessment. Educational assessment is the process of gathering information to monitor process and make educational decision (Kizlik, 2012). The process of teaching and learning is incomplete without effective and sagacious assessment. Educational assessment provides the necessary feedback reviewed in order to maximize the outcomes of educational efforts. The assessment of learners

provides the objectives evidences necessary for inference and decision making in education. It determines whether or not the goals of education are achieved (Stiggins, 2005). These are not doubt among educational assessment as basic condition for effective learning and decision.

Students' assessment is a major segment of teaching and learning. Teachers play a vital role in the process. So that their knowledge, skills, competence in classroom assessment practices are very crucial. Teachers are considered as a yardstick for making changes and preparing students for future challenges. Being the centre at any

educational system, teacher play a vital role in the development of the upcoming generation. Teachers are true nation builders, they serve as the yardstick that measure the achievement, potentialities and aspiration of a nation. They are the back born of any educational system: the leader's success or otherwise of the system rely on teachers. The leaders and builders of tomorrow are the products of today's teachers for that teaching and learning process need to be handle by appropriate hands. Meaning that to be handled by professionally trained teachers, who have acquired appropriate knowledge, skills and values needed to become effective teachers.

Assessment in education serves different purposes; generally, it is used for formative, summative, diagnostic and placement among others. Formative assessment (continuous assessment) is design to help the teachers to make effective teaching and learning decision throughout the period of teaching. The summative assessment is an overall assessment of learning outcomes for certification or decision concerning the worth of an educational program the diagnosis assessment deals with learning difficulties normally to find out learner's strength and weaknesses. While the placement, deals with the possession of the skills acquired by a learner for adequate placing in a job department of class. It answers the question where to put student? Which department?

There are different types of assessment tools which include: Tests, rating scale, checklist, observation interview, quizzes and anecdotal records. In all those mentioned instruments test is the most popularly used. It is a method to determine student's ability to complete certain task or

demonstrate a mastery of skills or knowledge of content (Kizlik, 2012). Test is an assessment tool used to measure a student's knowledge, skills, aptitude or physical fitness. Among the factors affecting the validity and reliability of a test is test administration. It is the process of presenting the learning task that the examinees are required to perform in order to ascertain the degree learning that has taken place during the teaching-learning process.

Simply, it is a combination of activities that start prior to the actual test taking process and extend beyond the immediate testing environment. The test administration procedure is an important as the process of preparing the test. This is because the validity and reliability of the test score can be greatly tempered with when the test is poorly administered. All the effort made by a classroom teacher to construct a valid and reliable test will be in vain if the test is not properly administered. As having seen the importance of test administration to the assessment of student's performance, this study will investigate the level of test administration knowledge among senior secondary school teachers in Minjibir Education Directorate, Kano State Senior Secondary School Management Board (KSSSSMB).

#### Objectives of the Study

The main objectives of this study is to find the level of teacher's test administration knowledge in Senior Secondary Schools of Minjibr Education Directorate, Kano State. While the specific objective of the study includes the following:

1. To determine the level of teachers' test administration knowledge in Senior Secondary Schools of Minjibr Education Directorate.

2. To find out the extent to which Senior Secondary Schools teachers differ in the possession of test administration knowledge by gender among Senior Secondary Schools in Minjibr Education Directorate, Kano State.
3. To find out the extent to which senior secondary school teachers differ in the possession of knowledge of test administration by qualification among teachers in Senior Secondary Schools of Minjibir Education Directorate.
4. To find out the extent to which senior secondary school teachers differ in the possession of test administration knowledge by working experience in Senior Secondary Schools of Minibar Education Directorate.
5. To find out if there are differences in test administration knowledge among teachers by location among senior secondary schools in Minjibir education directorate, Kano State.

### **Literature review**

The research reviewed the following subheadings: Conceptual frame work; concept of Test Administration, meaning of the test, principles of Test Administration, Method for Test Administration, Good Test Administration, Period before, during, and after the test, condition during test administration.

### **Concept of Test Administration**

Among the most useful instrument in teaching and learning is test. According to Steedle (2014), tests are important based on two general contexts; (a) in education and (b) in research. In education, it can be as sources of information for making decision

within the context of educational programs; and in research, it can be as indicators of abilities or attributes that are of interest in research on language, language acquisition, languageteaching. In educational programs; the uses of tests are based on three assumptions:

i Information regarding educational outcomes is necessary to effective formal education: accountability and feedback are essential mechanisms for the continued effectiveness of any educational program;

ii It is probable to improve learning and teaching through appropriate changes in the program; and

iii the educational outcomes of the giving program are measurable. These assumptions indicate that language tests are important in the process of language teaching and learning. It is true that the best test may give invalid and unreliable outcomes if it is not well administered. Therefore, test administration is a crucial process in language testing. In other words, when administering a test teachers should give learners an opportunity to carry out well. According to Agu (2013). 'test administration procedures are developed for an exam program in order to help reduce measurement error and to increase the likelihood of fair, valid, and reliable assessment' (p.231). According to Huxham (2012), test development is observed as a process including a number of logical stages. These stages initiate with test design and item writing and then move through the administration and reporting the outcomes. The final step of this assessment cycle is the evaluation step. Test administration is necessary for all types of tests. According to Mango (2013), when the process of test administration is elaborated in the

testing related texts the only concern is delivery system which is usually associated with test taking processes or the physical environment. In getting a right test administration involves two issues as: a) the first is replicating the meticulous conditions that the test designers set out in the delivery specifications. These are the condition under which the test was originally piloted and field tested;

b) the second issue is ensuring that these conditions are replicated for all test takers, so that no one experiences taking the test in a condition that provides. International journal of modern Language Teaching and Learning Available online at [www.ijmltl.com](http://www.ijmltl.com). Vol.1,issue 4,2016, pp.126-129

For administering better, the test controlling the extraneous irrelevant variables. These variables can be considered as simply any factors that affect test scores which are not related to what the test is intended to measure. In some ways, a good test is like an experiment, in the sense that it has to eliminate or at least keep constant all extraneous source of variation. We want our test to reflect only the specific type of variation in knowledge or skills that we are interested in at the moment. In administrating test, eliminating cannot be carried out whole extraneous source of variation, because it is not simple to control all variables. Instead of this procedure, test takers to carry out to the best of their abilities, and minimizes the opportunities for distraction or cheating.

### **The Meaning of the Test**

Anastasi and Urbina (2010) defined test as ‘objective and standardized measure of a sample of behaviour’. Testing implies a trial of somebody to

find out his/her ability, power, knowledge, skills, achievement, attitude etc. The instrument used in carrying out the trial is called the test. Anikweze (2010). ‘A test is the major and most commonly used instrument for the assessment of cognitive behaviors.’. He also added that, the classroom test, which is otherwise called a teacher-made test ‘is an instrument of measurement and evaluation used for the assessment of students learning outcomes it is a test prepared and used by teacher (s) for a particular class’. Teacher- made tests are designed for a particular group of students at particular institution. The test can be for a single class or a few classes at a particular institution. (Chikayunka, 2010).

### **Principles of Test Administration**

The most prominent tenets in administering any classroom test is that all testees should be given an equal opportunity to indicate their attainment of the learning results planned or intended. This indicates psychological and physical environment in which the test is occurring must helpful for the testees to accelerate the achievement of the testing results. Also, the factors that might interfere with validity of the measurement have to be monitored. Although, the evidence regarding the impacts of environmental and physical circumstances on performance of examination is encouraging, testees should be as calm as possible and distraction should be minimized or removed. While distraction during testing is known to have little impact on the learners’ scores, they may have serious impact on particularly young children (Steedle, 2014). Another tenant is learners owning positive attitudes towards an examination. People are possibly to carry out better at any attempt

involving test taking when they approach the experience with a positive attitude. Unlikely, constantly teachers fail to assist learners to develop positive attitudes towards examination.

Learners are not probably to carry out at their best when they are excessively tense. Therefore, the experience of test anxiety among some learners (Agu, 2013) It is imperative that administrators of test are qualified enough and trusted persons. This is to ensure that tests are properly managed to obtain valid and reliable results. Test administrators require to have the chance to acquire their accountabilities as a requirement to accurate examination outcomes (Adeyemi, 2010). Also, it should be mentioned that a well-designed and prepared test is simple to administer and the poor prepared examination not. Equally, it is significant to understand that a successful examination administration exercise is a product of test planning. According to Adeyemi (2010), cheating is most likely to occur in a poorly planned test thus, provng a challenge to test administration. However, a good test administration irrespective of the test preparation is paramount.

#### **Method for Test Administration Paper and Pencil Test**

An efficient method of assessment. Paper and pencil instrument refer to a general group of assessment tools in which candidates read questions and respond in writing. This includes tests such as knowledge and ability tests and inventories such as personality and interest inventories. (Anastasia 2010)

#### **Computer Based Test**

This is not a new idea in fact, it has been around in some form since 1959, when the very first computer-based training (CBT) system was built.

However, like CBT, computer-based assessment did not get much recognition until a few decades ago, and it only started becoming really influential in the past few years as online technologies have greatly advanced what is possible. Because computer-based assessment has changed so much since its inception, it is not always clear what people are talking about when they use the term. Here, well attempt to provide a clear computer-based assessment definition, drawing from current technologies and practice. Computer based assessment. At its broadest, the definition of computer-based assessment is this: the use of digital tools for assessment-related activity. Notice the use of the term digital tools rather than computers this is because today computer-based assessment can also be both created and taken using laptops, tablets, and smart phones. Any type of testing that involves the use of these technologies, as opposed to paper and pencils, can be considered under the umbrella of computer-based assessment. (Alabi , 2014).

#### **Good test Administration**

The practices of well testing rest in the hands of the examiner who will make certain practice of testing perform smoothly. Three stages should be performed as: The period before the test during the test and after the test should be efficiently controlled to realize a highly efficient testing period. In the next section these three phases will be taken into account. Black (2010).

#### **Period Before the Test**

Security of testing instrument: All test materials to be use in the assessment process whether paper-and-pencil or computer-based must be kept secure. This feature may result in some test takers having access to test questions before the test

therefore including the quality and invalidating their scores. To avoid irregularities and disorganization administrators of tests should, for instance, keep testing materials in locked rooms or cabinets and limit access to those materials to staff included in the process of assessment. Also the security of test is an accountability of test developers to make sure the test is not compromised over time. For maintaining their security, developers of test should introduce new forms of tests periodically (Brennan, 2010). Based on security of tests, testing authorities should attempt to open cartons including the materials of test and inspect the contents to specify and verify that proper test level and quantities have been received. After testing materials inspection, they should be securely kept since examination monitors may during unannounced visits inspect these materials to make certain the seals have not been tampered with before the due date (Black, 2010). After securing a sufficient number of tests, the following considerations should be part of preparation checklist:

- a) examinees and parents have been notified regarding the test date and time.
- b) Candidates have been reminded to bring materials necessary for the test.
- c) All students with special needs (e.g., glasses and hearing aids) have been considered before. International journal of modern Language Teaching and Learning Available online at [www.ijmltl.com](http://www.ijmltl.com). Vol. 1, issue 4, 2016, pp. 126- 128 the start of the test.
- d) All adequate invigilation has been planned.
- e) Examination administrators have read appropriate test administration procedures such as timing examination regulations and test

modifications.

- f) The rooms where the test is to be conducted have adequate ventilation and lighting have been properly arranged.
- g) Seat are arranged in such a way that candidates cannot look at each other's work.
- h) Candidates have been thoroughly prepared for the examination by suggesting to them ways of studying, giving them practice test like those to be used, teaching them test-taking skills and stressing the value of tests as for improving learning (Bendele, 2015).
- i) When all is set for the exam secure the room, including the writing testing in progress, do not Enter

### **Research Hypotheses**

To provide the answer of the above research question, the hypothesis below was tested in the study:

HO<sup>1</sup> There is no significance difference in the mean score of test administration knowledge between male and female teachers among senior secondary school teachers in Minjibir education directorate, Kano State.

HO<sup>2</sup> There is no significant difference in the mean score of test administration knowledge between qualified and unqualified teachers among senior secondary school teachers in Minjibir education Directorate, Kano State.

HO<sup>3</sup> There is no significant difference in the mean score of test administration knowledge among highly experienced, experienced, less experienced, and in- experienced teachers of senior secondary school teachers in Minjibir education directorate, Kano State.

HO<sup>4</sup> There is no significant difference in the mean score of test administration knowledge among teachers that teaches in rural and those teachers that teaches in urban senior secondary schools in Minjibir education directorate, Kano State.

**Methodology**

The research design employed for this research is survey research design. The **Table 1: Summary of Population** population of the study comprised all senior secondary school teachers in Minjibir Education Directorate Kano State. The zone consists of two local government areas namely

Minjibir and Ungogo. According to the report of Kano State Senior Secondary School Management Board Planning Department (2023), there are total number of forty-seven (47) public senior secondary schools and a total of five hundred and ninety-three teachers (593) teaching staff, which are the target population and the working/sample population was two hundreds and eighty (280). Both males and females having different qualifications, experiences, and location in Minjibir Education Directorate. Out of forty-seven (47) senior secondary schools, twenty (20) schools were selected

**Table 1: Summary of Population**

SN	LGA	Number of schools	Male teachers	Female teachers	Population
1	Minjibir	19	109	14	123
2	Ungogo	28	297	173	470
<b>TOTAL</b>		<b>47</b>	<b>406</b>	<b>187</b>	<b>593</b>

**Sample Size**

A sample size of 169 was used in the study based on Research Advisors (2006) table for determination of sample size. According to

the table when the population reached 280 the sample should be 169 at 0.05 degree of freedom.

**Table 2: Summary of Sample**

<b>SN</b>	<b>LGA</b>	<b>Name of Schools</b>	<b>Population</b>	<b>Sample</b>
1	Minjibir	GSS Minjibir	15	09
2	Minjibir	GSS Kunya	08	05
3	Minjibir	GSS ZbnawarInusa	02	01
4	Minjibir	GSS Kantama	03	02
5	Minjibir	GSS Sambauna	15	09
6	Minjibir	GSS Gurjiya	04	02
7	Minjibir	GSS Gandurwawa	02	01
8	Ungogo	GSS Rijiyar Zaki	52	33
9	Ungogo	GSS Ungogo	14	08
10	Ungogo	GSS Rafin Malam	05	03
11	Ungogo	GSS Zango gabas	15	09
12	Ungogo	GSS Zaura babba	17	10
13	Minjibir	GCEC Minjibir	03	02
14	Minjibir	GGAS Yaji rana	03	02
15	Ungogo	GSS Gayawa	16	10
16	Minjibir	GGISS Minjibir	05	03
17	Ungogo	GGSS Tudu Fulani	15	09
18	Ungogo	GSS Rangaza	31	18
19	Ungogo	GGSS Kadawa	45	27
20	Ungogo	GGASS Panisau	10	06
<b>TOTAL</b>			<b>280</b>	<b>169</b>

**Sampling Technique**

The sample size of 169 was drawn using multi-stage sampling technique. In the first stage the two local government areas (Minjibir and Ungoggo) were selected. In the second stage twenty (20) senior secondary school were selected out of forty-seven senior secondary schools from those local government areas by simple random sampling technique using Table of Random Number. That is twelve (12) schools (50%) were selected from Minjibir local government; eight (8) schools (50%) were selected from Ungogo local government. In the third stage element of the population/ cluster (teachers) were selected based on the proportion of the teachers in the school from two hundred and eighty (280) senior secondary school teachers to one hundred and sixty-nine (169) using the sampling fraction. A Researcher-made test instrument titled:

Teachers’ Test Administration Knowledge adapted from Muhammad (2018). Because the items of the test suit the objectives of the researcher’s study. The instrument was 25 items test. The test consists two (2) section i.e. Section A and B. Section A sought the information concerning the demographic characteristics of the respondents. On other hand, Section B consist of twenty-five (25) items with dichotomous responses, which was elicited responses regarding test administration knowledge among senior secondary school teachers in Minjibir Education Directorate Kano State.

