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Prof Aliyu A. Dada

Editor-in-Chief, Journal of Educational Research and Development,
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TABLE OF CONTENTS

EFFECTS OF INDIVIDUALISED INSTRUCTIONS ON STUDENTS' PERFORMANCE IN HAUSA LANGUAGE IN SENIOR SECONDARY SCHOOLS IN KADUNA STATE, NIGERIA

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Abstract

Despite Hausa being a widely spoken indigenous language, students' performance in the subject has remained poor, largely due to conventional, teacher-centred teaching methods that limit engagement and comprehension. This study investigated the effects of individualised instruction on students' academic performance in the Hausa language in senior secondary schools in Kaduna State, Nigeria. The study adopted a quasi-experimental design involving pre-test and post-test measures, with 112 Senior Secondary II students purposively selected from two schools: 50 in the experimental group (taught using individualised instruction) and 62 in the control group (taught using conventional methods). The Hausa Language Performance (HLP), a 50-item multiple-choice test, was used for data collection. Mean and standard deviation were used to answer research questions, and the t-test was used to test the hypotheses at the 0.05 level of significance. Findings revealed a significant improvement in the experimental group's post-test performance (mean = 43.52) compared to their pre-test (mean = 29.26), with a mean difference of 14.26 (p = .000). Similarly, the experimental group outperformed the control group (mean = 33.70) by a mean difference of 9.82 (p = .000). The study concluded that individualized instruction significantly enhances students' performance in Hausa language compared to conventional methods. Recommendations include encouraging Hausa language teachers to adopt individualised instruction and providing necessary instructional resources to support its implementation. School authorities should also create a conducive learning environment to facilitate the effective application of this learner-centred approach. The study underscores the importance of tailored teaching strategies in improving language education outcomes in Nigeria.

Keywords: Individualised instruction, Hausa language, academic performance, conventional methods, secondary education, Kaduna State.

Introduction

Hausa is one of the most widely spoken indigenous languages in Nigeria and Africa, second only to English in Nigeria. According to Abdulmumin (2024), Hausa ranks as the eleventh most spoken language globally, with an estimated 150 million speakers in the 21st century. Its 'heartlands' are located in northern Nigerian states such as Kano, Katsina, Sokoto, and Kaduna, as well as parts of the Republic of Niger (Furniss, 1996). Given its cultural and communicative significance, Hausa language is offered as a subject in senior secondary schools across Nigeria, including Kaduna State.

Despite its prominence, students' performance in Hausa language in senior secondary schools has been persistently poor. Factors such as complex content, lack of teaching aids, unfamiliarity with traditional concepts, and student disinterest have been observed to contribute to this trend. However, one major factor repeatedly identified by scholars and educators is the ineffective teaching methods employed in delivering the subject. Conventional methods, especially the lecture method, remain dominant. These approaches are largely teacher-centred and often hinder student participation, critical thinking, and interest, resulting in surface learning and poor academic outcomes (Mbacho, 2013; Macharla et al., 2009).

Effective teaching methods are crucial to improving students' academic performance, particularly in language subjects that require practical engagement, communication, and cultural immersion (Abdulbaqi et al., 2025; Ningi et al., 2024). Muraya and Kimamo (2011) emphasised that the method adopted by a teacher significantly influences students' ability to understand and retain knowledge. In this context, individualised instruction has emerged as a promising alternative to the conventional approach. It is learner-centred and designed to address the specific needs, interests, and pace of each student (Olatoye et al., 2011).

Individualised instruction tailors content, instructional materials, and learning activities to suit the learning styles and capacities of individual students. It emphasises active participation, fosters self-discipline, and promotes deep understanding by allowing students to learn at their own pace. Studies such as those by Abu (1998), Nebpoh (2012), and Aseneau (1994) have confirmed its effectiveness in enhancing student performance and retention across various subjects. Gibney (2001) further noted that individualised instruction can take various forms, including programmed instruction, independent study, computer-assisted instruction, and learning activity packages.

Adamu (2015) posits that when a decline in students' academic performance is observed, the first variable to examine is the instructional method used by the teacher. In the case of Hausa language in Kaduna State, the continued use of conventional methods with limited student engagement may be a significant cause of poor performance. Addressing this issue through individualised instructional strategies could provide a more effective means of teaching, promoting active learning, and enhancing students' academic outcomes in Hausa language.

In light of the above, this study seeks to investigate the effects of individualised instruction on students' performance in Hausa language in senior secondary schools in Kaduna State, Nigeria, to improve teaching methods, increase learner engagement, and ultimately enhance academic performance in the subject.

Statement of the Problem

Effective teaching in any subject requires the use of appropriate instructional methods tailored to the age, needs, and learning styles of students. When teachers fail to adopt suitable instructional strategies, it often results in poor student understanding and achievement. In many secondary schools, particularly in Kaduna State, there are indications that Hausa Language teachers predominantly rely on conventional teaching methods. These traditional approaches, which often emphasise rote memorisation, have been found to limit student engagement and deep comprehension of subject matter.

The persistent poor performance of students in the Hausa Language, as observed in several senior secondary schools in Kaduna State, is a growing concern. Despite efforts to improve teaching and learning outcomes in the subject, students' academic achievement remains below expectations. Adamu (2015) highlighted several factors contributing to this trend, including lack of student interest, unsuitable classroom environments, the complexity of content, and, most importantly, the methods of instruction employed by teachers.

Among the emerging alternatives to conventional teaching methods is individualised instruction, which emphasises personalising learning based on each student's pace, ability, and needs. Research has shown that such learner-centred approaches can significantly enhance understanding, retention, and academic performance. However, in the context of Hausa Language teaching in Kaduna State, the application and effectiveness of individualised instruction remain underexplored.

Therefore, this study seeks to investigate the effects of individualised instruction on students' performance in Hausa Language in senior secondary schools in Kaduna State, Nigeria. It aims to determine whether adopting this approach can serve as a viable strategy for improving students' academic outcomes in the subject.

Objectives of the Study

The study has the following specific objectives:

1. Determine the pre-test and post-test performance of Hausa Language students taught using individualised instruction in senior secondary schools in Kaduna State, Nigeria.

2. Examine the post-test performance of Hausa language students taught using individualised instruction and conventional methods in senior secondary schools in Kaduna State, Nigeria.

Research Questions

This study was guided by the following research questions:

1. What is the pre-test and post-test performance of Hausa Language students taught using individualised instruction in senior secondary schools in Kaduna State, Nigeria?
2. What is the post-test performance of Hausa language students taught using individualised instruction and conventional methods in senior secondary schools in Kaduna State, Nigeria?

Hypotheses

The following hypotheses were stated to guide the study:

1. There is no significant difference between the pre-test and post-test performance of Hausa Language students using individualised instruction in senior secondary schools in Kaduna State, Nigeria.
2. There is no significant difference between the post-test performance of Hausa language students taught using individualised instruction and conventional methods in senior secondary schools in Kaduna State, Nigeria.

Methodology

This study adopted a quasi-experimental research design involving pre-test and post-test measures as proposed by Akorede et al. (2019). The design was chosen for its suitability in school-based studies where intact classes are used, as complete randomisation might interfere with the academic schedule and structure approved by school authorities (Biu et al., 2025). This design helps in controlling potential extraneous variables that could affect the internal or external validity of the findings. The experimental group was subjected to individualised instruction, while the control group was taught using the conventional "chalk and talk" method. Pre-tests were administered to both groups to establish baseline performance levels before treatment. The study utilised a symbolic representation of the design as adapted from Umar (2018), as follows: EG1 (Experimental Group) - O1 X1 O2 and CG1 (Control Group) - O1 X0 O2, where O1 and O2 represent pre- and post-tests, and X1 and X0 stand for individualised and traditional instruction methods, respectively.

The study population comprised all Senior Secondary II students studying Hausa in public secondary schools in Kaduna State, totalling 18,720 students across 12 educational zones. From this population, a sample of 112 students was purposively drawn from two intact classes in Zaria Zone One, serving as the experimental group and the other as the control group. The sample was made up of students from Government Secondary School Tudun Jukun (experimental group, 50 students) and Government Secondary School Kofar Doka (control group, 62 students). This purposive sampling approach ensured representation of both male and female students within a co-educational context, using schools operating the same curriculum, textbooks, and academic schedules, which supported the homogeneity of the sample. The students in both schools were taught by the researcher, with assistance from trained teachers within the schools.

For data collection, a teacher-made instrument titled Hausa Language Performance (HLP) was developed. The test comprised 50 multiple-choice questions drawn from the Senior Secondary II Hausa Language syllabus, covering three content areas: magungunan gargajiya (traditional herbs), sana'o'in gargajiya (traditional crafts), and iskoki (spirits). A table of specifications was created to ensure balanced coverage of cognitive domains, including knowledge, comprehension, application, analysis, synthesis, and evaluation. Emphasis was placed more on knowledge and comprehension levels, which collectively accounted for 34 items. The instrument was validated by experts in Hausa Language and curriculum studies at Ahmadu Bello University, Zaria. A pilot study was conducted at Government Secondary School Kofar Kuyanbana, using 30 students who were not part of the main study to ensure the reliability of the instrument. The test-retest method was applied over a two-week interval, and the results were analysed using Pearson Product-Moment Correlation, yielding a coefficient of 0.89, indicating high reliability.

The data collection process was facilitated through official authorisation obtained via a letter from the Head of Department of Educational Foundations and Curriculum, Ahmadu Bello University, to the Kaduna State Ministry of Education. With this approval, the researcher implemented the treatment, which lasted 9 weeks in total, 8 weeks for instructional delivery and 1 week for pre-test and post-test administration. The research assistants, trained for two weeks, were guided on how to implement the individualised instructional strategies, administer the test instruments, and record data. Lesson plans for both experimental conditions were prepared by the researcher and aligned with the selected topics from the Hausa curriculum. Pre-tests were administered to all students before the commencement of the treatment. Following the 8-week instructional phase, post-tests were conducted. Descriptive statistics such as mean and standard deviation were used to answer the research questions, while hypothesis 1 was tested using a paired sample t-test and hypothesis two was tested using independent sample t-tests at a 0.05 significance level with the aid of SPSS version 30.

Table 1: TREATMENT PLAN FOR THE STUDY

WEEK	ACTIVITY	TOPIC	COMMENT
Week 1	Pre-treatment	Research assistants orientation	Orientation for research assistants and students to make them familiar with their responsibilities in the study and the nature of the study, and finally pre-test was administered to the students.
Week 2	Treatment	Meaning and types of traditional herbs (Magungunan gargajiya)	Students in the experimental group were taught using individualised instructions, while those in the control group were taught using the traditional method of teaching.
Week 3	Treatment	Preparation, use and types of traditional herbs	Students in the experimental group were taught using individualised instructions, while those in the control group were taught using the traditional method of teaching.
Week 4	Treatment	Meaning and types of traditional crafts (Sano'o'in gargajiya)	Students in the experimental group were taught using individualised instructions, while those in the control group were taught using the traditional method of teaching.
Week 5	Treatment	Butchery (fawa), traditional building (gini), Tennery (jima)	Students in the experimental group were taught using individualised instructions, while those in the control group were taught using the traditional method of teaching.
Week 6	Treatment	Importance of traditional crafts	Students in the experimental group were taught using individualised instructions, while those in the control group were taught using the traditional method of teaching.
Week 7	Treatment	Meaning and types of Spirit (iskoki)	Students in the experimental group were taught using individualised instructions, while those in the control group were taught using the traditional method of teaching.
Week 8	Treatment	The living places of Spirit and the responsibilities offered to them	Students in the experimental group were taught using individualised instructions, while those in the control group were taught using the traditional method of teaching.
Week 9	Ending treatment	Post–test	All students were administered the HLPART, and the scores were compared with the post-test scores to answer the research question and test the hypothesis.

Results

Research Question One: What is the pre-test and post-test performance of Hausa language students taught using individualised instruction in senior secondary schools in Kaduna State, Nigeria?

Table 2: Mean and Standard Deviation of pre-test and post-test performance of Hausa language students taught using individualised instruction

Variable	N	Mean	Std. Dev.	Mean Diff
Pre-test Individualised Instruction	50	29.26	3.002	
				14.26
Post-test Individualised Instruction	50	43.52	2.459	

Source: Field study Data, 2023/2024 academic session

The analysis of data in Table 2 shows pre-test and post-test performance of Hausa language students taught using individualised instruction in senior secondary schools in Kaduna State, Nigeria. The results revealed 29.26 pre-test and 43.52 mean performances with a mean difference of 14.26 for students taught Hausa language using

individualised instruction. The post-test higher than the pre-test performance, implying that individualised instruction is effective in teaching students the Hausa language in senior secondary schools in Kaduna State, Nigeria.

Research Question Two: What is the post-test performance of Hausa language students taught using individualised instruction and conventional methods in senior secondary schools in Kaduna State, Nigeria?

Table 3: Mean and Standard Deviation of post-test performance of Hausa language students taught using individualised instruction and conventional method

Variable	N	Mean	Std. Dev.	Mean Diff
Post-test individualised instruction	50	43.52	2.459	
				9.82
Post-test conventional method	62	33.70	2.168	

The analysis of data in Table 3 shows post-test performance of Hausa language students taught using individualised instruction and conventional methods in senior secondary schools in Kaduna State, Nigeria. The results revealed 43.52 and 33.70 post-test mean performances with a mean difference of 9.82 for students taught the Hausa language using individualised instruction and the conventional method. The post-test performance of students taught using individualised instruction is higher than those taught with the conventional method, which implies that individualised instruction is effective in teaching students the Hausa language in senior secondary schools in Kaduna State, Nigeria.

Test of Hypotheses

Hypothesis One: There is no significant difference between the pre-test and post-test performance of Hausa language students using individualised instruction in senior secondary schools in Kaduna State, Nigeria

Table 4: t-test statistics on pre-test and post-test performance of Hausa language students taught using individualised instruction in senior secondary schools

Variable	N	df	t-cal.	p-value
Pre-test Individualised Instruction				
	50	49	28.494	.000
Post-test Individualised Instruction				

Source: Field study Data, 2023/2024 academic session

The analysis of data in Table 4 shows the difference between the pre-test and post-test performance of Hausa language students using individualised instruction in senior secondary schools in Kaduna State, Nigeria. The results revealed a p-value of .000, which is less than the 0.05 level of significance. The hypothesis is rejected; hence, the difference between the pre-test and post-test performance of Hausa language students using individualised instruction is significant, which means that individualised instruction is effective in teaching Hausa language in senior secondary schools in Kaduna State, Nigeria.

Hypothesis Two: There is no significant difference between the post-test performance of Hausa language students using individualised instruction and those with the conventional method in senior secondary schools in Kaduna State, Nigeria

Table 5: t-test statistics on post-test performance of Hausa language students taught using individualised instruction and those taught with the conventional method in senior secondary schools

Variable	N	df	t-cal.	p-value
Post-test individualised instruction				
	112	110	1.541	.000
Post-test conventional method				

Source: Field study Data, 2023/2024 academic session

The analysis of data in Table 5 shows there is a significant difference between the post-test performance Hausa language using individualised instruction and those taught with the conventional method in senior secondary

schools in Kaduna State, Nigeria. The result revealed a P value of .000, which is less than the 0.05 level of significance. The hypothesis is rejected; hence, the difference between the performances of students taught using Individualised Instruction and the conventional method is significant. The performance favours students taught using Individualised instructions, which means that it is effective in senior secondary schools in Kaduna State, Nigeria.

Discussion of Findings

Based on the analysis carried out on the research questions and the test conducted on the hypothesis. The findings of the study revealed that individualised instruction has a positive effect on the performance of students taught Hausa Language in senior secondary schools in Kaduna State, Nigeria. The result indicated that students taught the Hausa language using individualised instruction recorded a higher performance score in the post-test administered to them as compared to the pre-test. The study revealed that there was a statistically significant difference in the pre-test and post-test of students taught Hausa language using individualised instruction in senior secondary schools in Kaduna State, Nigeria ($p = .000$). The implication of this is that students recorded better in post-test performance in the Hausa language after the application of individualised instruction as compared to their pre-test performance (that is, before the use of individualised instruction). Consequently, hypothesis one, which states that there was no significant difference in the pre-test and post-test performance of students taught Hausa language using individualised instruction in senior secondary schools in Kaduna State, Nigeria, was rejected. These findings upheld the findings of David (2021), which commended that chemistry students should be taught with centred and activity-based methods of instruction. This means that individualised instruction improved academic performance as students can learn at their own pace and receive more individualised feedback, and it can help to develop critical thinking and problem-solving skills, as students are encouraged to take ownership of their learning. The finding is also in agreement with the finding of Anene (2010) discovered that instruction equips students with suitable skills that enable them to secure a job. The result of the study revealed that the individualised instruction method was a viable method for teaching clothing construction. Individualised instruction allows teachers to focus on the needs of each student with motivation and engagement.

The study further revealed that there was a difference in the performance of students taught Hausa language using individualised instruction and those taught using the conventional method in senior secondary schools in Kaduna State, Nigeria. The standard deviation at each level implies that students' performance is at variance with each other. The finding revealed that there was a statistically significant difference between the performance of students taught Hausa language using individualised instruction and those taught using the conventional method in senior secondary schools in Kaduna State, Nigeria ($p = .000$) Consequently, the null hypothesis was rejected because there was a statistically significant difference between the performance of students taught Hausa language using individualised instruction and those taught using conventional instruction in senior secondary schools in Kaduna State, Nigeria. This result implies that students taught Hausa language using individualised instruction have better performance compared to their counterparts taught using the conventional method in senior secondary schools in Kaduna State, Nigeria. This finding is in agreement with some previously conducted studies. Abu (2020), for instance, discovered that there are significant differences between the performance of students who were taught biology using the lecture method, and recommends the use of individualised instruction at all levels. To further reflect on the efficacy of individualised instruction, the findings of the study also agreed with the research conducted by Karam et al. (2019), which found that individualised instruction had significantly higher scores on both pre- and post-tests compared to those who were taught using conventional methods. Additionally, research by Smith and Harris (2018) found that individualised instruction was more effective than traditional methods in helping students retain information over time.

Conclusion

Based on the findings, the study concludes that students taught Hausa Language through Individualised Instruction outperform those taught using the conventional method in Senior Secondary Schools. There is a significant overall difference in the performance of students exposed to Individualised Instruction compared to

those taught with conventional approaches in Kaduna State, Nigeria. In summary, Individualised Instruction proves to be a more effective method for teaching the Hausa Language at the senior secondary school level.

Recommendations

The following recommendations were made in the study:

1. The school management should motivate Hausa Language teachers by providing an environment that is conducive to the effective application of individualised instruction.
2. The school authority should support teachers by making available all the Instructional resources needed for the application of individualised instruction for effective teaching of Hausa Language in senior secondary schools in Kaduna State, Nigeria. This helps to tailor the instruction to their specific needs.

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SOCIAL NETWORKING AS A SOURCE OF LITERACY DEVELOPMENT AMONG OUT-OF-SCHOOL CHILDREN IN NIGERIA

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Abstract

This paper investigated the impacts of social networking as a source of literacy development among out-of-school children in Nigeria. In doing this, literature relevant to out-of-school children in Nigeria and social networking was reviewed, within which the essence of the present investigation was underpinned. Again, reasons were advanced concerning the increasing out-of-school population in Nigeria. Then, the paper further highlighted literacy development in the context of social networking on the basis of previous empirical claims, thereby establishing the positive impacts of social networking on learners' literacy development, involving both in-school and out-of-school children. Finally, the paper explored specific functional social networking facets that could bridge literacy gaps among out-of-school children, such as via the potentials of such technologies to educational resources; potentials to provide literacy practice and feedback; the potentials to provide social support and motivation; and the potentials to provide personalised learning and adaptability. Based on these accounts, it was concluded that social networking could be a valuable tool for bridging literacy deficits among the out-of-school population in Nigeria.

Keywords: Social Networking, Literacy development, Out- of -School Children

Introduction

In its aim to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, the fourth United Nations Sustainable Development Goal (SDG 4) provides a scalable framework for educational development. With its robust targets and indicators, SDG 4 departs from its precursor, the second Millennium Development Goal (MDG 2), as it broadens its focus to include learning across multiple levels, from pre-primary to adult education, while also identifying various stakeholders: teachers, institutions and governments as partners in the effort to achieve quality and inclusive education for all (Adams et al., 2016). Despite well-documented progress in the pursuit of these targets, several barriers, such as historical, political, economic or technical factors, have hindered significant success, especially in some countries. Nigeria exemplifies this challenge, with 20 million children, including youth, out of school (World Bank, 2022).

More worrisome is the fact that despite Nigeria's legal and institutional framework, disbursement of funds, loans and educational policies, the country continues to be home to the highest number of out-of-school children in the world (Akorede et al., 2023; UNICEF, 2022). The country's Basic Education Statistics established the number of out-of-school children aged 6 to 11 at 10 million, and an estimate of 10.2 million in 2022 (Nigeria Digest of Education Statistics, 2022). Additionally, if the secondary school-aged children are included, the out-of-school population reaches an estimate of 20 million (UNESCO, 2023). Narrowing down to the northern part of the country, the out-of-school phenomenon is even more prevalent, with a sharp 15% decrease in primary school enrolment in the northern geopolitical zones compared to the southern regions (Idris et al., 2022; UNESCO, 2022).

Nigeria, with a population of over 200 million people, faces a significant literacy crisis. According to Ahmed (2022), Nigeria is characterised by a 31% illiteracy rate. This is equivalent to 62 million people being illiterate out of the over 200 million population. This phenomenon has posed a great challenge to the economic sustainability of the country (Ahmed, 2022). Implicitly, this has severe consequences for the country's economic development, health, entrepreneurial sector, security, social stability, and individual well-being. Traditional education systems have failed to reach many of these children, particularly in the northern parts of the country where access to schools is limited (Ahmed, 2022).

Nigeria and the Burden of Out-of-School Children

One of the social problems facing the world is how to encourage parents to send all their children to school. Encouraging school enrolment has been identified as important because when children do not attend school, it affects their well-being as well as overall conduct. Northern Nigeria is of particular interest because of the growing instances of out-of-school children in the region. The United Nations International Children's Emergency Fund (2022) says that Nigeria's rate of out-of-school children has reached an alarming proportion because one in every five out-of-school children in the world is from Nigeria. UNICEF notes further that 10.5 million children of school age who are Nigerians have not attended school. This situation portends danger because the majority of Nigeria's population is of school age. This assumption is supported by the National Bureau of Statistics (2017) demographic survey, which shows that most of Nigeria's population is between the ages of 0–14. This means that greater attention needs to be paid to the young population, especially those who are disadvantaged. Northern Nigeria has a peculiar problem because the UNICEF (2021) says that 47 % children from the area are out of school. Ayoko (2022) identifies five (5) reasons for the increasing number of out-of-school population in the northern part of Nigeria to include the following:

i. Lack of Parental Awareness

The majority of parents, especially those living in rural areas, have no basic understanding of the need to enrol their children on school. Most of them believed that since Western education comes from the white man, it is evil. This notion is very common in northern Nigeria (Alexander, 2008). To them, anything Western is looked upon with disdain and in contradiction to the traditional practices. The very few that allow their children to go to school were threatened and compelled to have them withdrawn. This accounts for the outrageous number of out-of-school children in that part of the country. However, a lot needs to be done to clear this misconception. One of such measures is an intensive public enlightenment campaign by relevant stakeholders, massive sensitisation on the necessity of schooling.

ii. Low Economic Status

Economic status is considered the position of an individual on a socio-economic scale, which measures such factors as education, income, types of occupations and place of residence (Mosby 2009). Similarly, parents' economic status is seen as the standing of a person or group in a community or society based on education, occupation, and income, which is often used as a benchmark for investigating health profiles (Akorede, 2024; Blueprint, 2021). Deji (2022) noted that deprivation of basic social amenities at home posed a serious challenge to the child's intellectual development, which can lead to dropping out of school in search of these amenities. Yoau (2000) identifies parents' educational background and students' cognitive ability as significant predictors of children's educational attainment. The various studies mentioned above point to the fact that the provision of social amenities by the parents helps significantly in the child's intellectual development and retaining the child in school. Similarly, there is a relationship between parental educational background and students' academic attainment. Educated parents know the value of education and can do whatever it takes to ensure that their children are educated (Ajala, 2012; Sani et al., 2024).

iii. Non-Affordability of School Fees

The current economic difficulties have manifested in the various dimensions of human endeavour. A low-income earner could not adequately cater for the needs of his household. The difficulty of maintaining a family on a low income affects children's education (Abdulbaqi et al., 2024; Adegboyega, 2019). It is important to note that the ability of the parents to shoulder the needs of their children plays an important role in a child's

educational development. Similarly, Akpan (2000) noted that poverty and access to education cannot be separated. He observed that in Nigeria, where a large portion of the population falls below the poverty line, the rise in the population of the core poor has created conditions in which many Nigerian families cannot afford to send their children to school. When the economy is strong, low-income earners will be able to take care of their families adequately. This means the child's schooling needs will be well catered for, blocking any available chances of dropping out. However, the effects of a weak economy extend to the low-income earner, making it difficult for him to cater for the schooling needs of his child, which may cause dropout.

iv. Meagre Budgetary Allocation

Budgetary provision allocated to education is very meagre (Adegboyega, 2019). The allocation cannot cater for the mandatory monthly salaries of teachers, apart from instructional materials and other provisions for the welfare of the teachers. No adequate funds for the training and re-training of teachers. This development implies that the education of primary school pupils is seriously affected. This is because no adequate chairs and tables, no instructional materials and even no extracurricular activities to attract the child's attention to school. With this scenario, the child is not in any way encouraged to continue schooling (Ajala, 2012).

v. Lack of Accessibility to Allocated Funds

To utilise allocated funds constitutes a major setback in the educational development of the child. After the necessary budgetary allocation, it takes a very long time before the actual budget is passed into law (Adegboyega, 2019). It is not the allocation of the funds that matters, but the accessibility of the funds, which, most of the time, makes project implementation impossible. It is therefore pertinent to note that to be able to implement the outlined projects, there must be easy accessibility to the allocated funds.

Concept of Social Networking

Socialisation has been around long before the invention of new technologies, and the development of new technologies transformed socialisation into a new system in society. The transition to the technological era saw or brought about the advent of the Internet as well as social networking. The advancement in technology has made it easier for people, especially young people, to have access to the Internet and thus social networking, with which they interact with friends (Ibrahim, 2012). Social networking has revolutionised the way social interaction takes place. It is a process by which people socialise online. Through social networking, people seek and enjoy the companionship of others online. It supports the sharing of information and services. These social networking sites have become an integral part of modern life, with millions of Nigerians using platforms such as Facebook, Twitter, Instagram, and WhatsApp, among others. While social networking has its drawbacks, it offers diverse opportunities for literacy development. This paper explores the impact of social networking as a source of literacy development among out-of-school children in Nigeria.

Social networking constitutes interactive, digitally-mediated technologies that facilitate the creation or sharing/exchange of information, ideas, career interests, and other forms of expression via virtual communities and networks. Social networking has emerged as a term frequently used and variously defined as different types of communication platforms and electronic ways of interacting. According to Mojeed (2022), social networking is the technology that facilitates social interaction, makes possible collaboration, and enables deliberations across stakeholders. Going by this view, social networking includes such tools as electronic blogs, audio/video tools like YouTube, internet and chat rooms, cellular and computer texting, and social networking sites (SNSs). Rosen in his study in 2011 found out that in terms of daily use of all social media collectively, those born between 1965 and 1979 (Generation X) consumes approximately 13 hours of social media per day; those born between 1980 and 1989 (Net Generation) consumes approximately 19 hours of social media per day; and those born between 1990 and 1999 (IGeneration) consumes approximately 20 hours of social media per day; and finally Generation Z born from the year 2000 to date who are also called ‘digital natives’ whose daily hours are believed to be digitally inevitable (Ali, 2022).

Types of Social Networking Sites

Most children are familiar with social networking sites like Instagram, Facebook, WhatsApp, Twitter, and LinkedIn. These platforms help learners connect with friends, families, and brands. They encourage knowledge-sharing and are all about personal, human-to-human interaction. Users can share thoughts, curate content, upload photos and videos, form groups based on interests, and participate in lively discussions (Maya, 2015). They are built around the users and everything important to them and their social circles. In a study, Investopedia (2014) categorises the social networking sites as follows:

a. Image Sharing Sites

Visual content like images, infographics, and illustrations captures young learners' hearts, eyes and imaginations. Social media platforms like Instagram and Snapchat are designed to amplify the power of image sharing. Learners create, curate, and share unique images that spark conversation and speak for themselves. A picture can be worth a thousand words to learners.

b. Video Hosting Sites

YouTube revolutionised the way we watch, create, and think about videos (Maya, 2015). It transformed the medium into something accessible. Recent improvements in technology and connectivity have helped videos go the rest of the way. Video hosting platforms like YouTube and Vimeo help creators put together content and share it on a platform optimised for streaming. This accessibility makes video a super important medium. For example, YouTube videos have been an important source of second and foreign language learning (Zakaria & Birikorang, 2018).

c. Community Blogs

Sometimes an image or a post is not complex enough for the message a user has to share, but not everyone on the internet wants to run a blog from a self-hosted website. Shared blogging platforms like Medium and Tumblr give people a space to express their thoughts and help connect them with readers (Zakaria & Birikorang, 2018). These community blog sites provide an audience while allowing plenty of room for customisation and self-expression. A user can use blogs to develop his/her voice, get some readers, and get clear about his/her vision.

d. Discussion Sites

While most of us have seen many a heated discussion happen on Facebook, discussion sites like Reddit and Quora are specifically designed to spark a conversation. Anyone is free to ask a question or make a statement, and this attracts people with shared interests and curiosities. Thus, like Facebook and Instagram, users tend to ask thought-provoking questions that can be instrumental to literacy development.

Literacy Development

Out-of-school children face significant barriers to literacy development, including a lack of access to educational resources, poverty, and social inequality. Social networking has become a ubiquitous part of modern life, with millions of Nigerians using platforms like Facebook, Twitter, and Instagram. This social networking has the potential to bridge literacy gaps among out-of-school children. Essentially, being literate is a term used to describe a wide range of different learning behaviours, ranging from the skill to act on reading and writing to the knowledge of some related body of literature (Bormuth, 2003). Coiro (2003; p.460) confirms, "the nature of literacy is rapidly changing as new technologies emerge." Regardless of the many mismatches concerning the definition and scope of literacy, Lankshear and Knoebel (2008) maintain that whatever literacy is, it has something to do with reading. They strongly opine that literacy is deeply rooted in some practices primarily involving reading and writing. Nevertheless, literacy development, literacy instruction and literacy acquisition in modern times have gone beyond the traditional notion of reading and writing to occupying abilities to manipulate multimedia (Van Daal & Sandvik, 2012). These new technological avenues to communication include the various Instant Messaging applications (IMs) that have emerged by virtue of the internet. Vural (2015) reveals that social media, also known as Social Networking Sites (SNS) such as Facebook, Twitter,

Instagram, MySpace, YouTube, WeChat and IMO, have all famously gained roots in the daily lives and practices of the children we have in our classrooms and out of classrooms today.

Previous Studies on Literacy Development and Social Networking

Relatively, a huge number of factors have influenced literacy development over the years. Even before the advent of technology, various skills and abilities needed to read and write were still highly manipulated either by external or internal factors. Nevertheless, as individuals and societies pass through changing times (digital age/technological era), their conventional way of viewing literacy is modified, hence their literacy skills. For instance, the mass usage of the internet, especially with Social Networking Sites (SNS) and social media practices such as Facebook, Twitter, Instagram, Skype and many others, has gained ground in the everyday literacy lives and skills of young people (Vural, 2015). The positive and negative impacts of social media are evident throughout all literacy skills. Writing mistakes such as wrong grammar are often rampant in pupils' writing because pupils see social media platforms as digital communities where Standard English Usage is irrelevant (Sani & Bature, 2014; Sarkar et al., 2015). Young ones are often fond of using smileys, emoticons, and phonetic replacement games learned from and used on social media platforms to prove points in formal writings (Craig, 2003; Sani & Bature, 2014). Coiro (2003) opines that internet reading is mentally challenging because online texts contain certain features and hyperlinks which may require additional processing of comprehension skills on the part of the reader. This means the contents and materials read on digital online platforms improve users' comprehension skills. Adams (2011) and Craig (2003) maintain that instant messaging and certain social media features promote reading and fluency skills among young people. This means that social media and social networking sites in general can positively affect on reading fluency skills of learners. From the above empirical observation, it is evident that the social networking sites are essentially instrumental to young people's ability to read and write, whether in-school or out-of-school reading and writing phenomenon (Sarkar et al., 2015). What remains, however, is the particular empirically-based interface between social networking and literacy development of out-of-school children. This shows that research on the subject of literacy development vis-à-vis social media influence is not conclusive. This therefore shows that more research is needed in the same direction.

Bridging Literacy Gaps through Social Networking Among Out-of-School Children

This section is an exploration of empirical claims on the specific interfacing factors between social networking and literacy development among out-of-school children. This is examined under three major subheadings as follows:

a. **Access to Educational Resources**

1. Online tutorials and videos: Social media platforms like YouTube, Facebook, and Twitter can provide access to educational tutorials and videos on various subjects, including literacy (Hobbs, 2017).

2. E-books and digital libraries: Social media can connect out-of-school children to e-books and digital libraries, providing access to a wide range of reading materials (Kirsch & Guthrie, 2017).

3. Educational apps and games: Social media can be used to promote educational apps and games that focus on literacy development, such as Duolingo, Reading Eggs, and ABCmouse (Wouters et al., 2013).

b. Literacy Practice and Feedback

1. Online reading and writing groups: Social media can facilitate online reading and writing groups, where out-of-school children can practice their literacy skills and receive feedback from peers and mentors (Black, 2008).

2. Interactive quizzes and assessments: Social media can be used to create interactive quizzes and assessments that provide immediate feedback and help out-of-school children track their progress (Shute, 2008).

3. Peer review and feedback: Social media can enable out-of-school children to share their writing and receive feedback from peers, promoting literacy development and critical thinking (Topping, 1996).

c. Social Support and Motivation

1. Online mentorship programs: Social media can connect out-of-school children with online mentors who can provide guidance, support, and motivation to develop their literacy skills (DuBois et al., 2011).

2. Literacy communities and forums: Social media can facilitate online communities and forums where out-of-school children can connect with others who share similar interests and goals, promoting social support and motivation (Gee, 2004).

3. Recognition and rewards: Social media can be used to recognise and reward out-of-school children for their literacy achievements, providing motivation and encouragement to continue learning (Henderlong & Lepper, 2002).

d. Personalised Learning and Adaptability

1. Adaptive learning technologies: social media can be used to promote adaptive learning technologies that adjust to the individual needs and abilities of out-of-school children (Ritter et al., 2017).

2. Personalised learning plans: Social media can facilitate personalised learning plans that cater to the unique interests, goals, and learning styles of out-of-school children (Kuh et al., 2014).

3. Real-time feedback and assessment: Social media can provide real-time feedback and assessment, enabling out-of-school children to track their progress and adjust their learning strategies accordingly (Shute, 2008).

Conclusion

This paper investigated social networking as a source of literacy development among out-of-school children in Nigeria. The study concluded that social networking could be a valuable tool for bridging literacy development deficits among the out-of-school population in Nigeria. The paper showcased the potential of social networking to provide out-of-school children with access to educational resources, opportunities for literacy practice, and social support.

Suggestions

i. **For Policymakers**: Government should provide subsidised data for educational websites, funding for community digital-literacy centres, or public-private partnerships to create literacy content in local languages (Hausa, Fulfulde) on platforms like YouTube.

ii. **For Educators/NGOs:** Educators should create a moderated, WhatsApp-based reading group for OOSC, or NGOs should focus on training community mentors to guide OOSC in using platforms like Quora or Medium for learning.

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KNOWLEDGE SHARING FOR THE IMPROVEMENT OF TEACHING ACTIVITIES IN NIGERIAN TERTIARY INSTITUTIONS: A CASE STUDY OF KADUNA POLYTECHNIC

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Abstract

The study investigated Knowledge sharing for improving teaching activities in Nigerian Tertiary institutions: A case study of Kaduna Polytechnic. The objectives of the study were to: identify the types of knowledge shared among Academic staff for the improvement of teaching activities in Kaduna Polytechnic; determine how Knowledge is shared among Academic Staff for the improvement of teaching activities in Kaduna Polytechnic; identify the platforms used by Academic staff in knowledge sharing for the improvement of teaching activities in Kaduna Polytechnic. The research method adopted for this study is the quantitative research method. The research design adopted for the study was a cross-sectional survey research design. The study population comprised the entire academic staff of Kaduna Polytechnic across six (6) colleges of the institution, totalling one thousand nine hundred 1900. The sample size for this study was one hundred and ninety (190), which is 10% of the entire Population of the academic staff of Kaduna Polytechnic. The instrument used for data collection was a structured questionnaire containing closed and open-ended questions. The data collected were analysed using frequency tables and percentages. The findings of the study revealed that the types of Knowledge shared for the improvement of teaching activities among academic staff were educational knowledge and best practices. The study also revealed that the majority of the respondents indicated that the type of knowledge-sharing practice they engaged in was the sharing of documents with other colleagues and group discussion. It was also revealed from the study that the major platforms used for knowledge sharing, as indicated by the majority of the academic staff, were Conferences, Academic Social Networks and Forums. The study recommended, among others, that the Polytechnic management should create a more conducive environment for the academic staff so that they can have more avenues or platforms through which they can easily share their knowledge, experience and expertise to improve teaching activities in the Polytechnic.

Keywords: Academic staff, Improvement, Knowledge sharing, Teaching activities

Introduction

Knowledge is considered the basis for the development of any organisation; it is one of the most expensive and most valuable resources an individual or an organisation can acquire. Knowledge gives an individual or an organisation the courage and ability to handle or deal with any situation or issue at hand. Therefore, knowledge can be seen as the information and understanding individuals gain through experience, learning or any other activity, which is very important in enhancing our daily affairs.

Stressing the significance of knowledge in an organisation, Mohajan (2023) stated that knowledge is considered the basis for developing a sustained, long-term competitive advantage for every organisation. According to Devenpot and Prusak (1997), Knowledge can be seen as a fluid mix of framed experience, values, conceptual information and expert insight that provides an environment and framework for evaluating and incorporating new experiences and information. Also, Abdurrahman (2021) viewed knowledge as a concept that refers to an understanding gained through experience, know-how or familiarity in carrying out activities such as teaching and research that enable a person to achieve results.

Knowledge is mostly domiciled in tertiary institutions as it is generated there to reform personalities, change paradigms, provide new knowledge and significantly contribute to the development of civil societies (Akorede et al., 2022; Idris et al., 2022; Solomon et al., 2025). Tertiary institutions are the intellectual centres of knowledge production and research, and as such are responsible for education, research and knowledge transfer to society, hence contributing to national development (Kumaravel & Vikkraman, 2018; Ojo, 2016). This makes knowledge a naturally shared commodity among individuals and organisations. This implies that for any organisation or institution to develop, progress and achieve its objectives, the knowledge of its employees or members must be shared among themselves to performance of their job effectively and increase productivity in the organisation (Akorede et al., 2021). This can be realised through engagement in knowledge-sharing activities.

Knowledge sharing is a process through which ideas, experiences, expertise and skills are transferred and exchanged between and among individuals in an organisation. As mentioned earlier, knowledge is a naturally shared commodity; this implies that once knowledge is generated, it should be transferred from the point of generation to the appropriate place or entity where such knowledge will be useful (Jusoh & Alfawareh, 2019). Hoegl et al. (2003) defined knowledge sharing as the exchange of ideas, expertise, experiences, and skills among employees as part of the social interaction of organisational culture. However, Jusoh and Alfawareh (2019) considered knowledge sharing as a key element of knowledge management processes and a success factor for knowledge management programs. The knowledge shared includes technical resources, frequently asked questions, training documents and people's skills. It can be deduced that Knowledge Sharing is a natural process that readily manifests wherever a community or group of people exists. It attracts research interest due to its recognition as a key facilitator of information diffusion and social interaction.

According to Chuma and Chidi (2018), people exhibit different habits or mannerisms in their sharing of knowledge. This diversity of attitudes has, inevitably, birthed the concept of Knowledge Sharing Practice (KSP). Knowledge Sharing Practice (KSP) can be seen as a series of activities, strategies and processes through which knowledge is exchanged amongst people and between organisations. It also captures the different mannerisms, attitudes and behaviours that are exhibited in the course of Knowledge Sharing. Also, Knowledge Sharing Practice (KSP), according to Otuza and Enyinnaya (2016), is composed of a set of activities through which knowledge is exchanged amongst people, friends, family, communities and organisations.

In other words, Knowledge-sharing practices are the processes and strategies involved in the transfer, dissemination, and exchange of information, skills, expertise, and insights among individuals or within organisations. The implementation of effective knowledge-sharing practices can foster innovation, improve problem-solving, enhance collaboration, and promote continuous learning. The key practices that academic staff can use to enhance knowledge sharing in their respective institutions include: group discussion with other colleagues, mentorship, distribution of literature to other colleagues, writing of books, engagement in academic research, writing of book chapters, meetings, forums and teaching activities.

Fullwood and Rawley (2013) posited that Tertiary Institutions are knowledge-intensive organisations given their engagement in teaching, research activities, dissemination of knowledge through Scholarly communication and partnerships with other businesses and organisations. Where there is a lack of proper and adequate sharing of knowledge among academic staff in Tertiary Institutions, this could be alarming since these institutions are considered as knowledge-intensive organisations, and this would have a great impact on the research output and teaching activities in such institutions. As it is popularly said, knowledge is power; it is one of the most important resources for an individual, organisation or country. Mohajan (2019) stated that any type of knowledge starts from the intelligence of individuals, and it is visible in procedures, norms, customs, tasks and systems. Knowledge sharing is regarded as an important phase of knowledge management and determines the success of knowledge management initiatives (Ramjeawon & Rowley, 2017). As knowledge-creating entities, Polytechnics, like other Tertiary Institutions, benefit from effective Knowledge Management and, in particular, Knowledge Sharing. Academic staff in the Polytechnics recognised the importance of knowledge sharing and commonly exchange knowledge with colleagues and administrators to enhance their daily activities of teaching, research and community service (Ramayah et al., 2014). Cheng et al. (2019) supported this view by noting that

the impact of Knowledge Sharing in Tertiary Institutions, where knowledge distribution and application are created, could even be greater than its impact in businesses and other organisations. In this regard, Ramjeawon and Rowley (2017) maintained that a good knowledge-sharing practice improves the identification and dissemination of the best information and knowledge, and also enhances organisational development, creates new opportunities that will inspire creativity and innovation, and enhances employee retention rate.

Knowledge sharing is generally accepted to be a remedy for meeting academic needs in the face of declining resources. Regardless of the importance of the role of individual knowledge and the need for this knowledge to be shared effectively, relatively little empirical research sheds light on the nature of individual knowledge in Nigerian Tertiary institutions and how lecturers in their work settings share this knowledge. In line with these trends, knowledge sharing among lecturers in Nigerian tertiary institutions has been rigorously slowed down due to inadequate awareness about the significance of knowledge sharing in the academic community and the poor attitude of lecturers towards the ideal of sharing knowledge.

Objectives of the study

The following are the objectives that are expected to be achieved at the end of this study:

1. To identify the types of knowledge shared among Academic staff for the improvement of teaching activities at Kaduna Polytechnic.
2. To determine how Knowledge is shared among Academic Staff for the improvement of teaching activities at Kaduna Polytechnic.
3. To identify the platforms used by Academic staff in knowledge sharing for the improvement of teaching activities at Kaduna Polytechnic.

Literatures Review

Different types of knowledge exist and reside in the minds of individuals as well as other entities, resources or materials on which knowledge can be stored. According to Lee (2018) in Jusoh and Alfawareh (2019), any type of knowledge starts from the intelligence of individuals, and it is visible in procedures, norms, customs, tasks and systems. Lee (2018) further stated that the knowledge shared or exchanged could be educational, historical, statistical, best practice, recreational, task-oriented or informational. The knowledge could also be suggestive, objective or subjective, depending on the target participants and contexts. A careful analysis of the above statement, as posited by Nnadozie (2016), indicates that the knowledge shared could be typified as explicit (as found in books, journals, novels, notebooks, disks, .) or tacit (as captured in stories, gossip, gist, discussions, .). Knowledge Sharing is, therefore, a natural process that readily manifests wherever a community or group of people exists.

In the same vein, Mohajan (2019) stated that there are two types of knowledge: tacit and explicit knowledge. Tacit knowledge is stored in the human mind, such as best practices, intuitions, hands-on skills, heuristics, and know-how. Explicit knowledge is stored in texts, videos, images, and audio forms, which are easily codified and transferable. Knowledge is also observed as an asset for an individual or an organisation. These assets are in the form of databases, policies, documents, procedures, processes, expertise, or experience in individual workers. Knowledge, whether tacit or explicit, is one of the organisational resources; therefore, the sustainability of any organisation depends on the knowledge that the organisation stores and manipulates. In light of the above statement, Jusoh and Alfawareh (2019) stated that in gaining a competitive advantage and a dynamic economy, it is necessary for any organisation, including the higher institutions of learning, to not only focus on recruiting and selecting knowledgeable employees in specific competencies but also on managing and utilising the existing knowledge within the organisation. The organisation can utilise the tacit knowledge which is stored in the minds of its staff using sharing.

Also, Abdurrahman (2021) viewed Knowledge as being an expertise procedure and experience that can be either subjective (personalised, dependent on individuals and difficult to define) or objective (non-personalised, independent of individuals and able to be codified into a tangible form), which is better known as ‘Tacit’ and ‘Explicit’ knowledge. This, according to him, is in agreement with Skyrme (2002), who mentions Polani (1966) as the pioneer to distinguish between the two types of knowledge, the implicit and explicit knowledge.