**Data Presentation and Analysis**

The data obtained from the field work were basically scores on the knowledge in test administration among senior secondary school

teachers in Minjibir Education Directorate Kano State. The data were then summarized and presented in tables and charts.

Research Question 1: The level of teacher's test administration Knowledge in senior secondary schools of Minjibir education zone.

**Table 4 Levels of Teachers' Knowledge in test administration**

Levels	N	Frequency	M	SD
High	106	62.7%	34.01	4.28
Low	63	37.3%	23.04	3.93

From the above one can observe that teachers with high level of tests administration knowledge are 106 in number with 62.7% (mean high = 34.01 and SD= 4.28) while those with low level of knowledge in test administration are 63 with 37.3%(mean low = 23.04 and SD= 3.93). Therefore, those with higher knowledge dominate the zone regardless with their gender,

qualification, experience and or location.

**Hypotheses Testing**

**Hypothesis One:** There is no significant difference in mean scores of test administration knowledge between male and female teachers among senior secondary schools in Minjibir Education zone,

**Table 5: Independent sample T-test on gender difference in test administration Knowledge**

Gender	n	mean	SD	Std. error	t-value	df	p-value	decision
Male	113	29.64	6.87	.646	-774	167	.440	Not Sig.
Female	56	30.50	6.49	.868				

Table above represent the analysis of t-test on the mean score of test administration knowledge between male and female teachers. The outcome from the analysis showed that the mean score for male teachers (mean male = 29.64, SD =6.87) and mean female teachers (mean female = 30.50, SD= 6.49). The computed t-value stood at -774 at df level 167. From the table also, the P-value stood at .440 which is greater than Alpha value .05.

Therefore, based on the obtained result, the stated null hypothesis which says, there is no significant difference in mean scores of test administration knowledge between male and female teachers among senior secondary schools in Minjibir Education zone, is therefore retained.

**Hypotheses Two:** There is no significant difference in mean scores of test administration knowledge between qualified and unqualified teachers among senior secondary schools in Minjibir Education zone,

Table above represent the analysis of t-test on the mean score

of test administration knowledge between male and female teachers. The outcome from the analysis showed that the mean score for male teachers (mean male = 29.64, SD =6.87) and mean female teachers (mean female = 30.50, SD= 6.49). The computed t-value stood at -774 at df level 167. From the table also, the P-value stood at .440 which is greater than Alpha value .05. Therefore, based on the obtained

result, the stated null hypothesis which says, there is no significant difference in mean scores of test administration knowledge between male and female teachers among senior secondary schools in Minjibir Education zone, is therefore retained.

**Hypotheses Two:** There is no significant difference in mean scores of test administration knowledge between qualified and unqualified teachers among senior secondary schools in Minjibir Education zone,

**Table 6: Independent sample t-test on mean difference in test administration Knowledge by qualification**

Qualification	N	Mean	SD	Std error	t-value	df	p-value	decision
Qualified	145	30.75	6.21	.516	4.18	167	.000	Sig.
Unqualified	24	24.83	7.57	1.54				

Table above represent the analysis of t-test on the mean score of test administration knowledge between qualified and unqualified teachers. The outcome from the analysis showed that the mean score for qualified teachers (mean qualified = 30.75, SD =6.21) and mean unqualified teachers (mean unqualified = 24.83, SD= 7.57). The computed t-value stood at 4.18 at df level 167. From the table also, the P-value stood at .000 which is less than Alpha value .05. Therefore, based on the obtained result, the

stated null hypothesis which says, there is no significant difference in mean scores of test administration knowledge between qualified and unqualified teachers among senior secondary schools in Minjibir Education zone, is therefore rejected.

**Hypotheses Three:** There is no significance difference in the mean scores of test administration knowledge among highly experience, experience, less experience and inexperience senior secondary school teachers in Minjibir education zone.

**Table 7: Descriptive Statistics on Teachers Knowledge on Test administration by Experience**

Teaching Experience	N	Mean	SD	Std Error
Highly Experience	50	32.92	5.91	.836
Experience	55	29.45	7.51	1.013
Less Experience	36	27.94	5.18	.863
Inexperience	28	28.07	6.76	1.27

Table above revealed description of mean score of teacher’s knowledge in test administration on the years of teaching experience. The mean scores indicated that

highly experience teachers had highest mean score of 32.92 followed by experienced teachers with 29.45, inexperience 28.07 and less experience with 27.94.

**Table 8: ANOVA Test on Test Administration Knowledge in skill by work Experience**

Teachers Knowledge	Sum of Squares	Df	Mean Square	fcal	P-value
Between Group	689.086	3	232.695	5.532	.001
Within Group	6941.062	165	42.067		
Total	7639.148	168			

The ANOVA table above revealed the teacher’s knowledge of test administration by levels of working experience. The analysis showed that the P-value of .001 is less than the alpha level .05 with degree of freedom of 3. Therefore, the null hypothesis which state that, there is no significance difference in the mean scores of test administration knowledge among highly experience, experience, less experience and inexperience senior

secondary school teachers in Minjibir education zone is hereby rejected. Meaning there is significant difference in the mean scores of test administration knowledge among highly experience, experience, less experience and inexperience senior secondary school teachers in Minjibir education zone. To elucidate between which groups significant difference are found we need to run a post-hoc tests are follows;

Multiple Comparisons

Dependent Variable: tests administration knowledge

(i) experience	(j) experience	Mean Difference (I-J)	Std. Error	Sig.	95% Interval Lower Bound	Upper Bound
<b>highly experienced</b>	experienced	3.46545*	1.26736	.035	.1761	6.7548
	less experienced	4.97556*	1.41770	.003	1.2961	8.6551
	unexperienced	4.84857*	1.53093	.010	.8752	8.8219
<b>experienced</b>	highly experienced	-	1.26736	.035	-6.7548	-.1761
	less experienced	1.51010	1.39046	.699	-2.0987	5.1189
	unexperienced	1.38312	1.50574	.795	-2.5249	5.2911
<b>less experienced</b>	highly experienced	-	1.41770	.003	-8.6551	-1.2961
	experienced	4.97556*				
	unexperienced	-1.51010	1.39046	.699	-5.1189	2.0987
<b>inexperienced</b>	unexperienced	-.12698	1.63430	1.000	-4.3686	4.1147
	highly experienced	-	1.53093	.010	-8.8219	-.8752
	experienced	4.84857*				
	experienced	-1.38312	1.50574	.795	-5.2911	2.5249
	less experienced	.12698	1.63430	1.000	-4.1147	4.3686

From the above table it showed that there was a statistically significant mean difference between groups as determined by one-way ANOVA ( $F(3,165) = 5.532, p = .001$ ). A

Turkey post hoc test revealed that the level experience to effectively administer tests was statistically and significantly different with regards to highly experience (32.92 +5.91,  $p=.003$ ) knowledge compared to inexperience (28.07 + 6.76  $p=.795$ ). There was statistically significant mean difference with regards to experience (29.45+ 7.51,  $p=.035$ ) and less experience (27.94 + 5.18  $P= .699$ ). There was no significant difference between highly experience and experience and also no statistically difference observed in the mean score between less

experience and inexperience.

**Hypotheses Four:** There is no significant difference in mean scores of test administration knowledge between qualified and unqualified teachers among senior secondary schools in Munjibir Education zone,

**Table 9: Independent sample t-test on mean difference in test administration Knowledge by Location**

Location	N	Mean	SD	Std error	t-value	df	p-value
Urban	139	29.49	6.70	.56	-1.807	167	.077
Rural	30	31.93	7.67	1.21			

Table above represent the analysis of t-test on the mean score of test administration knowledge between urban and rural teachers. The outcome from the analysis showed that the mean score for urban teachers (mean urban = 29.49, SD =6.70) and mean rural teachers (mean rural = 31.93, SD= 7.67). The computed t-value stood at -1.807 at df level 167. From the table also, the P-value stood at .077 which is greater than Alpha value .05. Therefore, based on the obtained result, the stated null hypothesis which says, there is no significant difference in mean scores of test administration knowledge among those teachers teaches in rural and those teachers teaches in urban senior secondary schools of Minjibir Education Directorate, is therefore accepted.

**Discussion of findings**

The paper aimed at evaluating the test administration skills of senior secondary school teachers in Minjibir education directorate, Kano state, Nigeria The first finding of the study from the research question indicated that senior secondary school teachers in Minjibir Education Directorate Kano State possess test administration knowledge. This is evidence that 106 of the teachers which is representing 62.7% displayed high knowledge of test administration while 63 of them accounting for 37.3% manifested low knowledge of test administration. This finding is in support with the findings of Morayo (2012). Whose findings revealed that most of the teachers follow and use good test administration procedure 76 (100%)

claimed to ensure proper supervision and sitting arrangements. While administering their tests 75 (98%) notify students well ahead of time when necessary. 69 (90.8%) claimed to administer their test at the appropriate time of the day bearing in mind the weather condition and other factors and 75 (98.7%) admit that they ensure proper distribution and submission of question papers; 72 (94.7%) accept that they handled any case of exam malpractice in the regulated way.

Findings from hypotheses one revealed that there was no significant difference in the mean scores between male and female teachers of Minjibir Education Directorate Kano State. This is the evident that male’s mean score was 29.64 with SD of 6.87 while the mean score of females was 30.50 with SD of 6.49. The finding is in line with the findings of Muhammad (2018) which revealed that there is no significant gender difference in test administration skills both male and female has no difference in the possession of test administration skills.

Findings from hypotheses two revealed that there was a significant difference in the mean score between qualified and unqualified senior secondary school teachers of Minjibir Education Directorate for the evident that the mean score of qualified teachers was (30.75) with SD of (6.21) while the mean score of unqualified teachers was 24.83 with SD of (7.57). This finding is in line with the findings of Philips (2013) which revealed that teachers with teaching qualification (NCE BA.Ed/ MED) performed better than those teachers without

teaching qualification in administering and scoring classroom tests. The implication of this finding is that qualified teachers passed through educational courses where they have been taught different methods of teaching and the examination procedures. While those without teaching qualification did not receive such kind of methods. Findings from hypotheses three revealed that there was no significant difference in the mean score between highly experienced senior secondary school teachers and the experienced ones of Minjibir Education Directorate Kano State for the evident that the mean score of highly experienced was (32.92) and the mean score of experienced was (29.45). Also there was no significant difference in the mean score between less experienced and the in-experienced senior secondary school teachers of Minjibir Education Directorate Kano State. Where the mean score of less experienced was (27.94) and the mean score of in-experienced was (28.07). This revealed that highly experienced teachers were more experience in administering test than those with low experience. The implication of this finding may be attributed to the fact that highly experienced and experienced senior secondary school teachers spend many years in service. So that they have attended workshops seminars etc. Findings from hypotheses four revealed that there was no significant difference in the mean score between senior secondary school teachers who are teaching in rural and those that are teaching in urban areas of Minjibir Education Directorate Kano State. The implication of this finding may be attributed to the fact that location did not influence test administration knowledge of those senior secondary school teachers. This finding was in line with the researchers' assumption before the

conduct of this research work which said there no significant difference in the mean score between those teachers teaches in rural and the teachers that are teaching in urban areas of Minjibir Education Directorate Kano State Nigeria.

#### Conclusion

It was concluded that majority of teachers in Minjibir Education Directorate Kano State possess high knowledge/skills of test administration. This is evident that, 106 of the teachers which are representing 62.7% displayed high possession of test administration knowledge. While gender and location, did not influenced senior secondary school teachers' test administration knowledge in Minjibir Education Directorate Kano State, Nigeria.

Before the conduct of this study, the researcher assumed that teachers in Minjibir Education Directorate lack test administration knowledge but the finding of the study has negated the researcher's earlier assumption. The finding revealed that majority (62.7%) of senior secondary school teachers in Minjibir Education Directorate Kano State possessed test administration knowledge.

It was therefore recommended that there is need for the government both at local and state level, to enhance teachers training programme to senior secondary school teachers on the aspect of administering test items in order to justify the quality of the test items, through validity and reliability. This will help those teachers with low knowledge of test administration.

#### **Recommendations:**

Recommendations from the study and for further study for improving test administration knowledge among senior secondary schools' teachers in Minjibir zonal education directorate are as follows:

- i. Professional Development Programs: Implement ongoing training sessions and workshops focused on assessment literacy, covering topics such as test construction, administration, scoring, and interpreting results. You should also encourage teachers' participation in external courses or certifications related to educational assessment.
- ii. Collaboration and Peer Support: Establish collaborative groups or professional learning communities where teachers can share best practices, resources, and experiences related to test administration. Foster mentorship programs where experienced educators guide less experienced teachers in assessment strategies.
- iii. Access to Resources and Materials: Provide teachers with access to up-to-date assessment tools, guidelines, and literature that can aid in effective test administration. Create a repository of sample tests and assessment rubrics that teachers can adapt for their use.
- iv. Integration of Assessment into Teacher Training Programs: Advocate for the inclusion of comprehensive assessment training in teacher education programs, ensuring that new educators are well-equipped with the knowledge necessary for effective test administration. Collaborate with universities and teacher training colleges to develop tailored assessment modules.
- v. Regular Feedback and Evaluation: Establish a system for regular feedback on assessment practices, including peer evaluations and student performance data, to help teachers reflect on their practices and identify areas for improvement. Conduct periodic assessments of teachers' knowledge and skills in test administration to tailor professional development efforts accordingly.
- vi. Use of Technology in Assessment: Introduce teachers to educational technology tools that can facilitate test administration, such as online assessment platforms, which can streamline the process and provide immediate feedback. Encourage the use of data analytics tools to help teachers analyze assessment results and make informed decisions about instruction.
- vii. Policy and Administrative Support: Advocate for educational policies that prioritize assessment training and support at the institutional level, ensuring that test administration knowledge is recognized as a critical component of teacher effectiveness. Involve school administrators in promoting a culture of assessment literacy by providing resources and time for teachers to engage in professional development.
- viii. Engagement with Stakeholders: Involve parents and community members in understanding the importance of effective assessment practices, fostering a supportive environment for teachers. Collaborate with educational authorities to ensure alignment between curriculum expectations and assessment practices.

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**Confronting Emerging Health Challenges: The Impact of Aerobic Exercise on Blood Lipid Profiles among Pregnant Women Attending Antenatal Care in Urban Maternity Azare, Bauchi State, Nigeria**

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**Abstract**

This study examines the impact of 6-week aerobic exercise on blood lipid profiles among pregnant women attending antenatal care in urban maternity Azare, Bauchi state, Nigeria, with a view to encourage participation in regular exercise among pregnant women. Six hypotheses were formulated to guide the study. A quasi-experimental research design involving single group of participants was adopted. A total of 30 pregnant women who met the inclusion criteria were purposively selected, with 28 however, completing the study. Participants engaged in treadmill walking three times weekly for six weeks. Pre- and post-exercise measurements included Total Body Cholesterol (TBC), Blood Glucose (BG), High-Density Lipoprotein Cholesterol (HDL-c), Low-Density Lipoprotein Cholesterol (LDL-c), and Triglycerides (TG). Results from paired sample t-tests indicated significant reductions in TBC ( $t=16.83$ ,  $df=27$ ), ( $p<0.05$ ) BG ( $t=12.55$ ,  $df=27$ ), ( $p<0.05$ ) LDL-c ( $t=11.50$ ,  $df=27$ ), ( $p<0.05$ ) and TG ( $t=13.33$ ,  $df=27$ ), ( $p<0.05$ ) while HDL-c increased by 5.96 mg/dl ( $t=-13.81$ ,  $df=27$ ), ( $p<0.05$ ). It is concluded that regular treadmill walking can help regulate blood lipid profiles, potentially reducing the risk of Gestational Diabetes Mellitus (GDM) as one of the maternal health challenges. The study recommends incorporating treadmill walking as part of antenatal care to promote maternal health.

**Keywords:** Aerobic exercise, Blood lipid profiles, Pregnant women

**Introduction**

Pregnancy is a critical period that presents numerous physiological, psychological, and social challenges. In recent decades, emerging health issues have become increasingly prevalent among pregnant women, particularly in urban areas of developing countries. These challenges are often multifactorial, influenced by lifestyle changes, nutrition, environmental conditions, and healthcare accessibility.

Wang et al., (2018), posited that one of the most pressing emerging health concerns among pregnant women is gestational dyslipidemia—a condition characterized by abnormal blood lipid profiles during pregnancy. This condition has

been linked to adverse maternal and neonatal outcomes, including preeclampsia, preterm birth, and macrosomia (Sun et al., 2020). Urbanization and sedentary lifestyles have contributed significantly to the rise in dyslipidemia, as many women adopt Western dietary habits rich in saturated fats and low in physical activity.

Similarly, Endres et al., (2015), aver that another major health issue is excessive gestational weight gain (GWG), which increases the risk of obesity, gestational diabetes mellitus (GDM), and cardiovascular complications. In the same vein, WHO (2020), observed that the Maternal Mortality Rate (MMR) of Nigeria is 814 (per 100,000 live births). This is an increase of MMR compared to that of 2008 record of 608 (per 100,000 live births) in Nigeria (Doctor, Findley & Afeyandu, 2012). However, it is reported that aerobic exercise is potentially among the

measures that attenuates the onset of these adverse pregnancy outcomes, including Gestational Diabetes mellitus (GDM) (Nagpal & Mottola, 2020). Similarly, Bruce, Kriketos, Cooney & Hawley, (2004) maintains that regular, moderate-intensity aerobic exercise has been shown to positively influence lipid profiles, reduce the risk of GDM and hypertensive disorders, and improve overall maternal well-being. This is because aerobic exercise leads to increased blood flow to the working muscles. It also causes blood vessels to expand. Due to these two mechanisms, insulin is carried faster and more efficiently to the cells that uses them. Consequently, this causes the body to take up and use the sugar (glucose) in the blood; thus, blood sugar levels begin to lower faster than usual.

Several studies have been conducted in this regard. For example, McDonald et al. (2021) examined the effects of aerobic exercise on metabolic indicators during pregnancy. Their findings revealed significant improvements in lipid profiles: reductions in triglycerides (TG: 92.3 vs. 121.2 mg/dL,  $p = .04$ ), total cholesterol (TC: 186.8 vs. 219.6 mg/dL,  $p = .002$ ), and low-density lipoprotein cholesterol (LDL-C: 104.1 vs. 128.8 mg/dL,  $p = .002$ ) were observed in the exercise group compared to controls. Additionally, they reported lower insulin levels in late pregnancy among those who exercised ( $\beta = -2.6 \mu\text{IU/mL}$ , 95% CI: -4.2, -0.95,  $p = .002$ ), indicating enhanced insulin sensitivity. Similarly, El-Refaye, Ali, and Elbegawy (2015) found that aerobic exercise significantly reduced High Density Lipoprotein Cholesterol (HDL-C), fasting blood glucose, body mass

index (BMI), and fasting insulin levels ( $p < .001$ ). Although the reduction in HDL-C appears contradictory, it may reflect methodological or population-specific factors requiring further scrutiny.

In a study into women with gestational diabetes, Daniel, Nzeribe, and Udoaku (2021) found that increases in HDL levels across eight weeks of aerobic training, alongside significant reductions in LDL, TC, TG, and body weight ( $p < .05$ ). Aggarwala et al. (2016) also reported that aerobic exercise led to a significant decrease in both TG and HDL levels ( $p < .001$  and  $p < .05$ , respectively), further supporting the lipid-lowering effects of aerobic exercise.

### **Statement of the Problem**

The global maternal mortality rate, due mainly to the adverse pregnancy outcomes, is alarming. Ideally, pregnant women are supposed to engage in exercise right from the first trimester. This not only helps them maintain healthy weight but also prevents them from developing complications associated with conditions such as gestational diabetes mellitus, maternal obesity and gestational hypertension. However, even as it can be seen that exercise prevents complications associated with pregnancy, yet the researcher observed, during numerous supervision visits of students on practical field experience in the Urban Maternity Azare, through interview with personnel in the maternity, that many pregnant women are diagnosed with high blood pressure and other associated risk factors that can lead to development of Metabolic Syndrome in pregnancy such as abnormal level of HDL-c, LDL-c, abnormal level of triglycerides and BMI  $>30\text{kg/m}^2$ . For example, the maternity register revealed that in the month of February, March, and April, 2023, alone, there were records of 165, 199, 208 pregnant women respectively, who were diagnosed with Gestational Diabetes Mellitus.

The personnel further confirmed that the cases seem to be increasing exponentially. This is probably due to the fact that these pregnant women are not engaging in conventional exercise due to influence of culture or tradition.

Moreover, the extent to which aerobic exercise, such as treadmill walking, influences blood lipid profiles among pregnant women in urban maternity settings remains underexplored. This study aimed to bridge this gap by assessing the effects of a 6-week aerobic exercise program on the blood lipid profiles among pregnant women attending antenatal care in Urban Maternity Azare, Bauchi State, Nigeria. It is against this stated problem that the following research questions were advanced to guide the study:

1. Will 6 weeks aerobic exercise have effect on the total blood cholesterol among pregnant women attending antenatal care in Urban Maternity Azare?
2. Will 6 weeks aerobic exercise have effect on blood glucose among pregnant women attending antenatal care in Urban Maternity Azare?
3. Will 6 weeks aerobic exercise have effect on the High-Density Lipoprotein Cholesterol among pregnant women attending antenatal care in Urban Maternity Azare?
4. Will 6 weeks aerobic exercise have effect on the Low-Density Lipoprotein Cholesterol among pregnant women attending antenatal care in Urban Maternity Azare?
5. Will 6 weeks aerobic exercise have effect on Triglycerides among pregnant women

attending antenatal care in Urban Maternity Azare?

### **Hypotheses**

**H0<sup>1</sup>:** There will be no significant effect of 6 weeks aerobic exercise on the total blood cholesterol among pregnant women attending antenatal care in Urban Maternity Azare, Bauchi State, Nigeria.

**H0<sup>2</sup>:** There will be no significant effect of 6 weeks aerobic exercise on blood glucose among pregnant women attending antenatal care in Urban Maternity Azare, Bauchi State, Nigeria.

**H0<sup>3</sup>:** There will be no significant effect of 6 weeks aerobic exercise on the High-Density Lipoprotein cholesterol among pregnant women attending antenatal care in Urban Maternity Azare, Bauchi State, Nigeria.

**H0<sup>4</sup>:** There will be no significant effect of 6 weeks aerobic exercise on the Low-Density Lipoprotein cholesterol among pregnant women attending antenatal care in Urban Maternity Azare, Bauchi State, Nigeria.

**H0<sup>5</sup>:** There will be no significant effect of 6 weeks aerobic exercise on Triglycerides among pregnant women attending antenatal care in Urban Maternity Azare, Bauchi State, Nigeria.

### **Methodology**

A quasi-experimental research design of pre-test post-test involving single group of participants was used for this study. There are many reasons advanced by scholars for adopting quasi experimental design. For instance, quasi-experimental design allows researchers to study interventions in real-world settings without the need for random assignment. This ensures that all participants have access to potential

benefits of the intervention. In other words, it allows all eligible participants to receive an intervention, rather than only those randomised to the treatment group. In many clinical settings, it may not be ethical to randomly assign participants to treatment or control groups, especially if withholding treatment could be harmful. In this type of research design, measurements of the dependent variables are taken from only an experimental group pre and post exercise treatment. (Daniel, Nzeribe & Udoaku, 2021).

This design is suitable for this study as all the participants who met the inclusion criteria were allowed to participate in the study in order to acquire its potential benefit. They undergo treadmill walking exercise within the intensity of 50-70% heart rate maximum on three alternate days for 6 weeks. Moreover, their dependent variables were measured pre and post exercise treatment. The population of this study comprised all the 380 pregnant women attending antenatal care in Urban Maternity Azare, who were diagnosed with risk factors for GDM according to the maternity register, 2024. Purposive sampling technique was used to select 30 pregnant women who met the inclusion criteria. The reason for adopting purposive sampling technique is that all the participants of the study are pregnant women that met the inclusion criteria and therefore are

all eligible to participate.

The following instruments and exercise modalities were used for the study:

1. **Digital Automatic Sphygmoma- nometer:** (Model: Omron digital BP monitor/HR, model HEM-403C. Tokyo, Japan) to measure systolic and diastolic blood pressures.
2. Treadmill: (Model: Standard 4HP: Commercial Treadmill Heavy Duty (150kg User Weight).

A data collection sheet for physiological and anthropometric measurement was used to record the scores of the measurements of all the dependent variables of the participants, pre and post exercise treatment. Informed consent form was given to the participants to fill. The service of four lab technicians in the biochemistry laboratory of urban maternity Azare was employed for taking the blood samples and subsequent tests of blood lipid profiles of the participants.

### **Hypotheses Tested**

**H0<sup>1</sup>:** There will be no significant effect of six-week aerobic exercise on the Total Blood Cholesterol (TBC) among pregnant women attending antenatal care in urban maternity Azare, Bauchi state, Nigeria.

**Table 3:** Summary of paired sample t-test on the impact of six-week aerobic exercise on the total blood cholesterol among pregnant women attending antenatal care in urban maternity Azare, Bauchi state, Nigeria.

Variable	Test	Mean	N	SD	T	df	P
TBC (mg/dl)	Pre	201.32	28	1.38	16.83	27	0.01
	Post	196.14	28	0.84			

\*Significant at .05 alpha level  $t_{tab}=1.70$  (df:27);  $P<0.05$

Table 3 above shows 201.32mg/dl as pre-test value on TBC of the participants. This signifies that all the participants exhibited abnormal level of TBC before the beginning of the training program. However, after the administration of aerobic training for the period of 6 weeks, the

post-test value of the participants decreased to 196.14mg/dl. The statistical computation of paired sample t-test reveals significant effect ( $t=(df27),16.83, P<0.05$ ) of aerobic exercise on TBC of pregnant women attending antenatal care in urban maternity Azare, Bauchi State, Nigeria. It is believed that this change in the

**Table 4:** Summary of paired sample t-test on the impact of six-week aerobic exercise on blood glucose among pregnant women attending antenatal care in urban maternity Azare, Bauchi state, Nigeria.

Variable	Test	Mean	N	SD	T	df	P
BG (mg/dl)	Pre	97.03	28	1.31	12.55	27	0.01
	Post	93.39	28	0.78			

\*Significant at .05 alpha level  $t_{tab}=1.70$  (df:27);  $P<0.05$

Table 4 above shows 97.03mg/dl as pre-test value on BG of the participants. This signifies that all the participants exhibited abnormal level of BG before the beginning of the exercise program. However, after the administration of aerobic exercise for the period of 6 weeks, the post-test value of the participants decreased to 93.39mg/dl. The statistical computation of paired sample t-test reveals significant effect ( $t=(df27),12.55, P<0.05$ ) of aerobic exercise on BG of pregnant women attending antenatal care in urban maternity Azare, Bauchi state, Nigeria.

This positive change in BG among the participants is expected because the potency of aerobic exercise to positively influence insulin sensitivity in pregnancy has long being established. The null hypothesis is therefore

rejected on the basis that significant effect exists.

**H0<sup>3</sup>:** There will be no significant effect of six-week aerobic exercise on High Density Lipoprotein Cholesterol (HDL-c) among pregnant women attending antenatal care in aurban mternity Azare, Bauchi state, Nigeria. TBC of the participants after the exercise program is not unexpected as it is already established that aerobic exercise of substantial intensity and duration improves TBC of individuals. The null hypothesis is therefore rejected on the basis that significant effect exists.

**H0<sup>2</sup>:** There will be no significant effect of six-week aerobic exercise on Blood Glucose (BG) among pregnant women attending antenatal care in urban maternity Azare, Bauchi state, Nigeria

**Table 4:** Summary of paired sample t-test on the impact of six-week aerobic exercise on blood glucose among pregnant women attending antenatal care in urban maternity Azare, Bauchi state, Nigeria.

Variable	Test	Mean	N	SD	T	df	P
BG (mg/dl)	Pre	97.03	28	1.31	12.55	27	0.01
	Post	93.39	28	0.78			

\*Significant at .05 alpha level  $t_{tab}=1.70$  (df:27);  $P<0.05$

Table 4 above shows 97.03mg/dl as pre-test value on BG of the participants. This signifies that all the participants exhibited abnormal level of BG before the beginning of the exercise program. However, after the administration of aerobic exercise for the period of 6 weeks, the post-test value of the participants decreased to 93.39mg/dl. The statistical computation of paired sample t-test reveals significant effect ( $t=(df27), 12.55, P<0.05$ ) of aerobic exercise on BG of pregnant women attending antenatal care in urban maternity Azare, Bauchi state, Nigeria.