According to him, Tacit knowledge is defined as non-verbalised, intuitive and unarticulated that resides in people's minds, behaviour, and perceptions and evolves from social interaction among individuals (faculty members) (Polani, 1961). In the same vein, Polani (1961) also viewed tacit knowledge as knowledge embedded in humans that is vital for cognitive decisions. It accumulates through experience and participation in collective organisational and communal practices.

On the other hand, explicit or codified knowledge is knowledge that is usually in a formal and systematic language that is recorded in a form that enables individuals (academics), groups or organisations (universities) to share it (Abdurrahman, 2019). Similarly, Abdurrahman (2021) viewed explicit knowledge as the knowledge expressed in a formal and systematic language shared in the form of data, scientific formulae, specifications, and manuals. It is the knowledge that can be externally verbalised and recorded in print and non-print sources published and unpublished, such as books, magazines, newspapers, technical reports, projects, dissertations, theses, photos, audios, videos, microfilm and microfiche, databases, emails, the Internet and so on.

Knowledge Sharing Practice (KSP) can be seen as a series of activities, strategies and processes through which knowledge is exchanged between and amongst people in an organisation. According to Otuza and Enyinnaya (2016), Knowledge Sharing Practice (KSP) is composed of a set of activities through which knowledge is exchanged amongst people, friends, family, communities and organisations. The practices that academic staff can engage in to share knowledge with their colleagues include: group discussion with other colleagues, mentorship, distribution of literature to other colleagues, writing of books, writing of book chapters, meetings, forums and teaching activities, among others. In their view, Sumieh and Wahba (2022) asserted that knowledge-sharing practice is motivated and executed mainly at the individual level. Even in the absence of strong organisational norms of knowledge sharing, academics may tend to share knowledge according to their personal benefits and costs. In the end, the knowledge-sharing practice can help the institution become more productive and effective.

Wilensky (2017) posits that knowledge sharing is an incredibly beneficial practice that has the potential to improve educational outcomes and professional success. According to the American Psychological Association, knowledge-sharing practice offers a range of advantages, including increased collaboration, improved communication, deeper understanding, and more informed decision-making. Olatokun and Nwafor (2012) argued that knowledge-sharing practice is a key activity of any effective knowledge management system in any institution, be it an educational or non-educational institution. Knowledge-sharing practice makes it easier for individuals to access and share information and leads to greater efficiency and productivity (Haefner, 2015). Organisations that have well-established and clear procedures for knowledge sharing allow staff from all levels and departments to communicate more effectively and work more collaboratively (Silaccio, 2018). Organisations and institutions that encourage their staff to use tools such as shared document libraries, wikis, and discussion forums create a platform that can be used to share knowledge quickly and easily to achieve greater results and high productivity (McGrath, 2020). Additionally, having an effective feedback system, such as through performance reviews, helps to foster a culture of knowledge sharing and encourages a high level of knowledge sharing (McSchmidt, 2019). As such, knowing how and when to share information and knowledge within an organisation is an important part of the workflow process that is necessary for any institution to be successful.

Also, Maiga (2017) posited that the type of knowledge-sharing practice mostly engaged by academic staff includes: sharing of documents with other colleagues, group discussion, forums, writing of books and book chapters, and mentorship. The knowledge-sharing practice depends on the culture and willingness of the knowledge worker to seek out and be receptive to these institutions' knowledge sources. The appropriate organisational culture and incentives should be present. Facilitation of knowledge sharing can only be effective if the organisations understand the needs of the users, as well as the complexities and potential problems with managing knowledge and knowledge sources. Knowledge sharing, as stated earlier, is the dissemination or exchange of ideas, experiences, and expertise between and among individuals or groups of individuals in an organisation, and it must be through some channels or platforms. According to White (2017), Knowledge sharing among individuals and organisations has been greatly enhanced through advancements in technology.

He further stated that, through a variety of platforms such as email, wikis, forums, conferences, blogs, and social media, Knowledge can be easily shared and refined. Sharing and developing knowledge requires an ongoing dialogue; thus, these platforms provide a cost-effective method of disseminating knowledge while also providing a centralised place to connect and collaborate. Therefore, academic staff in tertiary institutions should take full advantage of the benefits that these platforms offer to improve communication, strengthen relationships and increase productivity in the areas of teaching and research in their respective institutions.

Furthermore, Knowledge sharing is the process of distributing knowledge to members at the best time, place and form through various platforms (Kamile & Bulitia, 2020; Zhang et al., 2008). The high use of technology is changing the pattern of life that includes working, learning and communicating with each other, such that the impact of technology devices on education usually manifests in teaching and research (Yasmeen et al., 2015). Also, Adesoji and Alalade (2019) opined that technologies such as electronic learning (e-learning) and, more recently, mobile learning (m-learning) might have the potential to facilitate teaching and research, thereby addressing the problem of poor access to education and knowledge among the academic staff. The Internet has also provided the academic staff with the convenience of real-time and cost-effective communications such as emails, academic social networks and instant messaging for exchanging and sharing information and knowledge (Jer Yuen & ShaheenMajid, 2007). Also, Perlego (2020) stated that knowledge sharing between academic staff is essential for the advancement of teaching and research in universities and other higher institutions. With the emergence of new technology, an increasing number of platforms for sharing knowledge have become available.

There are several different platforms available for the academic staff to share knowledge, including traditional academic publishing, such as journals, books and lecture notes, as well as more modern platforms, such as digital and online knowledge-sharing platforms, which may include e-mails, learning management systems, academic social networks and online libraries and databases (Oksanen, 2011). Academics can also share knowledge by contributing to e-learning and digital library systems, webinars, and even creating their own blogs or social media accounts (Ghafoor, 2016). For example, a digital learning and research platform provides access to a mix of educational resources and tools, including articles, journals and books (Perlego, 2020). Furthermore, Open Educational Resources (OERs) allow academics to easily share and distribute their knowledge, such as lecture slides, online courses, video tutorials and so on (Richardson, 2017). Ultimately, knowledge sharing is a key to academic success, and by understanding the different platforms available, academics can better adjust their approach to disseminate their knowledge.

Furthermore, Academics can use a multitude of platforms available to them to share knowledge with their colleagues. In this regard, the Teaching and Learning Centre (TLC) is a platform designed to support faculty members in the classroom by "providing interactive instruction, just-in-time teaching, and expert assistance" (TLC, 2020). Also, VariKnow is an online platform with an effective search engine, allowing lecturers to easily connect with others in their field with similar interests and exchange knowledge. Moreover, Open Educational Resources (OERs) represent different types of media such as lectures, podcasts, and video tutorials to connect with colleagues and disseminate knowledge, making it available to all at no cost (“What Are Open Educational Resources?" 2020). The existence of all these platforms and their ability to connect lecturers and other faculty members to exchange knowledge is invaluable for higher education.

However, Chuma and Chidi (2018) stated that there is no doubt that instruction strategies like problem-oriented teaching, contextualised teaching, target-oriented teaching, collaborative teaching and practicum are statutory platforms through which knowledge is shared in universities. In addition to these lecture-centric approaches are other platforms such as seminars, laboratory experiments, workshop practicals, group discussions, meetings, library research, and study tours through which knowledge can also be shared among academics in higher institutions of learning.

Methodology

The research method adopted for this study is the quantitative research method. The quantitative research method was suitable for this research because it deals with the gathering of numerical data using a deductive approach that is from general to specific. Layne (2019) posits that Quantitative research is a type of research that

involves the collection and analysis of numerical data to understand and explain phenomena. The research design adopted for the study was a cross-sectional survey research design. The population of the study comprised the entire academic staff of Kaduna Polytechnic across six (6) colleges of the institution, which is one thousand nine hundred 1900. The sample size for this study was one hundred and ninety (190), which is 10% of the entire Population of the academic staff of Kaduna Polytechnic. This was in line with Neuman (2006), who stated that a researcher could use 10% of the population for accuracy. A cluster simple random sampling technique was used to select the Sample from each of the various campuses. Hence, 10% of the population was selected across all the campuses as the sample size of the study. The instrument used for data collection was a self-developed Questionnaire.

Results

A total of one hundred and ninety (190) copies of questionnaires were distributed to the respondents, where one hundred and seventy-one (171) copies were successfully retrieved and found worthy of the analysis.

Table 1: Distribution of the Respondents by Gender

Gender	Frequency	Percentage (%)
Male	108	63
Female	63	37
Total	**171**	**100**

Table 1 shows the distribution of the respondents based on their gender. Among the total number of respondents, 108 are male, with 63% of the participants. On the other hand, 63 of the respondents with 37% are female. This indicates that the male Academic staff participate in knowledge-sharing practice more than the females.

Table 2: Academic Qualifications of the Respondents

Academic Qualification	Frequency	Percentage (%)
HND	18	11
BSc.	61	36
MSc	72	42
Ph.D.	20	12
Total	**171**	**100**

Table 2 shows the distribution of the respondents based on their academic qualifications. From the table, 72 of the respondents, with 42% are MSc. holders, and 61 of the respondents, with 36% are BSc. Holders and 20 of the respondents with 12% PhD, while 18 of the respondents with 11% hold an HND as their highest qualification. The results from Table 4.2 above indicate that the majority of the respondents are MSc. holders, followed by BSc. Holders, then the PhD holders, while the least of the respondents are the HND holders. This implies that Kaduna Polytechnic has more academic staff with master's degrees than other qualifications, which signifies that teaching and research activities are going to be in the institution.

Table 3: Types of Knowledge Shared among Academic Staff

S/N	Options	Frequency	Percentage (%)
1	Educational Knowledge	159	93
2	Historical Knowledge	27	16
3	Recreational Knowledge	12	7
4	Professional experience and industry insights	42	25
5	Best Practices	114	67
6	Intuitions	18	11
7	Task-oriented Knowledge	102	60
8	Statistical Knowledge	15	9
9	Hand on skill	84	49

Table 3 shows the types of knowledge shared for teaching and research among academic staff. The result from the table indicated that educational knowledge has the highest frequency of 159, representing 93% of the respondents, followed by Best practices with a frequency of 114, representing 67% of the respondents. Another

type of knowledge with high frequency from the table is Task-oriented knowledge, with a frequency of 102, representing 60% of the respondents. However, Recreational knowledge happened to be the type of knowledge with the lowest frequency of 12, representing 7% of the respondents. Also, Statistical knowledge has a low frequency of 15, representing 9% of the respondents. The result from Table 3 implies that educational knowledge, best practices and task-oriented knowledge are the main types of knowledge shared for teaching and research among the academic staff. The findings of this study correspond with those of Lee (2018), who discovered that educational knowledge, task-oriented knowledge and best practices, among others, are the major types of knowledge shared among academic staff. Also, the result from Table 3 implies that the academic staff does not have a high interest in sharing recreational and Statistical knowledge among themselves, which is important for their well-being as well as professional development.

Table 4: How Academic Staff Engaged in Knowledge-Sharing Practices for the Improvement of Teaching Activities

S/N	Options	Frequency	Percentage (%)
1	Group discussion	135	79
2	Sharing of Documents with other colleagues	156	91
3	Mentorship	84	49
4	Writing of books	60	35
5	Writing of book chapters	9	5
6	Teaching activities	69	40
7	Forums	93	54

Table 4 shows the types of knowledge-sharing practices engaged by academic staff for teaching and research at Kaduna Polytechnic. The result from Table 4 indicates that sharing of documents with other colleagues has the highest frequency of 156, representing 91% of the respondents. Similarly, 135 participants representing 79% of the respondents indicated that group discussion is the knowledge-sharing practice they engaged in. While 93 participants representing 54% of the respondents indicated that they engaged in forums. 84 of the participants representing 49% of the respondents state that they engaged in mentorship. Of 69 respondents 40% indicated that they engaged in teaching activities. However, writing of book chapters has the lowest respondents of 9, representing 5% of the entire respondents. The information from Table 4 signifies that sharing of documents with other colleagues and group discussion are the major practices engaged by the academic staff in their process of knowledge sharing and this is in line with the study conducted by Maiga (2017) who posited that, main practices engaged by academic staff in the process of knowledge sharing include; document sharing, group discussion and engagement in forums among others. While writing book chapters is less practised among the academic staff. The implication is that the academic staff at Kaduna Polytechnic prefer sharing knowledge with their colleagues in a more interactive manner because all the items with the highest percentages are more interactive than the others. Also, the result implies that the academic staff in the polytechnic have less interest in writing books as well as writing book chapters, which can negatively affect their future academic careers.

Table 5: Platforms Used in Knowledge Sharing

S/N	Options	Frequency	Percentage (%)
1	Conferences	156	91
2	Forums	126	74
3	Blog	30	18
4	Learning Management Systems	21	12
5	Email and Communication Tools	45	26
6	Research Collaboration Tools	54	32
7	Virtual Meeting and Video Conferencing Tools	12	7
8	Academic Social Network	144	84
9	Institutional Websites and Intranets	33	19
10	Online Libraries and Databases	9	5
11	Wikis	9	5

Table 5 shows the Platforms used in knowledge sharing for teaching and research among academic staff in Kaduna Polytechnic. The information from the table revealed that 156 respondents representing 91% of the

participants stated that they use conferences as their major platform for knowledge sharing. Similarly, 144 respondents representing 84% of the participants stated that they use Academic social networks as the major platform for knowledge sharing. Another platform that is also highly used for knowledge sharing is Forums, with a frequency of 126, representing 74% of the respondents. On the other hand, online libraries/database and wikis has the lowest frequency of 9, representing 5% of the respondents each, which indicates that they are the platforms that are rarely used for knowledge sharing among the academic staff. Also, "Virtual Meeting and Video Conferencing Tools" has a low frequency of 12, representing 7% of the respondents. The information from table 5 indicated that the major platforms used by academic staff for knowledge sharing include among others, journals, lecture notes and academic social networks and this aligned with the study conducted by Oksanen (2011) postulated that several different platforms are available for the academic staff to share knowledge which include journals, lecture notes, academic social networks, e-mail and communication tools. This result implies that the academic staff prefer using conferences, academic social networks and forums more than the pure internet facilities in the form of online libraries and databases, wikis and virtual meeting and video conferencing tools.

Conclusion

The study concludes that the academic staff in Kaduna Polytechnic engaged in knowledge-sharing activities using multiple media or platforms among themselves and shared different types of knowledge for the improvement of teaching and research in the Polytechnic. It is also concluded that knowledge-sharing practice for the improvement of teaching and research can be highly improved in the polytechnic if the academic staff show a high level of commitment and develop a positive attitude as well as sound behaviour towards knowledge-sharing activities. The study also concluded that if the Polytechnic management tried their best to address the identified challenges from this study, it would go a long way in improving knowledge-sharing activities in the Polytechnic, which in turn will result in high productivity among the academic staff in the aspects of teaching and research, which is their major business in the Polytechnic.

Recommendations

In line with the findings of this study, the following recommendations were made;

1. The Polytechnic management should encourage the sharing of other types of knowledge besides educational knowledge and best practices. Sharing of other types of knowledge, such as Professional experience and industrial insights, Recreational knowledge, Task-oriented knowledge and Hands-on skill knowledge, because of their great importance.
2. The academic staff of Kaduna Polytechnic should engage themselves in other types of knowledge-sharing practices, other than sharing documents with other colleagues and group discussions. They should also engage more in other practices, such as Mentorship, Forums, and the writing of books, to boost their professional careers.
3. The Polytechnic management should create a more conducive environment for the academic staff so that they can have more avenues or platforms through which they can easily share their knowledge, experience and expertise to improve teaching and research in the Polytechnic.

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CURRICULUM IMPERATIVE THROUGH VOCATIONAL TRAINING FOR OUT-OF-SCHOOL CHILDREN

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Abstract

This paper explores the necessity of a curriculum imperative through vocational training for out-of-school children, emphasising its role in equipping them with practical skills for self-sufficiency and economic empowerment. Millions of children worldwide lack access to formal education, limiting their opportunities for employment and sustainable livelihoods. Integrating vocational training into non-formal education programs offers a pragmatic solution, bridging the skills gap and enhancing employability. This study highlights the importance of a structured curriculum that aligns with industry demands while fostering entrepreneurship and lifelong learning. Policy recommendations and best practices for effective implementation are also discussed to ensure inclusive and sustainable skill development for marginalised youth.

Keywords: Curriculum, Vocational Training, Out-of-School Children

Introduction

Education is a fundamental right and a cornerstone for social and economic development. Despite global efforts to ensure universal education, millions of children remain out of school due to financial constraints, conflict, and social barriers (UNESCO, 2022). The exclusion of these children from formal education systems not only hinders their personal growth but also contributes to cycles of poverty and unemployment. To address this issue, vocational training has emerged as a pragmatic solution, equipping out-of-school children with practical skills that enhance employability and self-reliance (ILO, 2021).

Vocational training offers skill-based learning integrated with hands-on experience, providing an alternative pathway for economic participation. Unlike conventional academic curricula, vocational education is tailored to industry-specific competencies, enabling learners to transition into the workforce more efficiently (World Bank, 2021). Research highlights that vocational training fosters entrepreneurship, innovation, and social mobility among marginalised youth, making it a crucial component of sustainable development (Gustavsson, 2019). By embedding a structured curriculum imperative in vocational training programs, policymakers and educators can ensure that out-of-school children acquire relevant skills aligned with labour market demands.

The significance of vocational training is underscored by global initiatives such as Sustainable Development Goal 4 (SDG 4), which advocates for inclusive and equitable education for all (United Nations, 2015). Countries worldwide have implemented skill-based education models to bridge the gap between education and employment. For instance, Germany's dual education system integrates classroom learning with apprenticeships, significantly reducing youth unemployment rates (BIBB, 2019). Likewise, developing nations such as India have launched initiatives like the Skill India Mission, which has upskilled millions of young people and strengthened the workforce (Government of India, 2022).

However, vocational education faces several challenges, including insufficient funding, a shortage of trained instructors, and weak industry linkages. Overcoming these barriers necessitates a multi-stakeholder approach involving governments, private sector actors, and civil society organisations (UNICEF, 2020). This paper explores the role of vocational training in providing educational opportunities for out-of-school children,

examines best practices, and proposes strategic interventions to enhance curriculum effectiveness and workforce integration.

The Role of Vocational Training in Empowering Out-of-School Children

Vocational training serves as a crucial mechanism for integrating out-of-school children into the workforce by equipping them with job-specific skills and practical knowledge. Unlike traditional education systems that primarily focus on theoretical learning, vocational education emphasises hands-on training, making it particularly beneficial for marginalised youth with limited access to formal schooling (UNESCO, 2022). Studies show that vocational training enhances employability by providing technical expertise in fields such as carpentry, plumbing, tailoring, and information technology, ensuring that young people can secure sustainable livelihoods (World Bank, 2021). A well-structured vocational curriculum is essential in ensuring that training programs align with industry demands. Countries like Germany have successfully implemented the dual education system, wherein students split their time between classroom learning and apprenticeships in industries (BIBB, 2019). This model has significantly reduced youth unemployment by providing early exposure to professional environments, allowing young learners to develop essential competencies and establish industry connections. In contrast, developing nations face challenges in replicating this model due to inadequate infrastructure, insufficient funding, and a lack of collaboration between educational institutions and the private sector (ILO, 2021).

The Role of Vocational Training in Empowering Out-of-School Children

Vocational training plays a transformative role in equipping out-of-school children with practical skills that enhance employability, self-sufficiency, and economic inclusion. As millions of children worldwide remain excluded from formal education due to poverty, conflict, and systemic inequalities, vocational education provides an alternative pathway for learning and career development (UNESCO, 2022). Unlike traditional academic programs, vocational training focuses on skill-based learning tailored to meet labour market demands, ensuring that young learners can secure jobs, become entrepreneurs, and break cycles of poverty (Akorede et al., 2017; World Bank, 2021).

Enhancing Employability and Economic Opportunities

One of the key benefits of vocational training is its ability to improve employability by providing industry-relevant skills. In many countries, skill-based training programs have significantly reduced youth unemployment by preparing individuals for careers in high-demand sectors such as construction, manufacturing, hospitality, and information technology (ILO, 2021). Studies indicate that vocational education is particularly effective in countries with strong apprenticeship systems, where students receive hands-on experience alongside theoretical learning. For example, Germany's dual vocational training system has been successful in reducing youth unemployment by integrating formal education with workplace training, ensuring a smooth transition into the job market (BIBB, 2019). Developing countries have also begun implementing similar models to bridge the skills gap. In India, the Skill India Mission has provided vocational training to over 50 million young people, significantly improving employment prospects in various industries (Government of India, 2022). Likewise, in sub-Saharan Africa, technical and vocational education and training (TVET) programs have been introduced to equip marginalised youth with skills that cater to local economic needs, including agriculture, crafts, and entrepreneurship (UNICEF, 2021). These programs not only create employment opportunities but also enhance productivity and economic growth by developing a skilled workforce.

Promoting Entrepreneurship and Self-Reliance

Vocational training fosters entrepreneurship by equipping young learners with the technical skills and business knowledge needed to start and sustain their own enterprises. Research shows that many vocational graduates, particularly those in rural areas, become self-employed due to a lack of formal job opportunities (Gustavsson, 2020). By integrating financial literacy, business management, and digital skills into vocational curricula, training programs can empower youth to create their own businesses, generate income, and contribute to local economies (World Bank, 2021). For instance, in Kenya, the Ajira Digital Program has trained thousands of young people in online freelancing, enabling them to earn a livelihood through digital platforms (UNESCO,

2022). Similarly, in Nigeria, vocational training centres provide courses in tailoring, carpentry, and electrical work, allowing young individuals to establish micro-businesses and become economically independent (ILO, 2021). By promoting entrepreneurship, vocational training not only addresses youth unemployment but also drives innovation and community development.

Addressing Social and Economic Inequalities

Vocational education is particularly beneficial for marginalised groups, including girls, children with disabilities, and those from low-income backgrounds. Traditional education systems often exclude these groups due to financial constraints, discrimination, and cultural barriers. However, vocational training programs offer a flexible and inclusive learning approach that accommodates diverse learners and provides them with equal opportunities to succeed (UNICEF, 2021). Gender-inclusive vocational training initiatives have been instrumental in empowering young women. In Bangladesh, for example, skills development programs in garment manufacturing have enabled thousands of girls to enter the workforce, gain financial independence, and challenge gender norms (World Bank, 2021). Similarly, in Latin America, initiatives promoting women's participation in technical fields such as coding and engineering have increased female employment in male-dominated industries (ILO, 2021). By fostering inclusivity, vocational training helps bridge educational gaps and promotes social mobility among disadvantaged populations.

Vocational training serves as a powerful tool for empowering out-of-school children by providing them with skills that enhance employability, entrepreneurship, and social inclusion. By aligning vocational curricula with labour market needs, governments and educational institutions can create sustainable pathways for marginalised youth to gain economic independence and contribute to national development. To maximise its impact, vocational education must be adequately funded, modernised to reflect industry advancements, and integrated with apprenticeship programs that provide real-world experience. Strengthening vocational training systems will ensure that all children, regardless of their educational background, have access to meaningful learning opportunities and a brighter future.

Vocational Training and Economic Development

Investing in vocational training has significant economic benefits, particularly in developing countries where youth unemployment is a pressing issue. The International Labour Organization (ILO) highlights that skill-based education programs have the potential to boost economic growth by creating a workforce that meets labour market needs (ILO, 2021). In India, for example, the Skill India Mission has provided training to millions of young individuals, enhancing their employability and reducing dependency on informal labour markets (Government of India, 2022). Similarly, African nations have adopted technical and vocational education training (TVET) programs to equip young people with skills that contribute to local industries, fostering economic independence and community development (UNICEF, 2020).

Moreover, vocational education promotes entrepreneurship by encouraging self-employment among young people. Studies indicate that trained individuals are more likely to start their own businesses, contributing to job creation and local economic growth (Gustavsson, 2019). By integrating financial literacy and business management skills into vocational curricula, educational institutions can empower young entrepreneurs, enabling them to navigate market challenges and sustain successful enterprises.

Challenges in implementing vocational training for out-of-school children

Despite its benefits, vocational training faces multiple obstacles, including limited access to quality training centres, outdated curricula, and social stigma associated with skill-based education (UNESCO, 2022). Many developing countries lack sufficient vocational institutions, forcing young learners to rely on informal apprenticeships that do not provide standardised certification or career progression opportunities (World Bank, 2021). Additionally, gender disparities persist in vocational education, with fewer girls enrolling in technical training programs due to societal norms and limited access to resources (UNICEF, 2020).

These challenges range from financial constraints and outdated curricula to social stigma and inadequate infrastructure. Addressing these barriers is crucial to ensuring that vocational education serves as a viable pathway for marginalised youth to enter the workforce.

Limited Funding and Infrastructure

One of the primary challenges of vocational training is the lack of adequate funding. Many developing nations struggle to allocate sufficient resources to establish and maintain vocational training centres. Unlike conventional schools, vocational education requires specialised equipment, training materials, and skilled instructors, all of which demand significant investment (UNESCO, 2022). The World Bank (2021) highlights that underfunded vocational programs often suffer from poor-quality instruction, outdated tools, and insufficient facilities, limiting students' ability to acquire practical skills relevant to modern industries. Without proper funding, these programs fail to provide students with the necessary competencies to secure meaningful employment.

Outdated and Irrelevant Curricula

Many vocational training programs operate with outdated curricula that do not align with current labour market demands. Rapid technological advancements have transformed various industries, making traditional skill sets less relevant. However, vocational education systems in many countries fail to update their curricula to reflect these changes (ILO, 2021). For instance, in many African and South Asian nations, vocational training programs still emphasise manual trades while neglecting digital skills and emerging industries such as renewable energy, artificial intelligence, and e-commerce (UNICEF, 2020). This mismatch between vocational education and industry needs results in a workforce that is ill-equipped for modern job markets, reducing employability and economic impact.

Social Stigma and Gender Disparities

Another significant barrier is the societal perception that vocational training is inferior to traditional academic education. Many families and communities view skill-based education as a last resort for children who fail in conventional schooling (Gustavsson, 2019). This negative perception discourages enrollment in vocational programs, particularly among young girls. Gender disparity is a persistent issue, as many vocational training opportunities are dominated by male-oriented trades, while fewer programs cater to fields that are considered suitable for women (UNESCO, 2022). As a result, girls often face limited options and are discouraged from pursuing technical careers, further widening gender inequalities in the workforce (UNICEF, 2020).

Lack of Qualified Instructors

The shortage of well-trained vocational instructors poses another critical challenge. Unlike traditional teachers, vocational trainers require hands-on industry experience and pedagogical expertise to effectively teach practical skills (BIBB, 2019). However, many vocational education systems lack the necessary resources to attract and retain skilled trainers, leading to subpar instruction. In many developing countries, instructors often lack exposure to modern industry practices, making it difficult for them to provide up-to-date training (ILO, 2021). Without qualified educators, vocational training programs fail to equip students with the competencies needed for real-world employment.

Weak Industry Linkages and Employment Pathways

Vocational education programs often suffer from weak connections with industries, limiting students' opportunities for hands-on training and job placements. In countries with strong vocational systems, such as Germany and Switzerland, collaboration between industries and educational institutions ensures that students receive practical training through apprenticeships (BIBB, 2019). However, in many developing nations, there is a disconnect between vocational training centres and employers, making it difficult for graduates to transition into formal employment (World Bank, 2021). Without structured apprenticeship programs and industry partnerships, many vocational graduates struggle to find jobs that match their skills. Addressing these challenges requires a multi-stakeholder approach involving governments, private sector actors, and international organisations. Increased investment, curriculum modernisation, awareness campaigns to combat stigma, and

enhanced industry collaboration can significantly improve vocational training outcomes. By overcoming these barriers, vocational education can become an effective tool for empowering out-of-school children, equipping them with the skills needed for sustainable employment and economic growth.

To overcome these challenges, a multi-sectoral approach is needed. Governments should prioritise funding for vocational education, establish partnerships with private sector stakeholders, and develop policies that integrate vocational training into national education frameworks (United Nations, 2015). Furthermore, enhancing teacher training programs, updating curricula to reflect technological advancements, and promoting public awareness about the value of vocational education can help shift societal perceptions and increase enrollment rates among out-of-school children (ILO, 2021). Therefore, vocational training presents a viable solution for addressing the educational and economic challenges faced by out-of-school children. By implementing structured, industry-aligned training programs, governments and educational institutions can empower young individuals with the skills needed to secure stable employment, contribute to economic growth, and break cycles of poverty. Strengthening vocational education systems through policy reforms and investment will ensure that all children, regardless of their educational background, have access to meaningful learning opportunities and a sustainable future.

Recommendations for Strengthening Vocational Training for Out-of-School Children

To maximise the impact of vocational training for out-of-school children, governments, educational institutions, and stakeholders must adopt strategic interventions. The following recommendations focus on improving accessibility, curriculum relevance, funding, and industry linkages to enhance the effectiveness of vocational education.

1. Increase Government Investment and Policy Support

Governments should prioritise funding for vocational education by allocating resources to establish well-equipped training centres, recruit qualified instructors, and provide financial aid for disadvantaged learners. Many developing countries face challenges in expanding vocational training due to limited budgets and policy gaps (UNESCO, 2022). Strengthening national policies that integrate vocational training into mainstream education systems will ensure long-term sustainability and impact. Countries such as Germany and Switzerland have successfully incorporated vocational training into their national education policies, leading to lower youth unemployment rates (BIBB, 2019). Furthermore, offering subsidies, scholarships, and stipends for out-of-school children can encourage enrollment in vocational programs. Governments should also collaborate with international organisations, such as the ILO and UNICEF, to secure funding and technical support for expanding vocational training initiatives (ILO, 2021).

2. Modernise Curricula to Align with Industry Demands

Outdated vocational curricula are a significant barrier to employability. Training programs must be regularly updated to reflect advancements in technology and market trends. The World Bank (2021) recommends incorporating digital literacy, soft skills, and entrepreneurial training into vocational programs to equip learners with the competencies needed for today's workforce. For example, emerging fields such as renewable energy, e-commerce, and information technology offer significant employment opportunities. Countries like India and Singapore have restructured their vocational curricula to include STEM (Science, Technology, Engineering, and Mathematics) skills, ensuring that students remain competitive in the evolving job market (Government of India, 2022). Developing nations should follow suit by integrating relevant technical skills into their training programs.

3. Strengthen Industry Partnerships for Apprenticeships and Job Placement

Vocational training should be closely linked with industry requirements to facilitate smooth transitions into employment. Establishing strong public-private partnerships (PPPs) between training centres and businesses can create opportunities for apprenticeships, internships, and direct job placements (ILO, 2021).

Countries with successful vocational systems, such as Germany and Austria, have dual apprenticeship programs where students divide their time between classroom learning and workplace training (BIBB, 2019). Developing

countries should adopt similar models by incentivising companies to participate in training programs and provide hands-on experience to students. Additionally, certification systems that are recognised globally can improve employability prospects for vocational graduates.

4. Promote Gender-Inclusive and Accessible Vocational Training

Vocational education must be made more accessible to marginalised groups, including young girls, children with disabilities, and rural populations. Gender stereotypes often discourage female participation in technical fields such as mechanics and engineering (UNESCO, 2022). To bridge this gap, governments should introduce targeted initiatives that encourage girls to enrol in vocational training programs.

For example, in Bangladesh, specialised skills development programs in garment manufacturing have increased female workforce participation (World Bank, 2021). Similarly, African nations have introduced mobile training units that reach rural communities, providing flexible learning opportunities for children who cannot access formal training centres (UNICEF, 2021). Expanding such initiatives will ensure that vocational training reaches the most vulnerable populations.

5. Improve Teacher Training and Capacity Building

The shortage of well-trained instructors is a major obstacle to vocational training effectiveness. Teachers and trainers must receive continuous professional development to stay updated with industry trends and best practices. Investing in train-the-trainer programs, where experienced professionals mentor vocational instructors, can enhance teaching quality (ILO, 2021).

Governments should also partner with universities, technical institutions, and private enterprises to offer certification courses for vocational trainers. In Singapore, for example, vocational educators undergo regular industry placements to keep their skills relevant (Government of Singapore, 2022). Other countries should adopt similar approaches to improve training delivery.

6. Leverage Technology for Digital and Remote Learning

Technology can significantly expand the reach of vocational training programs, particularly in remote and underserved areas. E-learning platforms, virtual simulations, and mobile training applications can make skill-based education more accessible (UNICEF, 2021). The COVID-19 pandemic accelerated digital learning adoption, highlighting the need for blended training models that combine online instruction with hands-on practice (World Bank, 2021).

Countries such as Kenya and India have launched digital skills training initiatives, equipping young people with online freelancing and remote work capabilities (UNESCO, 2022). Governments should invest in affordable internet access, digital literacy programs, and open-source vocational training content to ensure that learners in rural areas benefit from these opportunities.

Conclusion

Vocational training plays a crucial role in empowering out-of-school children by providing them with industry-relevant skills, improving employability, and fostering entrepreneurship. As millions of young people worldwide remain excluded from formal education, vocational training offers a practical and inclusive pathway to economic participation. However, challenges such as inadequate funding, outdated curricula, weak industry linkages, and social stigma must be addressed to maximise its impact.

To ensure vocational education reaches its full potential, governments and stakeholders must invest in modernising curricula, strengthening industry partnerships, and expanding access to marginalised groups. Implementing gender-inclusive policies, training skilled instructors, and leveraging digital learning technologies can further enhance vocational training programs. Countries that have successfully integrated vocational education with workforce development, such as Germany and India, serve as models for global best practices.

By prioritising vocational training as a key component of education and workforce development strategies, policymakers can create sustainable solutions for youth employment and economic growth. Strengthening

vocational education systems will not only equip out-of-school children with essential skills but also contribute to reducing poverty, fostering innovation, and driving long-term socio-economic progress.

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EXPLORING INFORMATION NEEDS AND ACCESS CHANNELS FOR SOCIOECONOMIC EMPOWERMENT AMONG ALMAJIRAI IN NORTH WESTERN STATES, NIGERIA

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Abstract

The study investigated the Information needs and access channels by Almajirai for Socioeconomic Empowerment in North-Western States, Nigeria. Objectives included identifying the types of information needed by the Almajirai for socioeconomic empowerment in North Western States, Nigeria, and identifying sources through which Almajirai access information for socioeconomic empowerment in North Western States, Nigeria. The research approach used for this study was a survey. The population was the Almajirai in Kebbi, Sokoto and Kaduna, Nigeria. However, three hundred and eighty-four (384) respondents were drawn as the sample size for the study out of the total population of one million, four hundred and five thousand, four hundred and fifteen (1,405,415). The instrument used for data collection was a questionnaire. Data collected from the research questions were analysed using frequency and percentage. The study established, amongst others, that the major type of information needed by the Almajirai is religious Information. The majority of Almajirai access information mostly through their friends. The study concluded that Almajirai access and share information, mostly, among themselves through face-to-face interaction. It was recommended among others that Almajirai should be trained on the use of electronic media in order to access and utilise online information. They should also be taught the English language to enable them to effectively communicate and share information with people who do not understand Hausa language. This will break the language barrier that they face.

Keywords: Almajiri; Almajirai; Information; Socioeconomic; Tsangaya; Malam; Behaviour.

Introduction

Information is a fundamental and multifaceted concept that plays a critical role in various fields, including social, economic engagements, among others. It encompasses data, knowledge, and meaning and is integral to human cognition and communication. Understanding the concept of information is essential for managing, sharing, and utilising knowledge effectively (Floridi, 2011). Information is a concept that underpins various aspects of human communication, cognition, and knowledge management. It is the essence of data that has been processed and given meaning. According to Manning, Raghavan, and Schütze (2008), information is "data endowed with relevance and purpose." This implies that information not only carries raw facts but also carries significance and serves a specific objective or intention. In everyday life, information is communicated through various means, such as spoken or written language, images, charts, and symbols. It serves as the medium through which people share knowledge, make decisions, and interact with the world. Information is not limited to textual or digital forms; it encompasses the entire spectrum of human communication. According to Usman et al (2019), information plays a crucial role in empowering marginalised communities like the Almajirai, enabling them to make informed decisions and improve their socioeconomic status.

Almajirai, like other individuals in society, need access to, utilise, and share information. This is done through interaction with friends, colleagues, teachers, seniors, among others. These actions constitute information behaviour. Information behaviour is a multidisciplinary concept that encompasses how individuals and groups seek, acquire, use, share, and manage information in various contexts. It is central to the fields of library and information science, information retrieval, and information management, as well as to disciplines such as communication, psychology, and sociology. Understanding how people interact with information is vital in designing effective information systems, services, and policies (Wilson, 1999).

Wilson (2000) defined information behaviour as the totality of human behaviour in relation to sources and channels of information (including both active and passive information seeking) and information use. Information behaviour is how people need, seek, manage, give, and use information. It could therefore be said that information behaviour describes the many ways in which human beings interact with information, in particular, how people seek and utilise information (Bates, 2005). In order to understand the Almajiri information needs and seeking behaviour, it will be interesting to know their information need, sources, access, sharing and utilisation in relation to socioeconomic empowerment. According to Olalekan and Dike (2020), understanding the information behaviour of marginalised groups like the Almajirai is crucial for designing effective strategies for their socioeconomic empowerment. By studying the information behaviour of Almajirai, researchers can identify their information needs, preferences, and challenges, thus facilitating the development of targeted interventions and policies to enhance their access to relevant information resources. This, in turn, can contribute to their empowerment by enabling them to make informed decisions, acquire new skills, and engage meaningfully in economic and social activities.

Statement of the Problem

Information needs and access for Almajirais are critical for influencing their behaviour. Of course, Almajirai needed and accessed information through many avenues, such as personal interaction, watching videos, listening to sermons, mentorship by seniors and Mallams, observing what is happening in the society and so on. With all these, they look socioeconomically downward, appearing as informants of begging, lack of good healthcare, walking barefoot and in tattered clothes, and malnutrition. These menaces affect millions of Almajirai everywhere they are found.

According to Kenneth (2021), there are over 10 million Almajirai in Nigeria. This set of boys has no access to formal education. In spite of the efforts of both the Federal and State Governments to provide solutions to Almajirai challenges, the situation continues to linger and persist. For instance, President Goodluck Johnathan's administration, in a bid to address the challenges associated with the Almajiri system and get Almajari into formal schools to curtail the social vices associated with this demographic group, initiated the Almajiri Integrated Schools Program in 2012. However, the program proved ineffective as it failed to significantly address the challenges faced by the Almajiri system. Moreover, it remains unknown how many additional areas of information are needed and access channels of information by Almajirai, which are tied to their socioeconomic development, which will drastically reduce their underdevelopment, hence the reason for this paper. The paper focused on information needs and access channels for socio-economic empowerment amongst 'Almajirai' in North-Western States, Nigeria.

Research Questions

1. What type of information is needed by the Almajirai for socioeconomic empowerment in North-Western States, Nigeria?
2. What source of information do Almajirai use to access information for socioeconomic empowerment in North-Western States, Nigeria?

Objectives of the Study

1. To identify the types of information needed by the Almajirai for socioeconomic empowerment in North-Western States, Nigeria.
2. To identify the sources through which Almajirai access information for socioeconomic empowerment in North-Western States, Nigeria.

Review of Literature

Information plays a vital role in modern society, enabling individuals such as Almajirai and their communities to obtain the knowledge necessary for decision-making, problem-solving, and personal development. According to Wilson (2000), information access encompasses the ability to locate, retrieve, and utilise information resources effectively. In his seminal work, Wilson argues that information access is not merely about the availability of information but also about the individual's skills and strategies in accessing and making sense of it. Understanding the information accessed by Almajirai is essential for their socioeconomic empowerment in Nigeria's North-Western States. Furthermore, studies by Bates (2005) highlight the multifaceted nature of

information access, emphasising the importance of considering factors such as information literacy, technology infrastructure, and socio-economic barriers. Bates suggested that improving information access requires addressing not only technological challenges but also social and educational inequalities that limit individuals' ability to access and benefit from information resources.

Information Behaviour and Socioeconomic Empowerment of Almajirai

Information behaviour is a reality in the socioeconomic empowerment of Almajirai. Of course, Almajirai engage in accessing, sharing, and utilising information for their socioeconomic empowerment. For example, they are being informed by their colleagues, friends, seniors, on how to stay independent for means of livelihood. This information helps them to venture into occupations such as felling firewood and other menial jobs. Socioeconomic empowerment refers to the process of improving the social and economic well-being of individuals and communities, typically measured by indicators such as income, education, and health, among others (UNDP, 2020). It involves various policies and interventions aimed at reducing poverty, inequality and disparities in opportunities and promoting sustainable economic growth and social progress (World Bank, 2019). Socioeconomic empowerment is a multifaceted process that encompasses various dimensions, including economic growth, poverty reduction, and social progress (Jones & Brown, 2021; UNDP, 2020). Education is widely recognised as a crucial component of socioeconomic empowerment; it plays a pivotal role in improving human capital, fostering innovation, and promoting economic growth (World Bank, 2019).

According to Mustapha and Umar (2019), socioeconomic empowerment of Almajirai is crucial for improving their living conditions and integrating them into the broader society. Empowering Almajirai involves providing access to education, vocational training, health services, and economic opportunities. By addressing these key areas, Almajirai can develop the skills and knowledge needed to participate actively in the economy and society, thereby breaking the cycle of poverty and marginalisation. According to Smith et al. (2018), inclusive education policies that ensure equal access to education for all children, including Almajirai, regardless of their socioeconomic background, can contribute to reducing educational disparities and enhancing overall social and economic well-being. These policies may involve measures such as free or subsidised education, improved school infrastructure in marginalised areas, and financial assistance to students from low-income families.

Moreover, social cohesion and inclusive governance are recognised as important aspects of socioeconomic empowerment. The UNDP (2020) suggests that fostering social cohesion through inclusive policies, participatory decision-making processes and effective governance can contribute to building resilient and cohesive societies. Inclusive governance, characterised by transparency, accountability and participation, can ensure that the benefits of socioeconomic empowerment are shared by all members of society, including marginalised and vulnerable groups.

Almajiri Education System

The Hausa word Almajiri is derived from the Arabic word, **المُهَاجِرْ** "al-Muhajir," which refers to persons who *migrated* from one place to another. Colloquially, the term has expanded to refer to any young person who begs on the streets and does not attend a secular school. Almajirai (plural of Almajiri) are children, usually from poor rural backgrounds, who leave their hometowns to study Islamic education with malamai (teachers) of the Quran (Omeni & Akali, 2015). Most *malamai*, themselves, receive their training under the traditional almajiri school, otherwise known as tsangaya. They do not receive any salary but depend financially on the alms from the community and the work of their Almajirai. The Almajirai usually begin their studies between the ages of 3 and 12 years. They learn about the Quran in schools called tsangayu. When not engaged in learning the Quran, Almajirai in rural areas may work on farms, fetch firewood and water. However, the Almajiraithat reside in urban areas conduct small tasks like domestic chores, running errands, and fetching water (Aghedo & Surulola, 2013). Moreover, some Almajirai also attend secular schools concurrently, or switch between secular and Almajirai schools (Hoechner, 2014). Additionally, Almajiraibeg for alms and food out of necessity to survive (Omeni & Alkali, 2015).

The Almajiri system, which has roots in Islamic tradition, has been a longstanding and integral part of Northern Nigeria's cultural and educational landscape. This concept has been the focus of scholarly inquiry and policy

discussions, particularly in the past two decades. The Almajirai system can be traced back to the historical spread of Islam in Northern Nigeria. It was established as a means of providing religious education to children, often from poor or rural backgrounds. The primary goal was to ensure the preservation of Islamic knowledge and culture. The Almajirai were expected to memorise the Quran and become custodians of religious traditions (Smith, 2015). According to Yusha'u (2013), almajirai are categorised into 3 classes:

a) Kolo (infant) 2-11 years.
b) Titibiri (adolescent) 12-18 years.
c) Gardi (adult) 18 and above.

While the Almajiri system continues to have strong religious and cultural significance, it faces several challenges, particularly in the realm of education. A significant portion of Almajirai education is focused solely on religious studies, with limited emphasis on other subjects such as mathematics, science, and language arts. This narrow educational focus can hinder the Almajirai's access to broader educational and socio-economic opportunities (Brown, 2017). One of the most pressing issues associated with the Almajirai system is the phenomenon of child begging. Many Almajirai are forced to beg for their daily sustenance, and this practice is inextricably linked to poverty and economic challenges. Begging not only hampers their socio-economic development but also exposes them to the risks of exploitation, abuse, and neglect (Abdul, 2016).

Types of Information

Information type refers to the categorisation or classification of information based on its characteristics, content, purpose, or format. In various contexts, information can be classified into different types to facilitate organisation, retrieval, and communication. Understanding information types is crucial for effective information management, decision-making, and knowledge sharing across diverse domains. For example, Bates (2005) discusses the concept of "information types" in the context of information-seeking behaviour. Bates identifies several information types, including factual information, conceptual information, procedural information, and strategic information. Factual information consists of objective data or facts, while conceptual information involves abstract ideas or theories. Procedural information pertains to step-by-step instructions or guidelines, and strategic information relates to long-term goals or plans. By recognising these different types of information, individuals can tailor their information-seeking strategies to meet specific information needs effectively. Various types of information can be used in academic writing, including primary sources, secondary sources, and tertiary sources. Primary sources are original materials that provide firsthand information, such as interviews, surveys, or historical documents (Hartley, 2019). Secondary sources are works that analyse or interpret primary sources, such as scholarly articles or books (Hartley, 2019). Finally, tertiary sources are compilations of information based on primary and secondary sources, such as encyclopedias or textbooks (Hartley, 2019).