This positive change in BG among the participants is expected because the potency of aerobic exercise to positively influence insulin sensitivity in pregnancy has long been established. The null hypothesis is therefore rejected on the basis that significant effect exists.

**H0<sup>3</sup>:** There will be no significant effect of six-week aerobic exercise on High Density Lipoprotein Cholesterol (HDL-c) among pregnant women attending antenatal care in urban maternity Azare, Bauchi state, Nigeria.

**Table 5:** Summary of paired sample t-test on the impact of six-week aerobic exercise on HDL-c among pregnant women attending antenatal care in urban maternity Azare, Bauchi state, Nigeria.

Variable	Test	Mean	N	SD	T	df	P
HDL-c (mg/dl)	Pre	47.21	28	1.34	-13.81	27	0.01
	Post	53.17	28	1.84			

\*Significant at .05 alpha level  $t_{tab}=1.70$  (df:27);  $P<0.05$

Table 5 above shows 47.21mg/dl as pre-test value on HDL-c of the participants. This signifies that all the participants exhibited abnormal level of HDL-c before beginning of the exercise program. However, after the administration of aerobic exercise for the period of 6 weeks, the post-test value of the participants increased to 53.17mg/dl. The statistical computation of paired sample t-test reveals significant effect ( $t=(df27), -13.81, P<0.05$ ) of aerobic exercise on HDL-c of pregnant women attending antenatal care in urban

maternity Azare, Bauchi state, Nigeria. It is believed that this change in the HDL-c of the participants after the exercise program is not unexpected as it is already established that aerobic training of substantial intensity and duration improves HDL-c of individuals. The null hypothesis is therefore rejected on the basis that significant effect exists.

**H0<sup>4</sup>:** There will be no significant effect of six-week aerobic exercise on Low Density Lipoprotein Cholesterol (LDL-c) among pregnant women attending antenatal care in urban maternity Azare, Bauchi state, Nigeria.

**Table 6:** Summary of paired sample t-test on the impact of six-week aerobic exercise on LDL-c among pregnant women attending antenatal care in urban maternity Azare, Bauchi state, Nigeria.

Variable	Test	Mean	N	SD	T	df	P
LDL-c (mg/dl)	Pre	102.32	28	2.52	11.50	27	0.01
	Post	96.00	28	1.44			

\*Significant at .05 alpha level  $t_{tab}=1.70$  (df:27);  $P<0.05$

Table 6 above shows 102.32mg/dl as pre-test values on LDL-c of the participants. This signifies that all the participants exhibited abnormal level of LDL-c before the beginning of the exercise program. However, after the administration of aerobic exercise for the period of 6 weeks, the post-test value of the participants decreased to 96.00mg/dl. The statistical computation of paired sample t-test reveals significant effect ( $t=(df27), 11.50, P<0.05$ ) of aerobic exercise on LDL-c of pregnant women attending antenatal care in urban maternity Azare,

Bauchi state, Nigeria. This positive change in LDL-c among the participants is expected because the potency of aerobic exercise to positively influence insulin sensitivity in pregnancy has long being established. The null hypothesis is therefore rejected on the basis that significant effect exists.

**H0<sup>5</sup>:** There will be no significant effect of six-week aerobic exercise on Triglycerides (TG) among pregnant women attending antenatal care in urban maternity Azare, Bauchi state, Nigeria

**Table 7:** Summary of paired sample t-test on the impact of six-week aerobic exercise on TG among pregnant women attending antenatal care in urban maternity Azare, Bauchi state, Nigeria.

Variable	Test	Mean	N	SD	T	Df	P
Triglycerides (mg/dl)							

\*Significant at .05 alpha level  $t_{tab}=1.70$  (df:27);  $P<0.05$

Table 7 above shows 152.39mg/dl as pre-test values on triglycerides of the participants. This signifies that all the participants exhibited abnormal level of triglycerides before the beginning of the exercise program. However, after the administration of aerobic exercise for the period of 6 weeks, the post- test value of the participants decreased to 146.50mg/dl. The statistical computation of paired sample t-test reveals significant effect ( $t=(df27), 13.33, P<0.05$ ) of aerobic exercise on triglycerides of pregnant women attending antenatal care in urban maternity Azare, Bauchi state, Nigeria.

This positive change in Triglycerides among the participants is expected because the potency of aerobic exercise to positively influence insulin sensitivity in pregnancy has long being established. The null hypothesis is therefore rejected on the basis that significant effect exists.

**Discussion of Findings**

This study investigated the impact of aerobic exercise on blood lipid profiles among pregnant women attending antenatal care in urban maternity Azare, Bauchi state, Nigeria. The findings of this study indicated that significant decrease was found in the total body cholesterol of the participants, after

6 weeks of aerobic training. This decrease in total body cholesterol is believed to be as a result of the aerobic exercise intervention administered on the participants for the period of 6 weeks. This is further confirmed by the presence of abnormal level of the TBC among the participants before the aerobic exercise intervention. The findings of this study agree with the study of McDonald et.al (2021), who discovered favourable changes in the total body cholesterol of pregnant women after being subjected to 6- week aerobic exercise. The agreement between these findings can be ascribed to the similar physiological response to aerobic exercise among the participants of the two studies, which is known to enhance lipid metabolism by increasing enzyme activity responsible for breaking down cholesterol, a mechanism highlighted by McDonald et al. as being integral to the reduction in TBC.

The findings of this study further revealed a significant decrease in the blood glucose of pregnant women attending antenatal care in Urban Maternity Azare, Bauchi State, Nigeria. This decrease in blood glucose is believed to be as a result of the aerobic exercise intervention administered on the participants for the period of 6 weeks. This finding corroborates the study of El-Refaye, Ali and Elbegawy (2015) who found out that blood glucose level of pregnant women significantly decreased following 6- week aerobic exercise . The study is also in line with that of McDonald et.al (2021), who reported that the blood glucose of pregnant women with MS significantly decreased following 6-week aerobic exercise. The study is also in line with that of McDonald et.al (2021), who reported that the blood glucose of pregnant women with MS significantly decreased following 6-week aerobic exercise . The agreement

between these findings can be attributed to the fact that aerobic exercise enhances insulin sensitivity and glucose uptake by muscle tissues, which promotes better blood glucose regulation. This physiological mechanism, highlighted in both studies, likely reinforces the reduction in blood glucose levels observed in pregnant women undergoing aerobic exercise .

The findings of this study indicated that significant increase was found in the HDL-c of the participants after 6 weeks aerobic exercise . This increase in HDL-c is believed to be as a result of the aerobic exercise intervention administered on the participants for the period of 6 weeks. The findings agree with the study of El-Refaye, Ali and Elbegawy (2015), who discovered favourable changes in the HDL-c of pregnant women after being subjected to 6-week aerobic exercise . The study also corroborates that of Daniel, Nzeribe and Udoaku (2021), who in their study found out that there was an observed increase in the mean HDL of the exercise group from  $47.73 \pm 0.72$  at baseline to  $51.13 \pm 11.47$  after 4 weeks exercise participation and a further increase of  $54.87 \pm 12.26$  at the end of a total 8 weeks of participation in the exercises. The agreement of the findings of this study with the findings of El-Refaye, Ali, and Elbegawy (2015); and that of Daniel, Nzeribe and Udoaku (2021), can be ascribed to the fact that both studies employed similar aerobic exercise protocols over a 6-week period, which has been shown to consistently improve lipid profiles, including HDL-c, regardless of the demographic differences in the participants. This highlights the universal effect of aerobic exercise on enhancing cardiovascular health. The results of this study further revealed a significant decrease in the LDL-c of pregnant women attending antenatal care in Urban Maternity Azare, Bauchi State, Nigeria.

This decrease in LDL-c is believed to be as a result of the aerobic exercise intervention administered on the participants for the period of 6 weeks. This finding corroborates that of McDonald et.al (2021), who found out that LDL-c of pregnant women with MS significantly decreased following 6-week aerobic exercise. The study is also in line with that of Daniel, Nzeribe and Udoaku (2021), who in their study on aerobic exercise impacts on blood cholesterol of women with gestational diabetes, found out that the LDL- c of the participants of the exercise group was positively influenced by the exercise as it showed some decrease in values ( $P < 0.05$ ). The agreement with McDonald et al. (2021) and that of Daniel, Nzeribe and Udoaku (2021), likely stems from the similarity in both study designs, as each involved a structured aerobic training intervention over a 6-week period. Aerobic exercise has been consistently shown to improve lipid metabolism, and this physiological response appears to be common across various populations, including pregnant women. Thus, the findings reinforce the role of aerobic exercise in reducing LDL-c levels, irrespective of the specific health condition being addressed. The findings of this study further revealed that there is significant decrease in the Triglyceride (TG) level of pregnant women attending antenatal care in Urban Maternity Azare, Bauchi State, Nigeria. This decrease in TG is believed to be as a result of the aerobic exercise intervention administered on the participants for the period of 6 weeks. This finding agrees with the study of Daniel, Nzeribe and Udoaku (2021), who in their study on aerobic training impacts on blood cholesterol of women with gestational diabetes, found out that there was marked decrease in the TG of the exercise group following 8 weeks aerobic training. The study also corroborates that of Aggarwala, Sharma, Jain and

Sarkar (2016) who conducted a study on effect of aerobic exercise on blood glucose levels and lipid profile of pregnant women with type2 diabetes mellitus. Their findings show that high density lipoprotein cholesterol, TG had significantly decreased as p values were  $< 0.001$  and  $< 0.05$  respectively. The alignment with Aggarwala Sharma, Jain and Sarkar (2016), likely results from the common aerobic exercise regimen used in both studies, which effectively improved lipid metabolism and reduced TG levels. This suggests that the physiological effects of aerobic exercise in lowering triglycerides are strong across different populations, including those with varying health conditions such as gestational diabetes and type 2 diabetes mellitus, reinforcing the general effectiveness of such interventions in managing lipid profiles.

### **Conclusions**

The study concluded that aerobic exercise of 6 weeks duration had effect on blood lipid profiles of pregnant women attending antenatal care in urban maternity Azare, Bauchi State, Nigeria. This is further confirmed by noticeable decrease in total body cholesterol, blood glucose, LDL-c, TG, of the participants; there is noticeable increase as well in HDL-c among the participants of the study.

### **Recommendations**

Based on the conclusions of this study, the following recommendations were made:

1. The Urban Maternity Azare, Bauchi State, Nigeria and other similar health care provision units should include among their myriads of programmes of managing conditions associated with GDM, a treadmill walking exercise.
2. Pregnant women in general should utilise the ever-simple nature of walking on treadmill in order to prevent themselves from complications associated with GDM

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## Confronting emerging issues and unlocking opportunities in community development in Nigeria

By

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### Abstract

Community development is a demonstration of people's capacity and willingness to use their initiative to identify and prioritize community problems. It is a social process in which members, through group actions control their living conditions. This paper explores the dynamic landscape of community development, highlighting emerging issues and opportunities for growth. The objectives of the study were to determine challenges faced by the community members and approaches to address systematic barriers, leverage technology, and faster community engagement. The paper outlines key strategies for overcoming challenges. Also to determine emerging issues by the community members in Nigeria. By confronting challenges and unlocking opportunities community development can play a vital role in empowering individuals strengthening communities and driving sustainable development. The overall aim of the paper is to enable leaders and community members to take more effective control of the developmental process in their communities. The study utilized a combination of both primary and secondary sources of data. Conclusion and some recommendations are proffered that: diverse communication strategies should be adopted, prioritize accessibility, conduct thorough assessment, develop solutions that can be sustained over the long term and develop programs that focus on skills development

**Keywords:** Community Development Emerging Issues, Opportunities, Empowerment, Sustainable Development.

### Introduction

The word community development comes from the Latin words, 'communitas' which means as common. A group of people sharing common living, accommodation and goods. A community is a group of people living in the same area or having the same religion or race (Michael Riach, 2016). Community is a system or the totality of interactions among sub-systems. It can be characterized based on geography, culture or organization. Geographic are local neighborhoods, villages, town cities, states, zones, nations, regional, or global bodies. Community of culture ranges from local cliques, sub-culture, ethnic group, religious, multi-cultural or pluralistic civilization or the global community cultures, including 'communities of need or identify' such as 'challenged persons'. Community of organizations are seen in informal family or kinship networks to more formal incorporated

association at local, state, national or international scale (Ahmed 2015). The Community Development Academy, University of Missouri defines Community development as: 'A process through which people and communities acquire the attitudes, skills and abilities for active participation in creating meaningful futures and dealing with Community issues, Ayres, Barefield et al (2005).

Community development works to improve the quality of community life and the opportunity for individuals or groups within communities. In order for community development to be successful, key things that need to be identified includes identifying the needs and assets of a community. Assets are the things that can help improve the quality of life, whereas needs are the problems that need to be fixed or improve on. The assets are a useful tool in helping to increase the well-being of the people living in the

community so it is important to develop these rather than focusing on need. This study identified that community development must include capacity building, empowerment and participation if communication health and well-being is to be achieved. It was identified that there were four main principles that are important in linking community development to health. These principles include the identification of need, 'bottom up' solutions, enabling all people to take control over their own health and the empowerment and participation of communities. Empowerment is the process of increasing the capacity of individuals or groups to make choices and to transform those choices into desired actions and outcomes. It naturally links to the ability of individuals that affect their lives. An outcome of empowerment and participation is the building of social capital in communities. Social capital can be described as networks together with shared norms, values and understandings which facilitate cooperation within or among groups. Building social capital can aid in amplifying the influence of involvement in decisions that affect a community.

Owing to the failure of development projects in the year 1950s and 1960s, social workers and field activists began to call for the inclusion of populations concerned with development in project design and implementation (Armah et al., 2009). The notion then was that such projects were unsuccessful because local populations were left out of the decision-making process; a state of affairs that tended to perpetuate social inequality, hence initiatives were proposed as a mechanism to promote equality through inclusion (empowerment). Irrespective of the approach adopted for local economic development,

Giloth (1998) noted that the primary goal should be to increase the number and variety of job opportunities available to the local people through their initiatives.

### **Challenges in Community Development**

This study raises and discloses some of the challenges that are frequently occurred when initiating community development in rural or urban setting. They include among others: lack of funding and resources, limited community engagement, addressing diverse needs of the poor and marginalized, and overcoming social and cultural barriers. All these challenges are interrelated and often the cause of failure in disenfranchised community advancement initiatives.

#### **1- Lack of Funding and Resources**

In order to develop and maintain investment in health, communities need adequate resources and funding to do so. However, today often slowed economic and social changes a persistent public health funding gap exists for the community programs and services aiming to prevent health problems and improve quality of life. The largest single barrier to attaining social determinants of health that promote good health is funding. In general, lacking resources and funding are often symptoms of a deeper problem.

#### **Limited Community Engagement**

Where a community has not been able to engage effectively with the range of networks, services, and support agencies available, the people within it have generally not thrived. This has often resulted in marginalized of particular groups within communities and a growing sense of disconnection between individuals and the wider community engagement has been limited. At times, it has been due to the absence of leadership or vision, and in others, the plethora of top-down

initiatives and funding opportunities which require little community feeling that it has no real control over its own destiny. Limited community engagement can also be attributed to the competing demands and time constraint experienced by individuals in contemporary society. The extent to which community members are stretched and struggle to create a balanced livelihood has resulted in minimal participation in community activities. Limited community engagement has a direct impact on social capital and the ability of a community to work together to achieve common goals for the greater good. The capacity for community engagement in initiatives aimed at rectifying or preventing social and economic issue can often be limited by the government's agenda and focus.

### **2- Addressing Diverse Needs**

Diverse needs within community can be attributed to differences in age, gender, level of ability, ethnicity, religion, educational level, and economic status. To effectively meet the needs of the community, it is essential to identify those needs through continued dialogue with community members and leaders. This can be achieved through conducting a needs assessment to determine what the specific needs are and is most affected. The next step is to determine what resources are needed to meet those needs and where those resources can be acquired.

### **3- Overcoming Social and Cultural Barriers**

Social and cultural barriers can be the hardest to overcome because they often require temporary regression before progression can be made. For example, in attempting to change the status of a minority in a social hierarchy, that minority group may need to be given a voice and significant

resources to enhance their position, which can then lead to backlash from the majority, increasing inter-group tension. This may, in fact, make the minority group worse off than they were to begin with. Fortunately, the knowledge of the mechanisms of social change is continually growing and some common pitfalls have been identified. Emerging Issues

#### **1. Economic Disparities**

Uneven distribution of wealth and opportunities within and between communities can lead to social unrest and hinder overall development.

#### **2. Political Instability**

Conflict, corruption and lack of democratic participation can disrupt development efforts and undermine trust in institutions. It leads to economic uncertainty decreased investment and slower economic growth of the country at the same time disrupt social order leading to increased crime and violence.

#### **3. Environmental Degradation**

While globalization offers opportunities for economic growth and knowledge transfer, it can also exacerbate inequalities and create challenges for local economies and culture. Human activities like deforestation, overgrazing, mining and industrialization, as well as natural disasters such as drought and floods, can all contribute to environmental degradation.

#### **4. Social Inequality**

Discrimination based on gender, race, ethnicity, or other factors can create barrier to access and opportunities for marginalized groups. Individuals from certain social groups may face systemic barriers to accessing education, employment, and other opportunities, limiting their potential for advancement. This often also involve power dynamics where some groups in the society have more influence and control

over resources and decision making process, leading to marginalization for others.

### **5. Poverty and Disinvestment**

Poverty can create a cycle of disadvantage, limiting access to education, healthcare and other essential services. Nigeria is grappling with a severe poverty, crises, exacerbated by disinvestment in crucial sectors and weak governance, leading to a cycle of economic hardship. A significant portion of the population lives in extreme poverty, and the situation is projected to worsen without substantial interventions.

### **Unlocking Opportunities**

#### **1. Technology**

Technology serves as a powerful catalyst for unlocking opportunities across various sectors, from workforce development to entrepreneurship and personal growth. By providing access to information, tools and platforms, technology empowers individuals and businesses to enhance their capabilities, expand their reach, and innovate in ways previously unimaginable. Leveraging technology can improve access to information, education, healthcare and essential services, particularly in remote or underserved areas.

#### **2. International Partnerships:**

Collaboration with international organizations and other countries can provide resources, expertise and support for development initiatives. These relationships can vary in intimacy and duration, and they are fundamental to human social life, impacting well-being, development, and societal structures

#### **3. Community Engagement:**

Empowering communities to participate in decision making and resources allocation can lead to more equitable and sustainable development. Government empower individuals

to take an active role in shaping their lives and communities, they collaborate in problem solving where community ownership leads to more sustainable and impactful solutions.

#### **4. Community Resilience:**

Building community resilience can help communities cope with shock and stresses such as natural disaster or economic downturns. It encompasses the ability to prepare for, withstand, and bounce back from disruptions, whether natural hazards, social or economic challenges, or other crises. Building community resilience involves, a proactive approach to risk reduction, emergency planning, and fostering community competence and social capital. In essence, community resilience is not just about bouncing back from adversity, but also about building a stronger, more adaptable and more equitable community that is better prepared for the challenges of the future.

#### **5. Sustainable Practices:**

Promoting sustainable and land management, resources use and waste management can protect the environment and ensure long-term well-being. These practices encompasses environmental, social and economic considerations, aiming for a balance between people, planet and profit.

#### **6. Social Enterprises**

Supporting social enterprises can create jobs, generate revenue and address social and environmental challenges in a sustainable way. Social enterprises help create job opportunities for many people in Nigeria who face challenges while finding work, such as those with disabilities, veterans and those from underserved communities. There are coffee shops, business centers, internet cafe or Point of Sale (P.O.S) shop, health care providers and

films industries or companies are created or formed to make a transformative difference to communities and to the lives of disadvantaged people in Nigeria.

### **7. Networking:**

Facilitating networks among community members can foster collaboration and knowledge sharing, strengthen social ties and promote mutual support. Networking clearly involves both common courtesy and good communication. It is about maintaining a web of relationship that can support a useful and empowering flow of information and influence.

### **Strategies for Overcoming Challenges**

The importance of comprehensive and sequential community assessment is paramount in putting together a strategic plan. It will allow advisers to identify the most pressing concerns and prioritize their resources for addressing those concerns. Each community will deal with different issues and different level of issues at different times, based on their history, culture and unique set of circumstances. No plan will be a cure-all for everything that plagues a community. This can be a geographical area, a sector of the population, or a cultural/ethnic group. A clear definition of the community will pave the way to know who should be involved in the assessment and provide a list of primary and secondary data sources. With the community defined, the advisers can use a SWOT analysis to consolidate and organized what they have learned from basic data collection of the community's strengths, weaknesses, opportunities and threats. From the analysis, the group can define problems and goals. This will then launch, the advisers into the various forms of data collection and analysis using both primary and secondary sources, the group can get a solid understanding of the

community's perceived and actual needs. The culmination of the needs assessment will be a determination of the severity of problems relative to the available resources. With problems defined and categorized, the group can now draw clear objectives should be SMART (specific, measurable, achievable, realistic, time-frame) and should be the basis from which the group selects an intervention to match the needs of the community. This will lead the group into the formulation of the strategies plan, upon which each tactic will seek to fulfil at least one general objective.

### **1. Collaborative Partnerships**

Successful community development hinges on the effective engagement and collaboration of a diverse group of stakeholders from different sectors of society. This can include government official, academics, corporate people, community activists, and general members of the community. Whether it is a small project involving a couple of local community groups or a large-scale initiative with significant development interests, the role of forming a collaborative partnership is vitally important. Collaborative partnerships seek to develop continuous, inclusive and dynamic relationship that are focused on a shared purpose.

### **2. Capacity Building and Training**

Challenges of community development Laurence (1999), notes the need for collective, yet individual capacity building. This has been underscored in the strength of multifaceted CBOs that have supported their objective to a critical mass, at which they have become pivoted contributors to the development within their respective community. These processes allow communities to identify, mobilize, and to utilize

resources effectively, a key function in its endeavors to build a social infrastructure. The collective learning process has potential to not only improve the social capital of target communities, but to also impact upon the ways services are provided which is conducive greater development in the future. Empowering

### **3. Local Leadership**

This paper presents a number of strategies that are designed to empower rural communities in emerging issues and unlocking opportunities during the process of community development. Among these emerging issues is the task of building a pool of human resources with the capacity to lead the various stages of community development. In many cases, the various, local leadership is under developed and inadequate for the task. In the past, development programs have often responded to this situation by tasking leaders out of their communities for education and training in the expectation that they will return with new knowledge and skills beneficial for their communities. It is now often recognized, however, that this strategy can have detrimental effects on communities as leaders ‘drop out’ of their normal community roles for external periods, some may choose not to return to their communities, and the new knowledge and skills may not be appropriate to the felt needs of the community. An alternative strategy is to seek ways of educating and empowering leaders within their own communities. Leaders and community members can be encouraged to form study circle or action research groups to share and reflect on experiences and learning. The overall aim is to enable leaders and community members to take more effective control of the development process in their

communities.

### **Conclusion**

Community development is a complex and multifaceted process that requires a sustained commitment to addressing emerging challenges and unlocking new opportunities. By embracing a holistic, participatory and context sensitive approach, we can empower communities, build stronger and more equitable societies, and achieve sustainable development.

### **Recommendations**

Based on the discussions on this paper, the following recommendations were made:

1. Adopt diverse communication strategies: recognized that not all community members are comfortable with online platforms, and use a mix of traditional and digital methods for engagement.
2. Prioritize accessibility: to ensure that community programs and activities are accessible to all. Regardless of physical limitations, language barriers, or digital literacy levels.
3. Conduct thorough assessment: use various methods including surveys, interviews, and focus groups, to gather data about community needs and priorities.
4. Develop solutions that can be sustained over the long term, instead of addressing immediate needs without addressing root cause. However, build capacity and empower local leaders and organizations to take ownership of their own development.
5. Develop programs that focus on skills development, entrepreneurship and job creation to address youth empowerment. Promote social relationship between different groups within the community. Also use technology to improve access to information, service and economic opportunities.

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## Influence of School Feeding Program and Insecurity on Truancy among Secondary School Students in Birnin Kebbi, Kebbi State

By

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### Abstract

This study investigates the influence of school feeding program and insecurity on truancy among secondary school students in Kebbi State. Two research hypotheses were formulated and tested at 0.05 level of significant. The study adopted descriptive cross sectional survey research design. Three hundred (300) senior secondary school students were randomly selected. Three research instruments were adapted (school feeding program scale 0.73, insecurity scale 0.75, and truancy scale 0.74). The result showed that there was a significant negative relationship between the school feeding program and truancy ( $r = -.75$ ,  $p < .01$ ). There was a significant positive relationship between insecurity and truancy ( $r = .88$ ,  $p < .01$ ). School feeding programs and insecurity have a joint prediction on Truancy ( $R^2 = 0.78$ ,  $F(2,297) = 520.25$ ,  $p < .05$ ). The result further revealed that independently, insecurity ( $\beta = .81$ ,  $t = 16.99$ ,  $p < .05$ ) predicted truancy, while school feeding programs ( $\beta = .09$ ,  $t = 1.87$ ,  $p > .05$ ) have no significant independent prediction on the school feeding program. The study, therefore, concluded that school feeding programs were found to have a significant negative relationship with truancy, indicating their potential to reduce absenteeism. Conversely, insecurity showed a *significant* positive relationship with truancy, highlighting the detrimental effect of safety concerns on school attendance. It was recommended that the school should provide psychological support and implement counselling and support services to help students cope with the psychological impact of insecurity, which may contribute to truancy

**Keywords:** School feeding program, insecurity, truancy

### Introduction and Literature Review

Education serves as a cornerstone for personal development and societal progress. It is widely acknowledged that attending school is crucial for acquiring knowledge, skills, and shaping one's future. Moreover, the benefits of education, which will still be discussed at a later part of this section, extend beyond the individual, contributing to the overall development of communities and nations. However, the issue of truancy poses a significant challenge to the educational system, hindering the realization of these benefits (Evans, 2022). Truancy, defined as the intentional absence from school without a legitimate excuse, has multifaceted consequences on students and society

(Ampofo, Opoku, & Opoku-Manu 2022). It is associated with academic underachievement, increased dropout rates, and a higher likelihood of engaging in delinquent behaviour (Hoffmann, 2018). Recognizing the importance of addressing truancy, this study focuses on understanding the factors that contribute to this phenomenon among secondary school students in Birnin Kebbi, Kebbi State, Nigeria.

The benefits of attending school extend beyond the acquisition of academic knowledge. Schools serve as crucibles for the development of critical thinking and problem-solving skills and the cultivation of social skills. Furthermore, education empowers individuals

to contribute meaningfully to the socio-economic fabric of their communities and nations. The transformative potential of education is not confined to personal development but radiates outward, shaping the trajectory of societies. Regular school attendance is the linchpin of educational success. It establishes a routine conducive to learning, fosters discipline, and provides a structured environment for intellectual and social growth (Gottfried, 2014). Moreover, schools are not just educational institutions; they are platforms for socialization, character development, and the nurturing of future leaders. Recognizing the multifaceted benefits of attending school underscores the need to investigate and mitigate factors that contribute to truancy.

Truancy poses a significant barrier to achieving universal education goals, particularly in developing countries. Chronic absenteeism limits students' learning opportunities and denies them their right to education, often leading to dropping out or falling behind academically (UNESCO, 2017). This perpetuates a cycle of undereducation that entrenches illiteracy across generations (Saeed, 2019). The level of truancy is immense in the developing world where social problems exacerbating school absenteeism, such as poverty, conflict, and lack of infrastructure, are prevalent. According to the most recent UNESCO Institute of Statistics data, approximately 258 million children and youth were out of school in 2018, with sub-Saharan Africa and South Asia accounting for most of this number (UNESCO, 2020). Health and economic hardships are significant contributors to absenteeism in these regions (Ahmed, Bloom, Iqbal, Lucas, Rasheed, Waldman, Khan, Islam, & Bhuiya

2021). Illnesses stemming from poor sanitation and malnutrition, as well as child labor duties, hamper regular attendance (Alam, Ahmed, & Rahman, 2020). Natural disasters and conflicts also disrupt education through displacement and school closures (Iram & Arshad, 2020). Where costs pose barriers, marginalized groups become excluded from education (Jayasinghe, 2020).

National development goals are hampered when large sections remain semi-literate or illiterate due to truancy (Asim Arfeen, Noreen, & Rehman., 2021). Lower human capital development impedes productivity, technological advancement, and economic growth (Bilal, Khan & Malik 2021). Higher dropout risks amplify societal problems such as crime, unemployment, and intergenerational poverty transmission (Saeed, 2019). Therefore, innovative, multi-sectoral solutions tailored for local contexts are imperative to drastically reduce truancy and make universal primary and secondary education a reality, especially for vulnerable populations (Nawab, Nazish, & Ali 2021).

Family troubles significantly contribute to truancy. Children coping with poverty, parental neglect, abuse or household breakdown lack crucial support systems, making them more prone to missing school (Eiden, Coles, Schuetze, & Colder, 2017).

Learning difficulties or inadequate special needs assistance also discourage school attendance, as frustrated students avoid perceived failure and humiliation (Finning, Ukoumunne, Ford, Danielsson-Waters, Shaw, De Jager, Stentiford & Moore, 2019). Peer influence emerges as a causal factor since skipping classes becomes a social activity to gain peer acceptance (Henry, 2007).