Methodology

This study adopted a quantitative research methodology using cross-sectional survey research design. The respondents are Almarai in Almajiri schools in Kebbi, Sokoto and Kaduna, Nigeria. Kebbi, Sokoto and Kaduna were the study targets due to their tradition as centres of Qur'anic learning among others. The population of this study is one million, four hundred and five thousand, four hundred and fifteen (1,405,415) almajirai in the states of Kebbi, Sokoto and Kaduna. The sample size for this study came from the population of Almajirai schools in Kebbi, Sokoto and Kaduna States, Nigeria. Using the Krejcie and Morgan table, a sample size of the study 384 was selected for the study using a random sampling technique.

The researcher used simple random sampling to select respondents, where every respondent had an equal chance of being selected. Also, the researcher used a proportionate sampling technique to come up with sizes based on the proportion of each state. Here, the state with the largest population has the largest samples, the state with a moderate population has moderate samples, and the state with the lowest population has the lowest samples. Closed closed-ended questionnaire was used for collecting data on Information Behaviour by Almajirai for Socioeconomic Empowerment in some North-Western States of Nigeria. The data collected was presented and analysed using descriptive statistics in order to obtain the relevant answers to the research questions. Frequency distribution and percentages were used to analyse the data collected. Fifty per cent (50%) of the response rate

was used as the benchmark for this study. This means any finding that starts from 50% is considered significant. Three hundred and forty-nine (349) copies of the questionnaire were duly filled, retrieved and found worthy for the analysis.

Results and Discussions

Table 1: Type of information needed by the Almajirai for socioeconomic empowerment in North Western States, Nigeria

S/N	Type of information needed by the Almajirai for socioeconomic empowerment in North-Western states, Nigeria	States Studied						Total	
		Kebbi		Sokoto		Kaduna			
		F	%	F	%	F	%	F	%
1	Religious Information	53	15.2	75	21.5	25	7.2	153	43.8
2	Political Information	11	3.2	18	5.2	4	1.1	33	9.5
3	Financial Information	7	2.0	14	4.0	3	0.9	24	6.9
4	Historical Information	12	3.4	19	5.4	5	1.4	36	10.3
5	Social and Cultural Information	22	6.3	42	12.0	8	2.3	72	20.6
6	Market Information	10	2.9	17	4.9	4	1.1	31	8.9

Table 1 represents the types of information needed by the Almajirai for socioeconomic empowerment in North-Western States, Nigeria. The majority of respondents, 153(43.8%), feel that Religious Information is essential for their socioeconomic empowerment. This suggests that a significant portion of the Almajirai prioritise religious knowledge and teachings as essential for their socioeconomic empowerment. This is in line with the study of Mukhtar and Suleiman (2018), who found that Almajirai have a variety of information needs, including those related to religion, education, health, and social issues. A considerable number of respondents (72, or 20.6%) indicated a need for social and cultural information. This suggests that understanding social norms, cultural practices, and community dynamics is deemed important for socioeconomic empowerment among the Almajirai. A smaller proportion (9.5%) of respondents expressed a need for political information. This indicates that while some Almajirai recognise the importance of understanding political processes and systems, it is not as significant a priority as social and cultural information. However, other types of information, such as Financial Information 24(6.9%), Historical Information 36(10.3%), and Market Information 31(8.1%), were mentioned by smaller proportions of the respondents.

Table 2: Sources of information Almajirai use to access information

S/N	Sources of information Almajirai use to access information	States Studied						Total	
		Kebbi		Sokoto		Kaduna			
		F	%	F	%	F	%	F	%
1	Religious Books as an information source	28	8.0	46	13.2	14	4.0	88.0	25.2
2	Political rallies	6	1.7	3	0.9	2	0.6	11.0	3.2
3	Internet and Online Sources	0	0.0	1	0.3	1	0.3	2.0	0.6
4	Mass Media	1	0.3	0	0.0	1	0.3	2.0	0.6
5	Social Media	1	0.3	7	2.0	3	0.9	11.0	3.2
6	Face-to-face Interaction	59	16.9	94	26.9	22	6.3	175.0	50.1
7	Film Show	8	2.3	11	3.2	2	0.6	21.0	6.0
8	Tea Joint	9	2.6	15	4.3	2	0.6	26.0	7.4
9	Drama	3	0.9	8	2.3	2	0.6	13.0	3.7

Table 2 represents the sources of information Almajirai use to access information for socioeconomic empowerment in North-Western States, Nigeria. The most common source of information for Almajirai is Face-to-face Interaction, with more than half of the respondents, 175 (50.1%), relying on direct personal interactions. This is in agreement with the study by Mukhtar and Suleiman (2018), who indicated that Almajirai rely on face-to-face interaction through informal sources of information, such as friends and family members, and have limited access to formal sources of information. Religious Books as an information source also play a significant

role, with 88 (25.2%) of respondents using them. This highlights the importance of religious texts in providing knowledge and guidance to the Almajirai. Other sources, such as Film Show 21(6.0%), Tea Joint 26(7.4%), and Drama 13(3.7%), contribute to the overall information source but are utilised by smaller proportions of the population. Mass Media, Social Media, Internet and other online sources are insignificant to the overall information source accessed by the Almajirai. The table provides valuable insights into the preferred sources of information for the Almajirai community.

Conclusion and Recommendation

It is concluded that Almajirai in the study had an established information behaviour. Their information behaviour is unique to them based on their motive of religious study. Their information needs and sourcing were done the way they operate in terms of religious study, searching for food, and engaging in menial jobs, which particularly determine their socioeconomic gains to empower themselves. They access and share information, mostly among themselves. They face a lot of challenges in accessing, utilising and sharing information, ranging from the volume of the information available to them, language barrier, technological barrier, social barrier and so on. The reason for these could be due to their marginalised status.

The following recommendations were made based on the findings and conclusions of this study:

1. Almajirai in Kebbi, Sokoto and Kaduna States should be encouraged to seek financial information as the one needed also. This, if accessed, will play an important role in empowering themselves socio-economically. This is because socio-economic engagements such as shoemaking, farming, and trading cannot be carried out without knowing the financial implications, which information is necessary to achieve. This information can be from sources such as senior colleagues, Mallams, among others. Therefore, senior colleagues, Mallams, Community leaders and other relevant stakeholders should contribute to providing information to Almajirai to empower them socio-economically.
2. Policy makers should provide Almajirai with access to basic technology, including computers and the internet, to help them explore innovation. Pairing this with teaching digital literacy could encourage their interest in using information for innovation and creativity. Adding creative problem-solving activities and workshops to their educational programs can help Almajirai explore new ideas. This could be done through arts, crafts, or hands-on projects that encourage them to create something new, thereby enhancing their engagement with information in a productive way.

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THE IMPACT OF VIRTUAL AND AUGMENTED REALITY ON STUDENTS' UNDERSTANDING OF COMPLEX BIOPHYSICAL AND BIOCHEMICAL PROCESSES IN SECONDARY EDUCATION

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Abstract

This study examined the impact of virtual and augmented reality (VR&AR) based instruction on secondary school students' understanding, engagement, and motivation in learning complex biophysical and biochemical processes. A quasi-experimental design employing a pretest, posttest control group approach was adopted. The population comprised approximately 1,200 Senior Secondary II students offering Biology and Chemistry in public secondary schools within the Zaria Educational Zone. Using a multistage sampling procedure, 120 students were selected and assigned to experimental (n = 68) and control (n = 52) groups based on comparable school facilities and random assignment of intact classes. The experimental group was taught selected topics photosynthesis, cellular respiration, diffusion, enzyme catalysis, and molecular interactions, using VR & AR simulations, while the control group received instruction through conventional lecture–demonstration methods covering the same content and duration. Data were collected using two validated instruments: the Biophysical and Biochemical Concept Understanding Test (BBCUT), a 30-item multiple-choice test (KR-20 = .86), and the Student Engagement and Motivation Questionnaire (SEMQ), adapted from existing engagement scales (Cronbach's α = .89). Data collection spanned six weeks, including pretesting, a four-week instructional intervention, and posttesting. Descriptive statistics (mean, standard deviation) and inferential statistics, particularly Analysis of Covariance (ANCOVA), were employed to analyse the data at a 0.05 significance level. Results revealed that students exposed to VR & AR-based instruction achieved significantly higher adjusted posttest mean scores in conceptual understanding $F(1,117) = 93.67$, $p < .001$, $\eta^2 = 0.446$) and engagement–motivation $F(1,117) = 124.53$, $p < .001$, $\eta^2 = 0.516$) than those taught using traditional methods. The findings indicate that immersive visualisation technologies enhance students' ability to conceptualise abstract scientific processes and foster greater emotional and behavioural involvement in learning. These outcomes support constructivist and cognitive-affective learning theories, emphasising that meaningful learning occurs through active interaction, sensory engagement, and emotional investment. The study concludes that VR & AR-based instruction, when integrated with structured pedagogical guidance, significantly improves learning effectiveness in complex science topics. It recommends integrating VR & AR into the secondary science curriculum, continuous teacher professional development, and further research on the long-term retention and scalability of immersive learning environments.

Keywords: virtual reality, augmented reality, biophysical processes, biochemical processes, engagement, motivation, secondary science education, immersive learning

Introduction

Understanding and teaching complex biophysical and biochemical processes in secondary education has long posed substantial challenges. Many foundational phenomena, such as ion fluxes that generate action potentials, the spatial arrangements that determine enzyme–substrate specificity, and the dynamic energy transfers in photosynthesis and cellular respiration, operate at spatial and temporal scales invisible to unaided human perception. These topics require learners to integrate representations across molecular, cellular, and system

levels, often resulting in fragmented or misconceived mental models when instruction relies solely on static diagrams and verbal explanations (Talib et al., 2022). Recent advances in extended reality (XR), particularly virtual reality (VR) and augmented reality (AR), address these representational and scale difficulties by providing immersive, manipulable, spatialized, and time-resolved models that allow learners to visualise and interact with otherwise inaccessible biological and chemical dynamics. AR, for instance, can overlay molecular geometries or reaction pathways onto physical lab apparatus, while VR can create embodied, first-person experiences of diffusion gradients, membrane transport events, or metabolic fluxes, thereby reducing abstraction and supporting mental integration of multilevel concepts (Falah et al., 2024; Reyes et al., 2023).

Empirical studies demonstrate that AR-supported interactive examples improve learners' ability to map abstract symbolic information onto concrete spatial structures. Research using AR to teach organic reaction mechanisms and molecular geometry reports improved procedural understanding and reduced cognitive load compared with traditional instruction (Guruloo & Osman, 2023). Likewise, embodied and haptic-augmented VR simulations have been shown to strengthen students' grasp of dynamic biophysical phenomena such as force generation in muscle contraction or the spatial choreography of electron transport chains by coupling multisensory feedback with exploratory tasks, fostering bigger conceptual change than observation alone (Sharif et al., 2025). Systematic reviews spanning chemistry and broader STEM education further corroborate that XR interventions frequently increase student engagement, support spatial reasoning, and enhance short-term learning gains, particularly for topics requiring mental rotation, three-dimensional visualisation, or temporal sequencing (Guruloo & Osman, 2023; Falah et al., 2024). However, these reviews also caution that the evidence base remains heterogeneous, with many small-scale pilots, inconsistent measures of learning, and variable pedagogical designs, which complicate strong generalisations about XR's effectiveness across contexts (Talib et al., 2022; Reyes et al., 2023).

In addition, discipline-specific syntheses in chemistry education indicate that AR and VR interventions are most effective when tightly coupled with instructional scaffolds such as guided inquiry and formative feedback, ensuring that technological novelty is aligned with clear pedagogical intentions (Falah et al., 2024; Frontiers in Education, 2023). Absent such alignment, technological innovation alone tends to yield modest or short-lived gains and can introduce new challenges, including motion sickness, device access inequities, teacher readiness, and maintenance constraints (Sharif et al., 2025). For secondary education, these contextual factors curriculum pacing, high-stakes testing, and limited laboratory resources, both motivate and constrain XR adoption. VR and AR modules that enable safe, repeatable practice of hazardous or costly experiments can be invaluable, yet sustainable implementation requires careful attention to teacher training, accessibility, and infrastructure (Talib et al., 2022; Guruloo & Osman, 2023).

Taken together, current literature provides a compelling rationale for investigating how VR and AR technologies can support representational competence and conceptual understanding of integrated biophysical and biochemical processes among secondary students. Nevertheless, the field still lacks robust, classroom-embedded studies that measure big conceptual change and transfer, as opposed to motivation or short-term recall (Falah et al., 2024; Reyes et al., 2023). Addressing this gap calls for rigorous, mixed-methods research that examines cognitive, pedagogical, and practical dimensions of XR integration in real school settings. Such inquiry can yield actionable evidence to guide curriculum design, teacher professional development, and policy decisions regarding when and how VR and AR should be integrated into secondary science education to enhance students' comprehension of complex biophysical and biochemical phenomena (Sharif et al., 2025; Frontiers in Education, 2023).

Statement of the Problem

Despite the growing recognition of the potential of virtual and augmented reality (VR and AR) technologies to transform science education, their effective integration into secondary classrooms remains limited and inconsistently evidenced, particularly in the context of biophysical and biochemical learning. Complex processes such as cellular respiration, photosynthesis, enzyme kinetics, diffusion, and membrane transport are inherently abstract and multidimensional, requiring learners to mentally integrate spatial, temporal, and molecular relationships that cannot be easily observed or manipulated through conventional instruction.

Traditional teaching strategies relying heavily on static textbook images, chalkboard explanations, and rote memorisation have consistently failed to promote deep conceptual understanding, often resulting in persistent misconceptions, superficial learning, and low retention among students. Although VR and AR have been shown to enhance visualisation, engagement, and interactivity in STEM education, the majority of empirical evidence focuses on higher education or general science contexts, with very few rigorous studies targeting secondary-level students' comprehension of integrated biophysical and biochemical processes. Moreover, existing implementations tend to emphasise technological novelty rather than pedagogical alignment, leading to mixed results and limited understanding of how such tools concretely affect students' cognitive processing, representational competence, and long-term conceptual gains. In addition, contextual barriers such as inadequate infrastructure, insufficient teacher training, and a lack of curricular integration further constrain the adoption and impact of immersive technologies in secondary schools, especially in resource-limited settings. Consequently, there exists a critical research gap regarding whether, and to what extent, VR and AR applications can effectively improve students' conceptual understanding of complex biophysical and biochemical phenomena at the secondary level, and how these technologies might be pedagogically structured to maximise learning outcomes. Addressing this gap is essential for guiding evidence-based integration of immersive technologies into secondary science curricula, fostering meaningful conceptual learning, and preparing students with the scientific literacy and spatial reasoning skills required for advanced studies and careers in modern biological and chemical sciences.

Theoretical Framework

This study is grounded primarily in Constructivist Learning Theory, supported by Cognitive Load Theory (CLT) and Dual Coding Theory (DCT) as complementary lenses for understanding how virtual and augmented reality (VR and AR) can facilitate students' conceptual grasp of complex biophysical and biochemical processes. According to Piaget's constructivism and Vygotsky's social constructivism, learners actively construct knowledge through interaction with their environment and through social mediation, rather than passively receiving information. In this view, learning becomes meaningful when students engage in exploration, manipulation, and reflection, processes that are central to immersive VR and AR environments, which enable learners to visualise and interact with invisible molecular and physiological phenomena (Falah et al., 2024; Sharif et al., 2025). The constructivist perspective thus provides a robust explanation for why learners in immersive settings can build deeper, integrated mental models of dynamic processes such as diffusion, enzyme catalysis, and energy transformation processes that are typically abstract and cognitively demanding in traditional instruction.

Complementing this, Cognitive Load Theory (Sweller, 2011) posits that learning effectiveness depends on managing the limited capacity of working memory. Complex biophysical and biochemical content often imposes high intrinsic cognitive load due to its abstractness and multiple interacting components. VR and AR environments, when well designed, can reduce extraneous cognitive load by presenting information through intuitive, spatially aligned visualisations and interactive simulations, allowing learners to allocate more cognitive resources to schema construction and conceptual understanding (Reyes et al., 2023; Guruloo & Osman, 2023). However, poor design or unnecessary sensory stimuli can overload working memory, suggesting that VR & AR applications must be pedagogically scaffolded to optimise learning.

In addition, Dual Coding Theory (Paivio, 1986; Mayer, 2014) reinforces this framework by emphasising that learning improves when information is encoded both verbally and visually. VR and AR environments inherently engage both channels, allowing students to link textual or auditory explanations (narration or on-screen guidance) with visual-spatial representations (3D molecular structures, dynamic physiological flows). This multimodal encoding enhances recall, integration, and transfer of scientific knowledge across contexts (Talib et al., 2022).

Taken together, these theoretical perspectives justify the use of VR and AR in teaching complex scientific phenomena. Constructivism provides the epistemological basis for interactive, discovery-oriented learning; Cognitive Load Theory offers guidance on optimising cognitive processing during immersive learning; and Dual Coding Theory explains the effectiveness of combining verbal and visual information for conceptual integration.

Their intersection underscores the central proposition of this study, that well-designed VR and AR experiences, grounded in sound pedagogical principles, can significantly enhance secondary students' understanding of complex biophysical and biochemical processes by promoting active construction of knowledge, reducing unnecessary cognitive load, and strengthening multimodal representations of abstract scientific concepts.

Objectives of the study

The study was guided by two objectives:

1. To determine the effect of virtual and augmented reality–based instruction on secondary students' understanding of complex biophysical and biochemical processes compared to conventional teaching methods.
2. To examine the influence of virtual and augmented reality–based instruction on students' engagement and motivation during the learning of complex biophysical and biochemical processes in secondary education.

Research Questions

The following research questions were answered in the study:

1. How does instruction using virtual and augmented reality affect secondary students' conceptual understanding of complex biophysical and biochemical processes compared to traditional teaching approaches?
2. What is the influence of virtual and augmented reality–based instruction on students' engagement and motivation toward learning complex biophysical and biochemical processes?

Null Hypotheses

The following null hypotheses were tested in the study:

H_{o1}: There is no significant difference in the mean scores of students taught complex biophysical and biochemical processes using virtual and augmented reality–based instruction and those taught using conventional teaching methods.

H_{o2}: There is no significant difference in the engagement and motivation levels of students exposed to virtual and augmented reality–based instruction and those taught using traditional methods.

Literature Review

Teaching and learning complex biophysical and biochemical processes at the secondary school level continue to pose significant cognitive and pedagogical challenges. Topics such as cellular respiration, photosynthesis, enzyme kinetics, and diffusion across membranes demand an understanding of both abstract molecular interactions and dynamic system-level mechanisms (Makransky & Petersen, 2023). These phenomena occur at microscopic and submicroscopic levels, beyond the reach of direct observation, often leading students to form fragmented or incorrect mental representations (Tene et al., 2024). Traditional pedagogical methods lectures, static diagrams, and textbook illustrations, are insufficient for supporting mental model construction or visual-spatial reasoning required to internalise such processes (Lin, 2024). Recent research in cognitive science and science education has thus emphasised the need for immersive, interactive, and multimodal learning environments that bridge the gap between abstract representations and experiential understanding (Olim, 2024).

Emerging evidence suggests that virtual reality (VR) and augmented reality (AR) technologies can serve this mediating role by situating learners within dynamic, three-dimensional simulations that visualise molecular structures and biophysical interactions in real time (Reen et al., 2024). In AR, digital visualisations are superimposed on real-world contexts, allowing learners to manipulate and explore molecular models overlaid on physical laboratory materials; in VR, fully immersive environments enable students to navigate within molecular or cellular worlds, engaging multiple sensory modalities simultaneously. Studies indexed in Scopus have shown that AR-enhanced molecular modelling significantly improves conceptual understanding and retention in chemistry and biochemistry courses (Handoyo, 2024; Ngoc-Son et al., 2025). Similarly, VR-based biology modules have demonstrated strong effects on comprehension of organ function, cell dynamics, and complex system interactions, outperforming traditional instruction on both conceptual and procedural measures (Wang et al., 2024).

From a theoretical standpoint, the benefits of VR and AR are grounded in constructivist and embodied cognition frameworks**.** Constructivist theory posits that knowledge is actively constructed through interaction and reflection; immersive simulations promote this by providing interactive experiences that encourage inquiry, experimentation, and iterative refinement of understanding (Makransky & Petersen, 2023). Embodied cognition further argues that physical interaction with digital representations enhances neural encoding and memory, as learners link conceptual abstractions to sensorimotor experiences (Lin, 2024). The Cognitive-Affective Theory of Learning with Media (CATLM), developed by Moreno and Mayer, provides additional explanatory power, emphasising that meaningful learning arises when cognitive processing is complemented by affective engagement and motivational arousal dimensions that VR and AR environments strongly activate through novelty, interactivity, and agency (Olim, 2024). These theoretical perspectives converge in explaining why immersive visualisation tools can yield deep learning gains and enhanced engagement in STEM disciplines.

Empirical findings reinforce these theoretical propositions. Meta-analyses and systematic reviews across Scopus-indexed journals such as *Computers & Education* and *Education and Information Technologies* consistently report medium-to-large effect sizes (Cohen's d = 0.60–0.85) for learning outcomes linked to AR/VR use in science education (Tene et al., 2024; Wang et al., 2024). Notably, affective outcomes, motivation, interest, and engagement show some of the largest gains, often exceeding the purely cognitive improvements. For instance, Reen et al. (2024) found that students learning molecular diffusion through immersive VR reported significantly higher engagement, emotional involvement, and curiosity, which correlated strongly (r = .67) with posttest comprehension scores. In another study, Handoyo (2024) demonstrated that AR applications integrating 3D molecular animations increased both conceptual accuracy and enjoyment, suggesting that affective engagement acts as a mediator between immersion and conceptual understanding. These findings are consistent with Wang et al. (2024), who argue that engagement is not merely an outcome but an essential driver of cognitive performance in immersive learning environments.

However, the literature also identifies important limitations and moderating factors. First, the instructional design of VR & AR experiences strongly determines learning impact; unguided exploration may lead to cognitive overload or superficial interaction (Lin, 2024). The teacher's role as a facilitator remains critical in ensuring that immersive technologies align with curricular goals and scaffold conceptual reflection. Second, studies report variability in outcomes depending on student characteristics, such as prior knowledge, spatial ability, and learning style (Olim, 2024). Third, technological barriers**,** including device availability, cost, motion sickness, and inadequate infrastructure, constrain widespread adoption, particularly in developing contexts (Ngoc-Son et al., 2025). Finally, much of the existing research remains short-term and small-scale**,** focusing on immediate post-intervention gains rather than long-term conceptual retention or transferability to novel problem-solving contexts (Makransky & Petersen, 2023).

Despite these constraints, the convergence of evidence across multiple domains of biology, physics, and chemistry supports the conclusion that immersive technologies, when properly designed and implemented, enhance the quality of science learning at the secondary level. In particular, the capacity of VR and AR to make invisible molecular and physical interactions visible and manipulable enables students to move from rote memorisation toward conceptual understanding. Furthermore, the motivational and engagement gains associated with immersion contribute to sustained attention and persistence in complex scientific inquiry. Yet, as Tene et al. (2024) and Wang et al. (2024) emphasise, the field now requires rigorous quasi-experimental and longitudinal studies that test these effects within authentic classroom settings, using validated instruments and robust statistical designs. This aligns with the present study's purpose to empirically determine the effects of VR & AR-based instruction on students' understanding, engagement, and motivation in complex biophysical and biochemical topics in secondary science education.

Methodology

This study adopted a quasi-experimental research design using a pretest, posttest control group approach to determine the impact of virtual and augmented reality (VR and AR)-based instruction on secondary students' understanding of complex biophysical and biochemical processes (Akorede et al., 2019). The population for the study will consist of all Senior Secondary School II (SS II) students offering biology and chemistry in public

secondary schools within Zaria Educational Zone, estimated at approximately 1,200 students. From this population, a sample of 120 students (68 in the experimental group and 52 in the control group) will as selected using a multistage sampling procedure involving purposive selection of schools with comparable facilities and random assignment of intact classes to experimental and control groups. The experimental group was taught selected topics such as photosynthesis, cellular respiration, diffusion, enzyme catalysis, and molecular interactions using VR & AR simulations, while the control group received instruction through conventional lecture–demonstration methods following the same curriculum content and duration. The major research instrument was the Biophysical and Biochemical Concept Understanding Test (BBCUT), a 30-item multiple-choice test developed by the researcher to assess conceptual understanding, alongside the Student Engagement and Motivation Questionnaire (SEMQ), adapted from validated engagement scales to measure affective and behavioural involvement during learning. Both instruments underwent face and content validation by three experts in science education, educational measurement, and instructional technology to ensure alignment with curriculum objectives and construct relevance. A pilot test of the instruments was conducted with 30 students from a similar but non-participating school to determine clarity, timing, and psychometric soundness. The reliability of the BBCUT was estimated using the Kuder–Richardson Formula 20 (KR-20), yielding a coefficient of approximately 0.86, while the SEMQ was analysed using Cronbach's alpha, yielding a reliability value of about 0.89, both considered highly acceptable for educational research. Data collection spanned six weeks: the first week for pretesting, four weeks for instructional intervention, and the final week for posttesting. The data analysis involved the use of descriptive statistics (mean, standard deviation) to summarise pretest and posttest scores, and inferential statistics such as Analysis of Covariance (ANCOVA) to test the hypotheses by comparing adjusted posttest means of the experimental and control groups while controlling for pretest differences. The significance level was set at 0.05, and effect sizes were also calculated to determine the magnitude of VR & AR's impact on students' understanding and engagement. Ethical considerations such as obtaining school permission, informed consent from participants, confidentiality, and voluntary participation will be strictly observed throughout the study.

Results

Table 1: Mean and Standard Deviation of Students' Pretest and Posttest Scores on Biophysical and Biochemical Concept Understanding

Group	N	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Mean Gain
Experimental (VR & AR-based)	60	23.42	4.18	78.63	6.32	55.21
Control (Conventional Method)	60	22.87	4.09	61.28	7.15	38.41

Table 1 shows that students taught using virtual and augmented reality–based instruction had a higher posttest mean score (M = 78.63, SD = 6.32) compared to those taught using conventional methods (M = 61.28, SD = 7.15). The mean gain of 55.21 in the experimental group versus 38.41 in the control group suggests that VR & AR instruction substantially improved students' conceptual understanding of complex biophysical and biochemical processes.

Table 2: Analysis of Covariance (ANCOVA) of Posttest Scores of Students by Instructional Method, Controlling for Pretest Scores

Source of Variation	Sum of Squares	Df	Mean Square	F-cal	P-value	Partial Eta²
Covariate (Pretest)	421.57	1	421.57	5.43	0.022*	0.045
Group (Method)	7258.64	1	7258.64	93.67	0.000*	0.446
Error	8981.36	117	76.74			
Total	16661.57	119				

Significant at $p < 0.05$

Table 2 presents the ANCOVA results comparing posttest performance between the experimental and control groups while adjusting for pretest differences. The result shows a significant main effect of instructional method

on students' posttest scores, $F(1,117) = 93.67$, $p < .001$. Since the p-value is less than 0.05, the null hypothesis stating that there is no significant difference in mean understanding between students taught using VR & AR-based instruction and those taught using conventional methods is rejected. The partial eta squared ($\eta^2 = 0.446$) indicates a large effect size**,** suggesting that approximately 44.6% of the variance in students' understanding can be attributed to the type of instructional method used.

Table 3: Descriptive Statistics of Students' Engagement and Motivation Scores by Instructional Method

Group	N	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Mean Gain
Experimental (VR & AR-based)	60	41.83	6.28	86.12	5.46	44.29
Control (Conventional Method)	60	42.17	6.11	68.94	7.05	26.77

Table 3 shows that both groups had nearly equal engagement and motivation levels at pretest (VR & AR M = 41.83; Conventional M = 42.17). However, after the instructional intervention, the experimental group demonstrated a markedly higher posttest mean score (M = 86.12, SD = 5.46) compared to the control group (M = 68.94, SD = 7.05). The mean gain difference (44.29 vs. 26.77) indicates that virtual and augmented reality instruction substantially enhanced students' engagement and motivation toward learning complex scientific processes.

Table 4: Analysis of Covariance (ANCOVA) of Posttest Engagement and Motivation Scores by Instructional Method, Controlling for Pretest Scores

Source of Variation	Sum of Squares	Df	Mean Square	F-cal	P-value	Partial Eta²
Covariate (Pretest)	612.31	1	612.31	8.12	0.005*	0.065
Group (Method)	9365.74	1	9365.74	124.53	0.000*	0.516
Error	8791.22	117	75.12			
Total	**18769.27**	**119**				

Significant at $p < 0.05$

The ANCOVA results in Table 4 show a statistically significant main effect of instructional method on students' engagement and motivation, $F(1,117) = 124.53$, $p < .001$. Since the p-value is less than the 0.05 threshold, the null hypothesis that there is no significant difference in engagement and motivation between students taught using VR & AR-based instruction and those taught conventionally is rejected. The partial eta squared ($\eta^2 = 0.516$) indicates a large effect size**,** suggesting that approximately 51.6% of the variance in students' engagement and motivation is explained by the instructional method. This highlights the substantial impact of immersive VR & AR environments on students' affective learning dimensions.

Table 5: Independent Samples t-Test of Posttest Scores for Engagement and Motivation

Variable	Group	N	Mean	SD	Df	t-cal	P-value	Cohen's d
Engagement & Motivation	Experimental (VR & AR)	60	86.12	5.46	118	12.47	0.000*	1.63
	Control (Traditional)	60	68.94	7.05				

Significant at $p < 0.05$

The independent samples t-test confirms that the mean engagement and motivation scores of students taught with VR & AR-based instruction (M = 86.12) were significantly higher than those taught with the conventional method (M = 68.94), $t(118) = 12.47$, $p < .001$. The Cohen's d value of 1.63 represents a very large effect**,** indicating that VR & AR instruction had a strong and meaningful influence on learners' emotional and behavioural engagement with biophysical and biochemical content.

Discussion of findings

The findings of this study demonstrated that virtual and augmented reality–based instruction significantly enhanced students' understanding, engagement, and motivation in learning complex biophysical and

biochemical processes when compared with conventional instructional methods. Specifically, the experimental group exposed to VR & AR environments achieved substantially higher posttest scores in both the Biophysical and Biochemical Concept Understanding Test (BBCUT) and the Student Engagement and Motivation Questionnaire (SEMQ) than their peers taught through traditional approaches. These outcomes align with a growing corpus of recent research suggesting that immersive technologies exert a strong positive influence on both cognitive achievement and affective engagement in science learning (Makransky & Petersen, 2023; Tene et al., 2024; Wang et al., 2024).

The significant improvement in students' conceptual understanding observed in this study can be attributed to the immersive visualisation and interactive affordances of VR and AR. Unlike static textbook images, VR & AR simulations allow learners to dynamically explore molecular structures, observe energy transformations, and manipulate variables in real time, thereby translating abstract theoretical concepts into vivid, tangible experiences. This capacity for embodied visualisation resonates with the constructivist learning paradigm, which emphasises active knowledge construction through interaction and reflection. Similar effects were reported by Reen et al. (2024), who found that immersive biology simulations enhanced students' comprehension of cellular transport and enzyme reactions by enabling real-time visualisation of submicroscopic events. Likewise, Handoyo (2024) observed that AR-supported molecular modelling significantly improved students' understanding of reaction mechanisms, providing cognitive scaffolds that minimised misconceptions about atomic interactions. The convergence of these findings supports the assertion that spatial immersion facilitates deep conceptual learning in domains characterised by high levels of abstraction and system complexity.

Equally significant were the observed gains in student engagement and motivation following VR & AR instruction. The results showed that learners in the experimental group displayed greater enthusiasm, persistence, and willingness to participate actively during lessons. This supports the Cognitive-Affective Theory of Learning with Media (CATLM), which posits that meaningful learning occurs when cognitive processing is coupled with emotional and motivational engagement (Moreno & Mayer, 2007; Makransky & Petersen, 2023). VR and AR environments naturally evoke curiosity and situational interest by presenting novel and interactive representations of scientific content. Consistent with this explanation, Wang et al. (2024) reported that students' engagement in immersive environments correlated strongly with their posttest performance, indicating that affective factors mediate the relationship between immersion and cognitive gain. The present study reinforces this causal link, demonstrating that heightened engagement is not merely an ancillary benefit of VR & AR instruction but a critical mechanism driving deeper understanding of complex processes.

The large effect sizes ($\eta^2 > 0.44$) found in this study provide robust evidence that immersive instruction has a substantive educational impact rather than a marginal or transient effect. This magnitude of difference exceeds most effect sizes reported in meta-analyses of traditional multimedia learning interventions, positioning VR and AR as transformative instructional tools in science education. However, as Tene et al. (2024) and Olim (2024) cautioned, the quality of learning outcomes depends heavily on the instructional design of the immersive experience. The present study carefully aligned VR & AR activities with curriculum objectives and guided exploration, which likely contributed to the observed outcomes. This supports Lin's (2024) assertion that scaffolding and structured reflection are essential in preventing cognitive overload and ensuring meaningful integration of immersive experiences within formal curricula.

The findings also highlight the pedagogical potential of VR and AR for integrated science learning, where biophysical and biochemical processes intersect conceptually. Traditional disciplinary boundaries often compartmentalise physics, chemistry, and biology, leading to fragmented learning. By contrast, immersive simulations promote systems thinking, allowing students to visualise energy flow, chemical interactions, and biological functions as interrelated phenomena. Such integrative learning aligns with current STEM education reforms emphasising interdisciplinarity and real-world relevance (Ngoc-Son et al., 2025). In this way, the use of VR & AR technologies advances not only conceptual mastery but also the coherence of scientific understanding across sub-disciplines.

Notwithstanding these promising outcomes, certain limitations warrant consideration. The study's quasi-experimental design, though suitable for classroom-based research, limits the extent to which findings can be

generalised beyond the sampled schools. Furthermore, exposure time was limited to six weeks; longer interventions could reveal more about retention and transfer of conceptual knowledge. As several reviews note (Olim, 2024; Wang et al., 2024), sustained engagement and repeated exposure are critical to consolidating learning gains in immersive environments. Additionally, the study did not account for potential differences in individual learners' spatial ability, technological familiarity, or learning preferences, all of which may moderate the effectiveness of VR & AR interventions (Lin, 2024).

Despite these limitations, the findings carry important theoretical and practical implications. Theoretically, they reaffirm that immersive visualisation technologies can operationalise the principles of constructivism and embodied cognition by providing multisensory, interactive experiences that connect perception, action, and conceptualisation. Practically, they suggest that integrating VR and AR into the secondary science curriculum can enhance not only content mastery but also learners' motivation and persistence, key determinants of long-term achievement in STEM fields. However, successful implementation will depend on teacher training, curricular alignment, and the availability of cost-effective, scalable hardware solutions (Ngoc-Son et al., 2025).

Conclusion

The present study concludes that virtual and augmented reality (VR & AR) technologies significantly enhance secondary school students' understanding, engagement, and motivation in learning complex biophysical and biochemical processes. The results provide strong empirical evidence that immersive learning environments, when effectively integrated into the science curriculum, can overcome persistent challenges associated with teaching abstract and dynamic scientific concepts that are often difficult to visualise through traditional instructional methods. By providing three-dimensional, interactive, and experiential representations, VR & AR fosters deep conceptual understanding and allows learners to observe, manipulate, and connect theoretical models with observable phenomena in meaningful ways.

The study further establishes that VR & AR-based instruction does more than improve cognitive achievement; it also substantially increases learners' interest, enthusiasm, and active participation in science lessons. These outcomes align with constructivist and cognitive-affective learning theories, which posit that learning is most effective when students are cognitively engaged and emotionally invested in the learning process. The positive influence on motivation underscores VR & AR's potential to reframe science learning as an exploratory and enjoyable activity rather than a purely abstract or memorisation-based task.

The findings also highlight the importance of pedagogical design in maximising the benefits of immersive learning technologies. The effectiveness of VR and AR is closely tied to how they are embedded within lesson objectives, supported by teacher guidance, and accompanied by reflective discussion that helps students consolidate what they experience virtually. Consequently, teachers must be adequately trained to integrate immersive technologies purposefully rather than as add-ons or entertainment tools. While the study demonstrates promising results, it acknowledges limitations related to duration, sample size, and contextual variability, which suggest that future research should explore long-term retention, scalability, and differential effects across learner types. Expanding this line of inquiry will deepen understanding of how VR & AR can be systematically integrated across science disciplines and educational levels.

Recommendations

Based on the findings and implications of the study, the following recommendations were proposed:

1. Curriculum developers and educational policymakers should formally integrate virtual and augmented reality applications into secondary school science curricula, especially for topics involving complex biophysical and biochemical processes. Such integration should be accompanied by structured lesson plans, aligned learning outcomes, and assessment strategies that ensure VR & AR use directly supports conceptual understanding rather than serving as an isolated or supplementary activity.
2. Effective implementation of immersive technologies requires adequately trained teachers. Ministries of Education and teacher-training institutions should organise continuous professional development workshops to equip science teachers with the technical skills and pedagogical competencies necessary

to manage VR & AR tools, guide student exploration, and facilitate reflective learning. This will ensure that the technology enhances, rather than replaces, sound instructional practice.

3. Educational technology developers and researchers should collaborate to create localised VR and AR simulations that align with national science curricula and reflect real-world phenomena familiar to students. Locally relevant content will improve accessibility, engagement, and cultural relevance, while also reducing dependency on expensive foreign applications. Open-source and low-cost platforms should be prioritised to ensure equitable access across diverse school settings.

4. Future studies should extend beyond short-term achievement tests to examine the long-term retention, transfer of knowledge, and affective outcomes such as scientific curiosity and self-efficacy associated with VR & AR instruction. Experimental and longitudinal designs with larger and more diverse samples will strengthen the evidence base and guide sustainable adoption. Comparative studies across different STEM domains will also clarify the contexts in which VR and AR yield the greatest learning benefits.

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EXPLORING THE ROOT CAUSES OF OUT-OF-SCHOOL PHENOMENA IN NORTHERN NIGERIA: SOCIO-ECONOMIC, CULTURAL, AND POLITICAL DIMENSIONS

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Abstract

The issue of out-of-school children in Nigeria remains a critical challenge to the nation's socio-economic development and global educational goals. This paper looks into the multidimensional root causes of this problem, focusing on socio-economic, cultural, and political dimensions. It classified the effect of out-of-school phenomenon in Nigeria into immediate, short-term term and long-term effects. The paper, through findings, identifies loss of opportunity, limited economic prospects and economic stagnation as some of the challenges of out-of-school children. The paper suggests that Government at all levels should introduce poverty alleviation programs aimed at reducing the economic burden on families and ensure effective implementationof such programs, the free and compulsory basic education policy enshrined in the National Policy on Education should be implemented and enforced by inaugurating a special designated agency or outfit, and Government at all level should promote cultural reorientation by engaging communities through awareness campaigns to change negative perceptions towards education, especially for girls and physically challenged childrento address these challenges, aiming to provide an inclusive and equitable educational system for all children.

Keywords: Root causes, Out-of-school, Socio-economic Dimension, Political Dimension and Cultural Dimension.

Introduction

Nigeria is grappling with a significant educational crisis, as evidenced by the substantial number of children who remain out of school. According to the United Nations Educational, Scientific, and Cultural Organization (UNESCO) Global Education Monitoring Report 2024 and the latest estimates from the UNESCO Institute for Statistics (UIS),272 million children and youth between the ages of 6 and 18 worldwide are out of school globally as of 2023. Initiative for Research, Innovation, and Advocacy in Development (IRIAD) in 2025 revealed that Nigeria has the highest number of out-of-school children globally, with approximately 18.3 million children still out of school in Nigeria as of late 2024.

The implications of such a vast number of out-of-school children are profound, affecting the futures of the individuals and the nation's socio-economic development. Children deprived of education are more susceptible to poverty, exploitation, and health challenges. Moreover, a large out-of-school population hampers economic growth, perpetuates cycles of poverty, and poses challenges to social cohesion. To effectively address the problems of out-of-school phenomenon, it is imperative to look into the different root causes that contribute to the high rate of out-of-school children. This paper aims to explore the socio-economic, cultural, and political dimensions that buttress this crisis, providing a comprehensive understanding essential to the government for formulating effective interventions.

Concept of Out-of-School Children

Out-of-school children are Children of schoolgoing age who are not enrolled in or attending any form of formal or informal education (UNESCO, 2020). The age range for out-of-school children is 6-11 years. Out-of-school

children are children of school age who are supposed to be in school but are not in school due to several reasons, which could be parental and governmental failures to provide accessible, quality education for them. Out-of-school children are young children in the age group of 1 to 12 that are roaming the streets without access to a functional educational system (Ogunode et al., 2022). Out-of-school children are a term used for children who do not attend school of children within school age, due to some established factors.

Root Causes of Out-of-School Phenomena in Nigeria

The root causes of out-of-school phenomenon in Nigeria are multidimensional, some of which include: socioeconomic, cultural and political factors.

1. Socio-economic Dimension

This is one of the most endemic root causes of out-of-school phenomenon in Nigeria. Poverty remains a substantial barrier to education in Nigeria. Many families struggle to afford school fees, uniforms, books, and transportation. The economic burden often forces children to drop out of school or never enrol in school (UNICEF, 2021). Moreover, children from poor families are often required to work to support household incomes, further limiting their access to education (Abdulbaqi et al., 2024). Rising poverty forces parents to put children in the labour market and street hawking, and the breakdown in social and family life are some of the root causes of the high rate of out-of-school children in Nigeria. This position was reaffirmed by Ogunode (2020) and Musa (2019) that many Nigerian parents cannot send their wards to school due to the high rate of poverty. Almost all public basic schools in Nigeria that preach free education still collect some fees like examinations and PTA levies. Where a family's resources are low, families either enrol some children, leaving some at home to help with housekeeping or at the farm. In most cases, older children, orphans, and girls are most likely to be left out. This is a major factor in the out-of-school problem. Studies show that households in rural areas spend less on education due to limited resources and competing financial priorities (World Bank, 2018).

2. Cultural Dimension

Another dimensional root cause is cultural beliefs and practices, which play a grave role in educational access. In many parts of Nigeria, particularly in rural areas of Northern Nigeria, cultural norms have given more priority to early marriage and domestic responsibilities for girls over formal education. According to UNICEF (2020), about 43% of girls in Nigeria are married before their 18th birthday, limiting their chances of continuing education. Similarly, boys in rural areas are encouraged and persuaded by their parents to migrate to urban areas, mostly outside the region, for greener pastures or to pursue vocational work and farming, instead of attending school. These practices extend a cycle of limited educational attainment and poverty (EFA Global Monitoring Report, 2021). Cultural beliefs like attaching health challenges of children with impairment to evil or spiritual attacks, hindering them from seeking medical solutions, which in turn prevent them from enrolling such children in schools.

Some religious misconceptions, like Boko Haram, believe that Western or secular education is forbidden; in some communities, especially in the North-Eastern part of Nigeria, certain religious sects believe that Western education contradicts their faith, leading to resistance against formal schooling. Some parents prioritise religious education over formal education, resulting in enrolling their children in religious schools while neglecting formal education. Other religious misconception that increases the rate of out-of-school children in Northern Nigeria include: fate and predestination (destiny), dependency on religious leaders' teachings without critical thinking and fear of moral corruption in schools.

3. Political Dimension

The political factor is one of the most critical root causes of out-of-school children in Nigeria. Corruption in Nigerian politics and administration is one of the most critical factors responsible for out-of-school children in Northern Nigeria and the country at large. Ogunode and Stephen (2021) assert that corruption in the administration of Basic education initiatives is a cause of out-of-school children in Nigeria.

Adegboyega (2019) affirms that Transparency International documented that "66 per cent of the money Nigerian governments allocate to education was stolen by corrupt officials. According to the report, corruption is commonplace in education systems across the Economic Community of West African States (ECOWAS). This affects education access, quality, inclusion and learning outcomes with devastating consequences, not only for national economic growth but also for the life chances of children, their families and communities," the report stated. The report highlighted "Resource misallocation, corrupt procurement, fake qualifications, teacher absenteeism, and corrupt recruitment practices" as the various corruption risks and challenges facing education systems in all the countries, especially in Nigeria and its northern region. Corruption, mismanagement of resources, and a lack of accountability have hindered efforts to address the issue of out-of-school in Northern Nigeria.

Political instability, conflict, and insecurity can severely disrupt education systems. The ongoing insurgency in the northeast and insecurity in the northwestern region of Nigeria, for instance, have led to the closure of numerous schools and the displacement of communities, forcing children to flee their homes and abandon their education (Akorede et al., 2022). The lack of access to schools intensifies the problem, especially for children with disabilities, who face significant barriers to attending school (Human Rights Watch, 2020).

Inadequate government policies and political will are another major political cause of out-of-school children in Nigeria. Despite numerous policies aimed at improving education, implementation remains weak. For instance, Nigeria's Universal Basic Education Act (2004) mandates free and compulsory basic education, yet enforcement remains inconsistent (UNESCO, 2021). The government's inability to provide sufficient funding and oversight has left millions of children without access to the school system (Transparency International, 2020).

Implication of Out-of-School Children in Nigeria

The phenomenon of out-of-school children in Nigeria has far-reaching and devastating consequences, not only for the individual children but also for the nation as a whole. This paper categorised the effects into immediate, long-term, and societal.

1. **Immediate Effects**

   These are consequences or outcomes of out-of-school activities on children that occur immediately; they do not take a long time to become apparent. They include:

   a. **Loss of Opportunity:** Out-of-school children are deprived of the fundamental right to education, which limits their future opportunities for personal and professional growth (UNESCO, 2022). They miss out on acquiring basic literacy and numeracy skills, critical thinking abilities, and knowledge that are essential for navigating the modern world. This lack of foundational skills further marginalises them in a competitive job market (World Bank, 2020).

   b. **Increased Vulnerability:** Children out of school are more vulnerable to exploitation, abuse, and neglect (Akorede et al., 2022). They are at a higher risk of child labour, recruitment into armed groups, and involvement in criminal activities. This vulnerability is often worsened by poverty and lack of social safety nets (Human Rights Watch, 2018).

2. **Long-Term Effects**

   These are consequences or outcomes of out-of-school activities on children that occur after a long period of time; they take a long time to become apparent. They include:

   a. **Limited Economic Prospects:** Out-of-school children often face a lifetime of poverty and unemployment due to their lack of education and skills (World Bank, 2020). They are likely to be trapped in low-paying jobs with little or no chance for advancement. This perpetuates a cycle of poverty and limits their ability to provide for themselves and their families.
   b. **Poor Health Outcomes:** Lack of education is linked to poor health outcomes, including higher rates of infectious diseases, malnutrition, and maternal mortality (Abdlbaqi et al., 2019; Akorede et al., 2023).

Out-of-school children may also lack access to basic healthcare services and health information (Akorede et al., 2022). This can lead to decreased life expectancy and increased burden on the healthcare system.

c. **Social Exclusion:** Out-of-school children are often marginalised and excluded from social and civic life (UNICEF, 2021). They may face discrimination and stigma, which can further limit their opportunities and well-being. This social exclusion can lead to feelings of hostility and contribute to social instability.

3. **Societal effect**

These are the consequences of out-of-school on the society (Community, State and the Nation). They include:

a. **Economic Stagnation:** A large population of uneducated citizens hinders economic growth and development (Abdulbaqi et al., 2024). Wrexham Glyndŵr University (2021). The lack of skilled labour can discourage investment and limit innovation, leading to a less productive workforce and a weaker economy. The implications of this for Nigeria are that Nigeria will lose its ability to compete in the global economy.

b. **Increased Poverty:** Out-of-school children are more likely to live in poverty, perpetuating intergenerational cycles of poverty (World Bank, 2020). This can lead to increased social inequality and instability. The economic burden of supporting a large impoverished population can strain government resources.

c. **Social Problems:** High rates of out-of-school children are associated with increased crime rates, social unrest, and insecurity (UNODC, 2020). Uneducated youth are more likely to be involved in criminal activities and may be easily recruited by extremist groups. This poses a threat to national security and stability.

d. **Hindered Development:** The large number of out-of-school children in Nigeria poses a significant obstacle to achieving sustainable development goals (UNDP, 2022). The country's progress in areas such as health, education, and economic growth is hampered by the lack of human capital development. This affects Nigeria's ability to meet its development targets and improve the quality of life for its citizens.

Suggestions

This paper, after exploring some of the root causes of out-of-school children in northern Nigeria, makes the following suggestions, which, if implemented, will significantly reduce the rate of out-of-school children in northern Nigeria and the country at large:

1. The government at all levels should introduce poverty alleviation programs aimed at reducing the economic burden on families and ensuring the effective implementation of such programs.
2. The free and compulsory basic education policy enshrined in the National Policy on Education should be implemented and enforced by inaugurating a special designated agency or outfit, tasked with the function of ensuring strict implementation.
3. The government at all levels should promote cultural reorientation by engaging communities through awareness campaigns to change negative perceptions towards education, especially for girls and physically challenged children.
4. The government at all levels should invest in educational infrastructure by building and equipping more schools, particularly in rural areas and train teachers to improve education quality.
5. Government Policies should be strengthened to increase budgetary allocation to education and ensure transparent implementation of policies.
6. Communities should be involved in the security and decisions about their schools.

7. The government should provide adequate security, especially in rural areas where banditry cases are more prevalent, by addressing the issues causing insecurity in the country, particularly in the northern part.

Conclusion

The effects of out-of-school phenomena in northern Nigeria are broad and have devastating consequences for individuals and society. Addressing these challenges is crucial for the country's development and for ensuring a brighter future for its children. This paper discussed the concept of out-of-school children in Nigeria and looked at three major dimensional root causes (Socio-economic, Cultural and Political) for large out-of-school children in Nigeria and their implications to the individuals and the nation at large. This paper classified the impact of out-of-school phenomenon in Nigeria into immediate effect on the child, long-term effects on the individual and societal impact. Some of the specific impact of out-of-school children in Nigeria that the paper highlights includes loss of opportunity, limited economic prospects and economic stagnation. This paper suggests that Government at all level should introduce poverty alleviation programs aimed at reducing the economic burden on families and ensure effective implementationof such programs, the free and compulsory basic education policy enshrined in the National Policy on Education should be implemented and enforce by inaugurating a special designated agency or outfit, and Government at all level should promote cultural reorientation by engaging communities through awareness campaigns to change negative perceptions towards education, especially for girls and physically challenged children.

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CHALLENGES TO INFORMATION ACCESS ON SOCIAL MEDIA FOR SOCIO-POLITICAL DISCUSSIONS BY YOUTHS IN UNIVERSITIES IN NORTHWEST STATES, NIGERIA

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Abstract

This study investigates the challenges faced by university youths in Nigeria's northwest states in accessing information and participating in socio-political discussions on social media platforms. It is guided by two research questions and one null hypothesis in the following order: what challenges youths encounter in accessing information on social media platforms for socio-political participation in Northwest States of Nigeria; what challenges youths encounter in participating in socio-political discussions on social media platforms in Northwest States of Nigeria and there is no significant relationship between male and female youths in the type of social media platform they utilised to access information for socio-political participation in Northwest States of Nigeria. Using a quantitative methodology and a cross-sectional survey design, data were collected from 338 respondents across four public universities: Ahmadu Bello University, Usmanu Danfodiyo University, Kaduna State University, and Umaru Musa Yar'adua University. The data were analysed using mean, standard deviation, and Pearson Product-Moment Correlation (PPMC). Some of the findings revealed that the reliability of information content and fake news were the most pressing challenges in information access and engagement, respectively. Gender differences in platform use were also statistically significant, indicating variation in how male and female students engage with social media for political purposes. The study recommends integrating Media and Information Literacy (MIL) into university curricula, organising regular digital safety workshops, and developing gender-sensitive engagement strategies. These measures aim to promote critical information evaluation, protect users' digital rights, and ensure inclusive political participation across gender lines. By addressing these multifaceted challenges, stakeholders can enhance the role of social media as a democratic tool for youth engagement in Nigeria's political landscape.

Keywords: Challenges, Information Access, Socio-political discussion, Social Media, Youths

Introduction

Youths in universities across Nigeria's Northwest states increasingly rely on social media platforms for socio-political engagement. Platforms like WhatsApp, Facebook, Twitter, and YouTube serve as primary channels for accessing political information and participating in discussions. A study by Yusuf, Mohammed, and Umar (2024) highlights that these platforms are not only popular but also considered reliable sources for socio-political content among university students in the region. However, despite their widespread use, several challenges impede effective information access and engagement.

One significant challenge is the digital divide prevalent in Nigeria, particularly in the Northwest. Factors such as high costs of smartphones, limited internet connectivity, and inadequate digital literacy hinder many students from fully utilising social media for political discourse. This divide is more pronounced in rural areas, where infrastructural deficits further exacerbate the issue (Digital divide in Nigeria, 2025). Consequently, a substantial number of youths remain excluded from online political conversations, limiting the inclusivity and representativeness of such discussions. Misinformation and disinformation on social media platforms pose another significant barrier. The decentralised nature of these platforms allows for the rapid spread of unverified information, making it challenging for users to discern credible sources. This proliferation of false information can mislead youths, shaping their political opinions based on inaccuracies (Misinformation, 2025). The lack of

stringent content moderation further complicates efforts to maintain the integrity of information accessed by university students.

Additionally, online harassment and cyberbullying deter many youths from participating in socio-political discussions. A survey highlighted that a significant percentage of respondents faced challenges such as bullying, harassment, and trolling when expressing views online (Survey exposes challenges in Nigeria's digital politics space, 2024). Such hostile environments discourage open dialogue and can lead to self-censorship among students, thereby stifling democratic engagement.

To address these challenges, a multifaceted approach is necessary. Improving digital infrastructure and affordability can bridge the access gap, enabling more youths to participate in online political discourse. Educational initiatives aimed at enhancing digital literacy will empower students to critically evaluate information sources. Furthermore, implementing robust policies to combat online harassment and misinformation can create a safer and more trustworthy environment for socio-political engagement among university youths in Nigeria's Northwest.

Problem Statement

Social media have emerged as powerful tools for fostering socio-political participation, public discourse, opinion formation, surveys, campaigning, and information dissemination. In Nigeria, the first notable use of social media in political engagement occurred during the 2011 and 2015 general elections, marking a turning point in digital political activism. These platforms have since become central not only to information access but also to content creation by users (Omotola, 2024). While it has provided Nigerian youths with broader access to information and communication tools, it has also exposed them to complex challenges tied to digital literacy and social media manipulation. Bello and Ajao (2024) argue that although digital communication enables greater civic engagement, it can simultaneously threaten national cohesion when misused. The 2015 pre-election period in Nigeria exemplified this duality, as both traditional and social media platforms were exploited to circulate fake news and political propaganda (Folayan et al., 2024). Attempts by government institutions at federal, state, and local levels to curtail these issues through awareness and sensitisation campaigns yielded limited success, serving more as short-term deterrents than as long-term solutions (africanscholarpub.com). These dynamics underscore the need for focused academic inquiry into challenges youths in Nigerian universities encounter, particularly in the Northwest geopolitical zone, with social media in accessing information for socio-political discussion.

Research Question

The study was guided by the following research questions:

1. What challenges do youths encounter in accessing information on social media platforms for socio-political participation in the Northwest States of Nigeria?
2. What challenges do youths encounter in participating in socio-political discussions on social media platforms in the Northwest States of Nigeria?

Hypothesis

There is no significant relationship between male and female youths in the type of social media platform they utilised to access information for socio-political participation in the Northwest States of Nigeria.

Review of Literature

In the conceptual discussions by Manning (2014), emphasis was placed on the metamorphological birth of social media in that it is the most used term to refer to new forms of media that involve interactive participation and often, the development of media was divided into two different ages: the broadcast age and the interactive age. In the broadcast age, media were almost exclusively centralised, where one entity, such as a radio or television station, newspaper company, or movie production studio, distributed messages to many people. Feedback to media outlets was often indirect, delayed, and impersonal. Mediated communication between individuals typically happened on a much smaller level, usually via personal letters, telephone calls, or

sometimes on a slightly larger scale through means such as photocopied family newsletters. With the rise of digital and mobile technologies, interaction on a large scale became easier for individuals than ever before, and as such, a new media age was born where interactivity was placed at the centre of new media functions. The low cost and accessibility of new technology also allowed more options for media consumption than ever before, and so, instead of only a few news outlets, individuals now can seek information from several sources and dialogue with others via message forums about the information posted. At the core of this ongoing revolution is social media. Manning further averred in his quest to understand social media, the importance of looking at the core characteristics, common forms, and common functions of social media in order to understand the categorisation and changing nature of social media's new features and services. These were made in the following ways:

(a) In terms of core characteristics, all social media involve some sort of digital platform, whether that be mobile or stationary. Not everything digital, however, is necessarily social media.

(b) Common forms of social media demonstrate, some are used primarily for recreation or personal connections, others for work or professional reasons, but most allow leeway for both.

Social media is rife with all sorts of misinformation, the veracity of which, to a large extent, is doubtful, scary, sceptical and most times damaging to unsuspecting users. Misinformation is a common challenge encountered when accessing information on social media for socio-political discussion (Homero & Hsuan, 2019). For instance, fake news has become a buzzword, especially during and after elections (Persily, 2017; Grinberg et al., 2019). The emergence of social media technologies and the fragmentation of information have encouraged the spread of misinformation and fake news. The spread of fake news could also be traced as far back as 1938, according to H. G wells' drama ‘The War of the Worlds’, which represents an instance of widespread misinformation. Facticity and deception have been used to provide typologies of fake news definitions for different types of information, such as negative advertising, propaganda, manipulation, fabrication, news satire and news parody (Bode & Vraga, 2015; Tandoc et al., 2018).

Nevertheless, continuing efforts at understanding fake news and its complex factors have contributed to the rise of misinformation; understanding how it affects youths and exploring how to address misinformation and elicit news credibility are all important tasks for scholars (Oeldorf-Hirsch & DeVoss, 2019). Privacy and convenience, legal risk, Level of language proficiency and Level of education attained affect the use of social media and networking sites. Trust and credibility have a significant influence on the use of social media, and these can be identified as barriers in using social media for information and socio-political discussion (Athukorala, 2018). Studies revealed that the main challenges of social media for political mobilisation are rumours, the spread of fake news and conspiracies. Currently, Political mobilisations are influenced by every story, whether true or not, that gets spread around social media. Nowadays, it’s getting more and more difficult to identify real or actual news from fake news around social media, which makes this distinction especially confusing. The constant stream of memes, links, and rumours about political leaders and candidates is a mixture of truth, lies, satire and speculation. Some fake news sites simply exist to post clickbait stories or to troll readers who do not know how to verify information (Yalemsew & Desta, 2019).

University students in Nigeria face numerous challenges when accessing social media for socio-political discussions. These challenges range from technological limitations to security threats and content reliability issues. Below is a discussion of these challenges, supported by current literature and studies. Many students struggle with phone compatibility and the inability to afford the appropriate devices necessary for seamless social media use. A study highlighted that students often rely on outdated smartphones, limiting their ability to engage effectively on social platforms (Ahmed, 2017). Additionally, network fluctuations and the high cost of data subscriptions hinder consistent access to online discussions. The erratic power supply and poor internet services in remote areas exacerbate these issues, making it difficult for students to participate in digital dialogues (Springer, 2023).

The rise in hackers' activities, cybercriminal dubious activities, and scammers poses significant threats to students. Reports indicate that Nigerian university students have increasingly become involved in cybercrimes, partly due to economic hardships and the allure of quick financial gains (Olaigbe, 2021). Furthermore, platforms

like Instagram have witnessed a surge in sextortion scams, leading to the removal of thousands of fraudulent accounts linked to Nigerian networks (Reuters, 2024). Cyberbullying and online harassment are prevalent issues affecting students' mental well-being. Studies have shown that victims of cyberbullying often experience depression, anxiety, and in severe cases, suicidal thoughts (O'Keeffe & Clarke-Pearson, 2011). The anonymity provided by social media platforms often emboldens bullies, making it challenging to hold perpetrators accountable.

Students frequently encounter challenges related to the reliability of information content and information privacy. The spread of propagandist agendas and unsubstantiated content on social media platforms can mislead students and distort their understanding of socio-political issues (Adams et al., 2023). Moreover, concerns about profile data/cookie tracking have raised alarms about personal data security, with many students unaware of how their information is collected and used (Eke et al., 2014). The information bombardment on social media can overwhelm students, making it difficult to discern credible sources from unreliable ones. This challenge is compounded by the lack of proper and reliable sources, leading to the spread of misinformation and hindering informed discussions (Yahaya & Ayodeji, 2019). The absence of effective content moderation further exacerbates this issue, allowing false information to proliferate unchecked.

Methodology

Quantitative methodology and cross cross-sectional survey were used to conduct this investigation. It was suitable because the study intended to collect numerical data to give an adequate and true response from the respondents. This granted the researcher the opportunity to draw balanced and in-depth conclusions and make adequate inferences from data from the respondents at a specified time and location. The total population of the study is 15 (201,062) Universities in the Northwest States of Nigeria. A simple random probability sampling technique and sample table were used to draw a sample size of 343 across four (4) universities, namely: Ahmadu Bello University, Usmanu Danfodiyyo University, Kaduna State University and Umaru Musa Yar'adua University. A self-designed questionnaire, which was subjected to face and content validation and with a reliability coefficient of 0.997, formed the backbone of this survey. The data collected were analysed using frequency count, percentage, mean, standard deviation and PPMC.

Result

Challenges Youths Encountered in Accessing Information on Social Media Platforms for Socio-Political Participation in the Northwest States of Nigeria

Table 1: Challenges to Accessing Socio-Political Information on Social Media Platforms

Options	ABU	BUK	UDUS	KASU	UMYU	Σ	μ	σ
Phone compatibility with social media	3(0.9%)	2(0.6%)	18(5.2%)	7(2.0%)	-	30	6	7.17
Hackers activities	101(29.4%)	80(23.3%)	53(15.5%)	50(14.6%)	18(5.2%)	302	60.4	31.5
Cybercriminal dubious activities	77(22.4%)	25(7.3%)	27(7.9%)	48(13.9%)	20(5.8%)	197	39.4	23.5
Bullies	37(10.8%)	14(4.1%)	27(7.9%)	20(5.8%)	3(0.9%)	101	20.2	12.8
Information Privacy Challenge	90(26.2%)	22(6.4%)	30(8.7%)	40(11.7%)	19(5.5%)	201	40.2	29.0
Network fluctuation	106(30.9%)	32(9.3%)	24(6.9%)	39(11.4%)	20(5.8%)	221	44.2	35.3
Challenge of Data Subscription	111(32.4%)	83(24.2%)	37(10.8%)	41(11.9%)	18(5.2%)	290	58	37.9
Inability to afford an appropriate phone/laptop for social media use	96(27.9%)	25(7.3%)	10(2.9%)	1(0.3%)	2(0.6%)	134	26.8	39.8
Reliability of information content	107(31.2%)	98(28.6%)	53(15.5%)	43(12.5%)	20(5.8%)	321	64.2	37.0
Anonymity issue	55(16.0%)	12(3.5%)	22(6.4%)	6(1.7%)	1(0.3%)	96	19.2	21.4
Substantiating content	3(0.9%)	14(4.1%)	24(6.9%)	1(0.3%)	2(0.6%)	44	8.8	9.9
Profile data/cookie	103(30.0%)	25(7.3%)	11(3.2%)	23(6.7%)	17(4.9%)	179	35.8	37.9
Propagandist agenda	45(13.1%)	36(10.5%)	28(8.2%)	10(2.9%)	0	119	23.8	18.5
Scammers	107(31.2%)	87(25.4%)	58(16.9%)	48(13.9%)	20(5.8%)	320	64	33.9
Restriction issues	85(24.8%)	91(26.5%)	51(14.9%)	37(10.8%)	20(5.8%)	284	56.8	30.5
Information bombardment	21(6.1%)	14(4.1%)	25(7.3%)	11(3.2%)	12(3.5%)	83	16.6	6.1
Others: Lack of a proper and reliable source	98(28.6%)	43(12.5%)	54(15.7%)	40(11.7%)	20(5.8%)	255	51	29

Key: Σ =Total, μ =Mean, σ =Standard Deviation

Table 1 shows the types of challenges encountered by youths in universities of the northwest states in accessing information on social media for their socio-political participation. In order of frequency, reliability of information content is the most pressing challenge, with a Mean score of 64.2(σ =37.0), followed by the challenge of contending with scammers, with a Mean score of 64(σ =33.9). The least challenge is phone compatibility with social media, with a Mean score of 6(σ =7.17). Other significant challenges encountered are hackers' activities, restriction issues, data subscription challenge, network fluctuation and information privacy challenge. Social media is not immune to malicious activities of scammers, hackers, information privacy and technological instability. Perhaps it suffices to say that those are the negative sides of social media, and the positive sides are the simplification and ease of access to information. However, youths in universities of Northwest States, Nigeria must devise means of safety from the challenges associated with social media.

Challenges Youths Encountered in Participating in Socio-Political Discussions on Social Media Platforms in the Northwest States of Nigeria

Table 2: Challenges Encountered in Participating in Socio-Political Discussion on Social Media Platforms

Options	ABU	BUK	UDUS	KASU	UMYU	Σ	μ	σ
Misinformation	89(25.9%)	78(22.7%)	46(13.4%)	38(11.1%)	20(5.8%)	271	54.2	28.6
Sceptic about information on social media	93(27.1%)	87(25.4%)	58(16.9%)	30(8.7%)	17(4.9%)	285	57	33.6
Fake news	112(32.7%)	97(28.3%)	58(16.9%)	48(13.9%)	20(5.8%)	335	67	37.3
Rumours mongering	76(22.2%)	45(13.1%)	52(15.2%)	35(10.2%)	20(5.8%)	228	45.6	20.8
Lack of interest	41(11.9%)	23(6.7%)	36(10.5%)	21(6.1%)	2(0.6%)	123	24.6	15.2
Financial constraint	24(6.9%)	18(5.2%)	22(6.4%)	37(10.8%)	14(4.1%)	115	23	8.7
Manipulation	60(17.5%)	16(4.7%)	7(2.0%)	9(2.6%)	18(5.2%)	110	22	21.7
Domination	60(17.5%)	23(6.7%)	9(2.6%)	3(0.9%)	-	95	19	24.5
Unsolicited campaign	12(3.5%)	13(3.8%)	9(2.6%)	31(9.0%)	-	65	13	11.2
Network fluctuation	77(22.4%)	85(24.8%)	52(15.2%)	43(12.5%)	18(5.2%)	275	55	26.9
Language proficiency	25(7.3%)	28(8.2%)	11(3.2%)	-	-	64	12.8	13.3
Privacy issues	95(27.7%)	87(25.4%)	50(14.6%)	44(12.8%)	17(4.9%)	293	58.6	32.2
Legal risk to delicate political issues	48(13.9%)	87(25.4%)	32(9.3%)	26(7.6%)	10(2.9%)	203	40.6	29.2
Level of education	63(27.1%)	77(22.4%)	25(7.3%)	-	-	165	33	35.6
Bait stories to incitement	15(4.4%)	1(0.3%)	-	-	8(2.3%)	24	4.8	6.6

Key: Σ =Total, μ =Mean, σ =Standard Deviation

Table 2 reveals the challenges encountered by youths in universities of the northwest states participating in socio-political discussion on social media. The major they face is fake news with a Mean score of 67(σ =37.3), followed by privacy issues with a Mean score of 58.6(σ =32.2). The least challenge they encounter is bait stories to incitement, with a Mean score of 4.8(σ =6.6). Other challenges encountered are network fluctuation, rumour mongering, legal risk to delicate political issues, misinformation and being skeptic of information on social media. This implies that socio-political participation on social media requires constant verification of information and a conscious of fake news, bait and propaganda.

Ho- There is no significant relationship between male and female youths in the type of social media platform they utilised to access information for socio-political participation in the Northwest States of Nigeria.

Pearson Product-Moment Correlation, a parametric statistic, is used to test for a relationship in the hypothesis. Table 3 is the result of the hypothesis tested.

Table 3: Test for significant Relationship between Male and Female Youths in the Type of Social Media Platform Utilise to Access Information for Socio-Political Participation

Male and Female Youths		Mean	Std. Deviation	Male and Female Youths	Sig.
Male and Female	Pearson Correlation	10.6500	6.30184	1	.128
Youths	Sig. (2-tailed)	8.9000	5.97275		.592
	N	20	20	20	20

Table 3 shows the result of the hypothesis tested against an alpha value of 0.5. From the table significant value of .592 is >0.5. Therefore, the null hypothesis that "there is no significant relationship between male and female

youths in the type of social media platform they use to access information for socio-political participation in the northwest states of Nigeria" is rejected. This implies that there is a correlation in the types of social media use to access information for socio-political reasons between male and female youths in the Universities of Northwest States, Nigeria.

Discussion of Findings

Table 1 provides a quantitative representation of the various challenges encountered by youths in universities across Northwest Nigeria when accessing information on social media for socio-political participation. The most pressing issue identified is the reliability of information content, which recorded the highest mean score of 64.2 (σ = 37.0). This finding aligns with previous studies highlighting the prevalence of misinformation and disinformation on social media, which misleads users and distorts political discourse (Awopetu et al., 2024; Okereke & Oghenetega, 2014). The challenge of scammers, closely followed by a mean score of 64 (σ = 33.9), reflects the growing concern over fraudulent activities targeting social media users, especially young people with limited digital security awareness (Olaigbe, 2021).

Other significant challenges reported include hackers' activities, restriction issues, high data subscription costs, network fluctuations, and information privacy concerns. These reflect the broader infrastructural and digital security limitations prevalent in Nigerian higher education institutions. For example, hackers and cybercriminals exploit the digital naivety of students, compromising their personal data and sometimes manipulating political opinions (Egbunike, 2019). Similarly, fluctuating internet connectivity and the high cost of data restrict students' ability to engage in sustained socio-political interactions online (Mangden & Diyoshak, 2023).

Notably, information privacy challenges remain critical, as many youths are unaware of how their personal data is harvested and utilised by social media platforms. The lack of robust privacy regulations and the tendency to overshare online contribute to increased vulnerability (Wikipedia, 2024). In contrast, phone compatibility with social media was reported as the least challenge, with a mean score of 6 (σ = 7.17), likely due to increasing smartphone penetration in urban university settings (Awopetu et al., 2024).

Despite the numerous drawbacks, social media continues to serve as a powerful tool for socio-political awareness and activism among Nigerian youths. Its ability to simplify information access and enhance civic engagement cannot be overstated (Okereke & Oghenetega, 2014). However, without deliberate strategies such as digital literacy education, fact-checking awareness, and secure online practices, the negative consequences may overshadow its potential benefits.

It is imperative that students, educators, and policymakers collaborate to develop effective interventions. This includes integrating media literacy into university curricula, enforcing cybersecurity protocols, and sensitising students on how to critically evaluate content and safeguard their digital identities.

Table 2 highlights the challenges university youths in Northwest Nigeria face when engaging in socio-political discussions via social media. The most prominent issue identified is fake news, which recorded a high mean score of 67 (σ = 37.3). This aligns with existing literature pointing to the significant role fake news plays in distorting political understanding and polarising public opinion, especially during elections and socio-political movements (Bakir & McStay, 2018; Iwuoha & Jude-Onoabedje, 2021). Fake news is often designed to manipulate users emotionally and ideologically, leading to poor decision-making and misguided civic actions among youths (Allcott & Gentzkow, 2017).

Following closely is the challenge of privacy issues, with a mean score of 58.6 (σ = 32.2). Many youths are unaware of how their data is harvested, shared, or even sold by social media platforms, making them vulnerable to breaches and surveillance (Olanrewaju et al., 2022). Privacy violations can deter students from participating freely in political discourse, especially in politically tense regions. This concern is particularly relevant in Nigeria, where data protection laws are still evolving, and public understanding of online privacy is limited (Wikipedia, 2024).

Bait stories to incitement, with the lowest mean score of 4.8 (σ = 6.6), indicate that while less frequently encountered, such content still poses risks. These are often sensationalised or emotionally provocative narratives

intended to manipulate users or stir unrest. Though less common, their impact can be severe when they do surface, contributing to hate speech, violence, or communal tension (Ibraheem & Garba, 2020).

Other notable challenges include network fluctuation, rumour mongering, legal risks when addressing sensitive political issues, misinformation, and scepticism of information encountered online. Network instability, especially in rural areas, continues to limit students' consistent access to social platforms (Mangden & Diyoshak, 2023). Meanwhile, the spread of rumours and misinformation can blur the line between truth and fiction, reinforcing the need for constant information verification. As a result, many students approach online content with scepticism, uncertain of its authenticity (Awopetu et al., 2024).

This underscores the necessity for media and information literacy, particularly among university students engaging in civic matters online. To effectively participate in socio-political discourse, students must develop the skills to fact-check, verify sources, and critically assess the intent and authenticity of the information they consume and share (UNESCO, 2017). Without these skills, their political engagement risks being shaped by propaganda, falsehoods, or manipulation.

Table 3 presents the outcome of a hypothesis test conducted to examine gender differences in the types of social media platforms used by youths in universities across Northwest Nigeria for socio-political participation. The hypothesis was tested against an alpha value (α) of 0.5. The result showed a significant value of 0.592, which is greater than 0.5. Based on this result, the null hypothesis stating that "there is no significant relationship between male and female youths in the type of social media platform they use to access information for socio-political participation" is rejected. This outcome suggests that there is a correlation between gender and the types of social media platforms accessed for socio-political engagement among university youths in the region.

This finding aligns with prior research indicating that gender influences online behaviour, particularly in how men and women use social media for political expression, news consumption, and civic engagement. Studies have shown that male youths tend to prefer platforms like Twitter and YouTube, which are often used for real-time political discussions and video-based political commentary. On the other hand, female youths are more inclined toward platforms such as Facebook and WhatsApp, which support interpersonal communication and community-based discussions (Brandtzaeg, 2017; Duggan & Smith, 2013). These differences often reflect not just preferences, but also social norms and access-related factors.

Furthermore, gendered patterns of social media use may affect the type and depth of political content youths engage with. According to Olorunnisola and Martin (2020), while both male and female youths actively use social media for political purposes, men are more likely to engage in open political debate, while women often prefer closed-group discussions or private messaging due to concerns about privacy, harassment, or cultural constraints.

The implication of this result is significant for policymakers, educators, and civic organisations targeting youth political participation through digital platforms. Recognising these gendered preferences in social media use can help in designing inclusive and tailored media literacy programs that promote equitable access to political information and ensure balanced representation in online political discourse (UNESCO, 2017).

Thus, while social media offers a shared platform for civic engagement, its usage is not uniform across genders, and understanding these differences is crucial for enhancing youth participation in socio-political processes, especially in culturally diverse and sensitive regions like Northwest Nigeria.

Recommendations

The following recommendations are made according to the findings and discussion of the study:

1. Given the high prevalence of fake news, misinformation, and challenges related to the reliability of information content, universities should incorporate Media and Information Literacy (MIL) into their general studies curriculum. This will equip students with critical thinking skills, the ability to verify online content, identify propaganda, and responsibly engage in political discourse online.

2. Targeted sensitisation campaigns and workshops should be organised regularly on digital safety practices, privacy settings, recognising phishing attempts, and the ethical use of personal data. University ICT departments and digital rights organisations should lead this initiative.
3. There is a need for gender-sensitive strategies that promote inclusive online civic participation. Educational stakeholders and civil society groups should design tailored interventions, such as female-led political discourse forums on platforms like WhatsApp and Facebook, and open debates via Twitter to accommodate the digital behaviour and preferences of both male and female students.

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FOOD AND NUTRITION SECURITY FOR SOCIO-ECONOMIC STABILITY OF FAMILIES TOWARDS PREVENTING THE PHENOMENON OF OUT-OF-SCHOOL CHILDREN IN KADUNA STATE

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Abstract

In Kaduna State, a region grappling with socio-economic challenges, the phenomenon of out-of-school children remains a pressing concern. Numerous factors contribute to this crisis, one of which is the intertwined relationship between food and nutrition security, family stability, and education. Food and nutrition security are critical not only for the physical development of children but also for their mental acuity and overall ability to engage in educational pursuits. The paper explores how enhancing food and nutrition security can lead to greater socio-economic stability in families, thereby preventing the alarming rates of out-of-school children in Kaduna State. In conclusion, enhancing food security can lead to healthier, better-educated children who are more likely to thrive academically and contribute positively to societal development, which can be achieved through strategic policy initiatives, collaborative efforts, and community engagement. It is recommended that, to reduce the phenomenon of out-of-school children in Kaduna State significantly, continued investment in food and nutrition security may not only address immediate survival needs but also lay a foundation for sustainable socio-economic development in the long term.

Keyword: Food and Nutrition, Security, Socio-economic, Stability, Out-of-School-Children

Introduction

Food and nutrition security plays a crucial role in ensuring the socio-economic stability of families, directly influencing children's educational opportunities and overall well-being. In Kaduna State, where many families struggle with poverty and food insecurity, the inability to provide adequate nutrition has far-reaching implications, including the rising number of out-of-school children. Food security, as defined by the Food and Agriculture Organization [FAO] (2019), refers to a situation where all people have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs for an active and healthy life. When families lack access to adequate food and nutrition, their socio-economic stability is compromised, often forcing children into labour or street trading instead of formal education.

Kaduna State faces significant challenges in achieving food and nutrition security due to multiple factors, including high poverty rates, inflation, conflict, climate change, and inadequate agricultural policies (United Nations Children's Emergency Fund [UNICEF], 2019). The persistent economic hardship in many households makes it difficult for parents to provide balanced diets for their children, leading to malnutrition, poor cognitive development, and diminished academic performance (UNICEF, 2019). Malnourished children are more likely to suffer from illnesses, absenteeism, and low concentration levels in school, increasing their likelihood of dropping out (Abdulbaqi et al., 2025). Consequently, food and nutrition insecurity not only affects the health of children but also directly contributes to the growing phenomenon of out-of-school children in Kaduna State (Akorede et al., 2022).

Furthermore, socio-economic instability driven by food insecurity leads to an increase in child labour as families prioritise immediate survival over long-term educational investment (FAO, 2019). In many impoverished

households, children are forced to work on farms, in markets, or engage in hawking to supplement family income, thereby depriving them of their right to education (FAO, 2019). This situation is further worsened in conflict-affected areas of Kaduna State, where displacement disrupts both livelihoods and educational access. Insecurity in local government areas such as Birnin Gwari, Kajuru, and Chikun has led to the closure of numerous schools, forcing children out of the education system and into precarious situations that limit their future opportunities (Akorede et al., 2022; Abdullahi et al., 2023).

Addressing food and nutrition security as a means to prevent the phenomenon of out-of-school children requires a multi-sectoral approach involving government policies, agricultural reforms, social protection programs, and community-based interventions. Investing in sustainable agriculture, improving food supply chains, and supporting smallholder farmers can enhance food availability and affordability for low-income families (FAO, 2019). Additionally, targeted nutritional programs in schools, such as free school feeding initiatives, have proven effective in increasing school enrollment and retention rates, especially among vulnerable children. Strengthening social safety nets, including cash transfer programs for low-income families, can further enhance economic stability and reduce the financial burden that often leads to school dropouts (UNICEF, 2019).

Ensuring food and nutrition security is essential for fostering socio-economic stability among families and preventing the growing crisis of out-of-school children in Kaduna State. A well-nourished child is more likely to stay in school, perform academically, and contribute meaningfully to national development. Therefore, policy interventions that integrate food security, poverty reduction, and educational access must be prioritised to break the cycle of hunger, poverty, and illiteracy that continues to hinder Kaduna State's progress (FAO, 2019).

Food and nutrition security is a fundamental requirement for the well-being and socio-economic stability of families. However, in Kaduna State, a significant portion of the population struggles with food insecurity, leading to widespread poverty, malnutrition, and educational deprivation. The inability of many households to access adequate and nutritious food has far-reaching consequences, particularly on children's education. A major concern is the rising number of out-of-school children, a problem closely linked to economic instability and poor nutritional status within families. Despite various governmental and non-governmental interventions, which include;

Governmental Interventions

These are state and federal programs implemented in Kaduna State to address economic instability, well-being, and food insecurity among vulnerable families. They focus on cash transfers, subsidies, nutrition support, and empowerment initiatives.

Conditional Cash Transfers (CCT): Provides N5,000 monthly payments to poor and vulnerable households to improve consumption and encourage livelihoods.

National Home-Grown School Feeding Programme (NHGSFP): Delivers nutritious meals to pupils in public primary schools to enhance nutrition, attendance, and local agriculture.

Government Enterprise and Empowerment Programme (GEEP): Provides collateral-free microloans to MSME owners, prioritising women and youth for economic empowerment.

Kaduna State Women Empowerment Fund (KADSWEF): Low-interest loans and training for women-led MSMEs to boost financial access and reduce vulnerability.

Kaduna Start-up Entrepreneurship Programme (KADSTEP): Skills training and funding for youth to start small businesses and combat unemployment.

Growth Enhancement Scheme (GES): Subsidised fertilisers (50% off, up to two bags per farmer) via e-wallet for smallholder farmers to increase yields and incomes.

Kaduna Emergency Nutrition Action Plan (KADENAP): Targets malnutrition in children from poor families through health and feeding interventions.

Fertiliser Market Stabilisation Programme: Subsidised inputs like fertilisers and seeds to support smallholder farmers' access and productivity.

Women in Agriculture Programme: Funds, training, and land access for poor women farmers to enhance food production and household security.

National Programme for Food Security (NPFS): Diversifies farming, provides extension services, credit, and inputs to boost yields and reduce poverty.

Agricultural Transformation Agenda (ATA): Increases farmer incomes and food availability through productivity enhancements.

National Agricultural Investment Plan (NAIP): Supports sustainable agriculture for better household nutrition and economic stability.

Kaduna State Contributory Health Insurance Scheme: Protects against high health costs for low-income families, including free care for pregnant women and children under 5.

Household Uplifting Programme: Bimonthly payments of N10,000 (plus N5,000 for qualifiers) to informal workers and vulnerable groups.

Cash for Work Schemes: Temporary employment for unemployed youth from poor households to build assets and income.

ii. Non-Governmental Interventions

These involve NGOs, international partners, and private sector collaborations targeting food access, nutrition, and economic support in Kaduna.

1. Child Development Grant Programme (CDGP): Cash grants to poor families with children under 3, supported by the Foreign Commonwealth Development Office (FCDO) for nutrition and well-being.
2. FHI 360 Nutrition Interventions: Community-based programs in Kaduna for maternal and child nutrition, including advocacy and service delivery to reach vulnerable households.
3. Food Africa Project: Youth empowerment through innovative farming and PPPs, partnering with FAO, ILO, ITC, Sahara Group, and Roca Brothers to address food insecurity.
4. Enhancing Access to Safe and Nutritious Diets (ENSAND) Project: Improves dietary quality for bottom-of-the-pyramid families via community demand generation, led by Global Alliance for Improved Nutrition (GAIN).
5. Alliance for a Green Revolution in Africa (AGRA) Community-Based Advisor Project: Trains 360,000 smallholder farmers on productivity, funded by USAID and implemented with NAERLS.
6. Agro-Processing Productivity Enhancement and Livelihood Improvement Support (APPEALS): Value chain support for small farmers, funded by the World Bank to enhance incomes and food security.
7. Catholic Relief Services (CRS) Food Security Project: Targets 25,000+ displaced and vulnerable people with nutrition and agricultural support.
8. Gates Foundation Smallholder Farmer Support: Boosts yields and reduces food insecurity through government-partnered agricultural initiatives.
9. World Food Programme (WFP) and FAO Durable Solutions: Emergency food aid and production support during crises, focusing on northern Nigeria, including Kaduna.

Category Focus Area Key Examples Governmental Cash Transfers & Assistance CCT, NCTP, Household Uplifting Programme Governmental Nutrition & Food Security NHGSFP, KADENAP, GES Governmental Economic Empowerment KADSWEF, KADSTEP, GEEP Non-Governmental Grants and Direct Aid CDGP, CRS Project, ENSAND Non-Governmental Agricultural Support Food Africa, AGRA, APPEALS

Upon all those interventions stated above, some were not visible or heard by the target groups, talkless of benefiting from the said intervention. However, food insecurity remains a major challenge that directly affects children's access to education. One of the key problems is that food insecurity leads to malnutrition, which negatively impacts children's cognitive development, concentration, and overall academic performance. Many

children from food-insecure households attend school on an empty stomach, reducing their ability to focus and learn effectively. This often results in poor academic performance, frequent absenteeism, and eventual school dropouts, increasing the number of out-of-school children (Abdulbaqi et al., 2025). Without proper nutrition, children are also more susceptible to illnesses, further affecting their ability to attend school regularly.

Another major issue is that food insecurity contributes to economic instability in families, forcing many children into child labour to supplement household income. In many low-income communities, children are withdrawn from school to engage in street hawking, domestic work, or farming to help their families survive. This is particularly evident in rural and conflict-affected areas of Kaduna State, where poverty levels are high, and access to basic resources is limited. Girls are disproportionately affected, as they are often forced into early marriage to reduce the financial burden on their families, further exacerbating the out-of-school crisis.

Furthermore, Kaduna State's socio-economic and security challenges, including inflation, unemployment, and armed conflicts, continue to worsen food insecurity. The displacement of families due to violence disrupts livelihoods and education, leaving many children without access to proper schooling. Weak policy implementation and inadequate investment in agricultural and social protection programs further compound the problem, making it difficult for affected families to break free from the cycle of poverty, hunger, and educational deprivation.

If left unaddressed, the growing food and nutrition insecurity crisis will continue to push more children out of school, limiting their future opportunities and hindering Kaduna State's overall development.

Understanding Food and Nutrition Security

Food security exists when every individual has physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 2019). Nutrition security, on the other hand, emphasises the importance of not just the availability of food but also its nutritional value. In contemporary Kaduna State, a significant segment of the population grapples with food insecurity due to various factors, including poverty, conflict, and climate change. According to the World Food Programme (2020), about 1.5 million people in Kaduna State are in urgent need of food assistance.

The Socio-Economic Context of Kaduna State

Kaduna State is classified as one of the states with a high poverty rate in Nigeria, with many families living below the poverty line. According to the National Bureau of Statistics (2021), over 50% of Kaduna State's population lives in poverty, which considerably limits their ability to provide their children with not only necessary food but also education. The socio-economic instability manifests in various ways, leading families to prioritise immediate needs, such as food, over longer-term investments like education (Akorede et al., 2022).

In families struggling with financial constraints, children can easily become a source of additional income, leading to child labour rather than school attendance (Abdulbaqi et al., 2024). The urgent need for food often forces children to drop out of school to support their families through agricultural work, trade, or various forms of labour. As such, the vicious cycle of poverty and lack of education perpetuates as these children face a diminished future, lacking the skills and qualifications necessary for better economic opportunities.

Challenges to Achieving Food Security in Kaduna State

Despite the evident linkage between food security and education, several challenges impede efforts to ensure that families have access to enough nutritious food. In particular, the ongoing conflicts in various regions, especially in the southern and northern parts of Kaduna State, displace families and disrupt agricultural activities, leading to increased food shortages (Oxfam, 2021). Climate change exacerbates these issues, causing erratic weather patterns that further threaten food production. Additionally, the economic instability brought on by fluctuations in global oil prices severely affects government revenues, limiting funding for education and agricultural investments. Thus, while food insecurity directly impacts education, it is essential to consider the broader socio-economic landscape that continues to challenge families directly.

The Link Between Food Security and Education

Food security has a direct impact on education outcomes. Children who lack access to adequate nutrition often experience stunted growth, cognitive impairment, and poorer academic performance (Mendez, 2017). When families struggle to provide sufficient food, children are either unable to attend school or do not perform to their full potential when they do attend. This reality is particularly acute in impoverished regions of Kaduna State, where economic instability can lead families to prioritise survival over schooling.

Nutrition and Cognitive Development

Research indicates that malnutrition during crucial developmental stages can significantly impair cognitive functions, thereby affecting a child's ability to learn (Akorede et al., 2022). Nutritional deficiencies, including a lack of essential vitamins and minerals, have been linked to delays in academic achievement and a higher likelihood of dropping out of school. In Kaduna State, a region with one of the highest rates of childhood malnutrition in northern Nigeria (UNICEF, 2019), addressing dietary needs can be a vital step toward bolstering educational outcomes.

Socio-Economic Stability of Families

The socio-economic stability of families plays a fundamental role in determining access to education for children. In households where parents experience economic hardship, educational expenses may be deprioritised (Ogunyemi, 2018). Such families often face tough decisions between spending limited resources on immediate survival or investing in their children's education. When families struggle to meet their basic needs, children frequently remain out-of-school to contribute to household income or to help with chores (Ogunyemi, 2018).

Poverty and Education in Kaduna State

With over 50% of Kaduna State's population living below the poverty line (NBS, 2021), we see a stark intersection between poverty, food security, and educational attainment. Families forced to navigate extreme deprivation find it increasingly difficult to send their children to school consistently. The loss of potential educators due to child labour further perpetuates poverty, as individuals without education are less likely to secure sustainable employment, thereby creating a vicious cycle of poverty and educational neglect (Ogunyemi, 2018).

Policy Measures for Improvement

Addressing food and nutrition security is one of the most effective ways to combat the phenomenon of out-of-school children in Kaduna State. Policymakers need to adopt a multi-faceted approach that involves not just education reform but also agricultural policies that enhance food production and nutrition quality (Nigerian Institute of Social and Economic Research (NISER, 2020).

Agricultural Development and Food Security

To improve food security, Kaduna State must invest in improving agricultural productivity through irrigation, training, and resource provision to farmers. This not only ensures an adequate food supply but also creates jobs that enhance family income, thereby increasing families' capacity to invest in their children's education (Ahmad, 2020). Providing grants and subsidies to farmers can encourage greater production and make nutritious food more accessible to lower-income families.

School Feeding Programs

Schools can play a crucial role in combating child malnutrition and keeping children in school. Implementing comprehensive school feeding programs can boost nutritional intake for children. Research has shown that these programs can lead to improved attendance and academic performance (Akoredeet al., 2019; World Food Programme, 2020). In Kaduna State, the National Home-Grown School Feeding Programme supports local farmers and provides meals for school children, helping to mitigate food insecurity and encourage school attendance concurrently (Federal Ministry of Agriculture and Rural Development, 2021).

Malnutrition and School Attendance in Kaduna State

Malnutrition significantly impacts children's health and educational outcomes in Kaduna State. Below is a table summarising key malnutrition indicator among children under five in Kaduna State:

Table 1. Malnutrition and School Attendance in Kaduna State

Indicator	Value	Source
1. Prevalence of Stunting (Children under 5)	40%	UNICEF (2023)
2. Prevalence of Wasting (Children under 5)	8%	WHO (2023)
3. Underweight Children (under 5)	25%	UNICEF (2023)
4. Children with Iron Deficiency Anaemia	50%	WHO (2022)
5. School Dropout Rate (Primary Level)	30%	UNESCO (2023)

Sources: World Bank (2023)

Table 2. Food Insecurity and Household Economic Stability in Kaduna State

Indicator	Urban Areas	Rural Areas	State Average
Households Experiencing Food Insecurity (%)	40%	60%	50%
Households Living Below the Poverty Line (%	35%	60%	50%
Average Monthly Household Food Expenditure (NGN)	45,000	25,000	35,000
Percentage of Income Spent on Food	55%	75%	65%

Source: World Bank (2023)

Table 3. Impact of School Feeding on Enrollment and Attendance in Kaduna State

Programme	Enrollment Increase (%)	Attendance Improvement (%)
National Home-Grown School Feeding Program (NHGSFP)	35%	30%
State-Level School Feeding Programs	20%	25%
World Food Programme Interventions	25%	28%

Source: World Bank (2024)

Table 4. Socio-Economic Factors Contributing to Out-of-School Children in Kaduna State

Factor	Percentage Contribution
Poverty and Economic Hardship	50%
Food Insecurity	30%
Gender Disparities (Preference for Boys' Education)	10%
Insecurity and Conflict (Displacement of Families)	5%
Other Factors (Early Marriage, Child Labour)	5%

Source: World Bank (2024)

The Role of Government and NGOs

Both government and non-governmental organisations (NGOs) must collaborate to set up interventions that target food security and education. Initiatives like outreach programs aimed at educating families about the importance of nutrition can enhance community awareness. Moreover, providing financial incentives for families to send their children to school can alleviate some socio-economic pressure (Ogunyemi, 2018).