School-level issues, including overcrowding, large class sizes, teacher absenteeism, and harsh discipline methods, undermine the appeal of schooling (Epstein & Sheldon, 2002). Furthermore, mental health issues such as depression and behavioral problems diminish commitment to education (Kearney, 2008). If addressed, truancy yields undesirable short and long-term outcomes. It results in academic deficiencies, higher dropout rates, increased juvenile crime, teen parenthood and diminished career prospects for affected students (Finning et al., 2019). Families experience emotional stress, legal issues and financial burden in attempting to curb their children's absenteeism (Eiden et al., 2017). Governments lose resources allocated to universal education for absent students (Epstein & Sheldon, 2002). Ultimately, societies are deprived of skilled human capital and face elevated problems like unemployment, healthcare costs and crime (Henry, 2007).

Tackling truancy demands a collaborative multi-pronged approach targeting underlying determinants (Kearney, 2008). Effective strategies include early intervention, strengthening parental involvement, mentoring at-risk youth, counseling, rewarding attendance and consistent enforcement of attendance policies (Finning et al., 2019). Addressing societal issues through poverty alleviation, provision of basic services, improved schools, and specialised learning support can reinforce the commitment to education from students and families (Eiden et al., 2017; Henry & Huizinga, 2007). With concerted multi-sectoral action focused on the needs of the whole child, truancy rates can be significantly reduced to positively impact lives. School feeding program have been identified as

potential cases of truancy. The school feeding program is a government initiative aimed at providing nutritious meals to students, is designed to enhance attendance, concentration, and overall academic performance.

The implementation of school feeding programs has been a global strategy to address issues of malnutrition and enhance school attendance (Kristjansson, Gelli, Welch, Greenhalgh, Liberato, Francis, & Espil, 2022). Previous research has demonstrated a positive relationship between nutritional interventions in schools and enhanced academic outcomes. Access to healthy meals has been shown to improve students' cognition, behavior, and educational achievement.

A meta-analysis of 18 studies examining school feeding programs found they significantly increased standardised test scores by an average of 0.28 standard deviations (Kristjansson Robinson, Petticrew, MacDonald, Krasevec, Janzen, Greenhalgh, Wells, MacGowan, Farmer, Shea, Mayhew & Tugwell, 2007). Children who participated in breakfast clubs demonstrating higher math, vocabulary and general knowledge test results compared to non-participants (Brown, Beardslee, & Prothrow-Stith, 2019). Proper nutrition is important for brain and cognitive development in children. Feeding programs help address malnutrition, which is associated with deficiencies in critical micronutrients essential for learning, like iron, iodine, and vitamin B12 (Florence, Asbridge, & Veugelers, 2008). School meals also promote consistent energy levels and concentration needed for academic engagement and performance throughout the day (Kleinman, Hall, Green, Korzec-

Ramirez, Patton, Pagano, & Murphy 2002). Studies further report reduced absenteeism and fewer health complaints on schooldays when meals were provided (Jyoti, Frongillo, & Jones, 2005; Kristjansson et al., 2007). Children are less likely to fall sick or miss class due to hunger-related illnesses when nourished adequately at school (Kleinman et al., 2002). Reduced absenteeism directly translates to improved accumulation of learning. School feeding was also found to enhance psychosocial well-being by reducing short-term hunger, improving mood and increasing self-esteem of disadvantaged children (Kristjansson et al., 2007; Brown et al., 2019). A positive psychosocial environment enables better cognitive absorption and academic success.

Previous research by Ibrahim and Zainab, (2023) has explored the impact of school feeding programs globally, revealing varying degrees of success in different contexts. In the Nigerian context, the NHGSFP represents a laudable effort to address both educational and nutritional needs. However, the specific influence of this program on truancy among secondary school students in Birnin Kebbi remains an uncharted territory that warrants investigation. In tandem with the school feeding program, the issue of insecurity introduces another layer of complexity to the educational landscape. Insecurity, manifested through violence, conflict, and threats to personal safety, has the potential to disrupt the educational journey of students (Wang, & Fawzi, 2020). Kebbi State, like many regions globally, contends with various forms of insecurity that can deter students from attending school regularly. The school feeding program, while ostensibly addressing nutritional needs, may inadvertently influence truancy if its

implementation lacks efficiency or fails to resonate with the target population. Conversely, insecurity, by creating an atmosphere of fear and uncertainty, may lead to increased absenteeism among students. The complex dynamics at play warrant an empirical investigation into the relationships between these variables and truancy.

However, research evidence is very scanty as regards school feeding program and insecurity on truancy especially in this region. Most of the studies carried out here were focused on school attendance, and none has ever focused on truancy regarding school feeding and insecurity. Therefore, the present study to fill the gap observed. Especially, this study focused on the influence of school feeding program and insecurity on truancy among secondary school students in Kebbi State.

### **Statement of the Problem**

Despite the recognized importance of education, truancy remains a persistent challenge in secondary schools in Birnin Kebbi (Hassan & Said, 2022). The existing gaps in understanding the relationships between the school feeding program, insecurity, and truancy necessitate an in-depth investigation. The implications of truancy are far-reaching, affecting not only individual academic achievements but also the overall development of the community (Ampofo, Opoku, & Opoku-Manu, 2022).

Moreover, the broader implications of truancy include school dropout, poor academic performance, unwanted pregnancy, wastage of educational resources, and an increase in out-of-school children. This study aims to bridge existing gaps in knowledge by examining the interplay between the school feeding program, insecurity, and truancy among

secondary school students in Birnin Kebbi. While existing literature acknowledges the importance of education and explores various factors contributing to truancy, there is a notable dearth of research specifically delving into the nexus between the school feeding program, insecurity, and truancy in Birnin Kebbi, Kebbi State. Bridging this gap is essential for developing region-specific interventions that address the unique challenges faced by students in this locale

### **Objectives of the Study**

The main objective of this study is to investigate the influence of the school feeding program and insecurity on truancy among secondary school students in Birnin Kebbi, Kebbi State. Specifically, the study tends to:-

1. Assess the impact of the School Feeding Program on the truancy rates among secondary school students in Birnin Kebbi.
2. Examine the relationship between insecurity and truancy among secondary school students in Birnin Kebbi

### **Research Hypotheses**

1. There is no significant relationship between school feeding programs and truancy among secondary school students in Birnin Kebbi
2. There is no significant relationship between the level of insecurity and truancy among secondary school students in Birnin Kebbi

### **Methodology**

This study adopted a descriptive cross-sectional survey research design. This design is appropriate for investigating the influence of school feeding

programs and insecurity on truancy among secondary school students in Birnin Kebbi, Kebbi State, at a specific point in time. The target population for this study comprised of all secondary school students in Birnin Kebbi, Kebbi State. Simple random sampling techniques was used to select (20) public secondary schools in Birnin Kebbi. Also, 15 senior secondary school students were randomly selected from each of the 20 selected schools. Making total number of the participants to be three hundred (300).

Three research instruments were adapted for the purpose of this study, this includes: School feeding program scale (SFPS) by Akodu, Patrick, and Ayodele (2019), Insecurity scale (IS) by Smith Johnson and Williams, (2020) and Truancy behavior scale (TBS) by Keppens and Spruyt (2017).

The data obtained from the study were analyzed using descriptive and inferential statistics. Simple percentage and standard deviation were used to answer the research questions, while hypotheses was tested using Structural Equation Modeling (SEM), and Analysis of Variance (ANOVA), this is due to the fact that there are more than two levels of the independent variables used. The hypotheses was tested at 0.05 level of significance.

### **Results**

#### **Hypothesis One**

Hypothesis one states that there is no significant relationship between school feeding programs and truancy among secondary school students in Birnin Kebbi. The hypothesis was tested using Pearson r correlational analysis, and the result is presented in Table 1.

**Table 1: Pearson Product Moment correlation showing the relationship between school feeding programs and truancy**

Variables	Mean	S.D	r	P
School feeding program	27.38	7.68		
Truancy	23.64	6.95	-.75**	<.01

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The results obtained from the test are shown in Table 1. The table shows that there was a significant negative relationship between the school feeding program and truancy ( $r = -.75, p < .01$ ). The result implies that an increase in the school feeding program significantly relates to a decrease in truancy. The hypothesis is thus accepted.

### Hypothesis Two

Hypothesis two states that There is no significant relationship between the level of insecurity and truancy among secondary school students in Birnin Kebbi. The hypothesis was tested using Pearson r correlational analysis. The result is presented in Table 2.

**Table 2: Pearson Product Moment correlation showing the relationship between insecurity and truancy.**

Variables	Mean	S.D	r	P
Insecurity	45.69	13.53		
Truancy	23.64	6.95	.88**	<.01

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The results obtained from the test are shown in Table 2. The table shows that there was a significant positive relationship between insecurity and truancy ( $r = .88, p < .01$ ). The result implies that an increase in insecurity significantly relates to an increase in truancy among students. The hypothesis is thus accepted.

### Discussion of Findings

The first hypothesis stated that there is no significant relationship between school feeding programs and truancy among secondary school students in Birnin Kebbi. The results revealed a significant negative relationship between school feeding programs and truancy. The result implies that an increase in the school feeding program significantly relates to a decrease in truancy. Studies by Alderman and Bundy (2012) in sub-Saharan

Africa and Aurino et al. (2019) in Ghana have similarly demonstrated the positive impact of school feeding programs on attendance and reduced dropout rates. This relationship can be attributed to several factors, including improved nutrition, economic relief for families, and increased motivation for students to attend school. School meals provide essential nutrients that enhance students' cognitive abilities and overall health, making them more likely to attend school regularly. For families struggling with poverty, these programs reduce the financial burden of providing meals and encouraging parents to send their children to school. Additionally, the prospect of receiving a meal can serve as an incentive for students to attend, especially in areas where food insecurity is prevalent.

The second hypothesis stated that There is no significant relationship between the level of insecurity and truancy among secondary school students in Birnin Kebbi. The results showed that there was a significant positive relationship between insecurity and truancy. The result implies that an increase in insecurity significantly relates to an increase in truancy among students. Studies such as those by Olanrewaju et al. (2018) in Nigeria and reports from UNESCO (2011) have highlighted how conflict and insecurity in various parts of Africa have led to increased truancy and school closures. Several factors can explain this relationship. Fear and safety concerns may make students and parents reluctant to attend school due to the risk of violence or abduction. Insecurity often leads to the displacement of families, disrupting children's education. Furthermore, the stress and trauma associated with living in insecure environments can negatively affect students' ability to focus on education, leading to increased absenteeism.

The third hypothesis stated that School feeding programs and insecurity will jointly and independently predict truancy among secondary school students in Birnin Kebbi. This was tested using multiple regression analysis. The result revealed that school feeding programs and insecurity have joint predictions for Truancy. This revealed that the collective presence of the School feeding program and insecurity has a significant influence on Truancy. The result further revealed that independently, insecurity predicted truancy, while school feeding programs have no significant independent prediction on school feeding programs.

This could be due to the overwhelming effect of insecurity when both factors are considered simultaneously. Similar findings have been reported in other studies, such as Murnane and Ganimian (2014), who found that while interventions like school feeding programs can improve attendance, their effects can be limited or negated in contexts of high insecurity or conflict.

These results have several important implications for addressing truancy in Birnin Kebbi and similar contexts. Firstly, they highlight the need for a holistic approach that considers both incentives (like school feeding programs) and barriers (such as insecurity). Given the strong independent effect of insecurity on truancy, efforts to improve school safety and overall community security should be prioritised. Despite not showing independent prediction in the combined model, the negative relationship between school feeding programs and truancy found in the first hypothesis suggests that these programs are still valuable and should be continued and possibly enhanced. The interplay between feeding programs and insecurity underscores the need for context-specific interventions that address each community's unique challenges. Furthermore, more research is needed to understand the complex relationships between various factors affecting truancy, including potential mediating or moderating variables.

### **Conclusion**

This study investigated the relationships between school feeding programs, insecurity, and truancy among secondary school students in Birnin Kebbi. The findings revealed a complex interplay between

these factors. School feeding programs were found to have a significant negative relationship with truancy, indicating their potential to reduce absenteeism. Conversely, insecurity showed a significant positive relationship with truancy, highlighting the detrimental effect of safety concerns on school attendance. When examined jointly, school feeding programs and insecurity accounted for a substantial portion of the variance in truancy, underscoring the multifaceted nature of the issue. However, insecurity emerged as the stronger independent predictor of truancy when both factors were considered simultaneously. These results emphasise the need for a comprehensive approach to addressing truancy that considers both incentives for attendance and barriers to education.

### **Recommendations**

Based on the findings of this study, the following recommendations are proposed:

1. Government should ensure they strengthen and expand the school feeding programs' policy that are regularly reviewed and updated
2. The scope of the program should be extended to more categories of schools so as to serve as a motivator to students
3. Community stakeholders should engage in securing schools and foster partnerships between schools, families, and community leaders to create a supportive environment that encourages regular school attendance.
4. Psychological support and counselling services should be rendered to assist students to cope with the psychological impacts of insecurity, which may contribute to truancy. The results obtained from the test are shown in Table 2. The table shows that there

was a significant positive relationship between insecurity and truancy ( $r = .88, p < .01$ ). The result implies that an increase in insecurity significantly relates to an increase in truancy among students. The hypothesis is thus accepted.

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**Establishing Psychometric Properties of Secondary School Biology Students Interest Questionnaire (BSIQ) in Kano State, Nigeria**

By

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**Abstract**

Aim of this paper is to present the details of the construction, validation and reliability of Biology Students Interest Questionnaire (BSIQ). The specific objectives are to establish the validity of Biology Students Interest Questionnaire (BSIQ) and to ascertain the internal consistency reliability of Biology Students Interest Questionnaire (BSIQ). The instrument for the study was adapted from Scholastica (2020) and Haruna (2021). The instrument was pilot tested using thirty two (32) students via split-half method. The instrument was validated by five experts in the field of science education, Educational psychology, Test and Measurement. The Content Validity Ratio (CVR) as well as the Content Validity Index (CVI) of the instrument was established using the Lawshe's method. To establish the reliability index of the instrument, Cronbach Alpha was employed with the help of Statistical Package for Social Sciences (SPSS) software 20.0 version. The content Validity Index (CVI) of BSIQ was found to be 0.97 respectively. The Construct Validity of BSIQ was found to be 0.65. However the reliability index for the BSIQ using Cronbach alpha was found to be 0.89. These figures indicate strong validity and reliability of the instrument and therefore valid and stable to be used data collection

**Keywords:** *Biology Students, Interest Questionnaire, Validity and Reliability*

**Introduction**

One of the most important aspects of research is the construction, validation and pilot testing of the instrument for data collection. Pilot testing allows gathering preliminary knowledge about the studied phenomenon, and serves as a litmus test to check the usefulness of the adopted research instrument and methods to investigate a given problem (Mutz & Muller, 2016 and Thomas, 2017). The pilot test allows for the selection of information collected, which will eventually result in the rejection of information that is irrelevant to the problem under investigation (Moris & Rosebloom, 2017).

Furthermore, pilot testing entails establishing psychometric properties of the research instrument which is done by obtaining the validity and reliability of the data collection instrument (Johnson and Christensen, 2008). Validity in educational assessment refers to the extent to which an assessment instrument accurately measures what is intended to measure, and for an assessment tool to be useful in determining a student current knowledge or in predicting a student future academic performance such an instrument must have validity (Isaac & Uwaks, 2022).