Conclusion

The relationship between food and nutrition security and the socio-economic stability of families is profoundly significant in Kaduna State, particularly concerning the issue of out-of-school children. Enhancing food security can lead to healthier, better-educated children who are more likely to thrive academically and contribute positively to society. Through strategic policy initiatives, collaborative efforts, and community engagement, it is possible to reduce the phenomenon of out-of-school children in Kaduna State significantly. Continued

investment in food and nutrition security not only addresses immediate survival needs but also lays a foundation for sustainable socio-economic development in the long term.

Recommendations

1. Strengthening School Feeding Programs: The Kaduna State government should expand and adequately fund school feeding initiatives to ensure that children receive at least one nutritious meal per day. This will serve as an incentive for parents to keep their children in school, particularly in low-income communities.
2. Improving Agricultural Productivity and Food Accessibility: Investing in sustainable farming practices, irrigation systems, and rural infrastructure will enhance food production and affordability. Policies should support smallholder farmers with access to credit, technology, and storage facilities to reduce food wastage and ensure a steady supply of nutritious food.
3. Expanding Social Protection Programs: Implementing targeted cash transfers and food assistance programs for vulnerable families can help reduce financial burdens, ensuring that children remain in school rather than engaging in labour to support household income.
4. Enhancing Community-Based Nutrition Programs: Educating families on proper nutrition, breastfeeding, and balanced diets can help combat malnutrition and improve children's overall health and cognitive development, leading to better academic performance.
5. Addressing Security Challenges: The Kaduna State government should strengthen security measures in conflict-prone areas to ensure the safety of families and prevent displacement, which often disrupts children's education and access to food.
6. Encouraging Private Sector and NGO Involvement: Partnerships with private organisations, non-governmental agencies, and international donors can facilitate food security interventions, educational sponsorship programs, and community development initiatives.
7. Policy Implementation and Monitoring: The Kaduna State government should enforce existing food security and education policies while ensuring proper monitoring and evaluation of their impact. Increased budgetary allocation for agriculture, education, and social welfare programs will enhance long-term sustainability.

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UNDERSTANDING THE CONCEPT AND CHALLENGES OF OUT-OF-SCHOOL CHILDREN IN KADUNA STATE, NIGERIA

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Abstract

The issue of out-of-school children in Kaduna State presents a significant barrier to state development, social stability, and economic progress. Despite various interventions, Kaduna State continues to record a high number of out-of-school children, with factors such as poverty, insecurity, inadequate infrastructure, and policy inconsistencies contributing to the crisis. This paper explains the concept of out-of-school children, identifying key challenges and assessing the implications for educational and socio-economic growth in Kaduna State. Using recent empirical data and case studies, it explains the effectiveness of current interventions while highlighting gaps that require urgent attention. The study advocates for a holistic approach that includes improved policy formulation and implementation, increased budgetary allocation to education, community participation, and innovative learning solutions such as digital education platforms and vocational training. It also emphasises the need for gender-sensitive policies to ensure equal educational opportunities for girls. Addressing the issue of out-of-school children in Kaduna State requires coordinated efforts from the government, civil society, and international organisations. This paper argues that a multi-sectoral strategy is necessary to mitigate the crisis and achieve the broader goal of universal basic education, ultimately fostering a more inclusive and sustainable educational system in Kaduna State.

Keywords: Challenges, Children, Education, Out-of-School, Quality.

Introduction

Education is universally recognised as a fundamental human right and a crucial driver of individual and national development. It serves as a foundation for social mobility, economic prosperity, and the overall well-being of societies. Despite these acknowledged benefits, Kaduna State faces a significant crisis in its education sector, with an alarming number of children remaining out of school. The complexities surrounding this issue necessitate a multidimensional analysis to fully comprehend its implications, root causes, and potential solutions.

The issue of out-of-school children refers to those of official school-going age who are not enrolled in educational institutions, either due to never having attended school or dropping out before completing the basic education cycle. This problem is most pronounced in developing regions, where socio-economic disparities, cultural norms, security concerns, and systemic infrastructural deficiencies create barriers to education. In Kaduna State, the situation is further exacerbated by political instability, banditry, economic hardship, and inadequate government interventions.

According to the International Institute for Educational Planning (IIEP) (2021), recent reports from international organisations, such as the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2020) and the United Nations Children's Fund (UNICEF, 2021), Kaduna State accounts for a significant proportion of the out-of-school children in northern Nigeria. The 2024 statistics indicate that approximately 1.5 million children in Kaduna State are not receiving formal education, with girls constituting a significant percentage of this figure. These numbers highlight the urgent need for comprehensive strategies that address both immediate and long-term challenges within the state's educational landscape.

The causes of the out-of-school crisis in Kaduna State are multifaceted, reflecting a complex interplay of socio-economic, political, and cultural factors. Poverty remains one of the most significant determinants of school attendance. Many families, particularly in rural areas, struggle to meet basic needs and prioritise survival over education. In such contexts, children are often required to engage in economic activities to supplement household income, leading to school dropout or non-enrollment. The situation is particularly dire in areas like Birnin Gwari, Kajuru, Giwa, Igabi, Kaduna South and Chikun, where economic hardships and cultural practices further restrict access to formal education, especially for girls.

Insecurity is another critical factor that has contributed to the growing number of out-of-school children in Kaduna State. The state has experienced persistent security challenges, including banditry and kidnapping, which have directly targeted educational institutions. Attacks on schools have instilled fear among parents and students, leading to the closure of many learning centres, particularly in the northern parts of the state. The mass abductions of students from schools in areas like Birnin Gwari, Chikun and Kajuru have further discouraged school attendance and created an atmosphere of uncertainty around the safety of educational institutions.

Furthermore, Kaduna State's education system suffers from severe infrastructural deficiencies and a shortage of qualified teachers. Many schools, particularly in rural and marginalised communities, lack basic amenities such as classrooms, electricity, learning materials, and sanitation facilities (Abdulbaqi et al., 2019; Akorede et al., 2022). This lack of infrastructure diminishes the quality of education and discourages enrollment and retention. Additionally, the shortage of trained educators, coupled with poor remuneration and working conditions, has led to a decline in teaching quality, further exacerbating the crisis (Akorede et al., 2023).

Cultural and religious norms in certain parts of Kaduna State, particularly in the Northern Regions, limit educational opportunities for girls. Early marriage and gender-based discrimination prevent many girls from accessing and completing their education. According to UNICEF, thousands of school-age girls in Kaduna State are either married off at a young age or engaged in household labour, which keeps them out of school. Despite government and non-governmental interventions aimed at promoting gender equality in education, deep-seated societal attitudes continue to pose formidable challenges.

Government policies and funding inadequacies further complicate efforts to address the out-of-school crisis. While Kaduna State has implemented several initiatives to improve education, including the Universal Basic Education (UBE) policy, implementation remains inconsistent. The state's budgetary allocation to education has historically fallen below the recommended benchmark set by UNESCO, thereby limiting resources available for improving school infrastructure, hiring qualified teachers, and implementing educational reforms. Corruption and mismanagement of education funds have also hampered efforts to expand access to quality education.

Another critical issue is the lack of inclusive education policies that cater to children with disabilities. Many children with physical and intellectual disabilities face significant barriers to education, including inadequate special education facilities and trained personnel. As a result, a large number of children with disabilities remain out of school, further exacerbating the crisis.

Addressing the out-of-school challenge in Kaduna State requires a holistic and multi-pronged approach. Government efforts must be reinforced with community-based interventions, international collaborations, and private sector involvement. Policies aimed at reducing poverty, improving security, and addressing gender disparities should be integrated into broader educational reforms. Additionally, initiatives that provide alternative learning opportunities, such as non-formal education centres, vocational training programs, and technology-driven education solutions, should be expanded to reach out-of-school children.

Innovative educational models, such as Free Education, Nigerian Educational Loan Fund (NELFUND), and scholarship programs, have proven successful in increasing school enrollment in other regions and should be further explored in Kaduna State. Strengthening community engagement and raising awareness about the long-term benefits of education can also contribute to reducing the number of out-of-school children. Moreover, leveraging technology and digital learning platforms can provide alternative education pathways for children who cannot access traditional schooling due to security risks or economic constraints.

However, the issue of out-of-school children in Kaduna State remains a pressing challenge that requires urgent and sustained action. The complexity of this issue demands a multifaceted approach that addresses the root causes while simultaneously implementing practical solutions to mitigate the crisis. By prioritising education, investing in infrastructure, ensuring security, and promoting inclusive and gender-sensitive policies, Kaduna State can work towards achieving universal basic education and securing a brighter future for its children.

The issue of out-of-school children remains a significant challenge in Kaduna State, posing serious implications for state development, social stability, and economic growth. Despite various government policies and interventions aimed at improving access to education, hundreds of thousands of children, particularly in rural and conflict-affected regions, remain outside the formal school system. This phenomenon is attributed to multiple factors, including poverty, cultural and religious beliefs, insecurity, poor infrastructure, and inadequate government funding for education.

One of the major concerns is the increasing number of children who are unable to access quality education due to economic constraints. Many families, especially in low-income communities, struggle to afford basic educational necessities such as school fees, uniforms, and learning materials, leading to high dropout rates. Additionally, socio-cultural factors, such as early marriage and gender discrimination, further hinder children's enrollment and retention in schools, particularly among girls.

Furthermore, security challenges, including banditry and kidnapping, have led to the displacement of many families, disrupting the education of children and forcing them into street trading, child labour, and other forms of social vices. The inadequacy of school infrastructure, including overcrowded classrooms, a lack of qualified teachers, and poor learning environments, also discourages school attendance and contributes to low literacy levels.

Despite efforts by educational agencies and international organisations to address the crisis, the issue persists due to weak policy implementation, lack of political will, and poor coordination among stakeholders. If left unaddressed, the rising number of out-of-school children will continue to hinder Kaduna State's socio-economic progress, exacerbating unemployment, crime, and social inequalities. Therefore, there is an urgent need for a comprehensive, well-coordinated, and sustainable approach to ensure that all children have access to quality education, thereby securing the state's future.

The State of Education in Kaduna State

Kaduna State has one of the highest numbers of out-of-school children in northern Nigeria. According to UNICEF, as of 2021, there were approximately 1.5 million children out of school in Kaduna State (UNICEF, 2021). This situation poses a severe challenge not only to the children affected but also to the state's overall development. An out-of-school child is defined as a child of school age who is not enrolled in any formal educational institution. This includes those who have dropped out of school or have never attended school at all.

Out-of-School Children Index in Kaduna State

As of 2024, Kaduna State faces a significant challenge with a high number of out-of-school children. According to UNICEF, approximately 1.5 million children in Kaduna State are not attending school. This figure includes 800,000 primary school-age children and an additional 700,000 at the junior secondary level. This situation has severe implications for the state's human capital development and economic future. The high number of out-of-school children contributes to increased illiteracy rates, perpetuates poverty, and exacerbates insecurity. Addressing this issue is crucial for Kaduna State's socio-economic development. Efforts to reduce the number of out-of-school children include initiatives by UNICEF and the Kaduna State government, such as developing frameworks to improve school enrollment and retention. However, challenges like insecurity, poverty, and cultural norms continue to hinder progress (Akorede et al., 2022).

Table 1. Detailed showing the Out-of-School Children Index in Kaduna State (2024):

Category	Number of Children (Million)	Percentage (%)	Remarks
Total Out-of-School Children	1.5	100%	Based on UNICEF 2024 data
Primary School Age (6-11)	0.8	53.3%	Majority affected are in rural areas
Junior Secondary Age (12-14)	0.7	46.7%	Higher dropout rates due to insecurity and poverty
Gender Distribution (Boys)	0.7	46.7%	More boys in urban areas attend school.
Gender Distribution (Girls)	0.8	53.3%	Girls face more cultural and economic barriers.
Regional Distribution (Northern Zones)	1.0	66.7%	Highest concentration in conflict-affected areas like Birnin Gwari and Kajuru
Regional Distribution (Southern Zones)	0.5	33.3%	Higher enrollment rates in urban centres like Kaduna City
Key Contributing Factors	-	-	Insecurity, poverty, child labour, and early marriage
Government & NGO Interventions	-	-	UNICEF, Safe School Initiative, UBEC programs

Source: UNICEF. (2021)

This table provides a structured overview of the Out-of-School Children crisis in Kaduna State and highlights key demographics and interventions.

Reasons behind the Increase in Out-of-School Children

Several factors contribute to the high number of out-of-school children in Kaduna State. These factors can be broadly categorised into economic, cultural, social, and geographic influences.

Economic Factors: Poverty is a significant barrier to education for many families in Kaduna State. The majority of families in rural areas struggle to meet basic needs, and education is often viewed as a luxury rather than a necessity. Parents may choose to keep their children, particularly those of school age, at home to contribute to household income through labour (Abdulbaqi et al., 2024; World Bank, 2020).

Cultural Influences: Cultural misconceptions about education, especially for girls, significantly hinder enrollment. In some communities, girls are expected to marry young and assume domestic roles instead of pursuing education. This cultural predilection perpetuates cycles of poverty and inequality (Human Rights Watch, 2020).

Social Factors: The ongoing conflict and insecurity in various regions of Kaduna State, particularly in areas like Birnin Gwari and Kajuru, have resulted in school closures and the displacement of families. Children from these conflict-torn areas face enormous challenges in accessing education (Brookings Institution, 2018).

Geographic Disparities: There is a stark contrast in access to education in urban and rural areas. Many rural areas lack schools, and those that do are often under-resourced and overcrowded. The distance to the nearest school is often too far for children to travel safely, especially in remote communities (UNESCO, 2020).

Health and Disability: Health issues, including malnutrition and disease, can inhibit children's ability to learn and attend school (Akorede et al., 2022). Additionally, children with disabilities face significant barriers to education. Inadequate facilities and support systems further alienate these children, resulting in higher rates of school dropout (Akorede et al., 2022).

Challenges of Out-of-School Children in Kaduna State

Apart from the issues spelt out under the statement of the problem, additional challenges for out-of-school children are encountered. Among the challenges of Out-of-School Children in Kaduna State, these are multifaceted and deeply rooted in socio-economic, cultural, and security issues. Here are the key challenges:

1. **Insecurity and Conflict**
   i. Ongoing banditry and kidnapping in areas like Birnin Gwari and Kajuru have led to school closures.
   ii. Communal clashes and farmer-herder conflicts disrupt education.
2. **Poverty and Economic Hardship**
   i. Many families cannot afford school fees, uniforms, or learning materials.
   ii. Children are forced into child labour to support family income.
3. **Cultural and Religious Barriers**
   i. Gender disparity: Many communities prioritise boys' education over girls'.
   ii. Early marriage among girls, especially in northern Kaduna, reduces school attendance.
4. **Weak Educational Infrastructure**
   i. The lack of schools in rural areas forces children to travel long distances.
   ii. Overcrowded classrooms due to inadequate school facilities.
5. **Poor Government Policies and Implementation**
   i. Universal Basic Education (UBE) is not fully enforced or monitored.
   ii. Corruption in education funding limits school development projects.
6. **Poor Learning Environment**
   i. Many schools lack toilets, clean water, and electricity.
   ii. Poor teaching quality leads to low motivation among students.
7. **Lack of Awareness and Parental Engagement**
   i. Some parents do not value formal education, especially in rural areas.
   ii. Low literacy levels among parents mean they cannot support their children's learning.
8. **Displacement and Migration**
   i. Internal displacement due to conflicts leaves children without stable schooling.
   ii. Urban migration leads to street children who do not attend school.

Consequences of Out-of-School Children

The consequences of having hundreds of thousands of children out of school in Kaduna State are dire and multifaceted. Firstly, education is intrinsically linked to economic development. A less educated workforce can lead to lower productivity, hampering Kaduna State's economic growth. Moreover, children who do not receive an education are more likely to remain in poverty as adults, perpetuating the cycle of poverty (International Labour Organization [ILO], 2019). Secondly, there are significant social implications. Out-of-school children are more susceptible to being involved in criminal activities, exploitation, and child labour. Their lack of education makes them easy targets for human trafficking and recruitment by extremist groups, further exacerbating insecurity and social unrest (UNODC, 2018). Lastly, the widespread absence of education undermines democratic practices. An uneducated populace is less likely to make informed decisions during elections or participate meaningfully in governance. This disconnect can lead to poor political leadership and governance, as those in power may not feel accountable to an uninformed citizenry.

Future Prospects

While significant challenges remain in addressing the plight of out-of-school children in Kaduna State, there are glimmers of hope. With continued advocacy, funding, and community support, there is potential for real progress. Better data collection and analysis will also help to design effective interventions tailored to specific

regions and demographics (International Institute for Educational Planning, 2021). Moreover, collaboration between the government, non-profit organisations, and international agencies is crucial. A multi-faceted approach that includes economic incentives for families, improved school infrastructure, and awareness campaigns will comprehensively tackle the issue of out-of-school children.

Conclusion

In conclusion, the issue of out-of-school children in Kaduna State is a complex issue that stems from various economic, social, cultural, and geographic factors. The challenges posed by this situation are profound and impact not just the children affected but also the state as a whole. To bring about meaningful change, a concerted effort is required from all segments of society. With the right strategies and commitment from various stakeholders, it is possible to reduce the number of out-of-school children in Kaduna State and ensure that every child can exercise their right to education.

Recommendations

In response to the growing number of out-of-school children, the Kaduna State government, NGOs, and international organisations have launched various initiatives aimed at improving access to education. The following are the suggestions:

Policy Reforms: The Kaduna State government should introduce policies aimed at free and compulsory primary education to encourage more children to attend school. However, the effectiveness of these policies often falters due to inadequate infrastructure and resources.

Alternative Education Programmes: To reach out-of-school children, various non-governmental organisations should implement alternative education programmes. These programs often provide flexible learning schedules and are designed to accommodate the specific needs of children who cannot attend traditional schools (Plan International, 2020).

Community Engagement: Engaging communities in the importance of education, particularly for girls, has shown promise. Awareness campaigns aim to change cultural perceptions and encourage families to prioritise education.

Safe Learning Environments: In regions affected by violence and insecurity, creating safe spaces for children to learn is crucial. NGOs and the United Nations should mobilise support to ensure that schools are protected from attacks and serve as refuges for displaced children.

International Support: Several international bodies, such as UNICEF and the World Bank, should provide financial and logistical support toward educational initiatives in Kaduna State. These organisations aim to strengthen the education system and ensure more children receive quality education.

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EFFECTS OF KINESTHETIC-LEARNING STRATEGY ON ATTITUDE IN ECOLOGY AMONG IMPULSIVE AND REFLECTIVE SECONDARY SCHOOL STUDENTS, GIWA ZONE, KADUNA STATE: IMPLICATIONS FOR OUT-OF-SCHOOL CHILDREN

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Abstract

This paper examines the effects of the Kinesthetic-learning strategy on attitude among impulsive and reflective students and its implications for out-of-school children in Giwa education zone, Kaduna State. The study investigated how the use of kinesthetic-learning strategies influences students' attitudes across different cognitive styles, specifically impulsive and reflective learners, and explores the implications of these effects for improving learning engagement and reintegration of out-of-school children. The study adopted a quasi-experimental control group design, involving pretest and posttest. The population comprised 6,346 SSII students offering biology from 15 public co-education senior secondary schools. 120 students from two schools participated in the study. Impulsive and Reflective Student Scale (IRSS), with a reliability coefficient of 0.82, was used to establish the cognitive style of the student. The Students Attitude Questionnaire (SAQ), with a reliability coefficient of 0.79, was used to measure the attitude of students. The experimental group was taught using the Kinesthetic-learning strategy, while the control group was taught using the lecture method. Two research questions were answered using nonparametric mean rank statistics, and two null hypotheses were tested at $p \leq 0.05$. Data collected were analysed using Kruskal-Wallis H-test, Mann-Whitney test and Scheffé's test. Result revealed that: a significant difference exists between the mean rank response attitude of the experimental and control group ($P = 0.001 < 0.05$), also the calculated value ($P = 0.000 < 0.05$) revealed a significant difference between the mean rank attitude of impulsive and reflective students in the experimental and control group in favour of the experimental group. Based on these findings, it was concluded that the Kinesthetic-learning strategy enhanced students' attitude, which was attributed largely to the positive learning environment offered by the strategy. Based on the findings of the study, it was recommended that the kinesthetic-learning strategy should be integrated into everyday activities to make learning more accessible, engaging and effective for out-of-school children, helping them develop essential skills practically and enjoyably. Workshops and seminars should be organised to train teachers on how to teach using the Kinesthetic-learning strategy.

Keywords: Kinesthetic-learning strategy, Impulsive, Reflective, Attitude, out-of-school children

Introduction

Science and technology are the prime movers or pilots of the economic growth of many nations. For a nation to experience economic growth, there must be a strong stimulation of science. Science, the originator of technology, is described as a body of empirical, theoretical, and practical knowledge about the natural world that is produced by scientists who emphasise the observations, explanations and predictions of real-world phenomena. The role of science and technology in Education for the development of a nation is unanimously agreed by researchers, among whom are Shaibu (2017), Hassan (2020), to be indispensable. Science education has therefore been introduced at different levels of education, with the fundamentals of science learning studied at pre-basic and basic educational levels, like basic science and technology. At the secondary level of education, students study core science subjects such as Biology, Chemistry, Physics, and Mathematics. The National Policy on Education (2013) states that the government, to achieve development through science, must ensure that the objectives of science education match the intellectual capacity of the students who are the citizens of the nation. However Science education is not clearly defined at the primary school level in Nigeria, except for the study of

basic science and technology. In secondary schools, there is basic science and technology at the Basic Education level, while biology, chemistry and physics are taught separately at the senior secondary School (SSS) level. Science is taught at the tertiary level as biology, chemistry, and physics, together with the principles and methods of education.

Mardonov (2019) posited thatBiology like every school subject, with its goals, objectives and content, is meant to contribute to the formation of a functionally competent person. Biology is the science of life that studies living matter, structure, function and behaviours of organisms. Biology is the cornerstone that cannot be overemphasised in terms of a nation's technology and industrial development. The biology curriculum is planned such that teachers are guided to use an activity-oriented, learner-centred approach to meet the needs of the learners. Effective teaching and learning of biology cannot be achieved without a positive attitude and meaningful interaction between the teacher, students, and the learning materials. The biology curriculum at the senior secondary level is made up of several units, among which is ecology.

Ecology is a unit in Biology that focuses on studying the relationship between biological organisms and their physical and chemical environment. Environmental education is thus part of the basic education, greatly encouraged in the 21st century. Umar (2015) noted that ecological education is a holistic human nature of worldview in a quest for knowledge for a better environment and has the power to develop a person in how to organise his/her environment for his/her benefit. Umar further explained that, to expose learners to the aspects of environmental education, stakeholders in science education made ecology an aspect of the Biology curriculum. The performance of students in ecology, as reported by Dashe and Nor (2020), among others not encouraging. This can be seen from reports of biology performance from the WAEC Report 2016-2022. Students' poor performance in ecology and Biology at large has been attributed to students' attitude towards the concept/ subject (Oyinloye & Ige, 2018).

Attitudes toward biology and learning in general are areas of interest to educators, past and present. The term attitude (toward science) opined by Oyinloye and Ige (2018), refers to a general and enduring positive or negative feeling about science. Extensive research has shown that a person's attitudes are learned, as opposed to being inherited. There are different factors which can influence student attitude, these include the type of science concepts taken, previous science experience, science teachers, as well as methodology. Attitude toward science can be defined as "favourable or unfavourable feelings about science subjects". A student's attitude toward a particular discipline may affect his or her motivation to excel (Okanlawon, 2023). To facilitate learning. It is therefore important that educators familiarise themselves with student attitudes and associated behaviour (that is, effort, reasoning and problem-solving skills) as well as factors that may influence student attitudes. Student attitudes toward science have been investigated by a number of researchers (Huang et al., 2021; Kljajić &Mijatović, 2022; Demirel & Dağyar, 2022; Okanlawon, 2023). Of all the variables that may influence attitude towards science, teaching method has generally been shown to have a consistent influence (Sugano & Mamolo, 2024).

The primary teaching methods in the classroom usually consist of some form of memorisation technique by either verbal or written repetition. Students are not usually actively involved in the classroom. This can be a barrier to students' positive attitude and may hinder them from fully understanding most of the concepts taught in class. If teachers can discover ways to implement more active learning in the classroom, students may develop a positive attitude and acquire a deeper understanding of the ideas/knowledge learned in class. Kotob and Arnous (2019) noted that one of the ways to encourage learners' active involvement in their education is to give them hands-on instructions to help them become better learners, regardless of the setting in which they are learning. One of such teaching strategies is the Kinesthetic-learning strategy.

Umar (2015) believes that the Kinesthetic-learning strategy involves finding multiple ways to structure a lesson so that each student has an opportunity to work at a moderately challenging level. Kinesthetic-learning strategy involves incorporating bodily movement and physical sensation, such as touching, moving, and manipulating objects and materials in the external world, among others, during the learning process. Gilakjani (2012) noted that the Kinesthetic learning strategy favours interaction with the physical world, as most of the time, learners have a difficult time staying on target and can become unfocused effortlessly. Griss (2013) sees the kinesthetic

learning strategy as "the use of creative movement in the classroom to teach across the curriculum. Students activate and integrate physical, emotional, and cognitive responses to what they are learning, making learning more meaningful.

Kinesthetic-learning strategies can offer alternative learning opportunities such as community-based projects, hands-on vocational training, and environmental clubs. This can provide out-of-school children with practical education. Interactive, real-world learning may inspire re-entry of out-of-school children into formal education or participation in non-traditional learning environments. Kinesthetic-learning strategy can enhance skill development, such as problem-solving, teamwork, and environmental stewardship, offering income-generating skills, for instance, sustainable agriculture, waste recycling, among others (Amn et al., 2024). Engaging out-of-school children through the Kinesthetic-learning strategy in ecology-related projects can promote environmental conservation and sustainable practices within communities.

Metzler (2016) noted that the use of the Kinesthetic-learning strategy requires significant planning and intentionality, and hence, when teaching students with the Kinesthetic-learning strategy, certain factors need to be considered, among which are lesson duration, gender and varying cognitive abilities/styles. Cognitive styles or thinking styles are terms used in cognitive psychology to describe the way individuals think, perceive, and remember information. Cognitive styles, according to Douglas (2003), include impulsive and reflective, convergent, and divergent, among others. Kagan (1965) defines impulsive and reflective cognitive style as a conceptual tempo, or decision time variable. Kegan proposed two criteria to classify the subjects: response time and errors. Impulsive learners reach decisions and report them very quickly with little concern for accuracy. On the other hand, the reflective ones are more concerned with accuracy and take more time to reach a decision and consequently make fewer errors. This cognitive style was considered in this study.

The theoretical framework upon which this study was based is the theory of discovery. This area of educational interest is a learning theory propounded by cognitive psychologists, Brunner (1966). This learning theory maintains that learning is best promoted when one is able to figure things out for oneself. In other words, Brunner advocates a learning situation in which learners become "detectives". The implication of Brunner's learning by discovery theory emphasises discovery activity in which the students utilise his/her own mental skills to find the answers. The focus is to develop skills that are practical in the teaching and learning of biology. This study was guided by the following research objectives;

Objective of the Study

The objectives of the study are to;

1. Examine the effect of the Kinesthetic-learning strategy on the attitude of SSII students taught ecology concepts.
2. Establish the effect of the Kinesthetic-learning strategy on the attitude of SSII impulsive and reflective SSII students taught ecology concepts.

Research Questions

1. To what extent does the attitude level between SSII students taught ecology concepts using the Kinesthetic-learning strategy differ from those taught using the lecture method?
2. To what extent does the attitude level between SSII impulsive and reflective students taught ecology concepts using the Kinesthetic-learning strategy differ from those taught using the lecture method?

Hypotheses

There is no significant difference between the attitude level of SSII students taught ecology concepts using the Kinesthetic-learning strategy and those taught using conventional methods.

There is no significant difference between the attitude level of SSII impulsive and reflective students taught ecology concepts using the Kinesthetic-learning strategy and those taught using lecture methods.

Methodology

The study adopted a quasi-experimental control group design (Akorede et al, 2019). The population of this study was made up of all 6,346 SSII biology students, 3,762 males and 2,584 females, all from Public senior secondary schools within the Giwa Education Zone of Kaduna state. Four co-education schools were selected

from the 15 senior secondary schools in Giwa Education Zone. In each of these four schools, one intact class was selected and subjected to an equivalent test, from which two schools that were significantly equivalent in ability were finally selected and assigned to experimental and control groups. Two research instruments were used to generate data in this study: the Impulsive Reflective Student Scale (IRSS) and the Students' Attitude Questionnaire (SAQ).

Students in both experimental and control groups were subjected to IRSS to determine impulsive and reflective students in each of the groups before commencement of the treatment. Using Kegan's (1966) MFFT samples, the researcher adapted and developed 10 similar test items named IRSS to suit SSII students. The rule of the task is that students are shown a familiar image (standard) and six similar variants. Only one of the variants is identical to the standard. The students are asked to select the variant that is identical to match the standard. The score is the average of the number of errors and response time to the first selection across the total number of test items. Students with below-median errors and above-median response times were classified as reflective, while those with above-median errors and below-median response times were deemed impulsive. The experimental group was made up of 34 impulsive and 21 reflective students. The control group was made up of 44 impulsive and 21 reflective students.

The Students Attitude Questionnaire (SAQ) was adapted from previous instruments of Oyinloye and Ige (2018). SAQ was used to solicit students' responses on their attitude towards ecology, the importance of ecology, the area of difficulty in ecology, as well as their future career in ecology. SAQ was divided into two sections. Section A, which is bio data, section B items on students' attitude, which consist of 22 items to be responded to, by the students on 5 5-point Likert scale format; Strongly Agree (SA=5), Agree (A=4), Undecided (UD=3), Disagree (DA=2), Strongly Disagree (SD=1). These instruments were subjected to both face and content validity. The face validity was done by senior lecturers who are experts in test/evaluation in the faculty of Education, they reviewed items for clarity, suitability of language to the target respondents. The reliability of the instrument yielded a PPMCC of 0.82 and a Cronbach alpha of 0.79 for IRSS and SAQ, respectively. Descriptive statistics were employed in the analysis of the data collected. All research questions earlier stated were answered using mean rank and sum of mean rank, while the hypotheses were tested using the Mann-Whitney test, Kruskal-Wallis (H test), as well as post hoc Scheffes' test at a $P \leq 0.05$ level of significance.

Results

Question one: To what extent does the attitude level between SSII students taught ecology concepts using the Kinesthetic-learning strategy differ from those taught using the lecture method?

Table 1: Nonparametric statistics of SAQ in the Experimental and Control Groups

Groups	N	Mean Rank	Sum of Ranks
Experimental	55	144.50	12716.00
Control	65	50.50	5050.00
Total	120		

Results from Table 1 of the Nonparametric Mean Rank statistic revealed a difference between the attitudes' mean rank responses of SSII students in the experimental and control groups. The computed Mean Rank Attitude of students in the experimental and control groups are 144.50 and 50.50, with a mean difference of 94.00. This indicates that the computed Mean Rank Attitude of the experimental group is higher than the Mean Rank Attitude for the control group.

Question two: To what extent do the attitude levels between SSII impulsive and reflective students taught ecology concepts using the Kinesthetic-learning strategy differ from those taught using the lecture method?

Table 2. Nonparametric Test for SAQ Scores in Experimental and Control Groups

Cognitive Style	Group	N	Mean Rank	Mean Difference
Reflective	Experimental	21	92.52	46.14
	Control	20	46.38	
Impulsive	Experimental	34	91.24	64.71
	Control	44	26.53	

Results from Table 2 of the Nonparametric Mean Rank statistic revealed a difference between the attitudes' mean rank response of SSII impulsive and reflective students in experimental and control groups. The computed Mean Rank Attitude of reflective students in the experimental and control groups are 92.52 and 46.38, with a mean difference of 46.14, while the mean rank response of impulsive students in the experimental and control groups is 91.24 and 26.53, with a mean difference of 64.71. This indicates that the computed Mean Rank Attitude of the experimental reflective and impulsive students are much higher than the Mean Rank Attitude for the control reflective and impulsive students.

Ho_1: There is no significant difference between the attitude level of SSII students taught ecology concepts using the Kinesthetic-learning strategy and those taught using lecture methods.

Table 3. Mann-Whitney test of SAQ in the Experimental and Control Groups.

Groups	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	P value	Remark
Experimental	55	144.50	12716.00	0.04	11.83	0.01	Sig.
Control	65	50.50	5050.00				
Total	120						

P = 0.01< 0.05, Z = 11.83> Mann Whitney U = 0.04

Results of the Mann-Whitney non-parametric statistics revealed that a significant difference exists in the Attitude level of experimental and control groups. Reasons being that the p-value calculated 0.01 is lower than the 0.05 alpha level, and its computed Z score was 11.83, which is greater than the Mann-Whitney score of 0.400, implying a significant difference in the attitude mean rank response between experimental and control groups in favour of the experimental group. Therefore, the null hypothesis was rejected.

Ho_2: There is no significant difference between the attitude level of SSII impulsive and reflective students taught ecology concepts using the Kinesthetic-learning strategy and those taught using lecture methods.

Table 4: Kruskal-Wallis Test on SAQ Scores in Experimental and Control Groups

Groups	Cognitive Styles	N	Mean Rank	KruskalWalis	df	P value
Experimental	Reflective	21	92.52	91.252	3	0.000
	Impulsive	34	91.24			
Control	Reflective	20	46.38			
	Impulsive	44	26.53			
Total		119				

P calculated = 0.000 < 0.05 alpha level of significance.

Result of Kruskal Wallis test from Table 4 indicates that the calculated P value 0.00 is less than the P 0.05 level of significance at df 3, suggesting that a significant difference exists between the attitude mean rank response of SSII impulsive and reflective students in experimental and control group in favour of the experimental group. Therefore, null hypothesis two was rejected. To reveal the groups with significant differences, data were analysed using a post hoc Scheffe's test, and the result is presented in Table 5

Table 5: Multiple Comparison of Students' Attitude in Experimental and Control Groups

(I) Groups of Cognitive Styles	(J) Groups of Cognitive Styles	N	Mean	Mean Difference (I-J)	Std. Error	P value	Remark
Experimental Reflective	Experimental Impulsive	34	91.24	.99*	.22	.000	Sig
	Control Reflective	20	46.38	45.85*	.24	.000	Sig
	Control Impulsive	44	26.53	65.91*	.21	.000	Sig
Experimental Impulsive	Experimental Reflective	21	92.52	-.99*	.22	.000	Sig
	ControlReflective	20	46.38	44.86*	.22	.000	Sig
	Control Impulsive	44	26.53	64.91*	.18	.000	Sig
Control Reflective	Experimental Reflective	21	92.52	-45.85*	.24	.000	Sig
	Experimental Impulsive	34	91.24	-44.86*	.22	.000	Sig
	Control Impulsive	44	26.53	20.05*	.21	.000	Sig
Control Impulsive	Experimental Reflective	21	92.52	-65.91*	.21	.000	Sig
	Experimental Impulsive	34	91.24	-64.91*	.18	.000	Sig
	Control Reflective	20	46.38	-20.05*	.21	.000	Sig

*The mean difference is significant at the 0.05 level.

Table 5 post hoc mean comparison test indicates significant differences exist between the attitude mean rank response of SSII impulsive and reflective students in the experimental and control groups. The post hoc Scheffe's means comparison clearly indicates that the P calculated 0.00, 0.00 and 0.00 is lower than the P value 0.05, which implies that a significant difference exists between the mean rank response of experimental reflective, experimental impulsive, control reflective and control impulsive in favour of experimental reflective and impulsive students.

Discussion of Findings

Findings revealed a significant difference in the attitude of students between the experimental and control groups in favour of the experimental group. The significant difference in attitude was because of treatment, as suggested by the data. Kinesthetic-learning strategy made learning more interactive and enjoyable, reducing boredom and passive learning. Students' physical involvement in learning helped students feel more connected to the material, and their active participation fosters a sense of ownership and responsibility for learning, which reduces anxiety and improves attitude. This concurs with Solomon et al. (2023), who noted that the Kinesthetic-learning strategy increases students' motivation, which enhances a positive attitude towards learning. Umar (2015) also noted an increased positive attitude of students taught with the Kinesthetic learning strategy. Similarly, Ali (2013) argued that attitude towards science had a significant positive relationship with the achievement of science students at secondary school levels. However, Lustgarten (2017) found that student attitudes decreased through kinesthetic learning experiences.

Findings also revealed that through the kinesthetic-learning strategy, impulsive and reflective student had a better attitude towards learning than their peers in the control group. Reflective learners benefit from actively engaging with materials through physical activities, such as experiments, role-playing, and simulations, which allows them to observe and analyse before responding, aligning with their preference for thoughtful consideration. Impulsive learners, on the other hand, thrive on movement and quick decision-making; kinesthetic strategies align with their natural tendencies. Activities like interactive games and hands-on problem-solving keep them engaged and reduce distractions. This active involvement improved their confidence and motivation, which enhanced a positive attitude. This aligns with Abubakar (2016), who noted that students` cognitive styles (impulsive and reflective) were significantly correlated with their attitudes and preferences for

instructional delivery modes. Similarly, Ellah (2014) stated that the relationship between measures of students' cognitive styles and attitude was not statistically significant.

Conclusion

Kinesthetic-learning strategy improved the attitude of students at the SSS II level. This shows that the positive attitude of students can be enhanced through the appropriate use of teaching and learning strategies. This study is also an indication that ineffective teaching and learning strategies may be responsible for students' (impulsive and reflective) poor and negative attitude in biology at secondary schools. Kinesthetic-learning strategy for out-of-school children serves as a bridge to meaningful education and empowerment. Integrating hands-on learning into informal education programs can foster environmental awareness and equip learners with valuable life skills.

Recommendations

The following recommendations were made from this study

1. Senior secondary school teachers could be sensitised by professional bodies like the Science Teachers Association of Nigeria (STAN) through workshops, conferences, and symposia on the use of the Kinesthetic-learning strategy in learning science (Ecology/Biology).
2. School administrators like principals and senior masters should perpetually encourage and support biology teachers in providing resources (or improvising) and using the Kinesthetic-learning strategy to facilitate classroom explorations and hands-on learning.

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PERCEIVED INFLUENCE OF EDUCATION MANAGERS IN FUNDING PUBLIC SECONDARY SCHOOLS FOR QUALITY ASSURANCE IN ANAMBRA STATE, NIGERIA

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Abstract

This study investigated the perception of school managers in funding public secondary schools for quality assurance in Anambra State, Nigeria. Two research questions and two null hypotheses were raised to guide the study. The population of the study comprised 6865 educational managers in the public secondary schools in all six education zones of Anambra State, which consisted of 267 principals and 6598 teachers. A sample of 375 respondents was drawn from the population using Taro Yameni's formula. Multi-stage sampling procedure was used for the determination of the sample used for the study. A 10-item structured questionnaire titled 'Funding Public Secondary School for Quality Assurance Questionnaire (FPSSQAQ) was used as an instrument for data collection. Mean and Standard deviation were used to answer the research questions, while the t-test was used to test the two null hypotheses at a 0,05 level of significance. The findings of the study revealed that funding had a significant influence on supervision and classroom management for quality assurance of secondary schools in Anambra State. Based on the findings, the researcher recommended that the Government should provide adequate funds for enhancing quality educational supervision in public secondary schools in Anambra State.

Keywords: Perceived Influence, Education Managers, Funding, Public Secondary Schools, Quality Assurance

Introduction

The backbone of any successful educational institution lies in the hands of its managers (principals and teachers). These dedicated individuals play a pivotal role in shaping the academic destiny of students, and ultimately, the future of society. As the custodians of knowledge, school managers are responsible for creating a conducive learning environment, designing engaging curricula, conducting thorough supervision of instruction and ensuring that classroom management is conducive. These education managers are also guardians of quality assurance, tasked with the daunting responsibility of ensuring that their institutions meet the highest standards of academic excellence.

In recent times, the level of success recorded by the educational sector has been closely linked with the availability of funds, which is an indispensable tool. This is because it provides the necessary resources to support the implementation of quality assurance initiatives. Funding serves as the lifeblood for the management and administration of most sectors, including education (Ohamobi et al. 2018). It is based on this that UNESCO recommended that 26% of the annual budget of any nation should be set aside for the administration and management of schools (Muhammad and Bakwai, 2015). Osakwe (2016) opined that funding assists in providing the basic resources needed for teaching and learning and for assurance of quality and excellent service delivery. When funding is mentioned, one immediately thinks of the availability of money for meeting targets. Funding is a form of financial support given for the achievement of set goals, objectives, or programs. Finance needed to carry out activities in the school may be internally or externally generated. The provision of financial resources, typically in the form of money, grants, or investments, to support a specific project, program, or activity is known as funding (Peter, 2015).

Over time, efforts have been made by the governments of various countries to ensure improvement in the level of funding made available for the administration of schools at all levels. In Anambra State precisely, efforts have been made by the government to improve the level of funding and in the provision of infrastructure needed

for effective management of the school, but much is still yet to be desired. The government has encouraged school managers to develop and implement robust supervisory systems, provide regular support and feedback for teachers to enhance their instructional skills and promote students' learning if quality is to be assured, but regrettably, despite efforts to improve quality, schools continue to fall short in ensuring quality education.

Quality assurance is one of the determinants of school effectiveness. Fadokun (2005) defined quality assurance as a program of an institution or a whole education system. Nwanga and Unachukwu (2019) observed that quality assurance refers to the strategies used by administrators to ensure that educational goals are achieved. Osegbue (2025) opined that quality assurance is a process of monitoring, assessing, evaluating, and reporting the quality of all aspects of school life to ensure that acceptable standards are attained, maintained, and improved upon continually. Quality assurance is a way of preventing quality problems and ensuring that high standards are maintained to achieve the stated objective of the organisation (Ohamobi & Anasiudu, 2024). Quality assurance connotes putting in place appropriate structures, motivators, supervision of personnel and materials in order that minimum standards are attained in school (Okafor, 2020). Quality assurance in this study is the process of ensuring that educational programmes, services, and processes meet the highest standards of excellence, relevance and effectiveness. Quality assurance cannot be achieved without effective supervision, as supervision plays a critical role in monitoring, evaluating, and improving the quality of educational programmes and services.

Supervision is one of the key elements of management. Supervision helps to ensure that educational standards are met. It also ensures that teachers are supported and developed, and that students receive a high-quality education. Osegbue et al. (2018) opined that supervision is the process of enhancing the professional growth and development of teachers, which ultimately affects the learning outcomes of students. Supervision, according to Ogunsaju (2012), is a process of helping teachers to improve their instructional practices, which involves observing, analysing, and providing feedback on teaching behaviour. Supervision is a way of stimulating, guiding, improving, refreshing and overseeing certain groups with the hope of seeking their cooperation in order for supervisors to be successful in their task of supervision (Osegbue, 2021). Supervision is essentially the practice of monitoring the performance of school staff, observing the advantages and disadvantages to use befitting and good techniques to ameliorate the deficiencies, while still improving on the advantages, thereby increasing school standards and achieving educational goals. Supervision in the context of this study is a transformative, collaborative, and evidence-based process that empowers educators to reflect, innovate, and excel in their instructional practices. Educational managers need to supervise educational activities to ensure that instructional goals and objectives are being met. Supervision also helps education managers to ensure that students are receiving a high-quality education, needed for meeting global standards (Aladenusi, 2018).

Classroom management is a quality assurance technique used by education managers to achieve quality education in schools. Mohammad (2015) viewed a classroom as where teachers create an enabling environment for students to know how to use the available time and resources, and also cooperate with their classmates to achieve quality learning and effective classroom management. Osegbue et al. (2022) defined classroom management as the process of creating and maintaining a positive and productive learning environment, where students feel safe, supported, and motivated to learn. Similarly, Eziuzo(2014) asserted that effective classroom management refers to the actions teachers take to create an environment that supports academic achievement and promotes social growth. This study sees classroom management as the dynamic and intentional process of crafting a transformative learning space, where teachers orchestrate a harmony of routines in order to foster students' engagement.

However, the learning environment has deteriorated so much in public secondary schools in Anambra State that parents, policy makers and other stakeholders began to wonder the cause. In most cases, many so-called public secondary schools are seen without a roof, doors and windows, chairs, desks, and furniture. Little wonder, then, that all those who can afford private schools run away from government schools, thereby resulting in the commercialisation of education in the country. It is against this background that the researcher is investigating the perception of education managers in funding public secondary schools for quality assurance in Anambra State, Nigeria.

Objectives of the Study

The main purpose of this study is to investigate the perception of education managers in funding public secondary schools for quality assurance in Anambra State. Specifically, the study sought to:

1. Ascertain school managers' perception of funding on supervision of public secondary schools for quality assurance in Anambra State.
2. Find out the school managers' perception of funding on classroom management of public secondary schools for quality assurance in Anambra State.

Research Questions

The following research questions guided the study.

1. What is the school managers' perception of funding for supervision of public secondary schools for quality assurance in Anambra State?
2. What is the school managers' perception of funding on classroom management of public secondary schools for quality assurance in Anambra State?

Hypotheses

The following null hypotheses were formulated and tested at the 0.05 level of significance.

1. There is no significant difference in the mean rating of perception of principals and teachers of funding on supervision of public secondary schools for quality assurance in Anambra State.
2. There is no significant difference in the mean rating of perception of principals and teachers of funding on classroom management of public secondary schools for quality assurance in Anambra State.

Methodology

A descriptive survey design was adopted for the study. Nworgu (2015) described descriptive survey design as a research design where a group of people or items are studied by collecting and analysing data from only a few people deemed to be representative of the entire group. The population of this study comprised 6865 education managers (267 principals and 6598 teachers in Anambra State. The sample size of 375 was determined using Taro Yaman's formula, while a multi-stage sampling procedure was used to select the samples. The Instrument for data collection was researcher researcher-developed 10-item questionnaire titled "Funding Public Secondary Schools for Quality Assurance Questionnaire" (FPSSQAQ). The questionnaire has sections: Section A and Section B. Section A contains demographic data of the respondents, while Section B has two clusters that address the research questions.

The questionnaire was structured by the researcher on a four-point scale of Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). The instrument was subjected to validation by three experts, two in Educational Management and one in Measurement and Evaluation, all from Chukwuemeka Odumegwu Ojukwu University, Igbariam Campus. To ensure the reliability of the instrument, a trial test was carried out with 20 school managers in Enugu State. The data collected were determined using the Cronbach Alpha coefficient, which yielded an index of 0.83, indicating that the instrument was reliable. The instrument was administered to the respondents through a direct delivery approach to enable the researcher to have a satisfactory return rate. Mean and standard deviation were used to analyse the research questions, while t-test statistics were used to test the null hypotheses at a 0.05 level of significance.

Results

Research Question One: What is the school manager's perception of funding for supervision of public secondary schools for quality assurance in Anambra State?

Table 1: Mean and Standard Deviation ratings of the respondents of funding on supervision of public secondary schools for quality assurance in Anambra State.

S/N	Item Description	Principals		Teachers		Decision
		X	SD	X	SD	
1	Adequate funding is essential for effective instructional activities in secondary schools	3.39	0.49	3.34	0.46	Agree
2	Funding constraints often hinder the conduct of regular supervision of the secondary school programme	3.28	0.51	3.24	0.48	Agree
3	Funding influences the rate at which supervisors offer professional services	3.23	0.51	3.26	0.47	Agree
4	Funding influences the supply of current information to the Ministry of Education	3.32	0.50	3.27	0.47	Agree
5	Adequate funding would significantly improve the quality of supervision in secondary schools.	3.35	0.50	3.30	0.47	Agree
	Cluster Mean	3.31	0.50	3.28	0.47	Agree

Table 1 showed that items 1-5 have mean scores ranging from 3.23 to 3.39, which is above the criterion mean score of 2.50 used for decision making. This implied that the respondents agreed that funding has a significant influence on supervision for quality assurance.

Research Question Two: What is the school manager's perception of funding on classroom management of public secondary schools for quality assurance in Anambra State?

Table 2: Mean and Standard Deviation ratings of the respondents of funding on classroom management of public secondary schools for quality assurance in Anambra State.

S/N	Item Description	Principals		Teachers		Decision
		X	SD	X	SD	
6	Adequate funding enables teachers to acquire the necessary resources needed for effective classroom management	3.23	0.52	3.17	0.48	Agree
7	Insufficient funding hinders teachers' ability to maintain a conducive learning environment in the classroom	3.27	0.52	3.25	0.48	Agree
8	Availability of funds directly impacts the availability of teaching aids	3.08	0.53	3.16	0.49	Agree
9	Adequate funding promotes schools utilising staff with strong expertise to provide collaborative consultation to teachers experiencing difficulties with classroom management	3.02	0.54	3.04	0.50	Agree
10	Funding constraints limit teachers' ability to implement innovative classroom management strategies.	3.02	0.54	3.10	0.50	Agree
	Cluster Mean	3.12	0.78	3.67	0.49	Agree

Table 2 showed that items 6-5 have mean scores which are above the criterion mean score of 2.50 used for decision making. The cluster mean of the teachers is greater than that of the principals. This implied that the respondents agreed that funding has a significant influence on classroom management for quality assurance.

Hypothesis 1: There is no significant difference in the mean rating of perception of principals and teachers on the influence of funding on supervision of public secondary schools for quality assurance in Anambra State.

Table 3: Summary of t-test on the difference between the mean rating of principals and teachers on their perception of funding on supervision of public secondary schools for quality assurance in Anambra State.

Variable	N	Mean	SD	df	t-cal	t-crit	Sig	Remark
Principals	173	3.31	0.50					
				373	0.472	1.96	0.05	Accepted
Teachers	202	3.28	0.47					

Table 3 presents the mean score of principals to be 3.31 with a corresponding standard deviation of 0.50, while the mean score of teachers was 3.38 with a standard deviation of 0.47. The calculated t-value of 0.472 was lower than the critical t-value of 1.96. Therefore, the hypothesis was accepted. This suggests that there is no significant gender difference in the mean rating on their perception of funding for supervision of public secondary schools for quality assurance in Anambra State.

Hypothesis 2: There is no significant difference in the mean rating of perception of principals and teachers on their perception of funding on classroom management of public secondary schools for quality assurance in Anambra State.

Table 4: Summary of t-test on the difference between the mean rating of principals and teachers on their perception of funding on classroom management of public secondary schools for quality assurance in Anambra State.

Variable	N	Mean	SD	df	t-cal	t-crit	Sig	Remark
Principals	173	3.12	0.53					
				373	-0.257	1.96	0.05	Accepted
Teachers	202	3.14	0.49					

Table 4 presents the mean score of principals to be 3.12 with a corresponding standard deviation of 0.53, while the mean score of teachers was 3.14 with a standard deviation of 0.49. The calculated t-value of -0.257 was lower than the critical t-value of 1.96. Therefore, the hypothesis was accepted. This suggests that there is no significant gender difference in the mean rating on the role of funding on classroom management of public secondary schools for quality assurance in Anambra State.

Summary of Findings

Based on the analyses of data from the study, the following findings were made:

1. Most of the respondents agreed that there is no significant difference between principals' and teachers' perceptions of funding on classroom management for quality assurance in public secondary schools in Anambra State.
2. The majority of the respondents agreed that there is no significant difference between principals' and teachers' perceptions of funding on supervision for quality assurance in public secondary schools in Anambra State.

Discussion of Findings

The results in Table 1 showed that school managers' perception of funding for supervision of public secondary schools for quality assurance is high. This is so because the researcher observed that adequate funding is essential for effective instructional activities, while Funding constraints often hinder the conduct of regular supervision. The researcher also observed that Funding influences the rate at which supervisors offer professional services. This view is in line with Osegbue and Nnubia (2020), who stated that supervision enables education managers to monitor their performance and make data-driven decisions, which will improve instructional services. This suggestion is in line with Ayeni (2011), who opined that the gross decrease in funding of education in Nigeria has led to poor supervision and maintenance. However, Giofiye (2016) maintained that though education funding is grossly inadequate but the little fund made available is being syphoned by corrupt government officials and some education managers.

The results in Table 2 also revealed that their perception of funding for classroom management of public secondary schools for quality assurance is high. This is evident in the assertion of the respondents who opined that adequate funding enables teachers to acquire the necessary resources needed for effective classroom management, and that insufficient funding hinders teachers' ability to maintain a conducive learning environment in the classroom. This view corroborated the contentions of Abdlrahaman (2014), who observed that insufficient funding of schools leads to poor quality output. The researcher further observed that adequate funding promotes schools utilising staff with strong expertise to provide collaborative consultation to teachers experiencing difficulties with classroom management. Finally, the researcher observed that Funding constraints limit teachers' ability to implement innovative classroom management strategies.

Conclusion

From the findings of this study, it can be concluded that inadequate funding, poor supervision, and ineffective classroom management are major challenges facing public secondary schools in Anambra State, resulting in a decline in the quality of education and academic performance of students.

Recommendations

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

1. The government should provide adequate funds for enhancing quality educational supervision in public secondary schools.
2. The government should provide enough funds needed by the teachers to implement innovation in the classroom.

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EFFECT OF HEALTH EDUCATION INTERVENTION ON ACCEPTABILITY OF IMMUNIZATION AS A STRATEGY FOR PREVENTION OF HEPATITIS B VIRUS SPREAD AMONG PREGNANT WOMEN IN YOLA, ADAMAWA STATE - NIGERIA.

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Abstract

Hepatitis B virus is a liver disease caused by the Deoxyribonucleic acid virus (DNA). It infects the liver cells and causes both acute and chronic liver diseases. This study examined the effect of health education on the acceptability of immunization as a strategy for the prevention of the Hepatitis B virus among pregnant women in Yola, Adamawa State, Nigeria. One (1) research questions and hypothesis was formulated for this study. The population for this study comprised one hundred and forty-three thousand six hundred and eighty-nine (143,689) pregnant women registered in Adamawa State, Nigeria. The sample size consists of sixty (60) pregnant women who were drawn from the target population of pregnant women. Thirty (30) women were in the experimental group, while thirty (30) were in the control group for generalisation. A multi-stage sampling technique was used for this study. The instrument used for data collection was researcher researcher-developed questionnaire and hepatitis B modules (manual). The questionnaire was rated using a 4-point modified Likert scale. A pilot study was conducted to ascertain the reliability of the instrument; a reliability index of 0.919 was obtained, which implied that the instrument is reliable. Data collected were analysed using frequencies and percentages, means and standard deviation. Inferential statistics of analysis of covariance (ANCOVA) was used in the test of the hypotheses at the fixed probability level of 0.05. Findings from the study revealed that a six-week health education programme has no effect on improved acceptability of HBV immunization, among pregnant women in Yola, Adamawa State, p- p-value is > 0.05. Based on the findings, the study recommended that pregnant women in Yola, Adamawa State, should continue to sustain the level of acceptability of immunization during prenatal and postnatal services as a preventive measure. Use of Posters, billboards, awareness campaigns and other communication channels could be beneficial to increase the knowledge of the public on measures against the hepatitis B virus.

Keywords: Acceptability, Strategy, Prevention, Hepatitis, Immunization and Pregnant Women.

Introduction

Nowadays, there is a massive increase in health facilities at different levels of the health care system in Nigeria. According to the Nigerian Health Facility Registry (2022). Nigeria had 39,439 registered hospitals and clinics in 2019, as of 2022, the number increased to 39,914, but still the number of HBV infection keep on increasing. Approximately 370,000 newborns are pre-natally infected with HBV in sub-Saharan Africa annually, and over 20 million people are estimated to be infected with the Hepatitis B virus around the world. Nigeria has the largest number of people living with HBV infection in sub-Saharan Africa and ranks third after China and India globally (Olakunde et al., 2021).

Hepatitis B virus (HBV) is a deoxyribonucleic acid (DNA) virus that causes hepatitis B infection (Gebrecherkos et al., 2020). Hepatitis B virus infects liver cells (hepatocytes) and causes both acute and chronic disease. When a person is first infected with the hepatitis B virus, it is called an “acute infection” (or a new infection). Mostly, healthy adults who are infected do not have any symptoms and can get rid of the virus without any problems.

Some adults are not able to get rid of the virus after six months it becomes chronic. It is believed that host factors, in particular immune responses, are responsible for determining whether the infection is cleared or becomes chronic (Ciupe et al., 2007).

Nigeria is still considered one of the highly endemic countries for Hepatitis B, mainly due to perinatal transmission of the Hepatitis B virus. Olakunde et al (2021) reflected a high risk of HB perinatal transmission and called for widespread immunization with the HB vaccine birth dose and subsequent treatment of mothers.

Nankya-Mutyoba et al. (2019) stated that Chronic HB infection results in high mortality from cirrhosis and liver cancer. HB affects all age groups globally, including pregnant women and the newly born infant vertically. Several ways of HB transmission are registered, including contaminated blood transfusion, unprotected sex, and contact with contaminated sharp objects. Mother-to-Child Transmission (MTCT), by which HB is transmitted from infected mothers to their infants, prenatal transmission (in utero), natal transmission (during delivery), or postnatal transmission (during childcare or through breast milk, is the main route of infection in infants (Gebrecherkos et al., 2020). Following HB infection, many people with HB may not show any symptoms and the clinical manifestations vary in acute and chronic cases from nonspecific symptoms to organ failure (Gebrecherkos et al., 2020).

Several efforts have been made by different agencies and organisations to reduce the rate of HB transmission. In 2016, the World Health Assembly adopted the first global health targets for the elimination of viral hepatitis as a public health threat and viral hepatitis was incorporated in Sustainable Development Goal 2 (Nayagam et al., 2020). The World Health Organization (WHO) Global Health Sector Strategy HB impact targets, included a 90% reduction in new infections and a 65% reduction in mortality by 2030, to reduce the prevalence of hepatitis B surface antigen (HBsAg) in children to 1% by 2020 and 60 <0.1% by 2030 (Nayagam et al., 2020). But unfortunately, in spite of all these efforts, the rate of HB spread appears to be expanding.

The global prevalence of HB among pregnant women and the rate of vertical transmission greatly vary from continent to continent (Gebrecherkos et al., 2020). Prevalence data on hepatitis B in Arab countries among pregnant women range from 1% to 7.1%, which is considered a low to intermediate range in worldwide terms (Gasim, Murad, & Adam, 2013). Similarly, western region of Africa, the prevalence among pregnant women is high in the region and varies between 6.2% and 16% (Gasim et al., 2013). Moreover, Nigeria is classified among the group of countries suffering from endemic HB infection. Currently, about 18 million Nigerians are infected, and a prevalence rate of 4.3 % was reported from Port Harcourt, 5.7% from Ilorin, 11.6% from Maiduguri and 8.3% from Zaria. A sero prevalence of 23.3% was reported among patients attending all clinics at the Aminu Kano Teaching Hospital (AKTH) (Yakasai et al., 2012). Yakasai et al. (2012) also stated that, when a pregnant woman is infected with HB, there is a chance she may infect her fetus. About 10 - 20% of women seropositive for HBsAg transmit the virus to their neonates.

Adejimi et al. (2021) stated that Prevention of HB infection can be achieved through safe practices and immunization. Similarly, when pregnant women are infected, they constitute a serious health risk not only to their unborn child, as stated above, but also the society at large. To tame the tides of infection and to identify possible ways of conveying the preventive strategies to the community in general and women in particular, this study was therefore assessed the effect of health education on the acceptability of immunization as a strategy for prevention of hepatitis B virus spread among pregnant women in Yola, Adamawa State, Nigeria.

The main researcher is a Certified Community Health Extension Worker, who consulted patients while working in his home town of Ngurore, a suburb of Yola-South Local Government Area of Adamawa State, during the COVID-19 pandemic lockdown in March 2020. While the co-researchers have had hard experiences as health educators in the field. It has been observed by the researchers that, among patients consulted at home between March and May 2020, eighteen (18) patients were sent for laboratory investigation, of which six (6) patients (33.3%) tested positive for the hepatitis B Virus. Also, three (3) people were reported dead as a result of HBV from the same community. Although there is immunization for preventing the spread of the disease, there is still an increase in HBV spread. These are reasons that prompt the attention of the researchers to embark on this study, which examines the effect of health education intervention programme on the acceptability of immunization as a preventive measure of HBV among pregnant women in Yola, Adamawa State, Nigeria.

Research Question

What is the effect of six-week health education intervention programme on improving the acceptability of immunization as a preventive measure of HBV among pregnant women attending antenatal clinics in Yola, Adamawa State, Nigeria?

Hypothesis

There is no significant effect of six-week health education intervention programme on improving the acceptability of HBV immunization among pregnant women attending the antenatal clinic in Yola, Adamawa State, Nigeria.

Methodology

A pre-test post-test experimental research design was used for this study. This is because it is a research design in which the same assessment measures are given to participants both before and after they have received a treatment or been exposed to a condition, with such measures used to determine if there are any changes that could be attributed to the treatment or condition. This research involves two groups of participants: Group A (experimental group) and Group B (control group). All participants were subjected to a pre-test before the intervention and a post-test after the intervention; only participants in group A (experimental group) were subjected to the intervention. The group was exposed to health education programme on the prevention of hepatitis B spread among pregnant women in Yola, Adamawa State, Nigeria, for six weeks.

Result

The ranked effect of the six-week health education intervention programme on acceptability of HBV immunization as a preventive measure against HBV spread among pregnant women in the experimental and control groups was computed and compared in Table 1.

Table 1: Comparison of responses between experimental and control groups on acceptability of immunization as a preventive measure against HBV.

			Experimental		Control		
S/N	Acceptability of HBV immunization	Status	Mean	Std. Dev.	Mean	Std. Dev.	Mean diff
1	I accepted the hepatitis B vaccine before pregnancy	Pre-test	3.69	0.712	3.88	0.431	-0.19
		Post-test	3.80	0.407	3.97	0.186	-0.17
2	I believe that HBV vaccination is beneficial among pregnant women	Pre-test	3.55	0.827	3.88	0.431	-0.33
		Post-test	3.80	0.407	3.76	0.636	0.04
3	I received hepatitis B immunization during the most recent pregnancy	Pre-test	3.10	1.047	3.88	0.431	-0.78
		Post-test	3.63	0.556	3.76	0.636	-0.13
4	I received the first dose of the hepatitis B vaccine during pregnancy	Pre-test	3.34	0.857	3.88	0.431	-0.54
		Post-test	3.67	0.479	3.48	0.949	0.18
5	I accept that vaccination of pregnant women with HBV during pregnancy is necessary	Pre-test	3.48	0.911	2.85	0.543	0.64
		Post-test	3.93	0.254	3.38	1.115	0.55
	Aggregate	Pre-test	3.43	0.551	3.68	0.315	-0.24
		Post-test	3.77	0.197	3.67	0.429	0.10

(Decision mean = 2.50)

The mean responses of the two groups, as indicated in Table 1, revealed that the subjects agreed that improving the acceptability of HBV immunization is a major factor in reducing the spread of the virus among pregnant women. The emphasis tended to be more after the health educational intervention among subjects in the experimental group. In the table, the subjects in both groups agreed that they usually accept the hepatitis B vaccine before pregnancy and that HBV vaccination is beneficial, along with ensuring that the routine number is attained. Though the control group shared the same positive position as subjects in the experiment but after the health education intervention, the responses of subjects in the experiment group rose significantly higher than when they were not exposed to the intervention. The mean differences were -0.24 and 0.10 for the pre- and post-test scores for the two groups, respectively. In the overall aggregate, both groups were positive in their

acceptability of immunization as a major preventive measure against hepatitis B virus spread which clearly indicated that intervention with the health educational programme had a major impact.

Hypothesis: There is no significant effect of six-week health education intervention programme on improving the acceptability of HBV immunization among pregnant women attending the antenatal clinic in Yola, Adamawa State, Nigeria.

Table 2: Analysis of covariance on the effect of six-week health education intervention on the acceptability of HBV immunization by the experimental and control groups

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	0.130	2	0.065	0.580	0.563
Intercept	12.914	1	12.914	115.164	0.000
Pre-test	0.011	1	0.011	0.100	0.753
Groups	0.093	1	0.093	0.827	0.367
Error	6.279	56	0.112		
Total	822.280	59			
Corrected Total	6.409	58			

(F-critical = 4.00, p > 0.05)

The result of the test in Table 2 revealed that the experimental group, who were exposed to the health education intervention, did not differ in their score from subjects in the control group who were not exposed to the health education programme. The F-value observed was 0.827 with a p-value of 0.367 ($p > 0.05$). The covariate factor (pre-test) did not significantly influence the outcome of the experiment. The observed F-value was 0.100 with a p-value of 0.753 ($p > 0.05$). These observations did not provide sufficient evidence for rejecting the null hypothesis. The null hypothesis that there is no significant effect of six-week health education intervention programme on improving the acceptability of HBV immunization among pregnant women attending the antenatal clinic in Yola, Adamawa State, Nigeria, is therefore retained.

Discussion

This study assessed the effect of health education intervention on the acceptability of immunization as a preventive measure of Hepatitis B spread among pregnant women in Yola, Adamawa state, Nigeria, through an experimental procedure. From the analysis of the data, the study found that the use of health education intervention has not effectively improved the acceptability of immunization among pregnant women attending antenatal clinics, as revealed by the comparison of their responses in both control and experimental groups in Table 1. The six-week health education enlightens them on the importance of accepting immunization, which helps in preventing HBV spread among pregnant women.

The findings here support findings from a previous study by Schillie et al. (2018), who researched the prevention of hepatitis B virus infection in the United States, and reported that preventing perinatal transmission relies upon testing all pregnant women for HBsAg and administering timely prophylaxis, Hep B vaccine and hepatitis B immune globulin [HBIG] to infants born to infected mothers. This study revealed that a six-week health education intervention programme had less effect on the subjects' improved acceptability of HB immunization, with the impact being not significant. A possible reason for the less effect could be their familiarity with HBV immunization, having been attending post-natal clinics. However, Subjects in both groups agreed that they usually accept the hepatitis B vaccine before pregnancy and that HB vaccination is beneficial, along with ensuring that the routine number is attained. Though the control group shared the same positive position as subjects in the experiment but after the health education intervention, the position of subjects in the experiment group rose significantly higher than when they were not exposed to the intervention. This observed difference was not found to differ significantly from their counterparts who were not exposed to the health education programme. Both groups were found to be encouraged with their participation in the programme, as it was found to have improved their acceptance of immunization against HB. The finding here is in line with Owens et al., (2019), who conducted research on screening for hepatitis B virus infection in pregnant women:

reported that interventions to prevent perinatal transmission of HB infection include screening all pregnant women for HB, vaccinating infants born to HB-negative mothers within 24 hours of birth, and completing the HB vaccination series in infants by age 18 months.

Conclusion

From the findings of this study on the effect of health education intervention on acceptability of immunization as a strategy for prevention of hepatitis B virus spread among pregnant women in Yola, Adamawa State, Nigeria. It was concluded that the six-week health education intervention programme did not improve the acceptability of HB immunization among the pregnant women in Yola, Adamawa State.

Recommendations

Based on the findings from the analysed data and test of the research hypothesis, the researchers recommended that Pregnant women in Yola, Adamawa State, should continue to sustain their level of participation in the acceptability of immunization as a preventive measure for hepatitis B.

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MITIGATING SCHOOL-DROP-OUT-SYNDROME THROUGH INTEGRATING RECONCILIATORY INITIATIVES INTO EDUCATIONAL RECOVERY FOR SUSTAINING PEACE IN POST-BANDITRY BIRNIN GWARI COMMUNITY OF KADUNA STATE, NIGERIA

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Abstract

This paper explored how school drop-out syndrome can be mitigated by integrating reconciliatory initiatives into educational recovery for sustaining peace in post-banditry Birnin Gwari, Kaduna State. It examines how the recent reconciliatory initiatives in Birnin Gwari LGA and Kaduna State, which combine community-led dialogue, amnesty programs, and socio-economic rehabilitation, offer a fragile yet promising pathway to peace after years of banditry. It starts by examining the devastating impact of banditry on education in Birnin Gwari LGA, Kaduna State, Nigeria. Through a qualitative analysis of secondary data, it explores how persistent insecurity has disrupted schooling, exacerbated dropout rates, and deepened socio-economic inequalities. The paper proceeds to explore how these peace-building efforts can be sustained, adapted, and replicated to revive education and prevent relapse into violence. Drawing parallels with global post-conflict recovery models, it argues that education itself must be both a beneficiary and a driver of sustainable peace. The paper concludes that banditry in Birnin Gwari reflects systemic issues of state fragility, resource competition, and ethnic strife; that, unlike ideological insurgencies, bandits exploit economic grievances, complicating counter-measures; that education crisis mirrors global patterns (Sahel conflicts) but is intensified by local factors like illegal mining and weak law enforcement; thatgovernment responses, such as the Safe Schools Initiative, face challenges of corruption and underfunding and that Birnin Gwari's tentative peace demonstrates that reconciliatory initiatives, when rooted in community agency and socio-educational investment, can reverse banditry's harms. However, without systemic commitment to equity and justice, the paper believes that these gains risk erosion. By treating education as inseparable from peace-building, Nigeria can transform Birnin Gwari from a cautionary tale into a blueprint for conflict resolution. The paper recommends enhanced security, community engagement, leveraging technology, and national policy integration in order to turn the tide of school drop-out in society.

Keywords: school drop-out, educational recovery, reconciliatory initiatives, post-banditry, Birnin Gwari, peace accord, education

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Introduction

According to the United Nations Educational, Scientific and Cultural Organisation (1988) (UNESCO), Education is a fundamental human right and a cornerstone of development (UNESCO, 1948). However, in Birnin Gwari, a region plagued by banditry, this right was under severe threat for decades. Banditry, characterised by armed violence, kidnappings, and extortion, has escalated since the mid-2010s, rooted in socio-economic marginalisation, ethnic tensions, and weak governance (International Crisis Group, 2020). The recent reconciliatory initiatives in Birnin Gwari LGA and Kaduna State, combining community-led dialogue, amnesty programs, and socio-economic rehabilitation, offer a fragile yet promising pathway to peace. This paper investigates how insecurity has crippled educational access, quality, and equity, drawing on scholarly frameworks of human security and fragility (Newman, 2010), and how peace-building efforts can be sustained, adapted, and replicated to revive education and prevent relapse into violence.

Impact of Security Challenges on Education

Existing research highlights Nigeria's broader security challenges, including Boko Haram's insurgency and farmer-herder conflicts (Okechukwu, 2021). While studies analyse terrorism's impact on education in the Northeast, less attention is paid to banditry in Northwest Nigeria. Reports by the International Crisis Group (2020) link banditry to unemployment and illegal mining, while UNICEF (2022) notes Nigeria's 10.5 million out-of-school children, with insecurity as a key driver. This paper fills a gap by focusing on Birnin Gwari's unique context.

Methodology

This study employs qualitative analysis of secondary data from academic journals, NGO reports (Amnesty International, Mercy Corps), government publications, and verified news sources. Thematic coding identifies direct and indirect effects of banditry on education, contextualised within socio-political dynamics. Thematic and content analysis procedures are deployed to analyse and interpret the data.

Impacts of Banditry on Education

1. **School Closures and Attacks**:

Over 60% of Birnin Gwari's schools have closed due to attacks (Kaduna State Ministry of Education, 2023; Birnin Gwari Unity Forum, 2024& Birnin Gwari Local Government Council, 2025). Notable incidents include the expulsion of tens of villages and towns in Birnin Gwari with their schools (Islamic and western-styled), the 2021 abduction of 39 students from Federal College of Forestry Mechanisation and the mass abduction of nearly 200 school students in the neighbouring Kuriga town in 2024.

2. Infrastructure Destruction

Schools repurposed as military bases or destroyed, displacing 15,000 students (UNICEF, 2022). According to Birnin Gwari Unity Forum (2024) and Birnin Gwari Local Government Council (2025), nearly all the schools and public infrastructure in the deserted villages and towns in the LGA are dilapidated or destroyed due to many years of abandonment.

3. Dropout Rates

Enrollment plummeted by 45% between2018 and 2023, with girls disproportionately affected due to safety concerns (Plan International, 2023). For instance, when whole towns or villages and their schools are forcibly made to vacate their abodes, when teachers from other places cannot travel to their places of work or when existence is preferred over schooling, the result is massive dropping out from school.

4. Psychological Trauma

Teachers and students report PTSD symptoms, which hinder learning outcomes (Akorede et al., 2022; Human Rights Watch, 2022; UNICEF, 2023). Such memories of killing and maiming one's family members before one's very eyes, recounting times when one was being chased, abducted or even shot, are both devastating and psychologically traumatising for a long time.

5. Economic Strain

Families prioritise survival over education, with child labour increasing by 30% (National Bureau of Statistics (NBS), 2022). Displaced families who oftentimes lose their breadwinners to banditry resort to relying on kids for means of sustenance through begging or cheap and harmful labour, jeopardising the education of the young ones and exposing them to multifaceted vulnerabilities.

6. Strangulation of the Existing Schools in the Remaining Towns/Villages

Even the so-called existing schools in the last-man-standing-of-sort towns and villages have been rendered comatose, ineffective in the following ways:

i. Teachers are forced to abandon duty posts due to unsafe roads or school locations, leading to disruption or uncatered-for students.

ii. The general teacher paucity, which needs to be mitigated by such supportive government schemes as the National Youth Service Corps (NYSC) and deployment of student-teachers for teaching practice by teacher training institutions, excludes insecure areas, tagged as red zones that are risky to go to.

iii. Over-straining of the personnel and facilities of the existing schools due to the influx of internally displaced persons (IDPs) who fled their terrorised locations to enrol their wards in the safe schools.

iv. At times, the schools in the relatively safer locations get converted to camps for the IDPs or counter-banditry security personnel, prioritising shelter and security over education.

v. Exclusion of the schools in Birnin Gwari general area, even those in relatively safer locations, from virtually all interventions in the form of structural or personnel development programmes or projects of governments and NGOs, citing security concerns on programme/project executors.

Contextualising Reconciliatory Initiatives in Birnin Gwari

After over a decade of devastating attacks and counter-attacks, leading to near total desertion of Birnin Gwari land, around September 2024, through reconciliatory moves coordinated by the office of the National Security Adviser (NSA), Service Chiefs and the Kaduna State Government, in collaboration with some Muslim clerics, peace was brokered in Birnin Gwari LGA. The peace accord is lauded by all people living within or traversing through the vast Birnin Gwari land. The peace process in Birnin Gwari involves a myriad of efforts and strategies, the most important of which are summarised below.

1. Community-Driven Dialogue

Traditional leaders, notably, the Emir of Birnin Gwari, were in the forefront of the conciliatory moves, given their influence among the people. For instance, the Emir was conspicuously represented by the *Hakimin Tsakiya* (Head of the Central District). *HakiminGabas* (Head of the Eastern District)and *Hakimin Yamm* (Head of the Western District) at various places and times, mediating between bandit groups, security forces, and civilians.

2. Amnesty Programs

The embedded amnesty in the Birnin Gwari peace accord exists in the form of conditional disarmament and reintegration of repentant bandits, supported by state and federal agencies. As it stands, all repentant bandits have been given assurances of freedom from any retribution from both government and affected communities on conditions of among others releasing the captives/abductees in their custody, cessation of any form of hostility against anyone in any place and helping the government and community against defaulters from both within and outside the Birnin Gwari general area.

3. Socio-Economic Interventions

Livelihood grants, vocational training, and infrastructure rebuilding should be the next cogent step to take by the Nigerian government if a new leaf is to be turned on this crucial matter. For now, this is at the promissory stage. These initiatives have reduced attacks by 40% since 2022 (Kaduna Peace Commission, 2023), enabling the gradual reopening of schools. However, their long-term viability remains contested

Suitability of the Birnin Gwari Model for Educational Recovery

1. Addressing Direct Impacts of Banditry

i. School Reopening: Improvements have resulted in the return of schools in states such as Borno and Kaduna (the southern part) (State Universal Basic Education Board (SUBEB), 2023). With improved security, a good percentage of previously closed schools will resume operations, and the community vigilantes and repentant and integrated bandits will continue to patrol school premises, mirroring Colombia's EscuelasSegurasModel. Many

Islamiyyah and western-styled schools will re-open relative to the reconstruction efforts achieved in terms of the people's shelter and the school infrastructure.

ii. Trauma-Informed Education: Partnerships with non-governmental organisations (NGOs) like the United Nations' International Children's Education Fund (UNICEF)and local groups/bodies like the Reaching Out Of School Children (ROOSC) Project of the Kaduna State Government should introduce counselling programmes for students and teachers, critical for reversing the psychological scars associated with violence victims. In this direction, the activities of religious groups like the Muslim Students' Society of Nigeria (MSSN), Birnin Gwari Area Council and the *Jama'atu Izalatil Bid'ah wa Iqamatis Sunnah* (JIBWIS), Birnin Gwari Local Government Branch are commendable. The present researchers are witnesses to these laudable contributions of the aforementioned organisations. Their efforts at de-radicalising the former actors and victims of banditry in the area should be complemented and supported/sponsored, given their serious reformatory and consolatory impacts.

2. Tackling Root Causes

i. Youth Engagement: Since an idle mind is the devil's workshop, creating and equipping vocational centres targeting former bandits and out-of-school youth in such lucrative sectors as agriculture and mining through cooperatives and the like can reduce recruitment incentives to banditry in the near and even far future. As seen in Mozambique's post-civil war recovery, economic empowerment curbs relapse.

ii. Gender-Sensitive Policies: Scholarships, especially for girls, whose enrollment dropped by 60% during peak banditry (Plan International, 2022), can address systemic inequities exacerbated by conflict. In conflict-prone areas and times, girls' schools and female students are more targeted due to their vulnerability to sexual exploitation, non-resistance and fragility.

3. Community Ownership

Several community ownership strategies could be taken to sustain peace and boost student re-enrolment in post-banditry time in the affected communities. Such steps as having a viable school-based peace committee are necessary. Through such initiatives, parents, teachers, and elders can collaborate on safety protocols, fostering trust. Similar participatory frameworks succeeded in post-Boko Haram Northeast Nigeria.

4. Replicability

a. Conditions for Scaling the Model

For the Birnin Gwari approach to be replicated in regions like Zamfara or Niger State, the following are critical:

i. Decentralised Governance: Empower local leaders who understand socio-cultural dynamics, avoiding top-down militarisation. Any peace initiative without involving and relatively empowering the local leadership to take control of certain issues will be a mirage. It will simply end up putting square pegs in round holes, a clear mismatch and a waste of efforts and resources.

ii. Integrated Funding: There should be a pool of resources from the government, NGOs, and the private sector. Efforts like the Kaduna Safe Schools Fund and Reach Out Of School Children (ROOSC) are quite commendable. But efforts should be made to make sure the funds are judiciously used.

iii. Data-Driven Monitoring: Governments and other critical stakeholders in the peace initiative should try and track metrics like student retention, attack frequency, and employment rates to adjust strategies. The aim should be to advance the frontiers of mutual trust, cooperation and responsibility via proper and adequate engagement.

b. Challenges to Replication and Sustainability of the Peace Initiatives

Certain challenges are potent in facilitating or inhibiting the sustainability and replicability of the Birnin Gwari peace rebuilding initiatives, unless pre-empted and proactively nipped in the bud. This section addresses a few of such:

i. Persistent Mistrust: Communities may resist reintegrating ex-bandits without guarantees of accountability. The presence of some actors in the terrible and nightmarish banditry activities moving about unpunished (given amnesty) in the communities could trigger reprisals. The imperative of forgiveness, not vengeance, for lasting peace to reign, rather than a vicious cycle of reprisals and counter-reprisals, should be emphasised to all communities in the post-banditry period. The government at all levels should lead with practical commitment in this direction by implementing the terms of the treaty in both letter and spirit. Decisive actions should be taken to forestall any potential breaches from whatever sources and angles.

ii. **Resource Constraints:** Limited state capacity and donor fatigue threaten sustainability. The sustainability of peace after the nasty experiences needs a lot of complex strategies that could be capital-intensive. When budgetary allocations are not favourably made or judiciously managed, the myriad of human and material resources needed might be scarce, leading to an inglorious return to the days of mayhem and destruction.

Education as a Pillar of Sustainable Peace

Just as the destruction of is a direct consequence of banditry, education is a catalyst for peace. For lasting and sustainable peace to be achieved, therefore, education has to be invoked. Examples of ways to galvanise education for peace abound in such steps as curriculum reform and infrastructural revolution.

i. Funding and Policy: Prioritise education in budgets, implement the Safe Schools Declaration, and support NGOs providing alternative learning spaces. The budgetary allocation of 28% to education for the year 2025 is quite a step in the right direction, if care and deliberate steps are taken to implement it to the letter and inclusively.

ii. Research: Invest in longitudinal studies to track recovery and specific impacts. Funding should therefore be earmarked by governments and the private sector to incentivise research in this direction.

iii. Curriculum Reform: Integrating peace education to foster tolerance can be a viable option, as done in the Rwandan post-genocide peace initiative. The peace education could be a new subject entirely or new topics injected into existing ones, like Social Studies or Civic/Citizenship Education. Alternatively, religious education, which already teaches tolerance and forgiveness and remorse, should serve the purpose.

.**iv.Physical Rebuilding:** Reconstructing destroyed schools as monuments of resilience ("Peace Primary Schools"). The Borno State massive re-building os schools and towns remains a commendable physical rebuilding step taken by the government.

Conclusion

Banditry in Birnin Gwari reflects systemic issues: state fragility, resource competition, and ethnic strife. Unlike ideological insurgencies, bandits exploit economic grievances, complicating countermeasures. The education crisis mirrors global patterns (Sahel conflicts) but is intensified by local factors like illegal mining and weak law enforcement. Government responses, such as the Safe Schools Initiative, face challenges of corruption and underfunding.

Birnin Gwari's tentative peace demonstrates that reconciliatory initiatives, when rooted in community agency and socio-educational investment, can reverse banditry's harms. However, without systemic commitment to equity and justice, these gains risk erosion. By treating education as inseparable from peace-building, Nigeria can transform Birnin Gwari from a cautionary tale into a blueprint for conflict resolution.

Recommendations

Banditry has devastated education in Birnin Gwari, perpetuating cycles of poverty and insecurity. The peace initiatives are part of the laudable, long-awaited developments needed:

1. Enhanced Security: The government should collaborate with communities to fortify schools and deploy trained security personnel to deter non-compliant and defaulting aggressors.

2. Community Engagement: The drivers of the peace initiatives should leverage local leaders for conflict resolution and reintegration programmes, to give second chances and reformative changes to former/repentant bandits.
3. Leverage Technology: Radio-based learning (used during COVID-19) should be deployed for conflict-prone areas. This works even in areas with no mobile networks or a constant electricity supply.
4. National Policy Integration: Mainstream Kaduna's peace framework into Nigeria's National Action Plan for Safe Schools, to facilitate its awareness and deliberate replication in other regions.
5. International Partnerships: The Nigerian Government should collaborate with bodies like ECOWAS to share best practices across West Africa's conflict zones.

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EFFECTS OF PROJECT AND DEMONSTRATION TEACHING APPROACHES ON STUDENTS' AGRICULTURAL SKILLS ACQUISITION IN COLLEGES OF EDUCATION, PLATEAU, NIGERIA

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Abstract

This research was carried out to determine the effects of demonstration and project teaching approaches on the acquisition of agricultural skills among students in colleges of education in Plateau State, Nigeria. The study adopted a Quasi-experimental, pretest-post-test design. The population for the study consists of all the 147-year-two agricultural education students of the two colleges of education in Plateau State. Purposive sampling was used to select the Federal College of Education, Pankshin, and 75 students were selected using a simple random sampling technique. A 25-item multiple-choice Agricultural Skill Acquisition Test (ASAT) was used as an instrument for data collection. Research questions were answered using mean and standard deviation, while t-test statistics were used to test the null hypotheses at the .05 level of significance (P=0.05). The findings revealed that both project and demonstration teaching approaches have significant effects on students' acquisition of agricultural skills. The result also showed that, project teaching approach is more effective in teaching agricultural skills than the demonstration teaching approach. The study concluded that the project teaching approach will enhance students' acquisition of agricultural skills than the demonstration teaching approach, and that the use of project and demonstration teaching approaches to teach agricultural skills will be more effective in facilitating agricultural education students' acquisition of agricultural skills than the conventional lecture approach. The researcher recommended that curriculum planners and agricultural education teachers should emphasise the importance of using project and demonstration teaching approaches in colleges of education.

Keywords: Project, demonstration, teaching approaches, agricultural skills, acquisition, colleges of education

Introduction

Agricultural science education, as one of the core vocational education courses taught in Colleges of Education, can be a key driver of economic growth and skills acquisition if the appropriate teaching approaches are used to teach the students. This is because vocational education is generally aimed at providing the technical knowledge and skills required for career application. The emergence of career education and rising interest in job-related courses, and the employers of labour's emphasis on production skills acquisition before job placement, have generated a need for rapid expansion of employment-related education in Nigeria, especially now that the country is under the pressure of high unemployment and under-employment rates. To reduce this menace and to also achieve the goal of vocational education at the colleges of education, teachers have to use the required teaching approaches in teaching the various vocational skills as outlined by the curricula of the Nigerian Certificate of Education (NCE).

There are several teaching approaches available to the agricultural education teachers in colleges of education, such as demonstration, discussion, field trip, lecture, most of which are practical approaches. Amoah (2009) supported these by stating that agricultural education programme content, teaching, and learning should be practical-oriented. This follows the agricultural pedagogical fact that vocational skills are better acquired when the learners (students) learn by doing. The duration for learning a skill and the level of competencies a learner attained at the end are also dependent on how the learner is being taught. The desire for a functional

instructional approach to teaching and learning is becoming stronger among teachers at all levels of educational systems is proof to the fact of teaching approaches are important to knowledge transmission. Therefore, the study looked at how these teaching approaches, projects, and demonstrations can have effects on the acquisition of agricultural skills.

A project is a whole-hearted, purposeful activity proceeding in a social environment. It is a bit of real life that has been imparted into school. The Project Approach refers to a set of teaching strategies that enable teachers to guide children through in-depth studies of real-world topics. The Project Approach is not unstructured. There is a complex but flexible framework with features that characterise the teaching-learning interaction. When teachers implement the Project Approach successfully, children can be highly motivated, feel actively involved in their own learning, and produce work of high quality (Chard, 2004). A project is an in-depth investigation of a topic worth learning more about. The investigation is usually undertaken by a small group of children within a class, sometimes by a whole class, and occasionally by an individual child. The key feature of a project is that it is a research effort deliberately focused on finding answers to questions about a topic posed either by the children, the teacher, or the teacher working with the children (Katz & Helm, 2001).

According to Udofia and Aniefiok (2013), the project approach can be carried out by creating the proper situation for the students by the teacher in the class. The students evaluate their task by determining whether the objectives are achieved or not. After that, they criticise and express their feeling about the task freely. It should include the proposal, plan and its discussion, duties allotted to different students and how far they were carried out by them. It should also include the details of places visited and surveyed guidance for future and all other possible details (Nsa, 2002). Project Approach refers to a systematic teaching method that engages students in learning knowledge and skills through an extended inquiry process structured around complex, authentic questions and carefully designed products and tasks (Robert & Harlin, 2007). This process can last for varying time periods and can extend over multiple content areas. It is a set of teaching approaches which enable teachers to guide students through in-depth studies of real-world topics.

This set of approaches, according to Udofia and Aniefiok (2013), involves experimentation, instructions and illustration. Projects are described as having a complex but flexible structural framework with features that characterise the teaching-learning interaction, depending largely on instructional approaches. The project approach is one of the instructional approaches used by vocational and technical instructors as it enables students' participation and fast acquisition of skills. Furthermore, project approach is like assignment method in which a task is given to the students or several tasks are shared to students to carry out (written or practical) allowing a great deal of students' involvement right from the planning stage, the skh of the project, the steps of executing it, the tools, equipment and materials to be used up to the assembling stage of the project. The project seems to be a versatile teaching approach which facilitates teaching and assessing learners' performance simultaneously without negatively impacting the learner who learns independently. The project instructional approach is one of the instructional approaches used by technical instructors as it enables students' participation and fast acquisition of skills (Edu et al., 2012).

The most effective way to teach an occupational skill is to demonstrate it. Demonstration involves showing by reason or proof, explaining or making clear by use of examples or experiments. Put more simply, demonstration means to clearly show (Sola & Oloyede, 2007). In teaching by demonstration, students are set up to potentially conceptualise class material more effectively, as shown in a study which specifically focuses on demonstrations presented by teachers (Bruce et al., 2009). Demonstration approach is effective with both large and small groups. The greater the degree of participation and sensory involvement by the learner, the more effective learning will be. Teachers can improve the use of the demonstration approach in the classroom by allowing students to use several senses, which involve seeing, hearing and possibly experiencing. Also, ideas should be presented to stimulate interest. If these precautionary measures are not taken, the demonstration can limit students' participation.

According to Achounye (2002), the demonstration approach is a practical method of teaching. It involves showing, doing and telling something. Therefore, the teacher needs to display the steps in the process and explain them accurately and clearly, while students are expected to practice by repeating the things the teacher

has done. Demonstration means any planned performance of an occupational skill, scientific principle or experiment. Demonstration approach has emerged to become an instructional approach that is gaining growing interest within the engineering education community (Hadim & Esche, 2002). Duch (2002) described the demonstration approach as an instructional strategy that challenges students to 'learn how to learn', working cooperatively in groups to seek solutions to real-world problems. Prpic and Hadgraft (2009) addressed the key ingredients of the demonstration approach and postulated that it should not be confused with design projects or case studies, where the focus is predominantly on the application of existing knowledge and integration of what is already known. Demonstration approach goes beyond these; students will encounter some concepts for the first time, and therefore they need strategies for acquiring this new knowledge (Prpic & Hadgraft, 2009). Demonstration instructional approach is a method of teaching concepts, principles or real things by combining explanation with handling or manipulation of real things, equipment or materials (Edu et al., 2012).

The teacher has to pay attention to all safety rules, precautions and procedures; and emphasise them to the students. Use proper instructions, aids such as chalkboard, charts, and handouts, to support the demonstration. Provide for trainees' participation where possible, during and after the demonstration. Demonstrate the correct way only. First impressions are important; therefore, make them correct ones and always summarise the steps and emphasise key points again (Ogologo & Wagbara, 2013). Demonstration teaching approach is a method of teaching concepts, principles or real things by combining explanation with handling or manipulation of real things, equipment or materials (Edu *et al*. 2012). It involves showing by reason or proof, explaining or making clear by use of examples or experiments. Therefore, the greater the degree of participation and sensory involvement by the learner during the demonstration, the more effective learning will be. Also, ideas should be presented to stimulate interest. If these precautionary measures are not taken, the demonstration can limit student participation. Demonstration approach can bridge the gap between theory and practice, control the rate of breakages of tools and equipment, and accidents, as students watch the teacher do it before attempting to do the same. It is a learning by doing approach, and so enables the teacher to teach manipulative and operational skills within a short time using little material. To further examine how project and demonstrations affect agricultural skills acquisition was the basis for this study.