Reliability on the other hand, is the degree to which the measuring instrument consistently measures what it purports to measure and can be established through parallel alternate method, split half method and test-retest method (Uzoagulu, 2011). It is on this basis that, this paper highlights the various steps that were engaged in order to establish the psychometric properties of Biology Students Interest Questionnaire (BSIQ).

### **Statement of the Problem**

The quality of the outcome of any research depends to a large extent on the validity and reliability of the data collected for the study. A valid and reliable data is collected by using a valid and reliable data collecting instrument. Many studies ended up producing invalid and misleading results due to the use of invalid and unreliable data collection instruments.

Collecting a valid and reliable data is an integral part of quantitative research this is because invalid and unreliable data collection instrument may lead to faulty outcomes and misleading conclusions. It is in the light of the above reasons that, the researcher conducted a pilot study to establish the content and face validity, Construct Validity, Criterion Related Validity as well as the internal consistency reliability of Biology Students Interest Questionnaire (BSIQ) that may be used as the data collection instruments in other studies.

### **Research Questions of the Pilot Study**

The pilot study was guided by the following questions

1. What is the validity of Biology Students Interest Questionnaire (BSIQ)?
2. What is the coefficient of internal consistency reliability of Biology Students Interest Questionnaire (BSIQ)?

### **Methodology**

This pilot study employed descriptive survey research design, this is a design that involves gathering data by studying a representative sample of the entire group (Creswell, 2014). For the purpose of pilot testing the instrument, a sample size of thirty (30) biology students were selected as the sample of the study. The samples are within the target population for the study but did not form part of the main sample of the study.

The sample was selected on the basis of Johnson and Brooks (2010) recommendations, which recommends that, 10 – 20% of the main study sample is adequate for pilot study. The main sample of the present study is two hundred and eighty (280) biology students. Therefore the researcher used about 11% of the sample. Data collected in the study was analyzed via Laushe's method, Waltz and Bausell's approach as well as Crombach Alpha for the internal consistency of the instrument.

### **Description of Biology Students Interest Questionnaire (BSIQ)**

Biology Students Interest Questionnaire (BSIQ) was adapted from Scholastica (2020) and Haruna (2021). The questionnaire was divided in to two sections, section A deals with personal information of the student.

While section B consist of thirty two (32) items centered

around interest of the students toward biology with a four point Rating Scale designed to obtain responses from the students. The respondents were requested to indicate their preference by ticking against the prepared options ranging from Strongly Agree (SA) 4, Agree (A) 3, Disagree (DA) 2 and Strongly Disagree (SD) 1 for the positive items. While the negative items are scored in reverse with Strongly Agree (SA) 1, Agree (A) 2, Disagree (D) 3, and Strongly Disagree (SD) 4 respectively.

### **Review of Related Literature**

Interest as a motivational variable refers to the psychological state of engaging with particular set of objective or events overtime and could probably be a very powerful psychological trait that contributes in boosting the academic performance of secondary school students. However, improving student's interest has long been considered an important mechanism to increase student's success and retention in STEM Education (Knekta, Rowland, Corwin and Eddy, 2020). Similarly, assessing students Interest requires instruments such as the questionnaire. For the instrument to be valid and reliable for data collection it has to undergo validity and reliability tests, it is in line with this, that Cahyan and Subiantoro (2020) conducted validity and reliability test on an instrument titled Students Interest in Learning Biology and found the instrument to be good for data collection. In another study conducted by Jerome (2015) carries out pilot test on a General Subject Matter Measures using Individual Interest Questionnaire (IIQ), the study found the instrument to be valid and reliable for data collection. Therefore, this

pilot test aims to establish validity as well as the reliability of Biology Students Interest Questionnaire.

### **Validity of the Instrument**

Validity of an instrument deals with how well an instrument measures what is deign to measure. It can be considered as the most important step in the selection and use of any research instrument (Obilor and Miwari, 2022). The validity of the data collecting instruments can be established through various ways such as, content validity, construct validity, concurrent validity and predictive validity depending on the nature of the research. Content and face validity were used to establish the validity index of a research instrument. Content validity is the degree to which an instrument has an appropriate sample of items for the construct being measured (Saifullahi & Yusaff, 2019). To measure the content validity of a research instrument Subject Matter Experts (SME's) judgments are required on two aspect of each individual item in the test. These aspects are the relevance and representativeness. Each subject matter expert on a judgment panel should respond to each item of the test as proposed by Lawshe's (1975) "is the skill or knowledge measured by this item 'essential', 'useful but not essential', or not necessary to the performance of the job. The higher the agreement among the SME'S that a particular item is essential, the higher the items level of content validity (Nikolopoulou, 2023). SME'S inputs were effected and incorporated in to the final drafts of the instrument. In the same vein, the content validity ratio (CVR) of the instrument was calculated using the Lawshe's (1975) model.

To obtain the Content Validity Index (CVI) of the instruments Waltz and Bausell's approach was used.

It is an approach by which subject matter experts are requested to rate the relevance of each item of an instrument on a four point scale of (1) not relevant, (2) somewhat relevant, (3) quite relevant and (4) highly relevant. The total number of item with the rank of 3 and 4 is divided by the total number of experts to get the CVI value.

### **Validation of Biology Students Interest Questionnaire (BSIQ)**

BSIQ was face and content validated by five (5) experts. For the purpose of establishing content validity of the instrument, Content Validity Ratio (CVR) and Content Validity index (CVI) was employed by the researcher, specifically the CVR method developed by Lawshe's (1975). It is a method for gauging agreement among panelists (SME'S) regarding how essential a particular item is in an instrument. According to the Lawshe's CVR test, the CVR is computed to specify whether an item is necessary for operating a construct in a set of instrument or not. For this reason the SME'S were asked to give a score of 1-3 to each item ranging from essential (1), useful but not essential (2), and not necessary (3). Responses from the entire panelist were pooled together and items indicating "essential" were selected and Lawshe's formula was applied to determine the Content Validity Ratio (CVR) of each item.

In the same vein, the Content Validity Index (CVI) of the instrument was obtained using Waltz and Bausell's (1981) approach. On this approach, CVI value was obtained by requesting panel of experts to rate the relevance of each item

in the instrument on a four point scale of;

- 1- The item is not relevant
- 2- The item is somewhat relevant
- 3- The item is quite relevant
- 4- The item is highly relevant

### **Construct Validity for Biology Students Interest Questionnaire (BSIQ)**

Construct Validity of Biology Students Interest Questionnaire (BSIQ) was established by obtaining the Convergent Construct Validity Coefficient of the instrument which was found to be 0.86 and Discriminant Construct Validity Coefficient which was found to be 0.23. The overall Construct Validity of the instrument was calculated by subtracting the Discriminant Validity Coefficient from the Convergent Validity Coefficient that is:

Construct Validity = Convergent Coefficient – Discriminant Coefficient

$$0.86 - 0.21 = 0.65$$

From the result, the overall Construct Validity of BSIQ shows a strong Construct Validity of the Instrument and an indication that, the instrument is good for measuring what is intend to measure.

### **Reliability of the Instruments**

Reliability is the degree to which a test consistently measures what is measuring, the more reliable a test is, the more confidence we can have, that, the scores obtained from the test are essentially the same scores that would be obtained if the test will be re-administered to the same test takers (Gay, 2009). In the same vein, Creswell, (2012) sees reliability of an instrument as examining the stability of the instrument, are the items responses consistent across constructs? It also has to do with the stability of measuring instrument over time and in different conditions.

Furthermore, Del, 2013 added that, a test is reliable to the extent that, whatever it measures, measures it consistently. For this study, split-halves was used in pilot testing the two instruments, while Cronbach alpha formula was used to establish the internal consistency (reliability index) of the instrument since the instrument generates data that is not dichotomously scored (Del, 2013). Reliability is expressed numerically, usually as a coefficient which is obtained by using correlations. A perfectly reliable test would have a reliability coefficient of +1.00, a high reliability would have a coefficient close to 1 (that is minimum error) while a coefficient below 0.50 indicates low reliability index of an instrument. Internal Consistency Reliability of Biology Students Interest Questionnaire (BSIQ)

To determine the internal consistency reliability of Biology Students Interest Questionnaire (BSIQ), Cronbach Alpha reliability for internal consistency was used. It is a measure of reliability that tests the internal consistency or item interrelatedness of a scale or test (Howard, 2018). The instrument has thirty two items and all the items were subjected to reliability test using the Cronbach alpha.

**Results**

What is the validity of Biology Students Interest Questionnaire (BSIQ)?

To answer Research question 1 of this pilot test, content validity index, content validity ratio, item level content validity index, scale level content validity index as well as the construct validity of the instrument was obtained as presented in table 1

**Table 1: Showing the Results for the Validation of BSIQ**

<b>Item</b>	<b>Value</b>
Content Validity Ratio (CVR)	0.89
Content Validity Index (CVI)	0.97
Item Level Content Validity Index (I-CVI)	0.99
Scale Level Content Validity Index (S-CVI)	0.94
Construct Validity	0.65

From the analysis of Content Validity Ratio, the ratio of content validity with range of 0.2 until 1.0 was obtained for all the items. The overall CVR for this instrument was found to be 0.89 which is very much closer to 1.0 and the CVR value ranges from -1 for rejecting the validity of an instrument and +1 for accepting the validity of an instrument. This result indicates that, Biology

Students Interest Questionnaire has strong content validity ratio and therefore valid enough to be used. The CVI for all individual items (I- CVI) was found to be 0.99 and the overall scale (S-CVI) was found to be 0.94, Therefore, the Content Validity Index of The Instrument is 0.94, the value 0.94 is very much closer to +1 and therefore a strong indication that BSIQ accurately measures what is intended to measure

**Table 2: Showing the Results for Internal Consistency of BSIQ**

Number of items (N)	30
Cronbach's Alpha	0.90
Cronbach's Alpha based on standardized Items	0.92

The table 2: shows a reliability coefficient of 0.92. This shows an excellent reliability coefficient for the Biology Students Interest Questionnaire (BSIQ). However, it can be concluded that, the Cronbach's alpha reliability coefficient obtained (0.92) is above the minimum acceptable level of 0.70 as suggested by Cortina, 1993 that scales with 20 and above items can have 0.70 as acceptable reliability coefficient. Therefore, the instrument is considered to be reliable and suitable for data collection.

**Discussions**

Findings from question one reveals that, the Content Validity Index (CVI) for Biology Students Interest Questionnaire (BSIQ) was 0.97 which shows a high and excellent content validity index. This is in line with the position of scholars like Isaac & Uwaks, (2022), Waltz & Bausell's, (2017) and Shi, (2012) who opined that, a CVI value equal or higher than 0.78 would be considered relevant and excellent and can therefore be retained for the study, while items with CVI less than 0.70 would be considered not relevant and therefore need to be modified or rejected. The findings of this pilot test in agreement with the finding of Jerome (2015) who reported valid and reliable instrument to measure individual interest across different discipline. The finding is also in line with the finding of Knecka, Rowland, Corwan and Eddy (2020) who found strong validity and

internal consistency of Individual Interest Questionnaire.

Finally, finding from research question two on internal consistency reliability of Biology Students Interest Questionnaire (BSIQ) reveals reliability coefficient of the instrument to be 0.89. The result shows strong internal consistency reliability and agrees with position of Del, (2013) who recommends that, a minimum reliability of 0.70 is required for attitude scale. The finding is also in line with the postulation of Hulin, Netemeyer and Cudeck (2001) which indicated that alpha value of 0.60 - 0.70 is generally considered as acceptable reliability indices and 0.80 and above is considered as very good reliability indices.

**Conclusion**

The paper presented the validity, reliability of the BSIQ. The pilot study of the instrument (BSIQ) using the Lawshe's approach and Waltz & Bausell's as well as the Cronbach Alpha reliability has yielded a valid and reliable result. This is an indication of the effectiveness and fitness of the instrument in measuring the interest of secondary school biology students toward learning Biology. Finally, a total of thirty (30) out of thirty two (32) items were considered valid and reliable for data collection.

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**APPEDIX I**

**Biology Students Interest Questionnaire (BSIQ)**

. Dear respondents, I am a PhD student from the Department of Science and Technology Education Bayero University Kano, conducting a research on “Effect of Flipped Classroom Learning and Differentiated Instruction on the Academic Achievement, Interest and Retention of Science Secondary Biology Students in Kano State”. Your response will be treated with utmost confidentiality for the purpose of this research. Kindly tick the appropriate response to the designed four point Scales.

**Section A: Personal Data**

School Name.....

Class..... Gender

male ( ) female ( )

**Section B: Biology Students Interest questions**

Instruction: Tick appropriate in the column provided against the option of your choice Key

- Strongly Agreed (SA)
- Agreed (A)
- Disagreed (D)
- Strongly Disagree (SD)

<b>S/N</b>	<b>STATEMENT OF INTEREST</b>	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
1	I found Learning biology to be very interesting				
2	I prefer to learn biology than any other subject				
3	I feel happy in the absence of biology teacher in the class				
4	Biology lesson helps biology students to grasp certain biology concept more easily				
5	I sometimes leave class when it is time for biology lesson				
6	I appreciate the method used by the teacher in teaching biology lesson				
7	The method used by the teacher increases my motivation for learning biology concepts				
8	I am always thinking of other things when working on biology				
9	Biology lesson create more interaction among biology students				
10	I sometimes disturb and distract others in a biology class				
11	I devote free time to study biology than any other subject				
12	I like seeing charts and diagrams in biology class				
13	I sees studying biology as a waste of time				
14	I enjoy discussing topics in biology with my fellow students				
15	I would rather be working on something else beside biology				
16	I like answering questions in biology				
17	I like biology as a subject				
18	I have difficulty in paying attention when working on biology				
19	I give off easily when working on biology				
20	I always participate in biology lesson				
21	Biology has shown me the importance of science				
22	I would like to study further biology related subjects/courses				
23	I want to learn more about biology				
24	I am always in the class when it is time for biology				
25	I feel excited when new biology topic is announced				
26	I spend as little time as possible working on biology				
27	I found it difficult to learn biology				
28	I spend many hours working on biology				
29	Biology has increased my appreciation to nature				
30	I feel bored when working on biology concepts				

## Evidence-Based Education for the Future: Addressing Health Misinformation and Unlocking Public Health Literacy

By

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### Abstract

In the 21st century, health misinformation poses a growing threat to global health security. From vaccine hesitancy to the rejection of scientifically validated medical procedures, the consequences of misinformation are far-reaching. Health misinformation is a growing public health challenge that threatens evidence-based healthcare practices and undermines trust in medical interventions. With the rapid spread of misleading health claims through social media, digital platforms, and word of mouth, evidence-based education and public health literacy play crucial roles in counteracting misinformation. This paper highlights the spread of health misinformation, the impact of health-related misinformation, and the various roles of evidence-based education in enhancing public health literacy and Strategies to Combat Health Misinformation. The paper concludes by recommending multi-sectoral collaboration and policy-driven strategies to enhance the effectiveness of evidence based health education I improving public health literacy

**Keywords:** *Evidence-based Education*, Health Misinformation, Public Health Literacy, critical thinking

### Introduction

Health misinformation refers to false or misleading information related to health that is spread intentionally or unintentionally, leading to harmful consequences. In recent years, the rapid growth of digital platforms has amplified the spread of misinformation on various health topics, including vaccination, disease prevention, and treatment options (Kickbusch, Pelikan Apfel & Tsouros, 2021). Health misinformation is an urgent public health challenge in today's interconnected digital world. The rapid spread of inaccurate health information, particularly on social media, often leads to confusion, fear, and resistance to proven health interventions. Evidence-based education for the future presents a powerful solution to this growing challenge. By fostering scientific understanding and critical thinking, it helps societies confront and

counteract health misinformation. This phenomenon poses a significant threat to public health, as individuals who rely on inaccurate information may adopt harmful behaviors, delay seeking medical care, or reject evidence-based interventions. Health misinformation, especially concerning vaccines and disease prevention, has become a pressing public health threat. In regions like Nigeria, false narratives about polio, the Human Papillomavirus (HPV) vaccine, and cervical cancer screening are common and have led to reduced health-seeking behavior, mistrust of medical systems, and preventable deaths (WHO, 2021).