Acquisition of Agricultural Skill

Vocational and Technical Education is used as a comprehensive term referring to those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life (NPE, 2004). The goals of Vocational and Technical Education shall be to provide trained manpower in the applied sciences, technology and business particularly at craft, advanced craft and technical levels; provide the technical knowledge and vocational skills necessary for agricultural, commercial and economic development; and also, to give training and impart the necessary skills to individual who shall be self-reliant economically (NPE, 2004).

Vanpatten and Bennati (2010) defined skill as the ability to do rather than underlying competence or mental representation. Skill acquisition refers to a form of prolonged learning about a family of events. Through many pairings of similar stimuli with particular responses, a person can begin to develop knowledge representations of how to respond in certain situations. These representations have some form of privileged status in memory because they can be retrieved more easily and reliably than memories of single events. Thus, skilled behaviours can become routinised and even automatic under some conditions. Acquisition is a measure of what a person has learned within or up to a given time (Edmond & Ayodele, 2004). It is a measure of accomplished skills and indicates what a person can do at present as a result of learning. So, the acquisition of agricultural skills implies a measure of accomplished or learned skills a person has put into practice at present as an outcome of learning. This means what a student and a graduate of an agricultural training institution is able to do as a result of learning instructions during the period of learning.

Statement of Problem

The researchers observed that there is adequate time for teaching agriculture in colleges of education, and in spite lucrative nature of agribusinesses and the quick return on investment, not many college graduates are

willing to enter into agricultural production as a vocation. One can attribute this to poor acquisition of agricultural skills by these graduates, evident in their inability to gainfully engage in agricultural vocations after graduation. This may be caused by inadequate skills of the learners, consequent upon poor teaching of the production skills. The proceedings of the 43rd annual conference report of the Science Teachers Association of Nigeria (STAN) 2002, reported that emphasis is still on cognitive achievement and passing of examinations and not on production ability (Eleobhose & Uhumuavbi, 2002). The inability to put into practice what is taught is viewed as the cause of the relative backwardness of most societies. This observation has raised doubts on the efficacy of the teaching approaches used by teachers, considering the fact that the goal of all vocational and technical education as provided by the National Policy on Education is to provide technical knowledge and vocational skills necessary for agricultural productivity, development and self-reliance. So, the researcher wonders whether students of colleges of education are generally incapable of understanding and practising taught agricultural skills, or the teaching approaches used in training them are not appropriate to promote adequate acquisition of agricultural skills as provided by the curricula. Though many researchers have expressed worry about the ineffectiveness of the lecture method, it seems to be the most used in teaching agricultural education in colleges of education. Edu et al. (2012) reported that the acquisition of knowledge about employment opportunities, requirements and trends, and the possession of skills and qualifications that are saleable in the employment market, which are the key expectations of modern learning needs, should be the goal of educational institutions.

More so, the teaching of agricultural science at the primary and secondary school levels, where most of the NCE graduates hope to teach, requires a sound background in the practice of agriculture. To effectively teach, they must themselves be well-trained using practical approaches that promote real-world conditions. But previous researchers concentrated most of their work on teaching methods that teachers used at the primary and secondary schools, with little attention to how the teachers themselves were trained. Since the method of presentation is so important, teachers, including pre-service teachers, should be concerned not only with general methodology but also with some special approaches to teaching various subjects (Ogologo & Wagbara, 2013). Therefore, if the colleges of education's agricultural education graduates have to acquire skills that make them functional, teaching approaches that promote participation become necessary. Hence, the need for the study: Effects of Project and Demonstration teaching approaches on acquisition of agricultural skills among students in colleges of education in Plateau state, Nigeria.

Objectives of the Study

The general objective of the study is to investigate the effects of project and demonstration teaching approaches on students' acquisition of agricultural skills in colleges of education in Plateau state, with specific objectives to:

1. Determine the effect of the project teaching approach on students' acquisition of agricultural skills in colleges of education.
2. Identify the effect of the demonstration teaching approach on students' acquisition of agricultural skills in colleges of education.
3. Compare the effect of project and demonstration teaching approaches on students' acquisition of agricultural skills in colleges of education.

Research Questions

1. What effect does the project's teaching approach have on colleges of education students' acquisition of agricultural skills?
2. What is the effect of the demonstration teaching approach on students' acquisition of agricultural skills in colleges of education?
3. Do college of education students differ in their agricultural skills acquisition when they are taught using project and demonstration teaching approaches?

Hypotheses

The following research hypotheses were generated for the study and tested at a 0.05% level of significance (p=0.05):

HO_1: Project teaching approach does not have a significant effect on students' acquisition of agricultural skills in colleges of education.

HO_2: The demonstration Teaching Approach does not have a significant effect on students' acquisition of agricultural skills in colleges of education.

HO_3: There is no significant difference between the effect of project teaching approach and demonstration teaching approach on students' acquisition of agricultural skills in colleges of education.

Methodology

Quasi-experimental design was adopted for the research. The experimental groups were taught using different teaching approaches, and the scores were compared (Akorede et al, 2019; Biu et al., 2025). Quasi-experimental research design is also referred to as before-and-after with control design. The treatment is then introduced, and the dependent variable is measured again after the treatment has been introduced. The effect of the treatment would be equal to the level of the phenomenon after the treatment minus the level of the phenomenon before the treatment (Kothari, 2004). The population for the study consist of 147 year two students of Agricultural Education from the two colleges of education in the state. The researcher used a purposive sampling method to select Federal College of Education, Pankshin and random sampling was used to select 75 out of the 122 year two students in the college served as the sample for the study. Mean and Standard deviation were used to analyse the collected data. Statistical t-test was used to test the hypotheses at 5% level of significance (p=.05). When the calculated t-test value was greater than or equal to the critical t-value (t-calculated ≥t-critical) at 5% level of significance (p=.05), the null hypotheses of no significant difference was rejected, but when the calculated t-value was less than the t-critical value (t-calculated ≤ t-critical) at 5% level of significance, the null hypotheses of no significant difference were retained (Auwal, 2013; Edmond & Ayodele, 2014; and Ogologo & Wagbara, 2013).

Results

Table 1: Means and Standard deviation for the effect of the Project teaching approach.

Group	N	$\bar{X}$	SD	Mean Difference
Project approach post-test	25	20.16	2.85	12.12
Project approach pretest	25	8.04	2.82	

Source: Fieldwork, 2016

Table 1 shows that the mean and standard deviation of project approach post-test scores are 20.16 and 2.85, while the mean and standard deviation for the project approach pretest scores are 8.04 and 2.82. This showed that the post-test scores mean and standard deviation are greater than the pretest scores mean and standard deviation. This revealed a mean difference of 12.12 after the treatment was introduced. So it implied that students performed better when they were taught using the project approach, as seen in the post-test higher mean score. Therefore, it indicates that the project teaching approach has an effect on students' acquisition of agricultural skills.

Table 2: Means and Standard deviations for Demonstration approach pretest and post-test scores.

Group	N	$\bar{X}$	SD	Mean Difference
Demonstration approach post-test	25	16.32	2.82	7.92
Demonstration approach pretest	25	8.40	2.48	

Source: Fieldwork, 2016

Table 2 shows that the mean and standard deviation of demonstration approach post-test scores are 16.32 and 2.82, while the mean and standard deviation for the pretest scores are 8.40 and 2.48, with a mean difference of

7.92 between the pretest scores and post-test scores. This showed that the mean and standard deviation for students exposed to the demonstration approach post-test scores are greater than the pretest scores mean and standard deviation of students before the treatment. So, it implies that students performed better when they were taught using a demonstration approach, as shown in the difference of the means. Therefore, it indicates that the demonstration teaching approach has an effect on students' acquisition of agricultural skills.

Table 3: Means and Standard Deviations for Project and Demonstration Groups.

Group	N	$\bar{X}$	SD	Mean Difference
Project group post-test	25	20.16	2.85	3.84
Demonstration group post-test	25	16.32	2.82	

Source: Fieldwork, 2016

Table 3 shows that the mean and standard deviation of project approach post-test scores are 20.16 and 2.85, while the mean and standard deviation for the demonstration group post-test scores are 16.32 and 2.82. This showed that the mean and standard deviation for project teaching approach post-test scores are greater than the mean and standard deviation post-test scores for the demonstration approach group. So it implies that students performed better when they were taught using the project approach than those taught using the demonstration approach. Therefore, it indicates that the project teaching approach has a greater effect on students' acquisition of agricultural skills.

Test of Null Hypotheses

To test the null hypotheses 1and 2, the post-test scores of students taught using project and demonstration teaching approaches were compared with the post-test scores of the control group (lecture approach), while hypothesis three was tested by comparing the post-test scores of students taught using the project teaching approach with the post-test scores of those exposed to the demonstration teaching approach. The t-test statistics were used to analyse the scores at 5% level of significance (p=.05).

Table 4: Effect of Project Teaching Approach on Students' Skill Acquisition

Group	N	$\bar{X}$	SD	t-calc	t-crit.	Decision
Project approach post-test	25	20.16	2.85	14.76	2.09	Sig.
Project approach pretest	25	12.04	2.82			
Df=24						P=.05

Source: Fieldwork, 2016

Table 4 t-test analysis result showed that the t-calculated is 14.76, which is greater than the t-critical value of 2.09 at the .05 level of significance. This result, therefore, showed that the project teaching approach has a significant effect on students' agricultural skills acquisition. So, the null hypothesis that the project teaching approach does not have a significant effect on students' acquisition of agricultural skills was rejected.

Table 5: Effect of Demonstration Teaching Approach on Students' Skill Acquisition

Group	N	$\bar{X}$	SD	t-calc	t-crit.	Decision
Demonstration approach post-test	25	16.32	2.82	9.93	2.09	Sig
Demonstration approach pretest	25	8.40	2.48			
Df=24						P=.05

Source: Fieldwork, 2016

Table 5 t-test analysis result showed that the t-calculated is 9.93, which is greater than the t-critical value of 2.09 at the .05 level of significance. This result showed that the demonstration teaching approach has a significant effect on students' agricultural skills acquisition. Therefore, the null hypothesis that the demonstration teaching approach does not have a significant effect on students' acquisition of agricultural skills was rejected.

Table 6: Difference between the effects of Project and Demonstration Teaching Approaches

Group	N	¥	SD	t-calc	t-crit.	Decision
Project group post-test	25	20.16	2.85	4.89	1.96	Sig
Demonstration group post-test	25	16.32	2.82			
Df=48						P=.05

Source: Fieldwork, 2016

Table 6 showed the t-test analysis for the difference between the level of students' agricultural skills acquisition when taught using the project teaching approach and those exposed to the demonstration teaching approach. The t-test analysis result showed that the t-calculated is 4.89, which is greater than the t-critical value of 1.96 at the .05 level of significance. This result implies that there is a significant difference in the levels of students' acquisition of agricultural skills between the project teaching approach and the demonstration teaching approach. Therefore, the stated null hypothesis that there is no significant difference between students taught using the project teaching approach and those exposed to the demonstration teaching approach in their acquisition of agricultural skills was rejected.

Summary of Major Findings

The findings of this research, which was carried out to determine the effects of project and demonstration teaching approaches on students' acquisition of agricultural skills in colleges of education, Plateau State, were based on the results of the descriptive statistics (mean and standard deviation) and t-test analysis. The major findings are summarised as follows:

1. The project teaching approach has a significant effect on students' acquisition of agricultural skills.
2. Demonstration teaching approach also has a significant effect on students' acquisition of agricultural skills.
3. The research also revealed that the project teaching approach was more effective in teaching agricultural skills than the demonstration teaching approach.
4. It was further revealed that the demonstration teaching approach is better than the traditional lecture approach in teaching agricultural skills in colleges of education.

Discussion of Major Findings

The study revealed that the project teaching approach has a significant effect on students' acquisition of agricultural skills in colleges of education. This was shown in Table 1, where the post-test mean score (20.16) for students taught using the project teaching approach is greater than their pretest mean score (8.04). The t-test analysis result in Table 4 also showed that the project teaching approach had a significant effect on students' acquisition of agricultural skills in colleges of education, as the t-calculated (14.78) was greater than the t-critical value (2.09) at the .05 level of significance. This finding agrees with Binnie (2002), who found that the use of a project teaching approach was very helpful in assisting the learning of students. Their active involvement in the tasks motivates them to think and enhances their learning. Edmond and Ayodele (2014) also found that the project's instructional approach was more effective in enhancing the performance of students. Udofia and Aniefiok (2013) further concluded that the project teaching approach facilitates students' skill acquisition.

Table 2 revealed that the post-test mean score (16.32) of students taught using a demonstration teaching approach is greater than their pretest mean score (8.40). The t-calculated (9.93) on table 5 was also greater than the t-critical value of 2.09 at the .05 level of significance. This therefore means that the demonstration teaching approach has an effect on students' acquisition of agricultural skills. This finding is supported by Ogologo and Wagbara (2013), as they reported that the demonstration teaching approach has an effect on students' academic achievement. Amoah (2009) also found that the demonstration teaching approach was effective in teaching practical agricultural science.

Table 3 presents the mean score of 20.16 and standard deviation (2.85) of students exposed to the project teaching approach, which was higher than the mean score of 16.32 and standard deviation (2.82) of students

exposed to the demonstration teaching approach. The finding revealed that the project teaching approach was more effective than the demonstration teaching approach in enhancing students' acquisition of agricultural skills. The t-test analysis in Table 6 showed a significant difference in the students' acquisition of agricultural skills when taught using the project teaching approach and the demonstration teaching approach. The analysis revealed the t-calculated value of 4.89, which was greater than the t-critical value of 1.96 at the .05 level of significance. This implies that the project teaching approach was more effective than the demonstration teaching approach in students' acquisition of agricultural skills. This finding agreed with Duruji *et al.* (2014)'s work, which reported that more participatory teaching stimulates imaginative and conceptual thinking amongst students and has a positive in their performance. Udofia and Aniefiok (2013) also found that the project teaching approach facilitates students' skill acquisition. Nsa (2002) experimented on demonstration and project methods on secondary school students' acquisition of production skills using t-test and mean statistics, and reported that the project teaching method was more effective than the demonstration teaching method. Edmond and Ayodele (2014), in their research with building construction students, found that the project instructional approach was better in enhancing students' academic achievement. However, this finding disagreed with Amoah (2009), who found that the demonstration teaching approach was better than the project approach in teaching practical skills in agricultural science. Though it was a perception study and the result may likely be that the students responded based on their preference for the teaching approaches instead of the learning outcome.

Conclusion

Based on the findings of the study, the following conclusions have been made:

1. Project and demonstration teaching approaches are effective in teaching agricultural skills in colleges of education and can facilitate the acquisition of agricultural skills among students.
2. The project teaching approach is more effective than the demonstration teaching approach in teaching agricultural education in colleges of education.
3. Project and demonstration teaching approaches can be concurrently used in teaching skill areas in agricultural education in colleges of education.
4. Vocational agricultural skill acquisition among agricultural education students can actually be enhanced if project and demonstration teaching approaches are used to teach in colleges of education.

Recommendations

Based on the findings and conclusions of the study, the following recommendations have been considered necessary:

1. Agricultural education curriculum planners should review the colleges of education's NCE Curriculum to emphasise the importance of using project and demonstration teaching approaches by teachers in the colleges.
2. The project teaching approach should be properly adopted by agricultural education teachers as the main instructional approach to teaching agricultural skills in colleges of education.
3. Agricultural education teachers in the colleges should be discouraged from using the conventional teaching approach (lecture approach) in teaching.
4. Agricultural education students should be encouraged to approach learning agriculture as a vocation for livelihood. This is to enhance active participation and also discourage the mindset that practical learning is stressful.
5. There is a need for federal and state ministries of education to interphase with the ministries of agriculture in equipping the agricultural education departments in the colleges with adequate facilities required for vocational agricultural training.

6. There should be provision for compulsory teacher training and retraining for agricultural education teachers by institutions of learning for them to be effective in their work using practical-oriented instructional approaches.
7. For effective acquisition of agricultural skills, the teaching of agriculture at the colleges of education should be 70% on-the-farm-training and 30% classroom work in order to achieve the self-reliance target of the national goal of vocational and technical education.

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GAMIFICATION STRATEGIES AND THEIR EFFECTS ON LEARNING MOTIVATION AND CONCEPT MASTERY IN MATHEMATICS AND SCIENCE EDUCATION

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Abstract

This study examined the impact of gamification strategies on students' learning motivation and concept mastery in mathematics and science education in Nigerian secondary schools. A quasi-experimental design was adopted using intact classes from four public schools randomly assigned to experimental (gamified) and control (traditional) groups. A total of 180 students participated, and data were collected through a Concept Mastery Test and a Learning Motivation Questionnaire. ANCOVA analysis revealed significant differences between the two groups in both motivation and concept mastery, with the gamified group performing significantly better. The findings align with Self-Determination Theory and support the view that gamification enhances intrinsic motivation and cognitive engagement, leading to improved academic outcomes. The study recommends integrating gamified instruction into STEM curricula, training teachers in game-based pedagogy, and supporting digital education innovations across Nigeria.

Keywords: Gamification, Motivation, Concept Mastery, Mathematics Education, Science Education, Self-Determination Theory, Secondary Schools, Nigeria.

Introduction

In recent years, gamification has emerged as a transformative strategy in education, particularly in mathematics and science classrooms where student motivation and concept mastery often present persistent challenges. Gamification refers to the use of game elements such as points, levels, badges, and leaderboards in non-game contexts to enhance user engagement and performance (Mustafa, 2023). In education, it offers a promising approach for fostering active learning and motivating students through interactive, rewarding, and goal-oriented experiences. Mathematics and science subjects, though foundational for STEM careers, are often perceived as abstract, rigid, and difficult by learners, leading to low achievement and disengagement, especially in developing countries like Nigeria (Zourmpakis et al., 2022). Research has shown that gamified learning environments promote sustained attention, curiosity, and constructive competition, which are essential for grasping complex concepts (Kalogiannakis et al., 2021). Furthermore, gamification fosters intrinsic motivation by satisfying learners' psychological needs for autonomy, competence, and relatedness as described by Li et al. (2024) on Self-Determination Theory. When applied appropriately, gamification can bridge the gap between theoretical content and practical understanding, especially in science and mathematics instruction, where learners often struggle with abstraction and symbolic representation (Kam & Umar, 2018). Despite the growing evidence of its effectiveness, there remains limited empirical research in African secondary school contexts, particularly examining how gamification influences both motivation and concept mastery in STEM-related disciplines (Aliyu et al., 2025). Therefore, this study seeks to investigate the effects of gamification strategies on students' learning motivation and conceptual understanding in mathematics and science education. It further explores how game-based instructional designs can be employed to support curriculum delivery, especially in environments characterised by low resource availability, high teacher-student ratios, and declining learner interest in STEM fields (Aliyu et al., 2025). The outcomes of this study will provide data-driven insights to inform pedagogical practices and policy frameworks for enhanced student achievement and engagement.

Objectives of the Study

This study aims to explore the effectiveness of gamification strategies in enhancing students' learning motivation and concept mastery in mathematics and science education. Specifically, the study seeks to:

1. Examine the effect of gamification strategies on students' motivation to learn mathematics and science.
2. Determine the impact of gamification strategies on students' mastery of mathematical and scientific concepts.

Based on these objectives, the following research questions were raised:

1. What is the difference in learning motivation between students taught mathematics and science using gamification strategies and those taught using conventional methods?
2. What is the difference in concept mastery between students exposed to gamified instruction and those taught through conventional approaches?

Null Hypotheses

The following null hypotheses were formulated and tested at a 0.05 level of significance:

H_{01}: There is no significant difference in the learning motivation of students taught mathematics and science using gamification strategies and those taught using conventional methods.

H_{02}: There is no significant difference in the concept mastery of students taught mathematics and science using gamification strategies and those taught using conventional methods.

Literature Review and Theoretical Framework

Gamification has garnered increasing attention in education due to its potential to enhance student engagement, motivation, and learning outcomes, particularly in subjects like mathematics and science that often pose cognitive and emotional challenges for learners. According to Rivera et al. (2021), gamification can positively influence behavioural outcomes by integrating game elements such as rewards, competition, feedback, and progress tracking into traditional instruction. These elements provide immediate reinforcement, encourage participation, and stimulate curiosity, which are essential for conceptual learning. In mathematics education, gamification helps simplify abstract concepts through interactive challenges, fostering deeper understanding (Alsawaier, 2018). Similarly, in science classrooms, games and simulations make complex phenomena tangible and engaging, promoting experiential learning and inquiry (Ukgoda, 2025). A meta-analysis by Bharti (2023) confirmed that gamified instructional strategies consistently yield moderate to high effect sizes on both student motivation and achievement in STEM disciplines.

Moreover, Hellín et al. (2023) emphasised that the instructional effectiveness of gamification is maximised when game mechanics are directly aligned with specific learning objectives. The theoretical foundation of this study is rooted in Self-Determination Theory (SDT) by Deci and Ryan (2012), which asserts that motivation increases when learners feel autonomous, competent, and connected. Gamified learning environments are known to fulfil these psychological needs, promoting both intrinsic motivation and persistent effort. Additionally, the Constructivist Learning Theory supports the use of game-based learning, as it emphasises active participation, meaningful context, and feedback loops that enable learners to construct their understanding through interaction. Research by Maryana et al. (2024) and Smirani and Yamani (2024) also revealed that students in gamified science and mathematics classrooms demonstrate greater conceptual mastery due to improved retention and cognitive engagement. However, studies also caution that superficial or poorly designed gamification can lead to diminished interest and surface-level learning, highlighting the need for thoughtful instructional design (Sani et al., 2025). Given the limited contextual studies in African and specifically Nigerian school systems, this study contributes to the literature by examining the effectiveness of gamified instruction in enhancing student motivation and conceptual understanding in mathematics and science among secondary school students.

Methodology

This study adopted a quasi-experimental design involving a non-equivalent pre-test, post-test control group structure to assess the effects of gamification strategies on students' motivation and concept mastery in mathematics and science (Akorede et al., 2019). The design was chosen to allow for experimental control while using intact classes due to ethical and administrative constraints in school settings. The study was conducted in selected public junior and senior secondary schools in the Zaria Education Zone of Kaduna State, Nigeria. The population comprised all JSS3 and SS2 students offering mathematics and basic science/physics, with a target population of approximately 4,500 students. Using purposive and simple random sampling techniques, four co-educational schools were selected based on the availability of digital resources and trained teachers. Two schools were randomly assigned to the experimental group, where gamified instruction was implemented using platforms such as Kahoot, Classcraft, and Quizizz integrated into lesson delivery, while the other two formed the control group, receiving conventional teaching. A total of 180 students participated in the study, 90 in the experimental group and 90 in the control group. The instruments used for data collection were: the Mathematics and Science Concept Mastery Test (MSCMT), a 40-item objective test covering key topics aligned with the school curriculum, and the Student Learning Motivation Questionnaire (SLMQ), a 30-item Likert-type instrument adapted from Glynn et al. (2011) with subscales measuring intrinsic motivation, self-efficacy, and goal orientation. Both instruments were validated by experts in mathematics/science education and educational psychology, and pilot-tested with 30 students in a neighbouring school to estimate reliability using Cronbach's alpha, which yielded coefficients of 0.83 for SLMQ and 0.79 for MSCMT, indicating acceptable internal consistency. Data were collected over a six-week period, during which experimental group students engaged in gamified activities, competitions, and feedback cycles aligned with weekly lesson objectives. Pre-tests and post-tests were administered to both groups, and data were analysed using descriptive statistics, Analysis of Covariance (ANCOVA) for hypothesis testing, and effect size estimation using partial eta squared (η^2) to determine the magnitude of observed differences. Ethical approval was secured from the appropriate educational authorities, and informed consent was obtained from all participants and their school administrators.

Results

Research Question 1: What is the difference in learning motivation between students taught mathematics and science using gamification strategies and those taught using conventional methods?

Null Hypothesis 1 (H_{01}): There is no significant difference in the learning motivation of students taught mathematics and science using gamification strategies and those taught using conventional methods.

Table 1: ANCOVA Summary for Post-Test Motivation Scores (Pre-Test as Covariate)

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial η^2
Pre-test (Covariate)	103.42	1	103.42	6.53	0.012*	0.036
Group (Gamified vs. Traditional)	415.60	1	415.60	26.25	0.000**	0.134
Error	2750.48	176	15.63			
Total	**4456.17**	**179**				

*p < 0.05, **p < 0.001*

Table 1 shows a statistically significant difference in post-test motivation scores between students taught using gamification strategies and those taught using conventional methods, $F(1, 176) = 26.25$, $p < .001$, partial $\eta^2 = 0.134$. This indicates a large effect size, meaning gamified instruction significantly improved students' learning motivation. Therefore, H_{01} is rejected.

Research Question 2: What is the difference in concept mastery between students exposed to gamified instruction and those taught through conventional approaches?

Null Hypothesis 2 (H_{02}): There is no significant difference in the concept mastery of students taught mathematics and science using gamification strategies and those taught using conventional methods.

Table 2: ANCOVA Summary for Post-Test Concept Mastery Scores

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial η^2
Pre-test (Covariate)	198.75	1	198.75	8.22	0.005*	0.045
Group (Gamified vs. Traditional)	587.20	1	587.20	24.89	0.000**	0.124
Error	4146.65	176	23.56			
Total	**5975.66**	**179**				

*p < 0.05, **p < 0.001*

Results in Table 2 reveal a significant difference in concept mastery between the experimental and control groups, $F(1, 176) = 24.89$, $p < .001$, with a partial $\eta^2 = 0.124$. This suggests that gamification has a strong positive impact on students' conceptual understanding in mathematics and science. Thus, H_{02} is also rejected.

Discussion of Findings

The findings of this study strongly affirm the positive impact of gamification strategies on students' learning motivation and concept mastery in mathematics and science education. The ANCOVA results revealed significant differences in both motivation and conceptual understanding between students taught using gamified instruction and those taught through traditional methods, with large effect sizes indicating substantial educational value. These outcomes align with previous research that underscores the motivational power of gamification in academic settings. For instance, Rivera et al. (2021) found that game elements like feedback, points, and leaderboards trigger intrinsic motivation by satisfying students' needs for autonomy, competence, and social interaction, as theorised in Self-Determination Theory (Deci & Ryan, 2012). Similarly, Aliyu et al. (2025) reported improved academic performance and engagement when gamified tools were integrated into science and mathematics curricula. The present study adds to this body of knowledge by offering empirical evidence from a Nigerian context, indicating that students in gamified classrooms demonstrated greater conceptual understanding due to the interactive, iterative, and visual nature of gamified learning. This supports Alsawaier (2018), who emphasised the value of gamified environments in promoting active exploration and sustained cognitive engagement. Additionally, the improvement in mastery may be attributed to the immediate feedback and incremental challenges embedded in game mechanics, which are known to scaffold learning effectively (Sani et al., 2025). Moreover, the study echoes Subhash and Hellin et al. (2023), who highlighted that well-structured gamification fosters meaningful learning and reduces anxiety associated with difficult STEM subjects. These results suggest that integrating gamification into science and mathematics pedagogy not only stimulates learner interest but also enhances retention and understanding of core concepts, an essential requirement for fostering critical thinking and 21st-century competencies.

Conclusion

This study investigated the effects of gamification strategies on students' motivation and concept mastery in mathematics and science education within Nigerian secondary schools. The findings revealed that gamified instructional approaches significantly enhanced both learning motivation and conceptual understanding compared to conventional teaching methods. These outcomes underscore the pedagogical relevance of integrating game elements into STEM teaching, particularly in subjects where students often experience disengagement and learning difficulties. The results affirm that gamification is more than just a tool for entertainment it is a meaningful instructional strategy that aligns with established theories of motivation and cognitive engagement. Given the growing demand for innovative teaching methods that foster deep learning and positive attitudes toward science and mathematics, gamification presents a viable, cost-effective approach adaptable to diverse classroom settings.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. Integrate Gamification in STEM Curriculum: Education authorities and curriculum developers should formally incorporate gamified instructional approaches into mathematics and science education at the secondary school level to enhance engagement and mastery.

2. Teacher Training and Capacity Building: Teachers should be trained on how to design and implement effective gamified learning experiences using platforms like Kahoot, Quizizz, and Classcraft, ensuring alignment with learning objectives.
3. Policy Support for EdTech Integration: Governments and education stakeholders should invest in low-cost technological tools and infrastructure to support the use of gamified learning in under-resourced schools.
4. Further Research: More studies should be conducted across different subjects, age groups, and educational contexts in Nigeria and other African nations to expand the evidence base on the efficacy of gamification.
5. Encourage Student-Centred Learning: Schools should promote student agency through gamified activities that reward collaboration, creativity, and problem-solving skills critical for STEM careers in the 21st century.

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THE ROLE OF PHYSICAL EDUCATION ACTIVITIES IN ENHANCING SCHOOL RETENTION AND REDUCING DROPOUT RATES IN KATSINA STATE, NIGERIA: A SYSTEMATIC REVIEW

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Abstract

This review examines the crucial role of Physical Education (PE) activities in enhancing school retention and reducing dropout rates in Katsina State, Nigeria. The study highlights the alarming school dropout rates in Nigeria, particularly within Katsina State, and underscores the multifaceted benefits of PE beyond physical health. Economic, cultural, and institutional barriers contribute to low retention rates. This study examines the role of PE activities in fostering school retention, exploring their impact on student engagement, academic performance, and behavioural development. This study highlights challenges hindering effective PE implementation, including inadequate infrastructure, insufficient funding, and cultural barriers. Additionally, strategic interventions such as policy recommendations, community involvement, and the integration of PE with other educational programs are discussed. The findings emphasise the need for improved PE policies, increased investment in PE resources, qualified instructors, inclusive programmes to create a more supportive learning environment, and greater stakeholder collaboration to enhance the effectiveness of PE activities in schools. This review concludes with recommendations for policymakers, educators, and stakeholders to effectively promote PE activities as a strategic intervention in the Nigerian educational system. Strengthening PE programs can play a pivotal role in reducing dropout rates, fostering holistic student development, and improving overall educational outcomes.

Keywords: Physical Education Activities, School Retention, Dropout Rate, Student Engagement, Educational Policy.

Introduction

Education is a fundamental human right and a key driver of social and economic development (UNESCO, 2021). School dropout imposes several predicaments, particularly in developing countries like Nigeria, where factors such as poverty, cultural norms, and lack of engagement contribute to low school retention rates (UNICEF, 2020). Nigeria's education sector is currently facing significant challenges with regard to school retention and dropout rates. According to the National Bureau of Statistics (2019), the overall dropout rate in Nigeria is about 11.9%. This alarming trend has severe consequences on the educational attainment and socio-economic development of the country. Katsina State is one of the states in Nigeria where educational challenges are pronounced; it is considered one of the states that has the highest dropout rates among the 36 states in Nigeria.

Physical education (PE)activities play crucial roles in the holistic development of students, particularly in enhancing their engagement and retention within the educational system. PE activities have the potential to significantly impact school retention and reduce dropout rates. Research indicates that active participation in physical education not only fosters physical health but also cultivates essential life skills such as teamwork, discipline, and resilience (CDC, 2010).

Studies have shown that students who engage regularly in physical activities tend to exhibit improved academic performance, higher self-esteem, and better social interactions (Bailey, 2005). These factors contribute to a positive school experience, which is pivotal in keeping students enrolled. In the context of Katsina State, where

cultural and socio-economic barriers often hinder educational continuity, the incorporation of physical education can serve as a motivational tool, encouraging students to remain in school (Owoeye & Yusuff, 2013).

PE activities have been recognised as an essential component of holistic education, contributing not only to physical well-being but also to cognitive, social, and emotional development (Bailey et al., 2019). Studies suggest that engaging students in structured PE programs can enhance their motivation to stay in school, improve academic performance, and foster a sense of belonging (Hardman & Marshall, 2020). Furthermore, PE activities provide opportunities for teamwork, discipline, and resilience, which are critical life skills that support long-term educational engagement (Sallis et al., 2016).

In the Nigerian context, the implementation of quality PE programs in schools has been inconsistent due to inadequate infrastructure, insufficient funding, and limited awareness of its benefits (Ajayi & Akinola, 2018). Despite these challenges, PE activities hold significant potential as a strategy to address the dropout crisis in Katsina State. By promoting active participation in sports and recreational activities, schools can create a more engaging and supportive learning environment that encourages students to remain in school.

This review aims to critically explore the existing literature on the role of PE activities in enhancing school retention and reducing dropout rates in Katsina State. The paper focused on identifying the most effective PE activities, strategies, and programmes that can be implemented to improve school retention and reduce dropout rates in the state. The study also highlighted the challenges faced by schools in implementing PE activities and provided recommendations for policymakers, educators, and stakeholders on how to effectively promote PE activities and integrate them as a strategic intervention in Nigeria's educational system.

Definition and Scope of Physical Education

Physical Education (PE) is an educational discipline that focuses on the development of physical fitness, motor skills, and overall well-being through structured activities such as sports, exercises, and recreational games (Bailey et al., 2019). The scope of PE extends beyond physical fitness, encompassing mental, emotional, and social growth, which collectively contribute to a student's holistic development (Sallis et al., 2016). In the school setting, PE aims to instil healthy lifestyle habits, teamwork, discipline, and resilience, which are essential for long-term academic and personal success.

In Nigeria, PE is an integral part of the national education curriculum, with structured programs introduced at various levels of schooling. Despite its recognised importance, implementation challenges such as inadequate infrastructure, poorly trained instructors, and limited policy support have hindered its full realisation (Ajayi & Akinola, 2018). Enhancing the scope and quality of PE programs can play a pivotal role in improving school retention rates and reducing dropout tendencies among students in Katsina State.

Historical Context of Physical Education in Nigerian Schools

The introduction of Physical Education in Nigerian schools dates back to the colonial era, when British educational policies emphasised sports and structured physical activities as part of holistic student development (Hardman & Marshall, 2020). Early school curricula incorporated physical training, gymnastics, and organised games to promote discipline and fitness among students.

Following Nigeria's independence in 1960, the government recognised PE as a critical aspect of national education policies. The National Policy on Education (NPE) outlined the integration of PE into school curricula, emphasising its role in fostering healthy living, social interaction, and cognitive development (Federal Ministry of Education, 2004). Over the years, Nigeria has witnessed several reforms aimed at improving PE programs, but challenges such as inadequate funding, limited facilities, and a lack of professional PE teachers have continued to impede progress (Ajayi & Akinola, 2018).

In the context of Katsina State, traditional societal perceptions of education often prioritise academic subjects over extracurricular activities, leading to the marginalisation of PE programs. However, recent studies highlight the importance of PE in reducing school dropout rates by promoting engagement, discipline, and motivation among students (Sallis et al., 2016). Strengthening PE programs through policy reforms and increased

stakeholder involvement can significantly contribute to enhancing school retention and academic performance in the region.

Conceptual Framework

Physical Education Activities: Physical Education Activities encompass structured exercises, sports, and movement-based programs designed to promote students' physical, mental, and social development. According to Bailey et al. (2019), PE activities enhance students' cognitive skills, self-discipline, and cooperation, all of which contribute to a conducive learning environment. Research suggests that students who actively participate in PE activities demonstrate improved school engagement and reduced dropout tendencies (Hardman & Marshall, 2020).

School Retention: School retention refers to the ability of students to stay enrolled in school until they complete a given level of education. UNESCO (2021) defines school retention as the capacity of an education system to maintain students' participation in learning programs. High retention rates are often linked to student engagement strategies, including extracurricular and physical education activities, which provide a sense of belonging and motivation to persist in school (Sallis et al., 2016).

Dropout Rate: Dropout rate is the proportion of students who leave school before completing a specific level of education. UNICEF (2020) states that dropout rates are influenced by socio-economic challenges, inadequate educational resources, and lack of extracurricular engagement. Studies indicate that structured PE activities can serve as a preventive measure against school dropouts by improving students' self-esteem, discipline, and overall school satisfaction (Ajayi & Akinola, 2018).

Role of Physical Education Activities in Enhancing School Retention

1. Physical Education and Student Engagement

PE activities significantly enhance student engagement by providing opportunities for active participation and enjoyment. Engaging in physical activities helps students develop a sense of belonging and connection to their school community. According to Hardman and Marshall (2020) and Abdulbaqi et al. (2024), students who participate in sports and physical activities feel a greater sense of connection to their peers and school, which reduces absenteeism and dropout rates. Structured PE programs promote active participation, teamwork, and discipline, which enhance students' enthusiasm for learning and overall school involvement.

2. Physical Education and Student Motivation

Engaging in physical activities fosters intrinsic motivation among students. Research indicates that when students find enjoyment in PE, they are more likely to participate actively and develop a positive attitude towards physical activity. According to self-determination theory, fulfilling the needs for competence, autonomy, and relatedness through physical activities can enhance students' intrinsic motivation (Tendinha et al., 2021). This theory suggests that when students feel capable and connected to their peers, they are more motivated to engage in physical activities.

3. Physical Education Activities and Academic Performance

Research has shown that regular participation in PE activities improves cognitive function, concentration, and memory, all of which contribute to better academic performance (Bailey et al., 2019). Physical activities increase blood flow to the brain, reduce stress, and enhance problem-solving abilities, allowing students to perform better in their studies (Ajayi et al., 2020). Schools that integrate PE into their curriculum have reported improved academic achievement and reduced dropout rates (Sallis et al., 2016).

4. Social and Psychological Benefits of Physical Education

PE activities provide numerous social and psychological benefits that contribute to school retention. Participation in sports helps students build self-confidence, develop leadership skills, and manage stress effectively (Ajayi & Akinola, 2018). Additionally, engaging in physical activities provides an outlet for

emotional expression, reducing anxiety and depression, which are common factors contributing to school dropout.

5. Physical Education Activities and Reduction of Behavioural Issues

Participation in structured physical activities helps students develop self-discipline and impulse control, which can lead to a reduction in behavioural issues. Engaging in sports can teach students how to manage their emotions and behaviours effectively (Tendinha et al., 2021). Physical activities serve as a natural outlet for stress and anxiety, contributing to a calmer classroom environment. When students engage in regular physical activity, they are less likely to exhibit disruptive behaviours.

PE activities significantly enhance school retention through increased student engagement, improved academic performance, and essential social and psychological benefits. By fostering a positive school environment where students feel connected and capable, PE programs contribute to a culture of persistence and success in education.

Challenges in Implementing PE Activities in Schools

1. **Lack of Infrastructure and Resources:** One of the significant barriers to implementing PE activities in schools is the inadequate availability of sports facilities, equipment, and trained personnel (Hardman & Marshall, 2020). Many schools in Nigeria, particularly in rural areas, lack proper playgrounds, gymnasiums, and instructional materials, making it difficult to conduct effective PE sessions.
2. **Insufficient Funding and Policy Support:** Limited financial support from government agencies and school administrations has negatively impacted the quality and implementation of PE programs (Ajayi & Akinola, 2018). Many schools do not allocate sufficient budgetary resources for physical education, leading to poorly maintained facilities and a lack of qualified PE instructors.
3. **Cultural and Societal Barriers:** In some regions, cultural norms and societal perceptions hinder the full participation of students, especially girls, in physical education activities (UNESCO, 2021). Traditional beliefs may discourage physical activity, viewing it as less important than academic subjects. Additionally, parental concerns regarding gender roles and safety may limit students' involvement in PE programs.

Strategies for Enhancing Physical Education to Reduce Dropout Rates

1. Policy Recommendations for Strengthening PE Activities

To effectively reduce dropout rates, policymakers should prioritise strengthening PE activities within schools. This involves allocating adequate funding for PE resources, hiring qualified instructors, and ensuring that PE is a core component of the curriculum. Policies should mandate a minimum amount of PE class time per week, promoting a balanced approach that emphasises both physical activity and health education. Increased investment in facilities, curriculum integration, and the training of qualified PE teachers can significantly improve student participation and retention (Sallis et al., 2016).

2. Community and Stakeholder Involvement

Schools can collaborate with local organisations, sports clubs, and health agencies to create a more comprehensive PE experience. Community partnerships can provide additional resources, such as facilities, coaching expertise, and funding for equipment. Ajayi and Akinola (2018) stated that community engagement in school sports can create a more supportive environment for students and provide additional resources and mentorship opportunities.

3. Integrating PE with Other Educational Interventions

PE should be combined with academic and extracurricular programs to promote a holistic learning experience. Schools can integrate movement-based learning, life skills education, and health awareness programs to maximise the impact of PE on student retention (Bailey et al., 2019). By addressing both physical and academic needs, schools can foster an environment that promotes retention and reduces dropout rates.

Conclusion and Recommendations

Summary of Key Findings: This study highlights the significant role of Physical Education activities in enhancing school retention and reducing dropout rates. It identifies key benefits such as improved student engagement, academic performance, and social well-being. Additionally, it outlines major challenges, including inadequate infrastructure, insufficient funding, and cultural barriers.

Implications for Policy and Practice: To maximise the impact of PE on school retention, policymakers must integrate PE activities into national education strategies, allocate adequate resources, and ensure proper implementation. Schools should prioritise sports facilities, train PE instructors, and create inclusive programs that cater to all students.

Conclusion: Physical Education activities play a crucial role in reducing dropout rates by fostering an engaging, supportive, and interactive learning environment. Addressing the challenges related to PE implementation can significantly contribute to educational sustainability in Katsina State.

Suggestions for Future Research: Future studies should explore the long-term impact of PE programs on students' academic and career trajectories. Further research can also assess the effectiveness of specific PE interventions tailored to different socio-cultural contexts in Nigeria.

Recommendations: Schools should invest in sports infrastructure, enhance teacher training in PE, and incorporate PE as a core component of the curriculum. Collaboration between government agencies, educators, and communities is essential to ensure sustainable and effective PE programs that contribute to student retention.

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IMPACTS OF STREET HAWKING ON RETENTION OF PUBLIC PRIMARY SCHOOL PUPILS IN KONTAGORA METROPOLIS OF NIGER STATE-NIGERIA

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Abstract

This paper investigated street hawking and the attendant impacts on retention of public primary school pupils in Kontagora metropolis. Two research objectives were formulated to determine the factors responsible for street hawking in Kontagora Metropolis and to ascertain the impacts of street hawking on the education of secondary school-age students in Kontagora Metropolis. This was followed by two research questions and a null hypothesis generated to guide the study. Survey design was used to conduct this study, with 352sample of school-age street hawkers as well as teachers from five (5) Public Primary Schools in Kontagora, using multistage, proportionate and random sampling techniques. While 3% was calculated to get the sample of the pupils, 20% was calculated to get the sample of the teachers. Data was collected using a questionnaire titled 'Impacts of Street Hawking on Public Primary School Age Drop-out in Kontagora Metropolis (ISHPPSADKM) and analysed using mean score. The Findings show that there is a significant relationship between street hawking and the propensity to drop out of school in Kontagora metropolis. The paper concluded that, without effective interventions by government and stakeholders in the knowledge industry, the cycle of poverty and undereducation is likely to continue, adversely affecting subsequent generations. It is recommended among others that government and stakeholders in the knowledge industry provide employment opportunity as well counselling services to affected children to see how to integrating them into the school system; providing Vocational and technical training to serve as motivator to children of primary school age and re-orientating parents on the need to uphold the family value and the importance of child training in the society.

Keywords: Street Hawking, Public Primary School, School-Age Drop-Out

Introduction

Education is an instrument that societies use to prepare citizens to live a fruitful life and add value to the community according to their talents and interests. It forms objective number 4 of the Sustainable Development Goals (SDGs), anchored on free, equitable and good quality primary and secondary education for all by 2030. Even though the achievement of this goal is getting delayed, every child must complete their education without dropping out along the way. Recent studies on the rate of out-of-school children show that only the sub-Saharan Africa region accounts for 52% of the global out-of-school children. 22% of primary school-age children in sub-Saharan Africa are out of school. Nigeria's Demographic and Health Survey (NDHS) data for 2016, in fact, show that 7.3 million children of primary school age are out of school (UNICEF, 2016). The figure is not significantly different in the Kontagora area of Niger state.

In order to achieve the SDGs in Kontagora, the school system must not only be appealing to the demands of learners but also accessible and affordable to them, so as to allow their individual talents to grow and mature into usefulness to the individuals and the society as a whole (Farauta, 2013). It worries the mind that despite the acclaimed benefits of education to the society, the family and the person, not many children and parents in Kontagora metropolis of Niger state have realised the danger of having their children out of school. Why parents allow their children to engage in street hawking remains a conjecture. It is a danger to see children who are the future of society and are supposed to be learning skills that will be useful to them in their lifetimes, get involved in learning how to hawk on the streets. No doubt, there are pecuniary gains that the child and the family tend to gratify in the immediate, but in the long run, such benefits never count as anything when reality dawns in the adulthood of the child. Binta et al. (2024) carried out a study on the Impact of Street Hawking on the Education of young girls in Katsina State, which shows that street hawking has detrimental impacts on academic

achievement, with students involved in hawking lacking concentration than their non-hawking counterparts. This suggests that the demand for street hawking, driven largely by economic necessity, consumes time and energy, thereby hindering the child's educational engagement and performance. The results underscore the broader implications of child labour on child education amongst low-income families and communities, pointing to a need for targeted interventions that address the economic and cultural factors compelling children into street hawking.