Unlocking public health literacy is essential in combating misinformation, as it enables individuals to understand health-related concepts, assess sources of information, and make informed decisions about their well-being. Evidence-based education plays a key role

in fostering scientific literacy, critical thinking, and informed decision-making, all of which contribute to improved public health literacy (Kickbusch et al, 2021).

### **Understanding the Spread of Health Misinformation**

Before examining health misinformation, it is essential to distinguish among different types of false information: misinformation, disinformation, and mal information. Misinformation refers to false or misleading information that is shared unintentionally, without the intent to cause harm. Disinformation, by contrast, involves the deliberate dissemination of false or misleading information with the intent to deceive and cause harm (CDC, 2020). Misinformation refers to the disclosure of genuine information in a manner intended to inflict harm, such as making private information public. Misinformation spreads through a variety of channels, including social media platforms, messaging apps, blogs, and word of mouth (Pennycook, & Rand, 2022). These platforms often amplify false claims through rapid sharing and algorithmic promotion. Echo chambers and filter bubbles can reinforce misinformation by repeatedly exposing individuals to the same content, making it seem more credible. Visual formats such as memes and videos can also make misinformation more persuasive and emotionally resonant, contributing to its viral spread. Low media literacy and cognitive biases, such as confirmation bias, further accelerate the dissemination of misinformation (Pennycook, & Rand, 2022).

The spread of misinformation is not solely the responsibility of those who create and distribute it, the public also plays a significant role in its propagation. The perception of truth or falsehood is largely influenced by how individuals interpret and accept the information they receive. Misinformation becomes particularly dangerous when the public perceives it as credible. Moreover, individuals who share false information are often driven by social and psychological motivations, such as a desire for social validation or engagement within their communities. Addressing misinformation requires collaboration with trusted sources, including community leaders and media professionals, to dispel myths and promote evidence-based knowledge through town halls, community meetings, and various media platforms (Lewandowsky, Ecker & Cook, 2022).

### **Impact of Health-Related Misinformation**

Health-related misinformation poses significant risks to individuals and public health systems. The spread of false or misleading health information whether intentional (disinformation) or unintentional (misinformation) can lead to harmful consequences, including delayed medical treatment, vaccine hesitancy, and the promotion of ineffective or dangerous remedies (Chou, Gaysynsky, Vanderpool & Tan, 2020). When individuals act on incorrect health information, they may adopt behaviors that increase their vulnerability to diseases or reject scientifically proven interventions. For example, during the COVID-19 pandemic, false claims that drinking bleach could cure the virus led to poisoning incidents in several countries (Rutjens, Van der Linden, Van der Lee, 2021). A notable example is the link between misinformation and vaccine hesitancy. The spread of

debunked claims linking the measles, mumps, and rubella (MMR) vaccine to autism despite overwhelming scientific evidence disproving the connection as led to a decline in vaccination rates and outbreaks of preventable diseases (Hotez, 2021). In regions such as Northern Nigeria, rumors that the oral polio vaccine causes infertility or is a Western plot to harm Muslim populations have significantly hindered eradication efforts. These misconceptions delayed vaccine uptake and sustained transmission in areas that were otherwise reachable. Moreover, misinformation about the Human Papillomavirus (HPV) vaccine has also contributed to low vaccination rates, particularly among adolescent girls. Claims that the vaccine promotes promiscuity or causes infertility are widespread in conservative communities. Similarly, misinformation about cervical cancer screening such as beliefs that Pap smears are painful, unnecessary for young women, or only needed when symptoms appear discourages preventive care against cervical cancer (Rutjens et al, 2021). In meningitis outbreaks across sub-Saharan Africa, misinformation led to vaccine refusals, contributing to higher mortality rates. Some believed the vaccine was expired, contained harmful substances, or caused illness. These falsehoods flourished in the absence of timely and accurate communication. Social media and digital platforms play a crucial role in amplifying health misinformation, making it difficult to control its spread (Cinelli, Quattrociochi, Galeazzi, Valensise, Brugnoli, Schmidt & Scala, 2020). Algorithm-driven content recommendations often promote

sensational or misleading health claims, reaching large audiences rapidly. Psychological and social factors such as confirmation bias and group influence further contribute to the acceptance and dissemination of false health claims (Lewandowsky, Cook, Schmid, Holford, Finn, Leask & Vraga, 2021). For instance, conspiracy theories suggesting that 5G technology spreads COVID-19 led to vandalism of communication infrastructure in several countries, highlighting the real-world dangers of misinformation (Freeman, Waite, Rosebrock, Petit, Causier, East, & Lambe, 2020). The Role of Evidence-Based Education (EBE) in Promoting Public Health Literacy

Evidence-Based Education (EBE) is a structured and research-informed approach to teaching and learning that integrates high-quality empirical evidence, professional expertise, and the values and needs of learners to inform educational decisions (Slavin, 2022). Unlike traditional practices that rely on intuition or routine, EBE emphasizes the use of scientifically validated strategies, including randomized controlled trials and systematic reviews, to determine what works effectively in specific educational contexts. The core components of EBE include the application of credible research findings, the informed judgment of educators, and responsiveness to learners' cultural, social, and learning contexts (Sørensen, Van den Broucke, Fullam, Doyle, Pelikan, Slonska & Brand, 2022). In public health education, EBE plays a vital role by ensuring that interventions aimed at improving health literacy and promoting behavior change are evidence-based, context-sensitive, and outcome-oriented. For example, using evidence-based curricula for topics such as cancer prevention or vaccine awareness has been shown to significantly enhance knowledge, shift

attitudes, and promote healthy practices (Glanz, Rimer, & Viswanath, 2021). Public health literacy is widely recognized as a cornerstone for improving population health outcomes. EBE promotes public health literacy through the following core roles:

**1. Providing Scientifically Accurate and**

**Reliable Health Information-** EBE ensures that health education is grounded in the most current and rigorously validated scientific evidence. This role is crucial in combating health misinformation and myths that may hinder public understanding and trust in health services. Accurate information empowers individuals to adopt healthy behaviors and reject harmful or ineffective practices (World Health Organization (WHO), 2022).

**2. Enhancing Critical Health Literacy-**

EBE supports individuals in developing critical health literacy skills, which go beyond basic comprehension to include the capacity to evaluate the credibility, accuracy, and relevance of health information. This critical evaluation is essential in an age where misleading or false health claims are widespread, particularly on social media platforms (Sørensen et al., 2022).

**3. Supporting Sustainable Health Behavior**

**Change-** By applying behavioral theories such as the Health Belief Model and the Theory of Planned Behavior, EBE designs educational interventions that influence health behaviors effectively. These evidence-based strategies contribute to long-term improvements in areas such as vaccination,

cancer screening, sexual health, and nutrition (Glanz, Rimer, & Viswanath, 2021).

**4. Empowering Individuals and Communities-**

EBE often uses participatory approaches such as peer education, group learning, and community engagement to promote ownership and agency. Empowered individuals are more likely to apply what they learn, advocate for health improvements, and contribute to collective efforts to prevent disease and promote well-being (Wiggins & Popay, 2023).

**5. Strengthening Engagement with Health Systems and Services-**

Individuals with higher public health literacy enhanced through EBE can better navigate health services, seek appropriate care, and interact meaningfully with health professionals. This engagement fosters improved patient outcomes and more equitable health access (Nutbeam, 2022).

**6. Contributing to Policy Awareness and Advocacy-**

EBE helps build the capacity of learners to understand their health rights, recognize policy gaps, and participate in policy advocacy. This informed public engagement is critical in demanding better health infrastructure, legislation, and funding (Slavin, 2022).

**Strategies to Address Health Misinformation**

To address the growing challenges associated with health misinformation, the following evidence-based strategies should be employed:

To address the challenges posed by health misinformation, the following strategies should be employed:

**1. Promoting Scientific and Public Health Literacy:**

Scientific literacy is essential for individuals to understand, interpret, and apply health information

accurately. Public health literacy extends this concept by ensuring that individuals can navigate healthcare systems, understand health risks, and adopt preventive health behaviors. Evidence-based education fosters both scientific and public health literacy by teaching individuals the fundamentals of scientific research, how to distinguish credible sources from misinformation, and how to apply scientific knowledge to personal and community health. By integrating scientific literacy with public health literacy, evidence-based education empowers individuals to challenge misinformation and make informed health choices. (Betsch, Wieler & Habersaat, 2020).

2. **Engaging Trusted Messengers to Strengthen Public Health Literacy:** Trusted messengers, including healthcare professionals, educators, religious leaders, and community figures, play a pivotal role in enhancing public health literacy by ensuring that accurate health information reaches diverse populations. People are more likely to accept health guidance from familiar and credible sources. To maximize their impact, evidence-based education should include training programmes for these messengers, equipping them with the knowledge and communication skills needed to effectively counter misinformation and promote public health literacy at the grassroots level (CDCP. 2020).
3. **Encouraging Critical Thinking and Media Literacy:** The ability to analyze and critically evaluate health information is a cornerstone of

public health literacy. Evidence-based education should emphasize critical thinking skills to help individuals identify misleading health claims, media literacy education to enable individuals to recognize biases and sensationalism, and the importance of fact-checking health information before accepting or sharing it. By integrating media literacy into public health literacy efforts, individuals become better equipped to navigate digital health information and resist misinformation (Guess, Lerner & Lyons, 2020).

4. **Strengthening Public-Private Partnerships to Improve Health Literacy:** Public-private partnerships play a crucial role in expanding access to evidence-based education and improving public health literacy. Collaboration between governments, universities, healthcare organizations, and technology companies can help develop and distribute accurate health education materials, support research on misinformation trends, and regulate misleading health content on digital platforms. For instance, social media companies and search engines can adjust algorithms to prioritize evidence-based health information while reducing the visibility of misinformation (WHO, 2021).
5. **Prioritizing Health Education in Schools and Communities:** Health education is a key driver of public health literacy. Integrating evidence-based health education into school curricula ensures that students develop the skills needed to evaluate health information critically from an early age. In addition, community-based health literacy programmes can provide educational workshops on topics such as vaccination, nutrition, and disease prevention, increase awareness of health risks and credible healthcare resources, and address specific cultural and linguistic barriers to health literacy. By

embedding public health literacy initiatives in schools and community programme, misinformation can be reduced at the societal level (Nutbeam, 2022).

**6. Raising Public Awareness Through Health Literacy Campaigns:**

Public awareness campaigns are essential for promoting public health literacy and countering misinformation. Governments and health organizations should launch large-scale evidence-based educational campaigns using traditional media, such as radio, television, and newspapers, as well as digital platforms, including social media, websites, and online forums. Additionally, community-based initiatives tailored to local populations can further enhance the effectiveness of these campaigns. These campaigns should emphasize health literacy skills, enabling the public to question misinformation and seek credible health information (WHO, 2021).

**7. Strengthening Media Practices for Responsible Health Communication:**

The media plays a powerful role in shaping public perceptions of health issues. To enhance public health literacy, journalists and media professionals must verify health claims before publication, adhere to ethical health reporting standards, and collaborate with public health experts to ensure accuracy. By strengthening responsible health reporting, media organizations can support public health literacy efforts and limit the spread of misinformation (Abrams, Greenhawt, & Shaker, 2021).

**8. Enhancing the Role of Technology Platforms in Promoting Public Health Literacy:**

Digital platforms serve as primary sources of health information for many individuals. To support public health literacy, technology companies should invest in AI-powered fact-checking tools, reduce the visibility of false health claims, and provide easy access to verified health information. Collaboration between technology companies and health organizations can improve the accessibility of evidence-based health education materials, ensuring that credible health information reaches the public more effectively (Miller, 2021).

**9. Strengthening Research Efforts on Health Misinformation and Public Health Literacy:**

Ongoing research is necessary to understand how misinformation spreads and how public health literacy can be improved. Research should focus on behavioral factors influencing misinformation belief, strategies to build public trust in evidence-based health information, and the impact of health literacy initiatives on misinformation resilience. Findings can guide the development of targeted educational interventions to enhance public health literacy and misinformation resistance (Kickbusch, Pelikan, Apfel & Tsouros, 2021).

**Conclusion**

In an era overwhelmed by digital content, health misinformation has emerged as a formidable challenge to global health equity, scientific integrity, and public trust. As demonstrated throughout this paper, evidence-based education (EBE) is not merely a pedagogical approach but a powerful, strategic response to counter misinformation and foster resilient, health-literate societies. By promoting critical

thinking, scientific understanding, and informed health behaviours, EBE empowers individuals and communities to discern credible health information and make evidence-informed decisions. Its role becomes even more critical in diverse cultural and socio-economic settings, where myths, fear, and distrust often thrive in the absence of reliable health communication. Strengthening public health literacy through EBE is essential not only for mitigating misinformation but also for advancing health equity, improving population health outcomes, and fostering civic engagement in health policy and decision-making. Therefore, a future-ready health system must embed EBE as a cornerstone of both education and public health interventions.

### **Recommendations**

1. **Integrate Health Literacy into Education-** Incorporate evidence-based health education and critical thinking skills into school and community learning programme.
2. **Train Trusted Messengers-** Equip healthcare providers, educators, and community leaders with skills to communicate accurate health information effectively.
3. **Strengthen Media and Digital Literacy-** Promote public campaigns and media training to enhance the ability to identify and resist health misinformation.
4. **Foster Public-Private Collaboration-** Encourage partnerships among governments, tech platforms, and health institutions to regulate misinformation and promote credible content.
5. **Support Research and Policy Development-** Invest in research on misinformation trends and integrate health literacy goals into national public health policies.

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