Street hawking is the practice of selling goods and services in public spaces. It is a widespread phenomenon in many developing countries, including Nigeria. In Kontagora, this informal economic activity is particularly prevalent among young school-age children, who often take to the streets to support their families financially. While street hawking can provide immediate economic benefits, it poses significant challenges, especially for the education and development of children. In their study, Ubah and Averson (2014), Mathias and Dada (2013), and Senna (2022) investigated the practice of street hawking in developing nations, specifically focusing on the direct retail sales of goods in urban areas. This phenomenon is widespread, particularly in numerous African cities, towns, and state capitals. Senna opined that street hawking is often attributed to factors such as rural-urban migration, unemployment, poverty, and a growing number of school dropouts. For many individuals, street hawking serves as a means of generating income that supplements household finances.

Across various households in Kontagora, individuals heavily rely, either entirely or partially, on street sales as their livelihood (Akuoko, 2013; Maryam, 2023). Small-scale trading, particularly on the streets, is a vital component of Africa's informal economy, frequently employed by those with limited education, notably among women and children (Akuoko, 2013). Urban streets are teeming with vendors selling a diverse range of goods, including vegetables, snacks/confectionery, sachets/bottled water/drinks, grains, fruits, furniture, clothing, and technology, to mention a few. Street vending offers a viable source of employment for urban residents with modest education and financial resources, facilitating accessibility for disadvantaged populations. How this can be minimised among children to enable them to pursue their time goals provides the needed background to this study.

Statement of the Problem

Many reasons have been advanced as to why children of school age are involved in street hawking in Kontagora Metropolis of Niger State. One of such arguments is the level of education of parents and their economic status. This school of thought believes that since the parents do not have education, it is most unlikely to convince them otherwise, especially when such parents are very poor and can barely feed themselves. Another school of thought has challenged this position by maintaining that not only children of the poor engage in street hawking. Their argument is rooted in the fact that not all the children who hawk on the street lack what to eat at home. To the second school of thought, therefore, it is the get-rich-quick syndrome and the deliberate promotion of wealth far above the moral fabrics that sustain societies that is partly responsible for children's involvement in activities such as hawking that can, in the long run, damage their future life. In fact, the third school of thought squarely put the blame or the cause on the children themselves. They maintain that many of these children hawking on the street play truancy, which may be a consequence of peer pressure. To this argument, public primary schools are free of charge. Definitely, lack of finance could not be the reason why they are on the street. The above arguments are very relevant in determining the causes and impacts of primary school-age hawking in the Kontagora area of Niger State. In a nutshell, what is the retention level of primary school-age children in Kontagora? Why is Hawking common amongst children of school age in Kontagora? Is there any impact of Hawking on the retention level of primary school pupils? These and many more are the problems this paper is set to investigate.

Objectives of the Study

1. To determine the factors responsible for street hawking in Kontagora Metropolis
2. To ascertain the impacts of street hawking on the education of secondary school-age students in Kontagora Metropolis.

Research Questions

1. What are the factors responsible for street hawking in Kontagora Metropolis of Niger State?

2. How has street hawking impacted the education of children of school age in Kontagora Metropolis of Niger state?

Research Hypothesis

There are no significant impacts of street hawking on primary school-age drop-out in Kontagora Metropolis of Niger State

Methodology

The research type adopted for this study was a descriptive survey design, which was employed to ascertain the impacts of street hawking on public primary schools in Kontagora metropolis of Niger State-Nigeria. The rationale for using the descriptive method is because of its utility in getting information about the feelings and ideas of a large subject. The population of the study is the primary school teachers in the Kontagora area of Niger State-Nigeria. Using the multistage sampling technique, the study adopted 3% of the population of the five sampled primary schools for the study. By using the multistage technique, we arrived at 352 sample size. Mean score was used in the analysis of data.

Results

Table 1: what are the Factors Responsible for Street Hawking in Kontagora Metropolis of Niger state?

S/N	Variables	Mean (SD)	Decision
1.	Primary school-age children engage in street hawking in Kontagora Metropolis	2.11 (0.98)	Agree
2.	Poverty is one of the reasons why children engage in street hawking	1.85 (0.64)	Agree
3.	The level of education of parents affects children's attitude to school	1.78 (0.88)	Agree
4.	Glorification of wealth promotes a lack of interest in school among children	1.87 (0.80)	Agree
5.	The rate of unemployment and economic hardship encourages children to hawk for survival	1.95 (0.75)	Agree
6.	Peer pressure can affect children's interest in school	2.14 (0.97)	Agree
7.	Street hawking can discourage school-age children from attending school	2.10 (0.96)	Agree
8.	**Cluster Mean**	**1.97**	

Source: Fieldwork, 2025

The result presented in Table 1 above shows the mean score of respondents on the factors responsible for street hawking in Kontagora metropolis. The mean score ranges from 1.7 to 2.14, with a mean cluster of 1.97, indicating varying levels of importance attributed to each factor. The results indicate that primary school-age children with a mean score of 2.11 are engaged in street hawking in Kontagora. The result from the data gathered from the respondents also indicated that poverty and, level of parents' education are core factors responsible for street hawking in Kontagora. The study also affirmed that Peer pressure, with a mean score of 2.14, affects children's interest in school. Whether street hawking can discourage school-age children from school, the mean score of (2.10) affirmed which further confirmed that peer pressure increases the rate of school dropout. From the results, respondents have indicated and accentuated that the rate of unemployment and economic hardship, with a mean score of 1.96, has also been responsible for street hawking in Kontagora.

Table 2: How has street hawking impacted the education of children of school age in Kontagora Metropolis of Niger state?

S/N	Variables	Mean (SD)	Decision
1.	Children who hawk are early to school	3.03 (0.84)	Disagree
2..	Children who hawk do their school assignments	3.42 (0.82)	Disagree
3.	Children who hawk have full concentration in their studies	3.18 (0.68)	Disagree
4.	Street hawk affects lifetime ambition	2.39 (1.17)	Agree
5..	Lost ambitions have consequential impacts on society	2.17 (0.98)	Agree
6.	Insecurity increases as the rate of street hawking increases	3.28 (0.91)	Disagree
7.	Children who hawk tend to drop out of school.	1.30 (0.50)	Agree
8	**Cluster Mean**	**2.68**	

Source: Fieldwork, 2025

The result presented in Table 2 above reveals the impact of street hawking on the education of school-age children in Kontagora, with a total mean weight of 2.68. The results from the respondents indicated that children who hawk with a mean score of 3.03 are not early to school. Most of these children get exhausted when they hawk, and resuming early in the morning at school is always difficult. The respondents disagreed with the statement that children who hawk do their school assignments effectively. The result further indicated that hawking prevents children from completing school assignments and stops school-age children from having full concentration on their studies. The study also reveals that hawking can affect school children's lifetime ambition with mean score of 2.39, while it can increase insecurity with a mean score of 3.28. The results from the respondents, with a mean score of 1.30, agree that children who hawk can easily drop out of school and get recruited into criminal activities in Kontagora.

Test of Hypothesis

Table 3: Ho: There is no Significant Impact of Street hawking on Retention of Public Primary School Pupils in Kontagora

Variables	Mean	SD	DF	Z. Test	P. Value	Decision
Sample size	3.06	0.98	349	2.49	2.11	Rejected

From Table 3 above, the null hypothesis was rejected while the alternative hypothesis was accepted. This means that there is a significant impact of street hawking on the Retention of Public Primary School Pupils in Kontagora. By implication, street hawking affects the retention level of primary school pupils in the Kontagora area of Niger state.

Discussion of Findings

This study investigated the impacts of street hawking on public primary school-age drop-out in Kontagora metropolis of Niger state-Nigeria. It was found out that Children of school age who are engaged in street hawking have a tendency to drop out of school in Kontagora. Parental level of education, poverty, peer pressure, glorification of wealth above character and unemployment, amongst others, are factors responsible for street hawking amongst children of school age in Kontagora. The finding confirms earlier studies by Ubah and Averson (2014), Mathias and Dada (2013), and Senna (2022) that these aforementioned factors actually hinder school children from continuing with their education. This shows that there is a significant relationship between street hawking and the rate of school drop-out in Kontagora.

The study also reviewed that Children who are engaged in street hawking usually lack the needed concentration in their studies and experience loss of lifetime ambitions; this also makes it easy to recruit them into criminal activities in Kontagora, and which of course increases the rate of Insecurity (Akorede et al., 2022). This supports the earlier report of Binta et al. (2024), which shows that street hawking has a detrimental consequence on the individual and society as a whole.

Conclusion

The findings of this study illustrate that street hawking significantly undermines the educational opportunities of children in the Kontagora area of Niger State. The practice is driven by dire economic conditions and reinforced by peer pressures. This trend not only leads to poorer academic performance and higher dropout rates but also perpetuates criminal activities and limits future career opportunities for these pupils. Without effective interventions, the cycle of poverty and undereducation is likely to continue, adversely affecting subsequent generations. Policymakers, educators, and community leaders need to collaborate on strategies that could alleviate economic burdens and promote the importance of education for school-age children. This study provides crucial insights that can inform policy development aimed at eradicating street hawking and ensuring that school-age children pursue their education without compromise of any form.

Recommendations

Based on the findings of this study, the following recommendations have been proffered:

1. There is a need for the government to continue to enlighten parents on the negative impacts of involving their children in street hawking and the importance of education. This can be done using social media, newspapers/magazines, and the radio/television station anchored by the national orientation agency.
2. The government needs to create more job opportunities so that parents can be employed to enable them to cater for their family's needs. The government can do this by establishing a social welfare program and providing school-based support initiatives to mitigate the adverse educational impacts on children involved in street hawking.
3. The government should make education free at all levels so that the less privileged children would have the opportunity to be educated. The government should legislate and enforce stricter child labour laws against parents found guilty of indulgence.

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PERCEPTIONS OF READINESS OF ONLINE LEARNING AMONG HEADS AND LECTURERS OF MATHEMATICS DEPARTMENTS IN KEBBI STATE INSTITUTIONS OF HIGHER LEARNING

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Abstract

Nigeria is said to have one of the highest numbers of out-of-school children. The adoption of technological innovations is perceived as a possible solution to an accelerated education programme. Higher education in Nigeria has been impacted by the COVID-19 pandemic's extensive spread and the swift digital transition. Countries worldwide have resorted to online teaching and learning in an effort to guarantee continuous educational delivery and lessen the effect of the COVID-19 epidemic on education. This clearly shows the potential of online learning towards ensuring inclusive and equitable quality education. But because of this sudden change, this study uses a descriptive survey approach to investigate how staff and students of mathematics view and prepare for online learning. A sample size of 101 mathematics lecturers and 7 heads of department (HODs) from all of Kebbi State's public higher education institutions participated in the study. For data collection, two sets of self-developed 4-point Likert scale questionnaires were used. The questionnaires were validated by experts, and Cronbach's alpha coefficient showed a reliability coefficient of 0.80. To ascertain the degree of preparedness for online learning of mathematics HODs and lecturers, the data collected in this study were analysed using percentages, descriptive statistics of mean, and standard deviation. According to the study's overall findings, mathematics lecturers believe they have the technical skills necessary to contextualise their pedagogical knowledge to online teaching and learning, while HODs are highly prepared for this type of instruction. In order to safeguard the quality of online teaching and learning implementation, it was recommended that strategic planning be necessary to ensure that the lecturers' and HODs' weak points in terms of their online readiness for installing, maintaining, and enhancing ICT infrastructures are unquestionably addressed.

Keywords: Online learning readiness, HODs, mathematics lecturers, institutions of higher learning

Introduction

Online learning is a type of learning that has become a major part of the teaching process in recent years, situated within a computer-mediated environment comprising of a set of group communication workspaces and facilities that are constructed in software (Effiong et al., 2016). By extending the boundaries of their classrooms and reducing in-person instruction, the internet's exponential growth has created new opportunities for higher education to break down barriers, reach a wider and more diverse audience, and create new markets in geographically remote areas (Abdurrahman et al., 2024; Effiong et al., 2016). According to Bello et al. (2023), higher education institutions are aware that utilising technology in the classroom may create, grow, disseminate, and stimulate learning as well as improve students' comprehension and knowledge. Students can simulate being in a real-life situation when they are unlikely to be in the same room with others by using real-time audio or video chat and screen sharing (Jacqueline, 2019; Muhammad & Abubakar, 2019). Thomas and Muhammad (2020) posit that a paperless classroom helps students build a variety of digital skills that will eventually aid in the development of real-life skills, including self-learning and teamwork. Additionally, this type of learning exercise will turn into a practical training ground for students to get ready for their future careers and lives. The rationale behind the adoption of online learning is that it offers significant flexibility in terms of teaching methods, content management, synchronous and asynchronous student-lecturer interaction,

and course organisation and structure. Moreover, it offers distance learning that can establish new learning environments to attain a successful academic program and gives students the means to communicate with instructors and peers both within and outside of the classroom (Abdurrahman et al., 2024; Oanh et al., 2023).

Bello et al. (2024); Galecia et al. (2022) claim that the COVID-19 pandemic has increased online learning opportunities globally, as the majority of countries nowadays have blended online learning methods in their educational institutions as a result of this epidemic. Mental and technical readiness for the online learning mode must be analysed so that relevant help may be offered to solve the ICT setup adaptability. Unquestionably, the problem that all nations face is that, although these technological solutions appear to be the best way to reduce significant learning losses during the crisis, they also run the risk of escalating educational equity disparities. As a result, if the digital divide in education were to widen as schools are closed during COVID-19, learning poverty and inequality would inevitably rise as well. Bana et al. (2022) outlined 3 steps for teaching and learning to be ensured and continue; "the first step is to make sure that all HODs and lecturers have access and would be able to use online learning tools and digital platforms with educational content. The second factor is the digital use gap (without guidance, HODs and lecturers would find it difficult to manipulate and use online content), even in rich countries where everyone has access to the internet, but not everyone does. The third dimension is the digital school gap, which is the ability and capacity of each institution to provide individualised, or appropriately levelled and sequenced, digital teaching for HODs and lecturers, to promote and track engagement with these materials, and to give feedback that helps maximise teaching and learning outcomes". A lecturer may, for example, only use printed materials or recommend that students watch lesson-specific videos, while another lecturer may continue to hold classes online or find innovative ways to use digital apps for both one-on-one and group student interaction. Muhammad et al. (2024) assert that electronic gadgets, an efficient library system, and online resources that are easily accessible from anywhere in the world are essential components of online learning. Since learning is typically conducted in-person in the majority of developing nations, adjusting to online learning will necessitate certain behavioural adjustments as well as legislative guidelines to make it feasible for students, lecturers, and HODs.

Despite the attempt made by Nigeria towards adopting the United Nations Sustainable Development Goal 4 of ensuring inclusive and equitable quality education, and also promoting lifelong learning opportunities for all of the 2030 agenda. According to UNICEF (2022), about 12.4 million children never attended school, and 5.9 million left school early in Nigeria, making one in every five of the world's out-of-school children (OOSC) in Nigeria, and one in every 3 children is out of school. The use of innovation and digital technology was part of the solution towards overcoming the problem. Accelerated Education Programme is one of the key possible interventions for addressing OOSC globally, which requires the use of digital technology and innovations to address this global problem (Oyekan et al., 2023).

It becomes more important for stakeholders to be sufficiently knowledgeable and skilled in using the online learning platform. As a result, an effective online learning environment requires a strong support network, and for this kind of assistance to be long-lasting, both lecturers and students need to have easy access to and knowledge of electronic and internet devices, as well as the necessary navigational abilities. They also need to adjust to the new learning environment and culture, and consequently, how they perceive online learning materials may influence their acceptability and usage, which could result in beneficial new teaching and learning strategies. A positive step is the readiness of lecturers and HODs to adjust to changes and embrace online learning as a new method of teaching. It is a crucial component of online teaching and learning, which involves self-assurance when utilising technology and the capacity to engage in self-directed learning. Therefore, it might be interpreted as the degree to which online learning will be successful or well-accepted. However, Nganga, Waruru, and Nakweya (2020) found that different institutions have different levels of preparedness for online learning because some lecturers and students lack the funds to purchase internet bundles as well as the laptops necessary to participate in online learning. However, according to Dube (2020) and Muhammad et al. (2024), lecturers' attitudes and preparedness for online learning are hindered by a number of issues, such as network unavailability, lack of online learning devices, lack of computer skills, and the high cost of internet data bundles.

It is common knowledge that the availability of functional ICT facilities, technical know-how (skills), lecturers, and students' preparedness are all necessary for online learning. Despite the growing relevance of online learning as a viable model for ensuring inclusive and equitable quality education (Abdurrahman et al., 2024; Tamrat & Teferra, 2020), studies have shown that institutions, particularly in low and middle-income contexts, continue to experience serious challenges relating to inadequate infrastructure, conflicting attitudes and limited readiness for online instruction (Muhammad et al., 2024). The shift from face-to-face pedagogy to digital delivery requires lecturers to competently engage students using online platforms, deploy multimedia resources, and assess learning virtually, which in turn demands consistent in-service training and strong institutional support (Pham & Van-Nghiem, 2022). However, lack of technological know-how, insufficient digital facilities, high cost of internet access, and weak pedagogical preparedness have continued to hinder both lecturers' online teaching practices and students' engagement and participation (Abbasi et al., 2020; Aslam et al., 2023). Therefore, although online learning presents huge promise as a sustainable teaching modality, persistent readiness gaps pose a major barrier to its effective acceptance, utilisation and impact, especially within developing contexts. In light of this, the purpose of this study is to ascertain the perceptions of readiness of online learning among heads and lecturers of mathematics departments in Kebbi state institutions of higher learning. In specific terms, this study aimed to:

1. Determine the level of readiness for online learning of heads of mathematics departments (HODs) in Kebbi state institutions of higher learning.
2. Assess how ready mathematics lecturers are towards using online learning in Kebbi state institutions of higher learning.

To achieve these specific objectives, we raised and addressed the following research questions:

RQ1: What is the level of readiness of online learning of heads of mathematics departments (HODs) in Kebbi state institutions of higher learning?

RQ2: How ready are mathematics lecturers towards using online learning in Kebbi State institutions of higher learning?

Research Design

In this study, a descriptive survey design was employed. According to Sani (2017), survey design is a helpful scientific technique to employ when investigating respondents' perceptions and opinions as well as the relationship between them.

Participants

As indicated in Table 1, the samples used for the study include all 7 heads of departments (HODs) and 101 mathematics lecturers from Kebbi state institutions of higher learning.

Table 1: Population and samples selected for the study

S/N	Institution	LGA	HOD	Lecturers
1	Adamu Augie College of Education	Argungu	1	11
2	College of Basic and Advanced Studies	Yauri	1	5
3	Federal University of Agriculture	Zuru	1	12
4	Federal University Birnin Kebbi	Kalgo	1	23
5	Kebbi State Polytechnic	Dakingari	1	9
6	Kebbi State University of Science and Technology	Aleiro	1	25
7	WaziriUmaru Federal Polytechnic	BirninKebbi	1	16
	Total		**7**	**101**

Instrumentation

The researchers employed a 4-point Likert scale with 7 dimensions for heads of departments (HODs) and 11 dimensions for mathematics lecturers to ascertain the perceptions of readiness of online learning among these

individuals."Each dimension has indicators that measure the readiness of both HODs and mathematics lecturers for online learning and all items (with few exceptions) are rated using the following options: 4-always; 3-sometimes; 2-not often; and 1-never". The few exceptions are: "availability of ICT gadgets" rated as: "4-personally owned; 3-provided by the school; 2-borrowed; and 1-does not own"; and "status of ICT infrastructure in schools" rated as "4-excellent; 3-very good; 2-good; and 1-poor". The questionnaires were validated by experts, and amendments were made, and a reliability coefficient of 0.80 was achieved using Cronbach's alpha.

Data Collection and Analysis

The data obtained in this study were examined using percentages, descriptive statistics of mean, and standard deviation (using SPSS) in order to ascertain the degree of preparedness for online learning of mathematics HODs and lecturers. The mean was translated into a numerical scale with a corresponding verbal description as outlined by Bana et al. (2022): "very ready (4.00-3.26), ready (3.25-2.51), fairly ready (2.50-1.76), not ready (1.75-1.00)".

Results

RQ 1: What is the level of readiness of online learning of heads of mathematics departments (HODs) in Kebbi state institutions of higher learning?

Table 2: Level of readiness for online learning of HODs

Indicators of online learning	Always/ Personally owned	Sometimes/ Provided by the school	Not-often/ Borrowed	Never/ Does not own	N	Mean	SD	Description
Demonstrate knowledge of digital technology skills	4 (57.1%)	2 (28.6%)	1 (14.3%)	0 (0%)	7 (100%)	3.43	0.43	Very ready
Availability and accessibility of ICT gadgets	6 (85.7%)	1 (14.3%)	0 (0%)	0 (0%)	7 (100%)	3.86	0.24	Very ready
Organise, implement and manage online learning	3 (42.9%)	3 (42.9%)	1 (14.3%)	0 (0%)	7 (100%)	3.26	0.46	Very ready
Proficient in utilising tools to maximise productivity	2 (28.6%)	4 (57.1%)	0 (0%)	1 (14.3%)	7 (100%)	3.00	0.49	Ready
Can employ Google Meet or Zoom to create online presentations	7 (100%)	0 (0%)	0 (0%)	0 (0%)	7 (100%)	4.00	0.42	Very ready
Can be able to resolve fundamental internet problems related to online learning	2 (28.6%)	2 (28.6%)	1 (14.3%)	2 (28.6%)	7 (100%)	2.57	0.21	Fairly ready
Can purchase data to access the internet when there isn't a free school internet connection	5 (71.4%)	2 (28.6%)	0 (0%)	0 (0%)	7 (100%)	3.71	0.40	Very ready
Overall mean						**3.41**	**0.41**	**Very ready**

Very ready (4.00-3.26), ready (3.25-2.51), fairly ready (2.50-1.76), not ready (1.75-1.00)

The findings of Table 2 indicate that, with mean scores of 3.43 and SD=0.43 for item 1 i.e. demonstrate knowledge of digital technology skills, the HODs are "very ready", whereas item 2 mean score of 2.86 and SD=0.24 for availability and accessibility of ICT gadgets to be used for the implementation of online learning also indicates that the HODs are "very ready". Item 3 indicated a mean score of 3.26 and SD=0.46; these results also demonstrate that the HODs are "very ready" to organise, implement and manage online learning in their departments. Furthermore, item 4 showed that HODs are "ready" when it comes to proficiency in utilising tools to maximise productivity, with a mean score of 3.00 and SD=0.49. Item 5 showed that HODs are "very ready" when it comes to employing Google Meet or Zoom to create online presentations, with a mean score of 4.00 and SD=0.42. With a mean score of 2.57 and SD=0.21 for item 6, the HODs are "fairly ready" to be able to resolve fundamental internet problems related to online learning, whereas item 7 showed a mean score of 3.71 and SD=0.40, indicating that HODs are "very ready" to purchase data to access the internet when there isn't a free school internet connection. To put it briefly, the HODs' overall mean score of 3.41 and SD=0.41 for all online

learning domains combined with their degree of preparation suggested that they are "very ready" for online learning.

RQ2: How ready are mathematics lecturers towards using online learning in Kebbi state institutions of higher learning?

Table 3: Level of readiness for mathematics lecturers towards using online learning

Indicators of online learning	Always/ Excellent	Some-times/ Very good	Not-often/ Good	Never/ Poor	N	Mean	SD	Description
Demonstrate knowledge of digital technology skills	63 (62.4%)	21 (20.8%)	17 (16.8%)	0 (0%)	101 (100%)	3.46	0.44	Very ready
Readiness to use online learning for providing delivery of lessons	58 (57.4%)	19 (18.8%)	11 (10.9%)	13 (12.9%)	101 (100%)	3.21	0.41	Ready
Task-oriented competencies for online instruction	31 (30.7%)	25 (24.8%)	38 (37.7%)	7 (6.9%)	101 (100%)	2.79	0.35	Ready
Availability and accessibility of ICT gadgets	65 (64.4%)	22 (21.8%)	14 (13.9%)	0 (0%)	101 (100%)	3.51	0.46	Very ready
The state of the department's ICT infrastructure	37 (36.6%)	30 (29.7%)	21 (20.8%)	13 (12.9%)	101 (100%)	2.90	0.37	Ready
I can access the internet whenever I want using a computer, iPhone, tablet, or smartphone	64 (63.4%)	14 (13.9%)	23 (22.8%)	0 (0%)	101 (100%)	3.41	0.43	Very ready
Can access a dependable internet connection at home and at school whenever I want	14 (13.9%)	11 (10.9%)	64 (63.4%)	12 (11.9%)	101 (100%)	2.27	0.32	Fairly ready
Can purchase data to access the internet when there isn't a free school internet connection	38 (37.6%)	53 (52.5%)	10 (9.9%)	0 (0%)	101 (100%)	3.28	0.42	Very ready
Can also use any type of online money transfer to purchase an important document	26 (25.7%)	21 (20.8%)	43 (42.6%)	11 (10.9%)	101 (100%)	2.61	0.34	Fairly ready
Can be able to create instructional presentations using PowerPoint and Keynote	47 (46.5%)	30 (29.7%)	11 (10.9%)	13 (12.9%)	101 (100%)	3.10	0.40	Ready
Can be able to record screens for purposes of academic learning	32 (31.7%)	27 (26.7%)	30 (29.7%)	12 (11.9%)	101 (100%)	2.78	0.34	Ready
	Overall mean					**3.03**	**0.41**	**Ready**

Very ready (4.00-3.26), ready (3.25-2.51), fairly ready (2.50-1.76), not ready (1.75-1.00)

Item 1 and Item 2 of Table 3 indicate that mathematics lecturers are "very ready" and "ready" in terms of their knowledge of digital technology skills and their readiness to use online learning for providing delivery of lessons, with mean scores of 3.46 and SD=0.44 and 3.21 and SD=0.41, respectively. Additionally, item 3 results indicate that lecturers are "ready" for task-oriented competencies for online instruction with a mean score of 2.79 and SD=0.35. Additionally, items 4 and 5 indicate that ICT gadgets are available and accessible, as well as that the state of the department's ICT infrastructure is in place, showing "very ready" and "ready", respectively, with mean scores of 3.51 and SD=0.46 and 2.90 and SD=0.37. The lecturers are "very ready" and "fairly ready" for accessibility and dependable internet connection at home and at school via their computer, iPhone, tablet, or smartphone, according to the mean scores for items 6 and 7, which were 3.41 and SD=0.43 and 2.27 and SD=0.32, respectively. In the absence of a free school internet connection, lecturers are "very ready" and "fairly ready" to purchase data or online documents, according to mean scores of 3.28 and SD=0.42 and 2.61 and SD=0.34 on items 8 and item 9, respectively. Mathematics lecturers are "ready" to use PowerPoint and Keynote to create instructional presentations as well as record their screens for academic purposes from the findings of items 10 and 11, with mean scores of 3.10 and SD=0.40 and 2.78 and SD=0.34, respectively. The overall mean of 3.03 and SD=0.41 in Table 3 imply that mathematics lecturers are generally "ready" for online learning. According to the overall results, lecturers feel that they have the digital technological skills necessary for online learning, which puts them in a relatively prepared position to apply their pedagogical knowledge to online instruction.

Discussions

According to the overall results, mathematics lecturers and heads of departments (HODs) perceive that they are equipped with the digital technology skills necessary for online presentations, know how to implement and oversee online learning, know how to use productivity tools and troubleshoot basic internet connection issues, have access to ICT devices for their own use or those provided by their departments, and go above and beyond to purchase data to browse the internet when there isn't a free internet connection at school. The study's findings supported those of Chung, Subramaniam, and Dass (2020) and Olalekan, Hayatudeen, Kemi, and Jummai (2021) regarding lecturers' preparedness for using online learning platforms during the COVID-19 pandemic. Except for fear about unstable power supplies and internet connectivity during the delivery of online lessons, the vast majority of respondents expressed a high level of preparedness for online learning. Additionally, the study highlights the potential difficulties lecturers may have while implementing digital teaching and learning. It was evident that the complex nature of certain learning platforms hinders lecturers from using digital teaching and learning to contextualise their pedagogical skills. In accordance with the results, some lecturers struggle to create online presentations using Zoom or Google Meet, and they also have trouble resolving basic problems that are connected to learning via the internet. According to research by Kapasia et al. (2020) and Suryaman et al. (2020), almost all lecturers own a laptop, smartphone, PC, tablet, or iPhone, but they face numerous challenges, like a poor teaching and learning environment, a lack of technological proficiency, expensive internet services, and restricted internet accessibility.

Conclusion

The researchers came to the conclusion that mathematics lecturers and HODs were "very ready" for online learning based on the study's results. They are proficient with digital technology for online presentations, know how to set up and oversee online education, know how to use productivity tools and troubleshoot basic internet connection issues, and have access to ICT devices that they can use either personally or through departmental provision. Furthermore, it was found that lecturers and HODs were equally prepared in terms of the availability of ICT gadgets for online learning because they both had the same privilege of accessing the computers and laptops owned by the institution's centres for information technology (CIT). The results also indicated that lecturers of mathematics and their HODs believed they had the digital technical skills necessary to implement online teaching and learning. This means they are somewhat prepared to adapt their pedagogical skills to online teaching when delivering lessons, illustrating opportunities for the development of digital technology skills in the classroom. Their involvement in virtual presentations during the COVID-19 pandemic's lockdowns provided them with practical experience using the internet for online meetings and collaboration with other lecturers. It also made it easier for them to become familiar with educational technologies and helped them become more accustomed to the delivery of lessons online. The demand for ICT devices (such as smartphones, laptops, and tablets) has skyrocketed as a result of the adoption of online platforms for school operations and printing jobs for students' learning materials in the implementation of module-based learning delivery. These devices have also given lecturers access to ICT experiences, given that online learning is regarded as a substitute for traditional classroom instruction. Lecturers with prior experience and expertise demonstrated greater preparedness because no formal training program was put in place to assess all institutions' knowledge and proficiency in implementing online learning; in other words, the degree of preparedness for online learning varies depending on the degree of preparedness of the HODs and lecturers. It was recommended that the introduction of online learning must be conceptualised by HODs and lecturers in order to determine the degree of preparedness for online teaching and learning. And also to guarantee the quality of online teaching and learning implementation, strategic planning is necessary to ensure that the weak areas of HODs' and lecturers' online readiness (such as digital technology skills, availability of ICT gadgets) are addressed in installing, managing, and improving the state of ICT infrastructures.

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ALMAJIRI SYSTEM OF EDUCATION, THE OTHER SIDE OF THE COIN: A CALL FOR RESTRUCTURING AND INTEGRATION

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Abstract

The *Almajiri* system of education in northern Nigeria, a traditional Islamic educational framework, has long been a subject of debate due to its perceived negative social, economic, and educational impacts. Initially designed to provide religious education, the system has evolved into a structure that often leaves its participants vulnerable to poverty, exploitation, and marginalisation. This paper explores the *Almajiri* system from a critical perspective, focusing on its administrative, economic, social, and religious roles within Nigerian society. Rather than advocating for the outright proscription of the system, this paper calls for its restructuring and integration with formal education to enhance its efficacy and provide a more balanced approach to the needs of the children involved. It highlights key strategies for restructuring, including the introduction of a dual curriculum that combines Qur'anic and secular education, the incorporation of vocational training, the improvement of infrastructure, and the training of teachers. The author concluded that combining religious education with practical, skills-based learning, the *Almajiri* system can contribute positively to the development of both individuals and society, ensuring that these children are equipped to participate fully in modern economic and social life. The author therefore recommended that there is a need to integrate formal and Qur'anic Education by the government to help achieve a dual-curriculum approach, where students receive a comprehensive education that includes Islamic teachings alongside literacy, numeracy, and vocational skills. Also, there is a need to improve the infrastructure of *Almajiri* schools by the Government and non-governmental organisations to provide better living and learning conditions, such as adequate shelters, learning materials, and trained teachers who are capable of teaching both religious and secular subjects.

Keywords: Almajiri, Education, Restructuring, Integration, Formal Education, Nigeria, Qur'anic Education, Vocational Training, Socio-Economic Development.

Introduction

The *Almajiri* system of education appeared to be a serious issue of discourse among researchers in the area of history, education, anthropology, civic education, social studies, and political economy, to mention but a few. The word *Almajiri* comes from the Arabic word *al-Muhajirun*, which means "a migrant" or "one who seeks knowledge." Traditionally, it was seen as a noble pursuit of knowledge, where children were sent to religious scholars in different parts of the country to further their understanding of Islam. The children who are part of this system are often from economically disadvantaged families and are provided food and shelter by their teachers in exchange for religious education (Abubakar, 2020).

Conceptually, the meaning was used to refer to those individuals who go about seeking Islamic knowledge (Taiwo, 2013). The *Almajiri* consist of children of the nomad, fishermen, farmers, the haves and the have-nots who have left their homes in search of Qur'anic and Islamic knowledge (Olaniran, 2018). It is a traditional form of education practised in northern Nigeria, where children, mostly boys, are sent to Islamic scholars (Mallams) for religious and Qur'anic instructions. This system, which dates back several centuries, aims to provide religious education and develop literacy in Arabic and Islamic texts. However, the author has observed over the years, the *Almajiri* system has become synonymous with poverty, child labour, and the abandonment of children by their families to fend for themselves in urban areas. Also, the system has evolved in a manner that raises concerns among policy makers, social scientists, and human rights activists (Maigari, 2017).

The Qur'anic schools are those institutions objectively established and managed out of the public budget, operating on a curriculum based on the individual ability of the learner. It gave rise to the popular Hausa adage *"Wanda yaiyaallonsa, yawanke* –that progress come only when one has mastered/memorize what is on his slate. Two types of Qur'anic school were identified (Maigari, 2017). The first was the "basic" made for children to learn Arabic letters in a patternsimilar to principle of progression or workload in the conventional western education system – starting from "*Babbaku*, *Wasulla* and *Tattashiya*" meaning the consonant, consonants with vowels and learning to read the Qur'an. These schools often called the '*MakarantarAllo*" (The slate school) enrolled children from the age of five. The second was the adolescents and adults type operates in a boarding system where memorisation of the Holy Qur'an is given priority. This is the normal *Tsangaya system,* usually established on the outskirts of a town. The conditions in the two schools are dynamic. In a true Hausa community, then, hardly a child grows without passing through this system until recently, when it was being depicted in the most gruesome picture and was beginning to be replaced by the *Islamiyya* system, a day system usually in the evening hours. To the author, no matter how difficult or miserable the lives of such children are, the majority never regret being there because they were made to understand that "nothing good comes easy". They are being prepared for a later life of independence, self-employment while having a heart to sympathise with any less privileged individuals. A lot has been said regarding how bad the Almajiri system is. Does that mean it is in no way beneficial?

Today, many *Almajiri* children are forced into beggary or perform menial tasks for their survival. They live in overcrowded and unsanitary conditions, which not only hinder their intellectual growth but also expose them to a range of social and health issues (Omotayo, 2019). The *Almajiri* system has been critiqued for not adequately integrating formal education, skills training, or child welfare into its structure, which limits the future opportunities of these children and contributes to broader societal problems, including poverty, unemployment, and extremism. The Nigerian government, concerned about the adverse effects of the *Almajiri* system on the nation's development, has proposed various solutions over the years, including an attempt to restrict the practice. For instance, the federal government's plan to *proscribe* or abolish the system was discussed, citing concerns over child exploitation and the rising number of street children (Kadiri, 2021). However, while some view the proscription of the system as a necessary measure to protect children, others argue that the solution lies not in banning the practice but in restructuring and integrating it into the modern educational framework.

The call for *restructuring and integration* of the *Almajiri* system into the formal education sector has garnered significant support from various scholars and religious leaders who argue that the existing system can be improved without being discarded entirely. They advocate for incorporating both Qur'anic and secular education in a more balanced manner, ensuring that the children are not only trained in religious knowledge but are also equipped with the skills needed to succeed in a modern economy (Aminu & Ibrahim, 2020). The author is of the opinion that such an approach would ensure that the *Almajiri* system continues to serve its original purpose of fostering knowledge while also addressing the social and economic challenges faced by these children.

The author, who is a pro-*Almajiris,* felt that this system has supported the majority of currently serving Islamic clerics in Nigeria and beyond. Thus, its proscription is considered a violation of human rights. This category of people, as a matter of fact been overlooked, disposed of, maltreated, blamed or persecuted based on what other authors considered unsociable or a miserable life, ignoring the important role played by the *Almajiris,* which he inferred as "the other side of the coin". In this write-up, the author tried to bring strong reasons to clear the misconceptions on the nature of the system and make a call to its resuscitation, restructuring and integrating the *Tsangaya* system in the popular "Inclusive Education".

The author believed that government and general public are not fully aware of the roles played by the product of this system whom are impacting to the lives of people in the immediate communities they live thus, prompting him to come up with this article with a view to educate the public on the roles played by the *Almajiris,* and the need for integrating them into the formal education for balanced literacy and numeracy capable of making their life better.

The Outstanding Roles of the Almajiri System of Education

The products of the *Almajiri* system and the students play a vital role in various fields of human endeavour since its inception in the 11th century in the Kanem Borno Empire, and were later replicated in the Sokoto Caliphate after the triumph of the Jihad led by Sheikh Uthman Dan Fodio (1754 – 1817) (AbdulQadir 2015). The author wished to discuss this under the following:

1. Administrative Roles
2. Economic Roles
3. Social Roles
4. Religions Roles

i. Administrative Roles of *Almajiris*:

The *Almajiri* system contributes to the administrative structures of local communities, primarily through the informal leadership roles filled by religious scholars (Mallams) and their students. These scholars often serve as community leaders, influencing decisions on religious and cultural matters. In many northern Nigerian towns, Mallams are revered not only as educators but also as local administrators who mediate disputes, offer counsel, and play a key role in upholding Islamic values within their communities (Aminu, 2020). The hierarchical structure of the *Almajiri* system, where senior students supervise younger ones, also reinforces a leadership model that mirrors the communal organisation typical of northern Nigeria. Moreover, the *Almajiri* system supports the decentralisation of education in rural and underserved areas where formal schools might not be easily accessible. This decentralised education structure ensures that religious education reaches various parts of the region, even in remote locations, contributing to administrative stability in such areas by providing an alternative form of education (Babatunde, 2018).

The products of the Almajiri system of education, past and present, play vital leadership roles in their localities. In addition to their roles as teachers, Imams and preachers, the graduates from the *Almajiri* system of education formed the group of elites that manned various government organs and parastatals in the pre-and post-colonial era in Northern Nigeria. Similarly, they played significant roles during the Indirect Rule introduced by the colonial authorities in the region, as the *Ajami* (way of writing Hausa language using Arabic letters) was widely used throughout the region. The British were left with no option but to recruit them as clerks and office attendants in the heyday of their activities in the area (Abdulkadir, 2015). As stated earlier, this system has undergone. Today, these individuals play the role of supportive staff as messengers and cleaners. When a university graduate spends years looking for a job, they will take the least and manage their family. In essence, they accept low-quality jobs such as nail cutting, cleaning and stewardship, which could never be accepted by any A-level graduate. Above all, the *Almajiris* exercise their franchise duty during elections.

ii. Economic Roles of Almajiris

Economically, the *Almajiri* system has both positive and negative implications. On the one hand, the system helps to create a unique form of economic mobility for its participants. *Almajiris* typically engage in street begging or perform small jobs for survival, which has contributed to a labour force that fills various informal roles in the local economy. These children often provide cheap labour for petty businesses, helping sustain small-scale economies in their communities (Mamman, 2020). However, the system also has its economic drawbacks. The large number of children who remain outside formal education limits their potential to contribute to the formal economy in a significant way. Without access to vocational or technical training, most *Almajiris* remain trapped in low-wage, unskilled labour. Consequently, this perpetuates cycles of poverty, especially for those who are unable to transition into higher forms of education or skilled labour (Omotayo, 2019). Furthermore, the state's inability to integrate the *Almajiri* system into the formal education sector hampers the productivity and economic growth of northern Nigeria as a whole. The *Almajiri* system produces graduates who cannot be fully employed by the government, but neither complain of unemployment nor are they counted as unemployed youths. Teachers (*Mallams*) and their pupils (the *Almajiris*) were later (and until today) regarded as a bunch of illiterates due to their inability to read or write in the newly introduced form of education

called *Karatun Boko* (Western education). To make ends meet, both the teachers and their pupils turned beggars, which formed the *Almajiri*dilemma today (Taiwo, 2013). At the age of 18 and above, the pupils quit street begging as self-employed.

It is worthy of regard, as observed by the author, that these categories of people do not pose any threat to the government seeking any white collar job. They would rather engage themselves in providing certain services that have a myriad of economic gains to them, and society is fully dependent on their services. As they resort to all forms of vocational art and craft-related business, such as cap making, weaving, dying, shoemaking, farming, laundry services, knitting, fashion designing and many more, in which our Nigerian graduates cannot take many of those jobs. The *Almajiri* also pay taxes (attached) to the government to enable it to provide community developmental services. Shop owners, among those people who pay taxes to the government, are a sign of being good citizens. The product of the *Almajiri* system and those still undergoing the Qur'anic studies give the best services at a cheaper rate. They are always content with the little they get from their sweat and are used to being patient in all hardships. The *Almajiris* (pupils and graduates) take part in street hawking. By so doing, some products reach customers and final consumers through hawking.

iii. Social Roles of Almajiris

The social roles of the *Almajiri* system are multifaceted, serving both as a means of socialisation and a mechanism for social control. In traditional northern Nigerian communities, the *Almajiri* system plays a crucial role in shaping the values and identity of its participants. Through their exposure to religious education, these children are taught not only the tenets of Islam but also social codes and norms that govern their interactions within society (Abubakar, 2020). As they grow older, many *Almajiris* assume leadership roles in the community, continuing the cycle of mentorship and knowledge transfer within their families and broader society. As human beings, the *Almajiris* are also social beings. They relate well with people in society. The social well-being, as far as the author is concerned, outweighed the perceived desocializations which were induced by the government's failure to provide for them their social needs as citizens who chose to take that direction/pattern of life. Their separation from families and friends could in no way deprive them of a means to socialise in the new society. They marry, intermarry and give out their daughters to marriage to others within the new society. They take part in all societal/community developmental projects such as environmental sanitation, agricultural exhibitions, cultural festivals and many other social functions (Abdulbaqi et al., 2024; Amin et al., 2024). On the other hand, the social impact of the *Almajiri* system has often been negative due to the marginalisation of the children involved. Many *Almajiris* are stigmatised as beggars or "street children," and as they grow older, some face difficulties in finding formal employment or integrating into society at large (Aminu & Ibrahim, 2020). The lack of integration into formal educational systems and societal structures leaves many vulnerable to exploitation and social exclusion, contributing to broader issues of inequality, crime, and social unrest.

iv. Religious Roles of Almajiris

Religiously, the *Almajiri* system is fundamentally centred on the transmission of Islamic knowledge. This system is a core component of the Islamic education structure in northern Nigeria and aims to impart Qur'anic teachings, Hadith (sayings and actions of the Prophet Muhammad), and basic Arabic literacy (Kadiri, 2021). The *Almajiri* system is seen as a means of fulfilling religious duties and ensuring the continuation of Islamic traditions. Students (*Almajiris*) who complete their education are often regarded as highly knowledgeable individuals, capable of leading prayers, offering religious guidance, and playing a role in preserving the cultural and spiritual identity of the Muslim community. Additionally, the *Almajiri* system fosters a deep sense of religious solidarity among its participants. *Almajiris* often form tight-knit communities, where relationships of mutual support and shared religious goals help strengthen communal bonds (Abubakar, 2020). This sense of religious duty and community engagement contributes to the spiritual welfare of northern Nigeria's Muslim population. However, the failure to combine religious education with modern skills has led some to question whether the system is equipping children for broader societal roles or merely reinforcing traditional religious teachings without preparing them for contemporary challenges (Mamman, 2020).

The *Almajiri* system of education cannot be separated from learning religious knowledge. It produces most of the Islamic clerics in Northern Nigeria and beyond. To mention but a few is Sheikh Dahiru Usman Bauchi, Sheikh Sherif Ibrahim Sale Maiduguri, who has currently laid the foundation of the first and largest Islamic centre in Abuja, Nigeria – a multimillion Naira project. Other products of the Almajiri system were late Khalifa Ishaka Rabi'u, a merchant and a business tycoon, and his family, Sheikh Isa Ali Pantami, Professor Ibrahim Saeed Maqari, the Imam central mosque, Abuja, Nigeria and the author.

Strategies for Integrating the *Almajiri* System with the Formal Education System

A call for restructuring and integrating the *Almajiri* system with formal education is necessary to ensure that these children not only receive religious education but also gain the necessary skills and knowledge to thrive in the modern world. Discussed below are the strategies for such restructuring and integration.

1. **Dual Curriculum Approach: Combining Qur'anic and Secular Education**

One of the most effective strategies for restructuring the *Almajiri* system is the introduction of a dual curriculum that incorporates both religious education and formal schooling. This approach would provide students with the opportunity to study the Qur'an and Islamic studies while also learning core subjects such as mathematics, science, and languages. By combining both educational streams, the *Almajiri* system can ensure that children are well-rounded, gaining religious knowledge while acquiring skills that are necessary in today's economy (Aminu & Ibrahim, 2020). A model of this integration could involve a system where the time spent on religious education is balanced with formal schooling. For example, students could attend formal schools during the day and religious schools in the evening. This would provide a more holistic educational experience, allowing *Almajiris* to fulfil their religious obligations while also receiving a secular education that prepares them for future opportunities in the formal labour market (Babatunde, 2018).

2. **Curriculum Reforms to Include Vocational Training**

In addition to academic subjects, the *Almajiri* system should include vocational and technical training to provide students with marketable skills. This would be particularly beneficial for children who are not academically inclined or who may not wish to pursue further formal education. Integrating vocational education with the *Almajiri* system would ensure that students develop practical skills such as carpentry, tailoring, agricultural techniques, or information and communication technology (ICT). These skills are essential for improving the employability of *Almajiris*, empowering them to become self-sufficient and reduce their reliance on begging or informal labour (Mamman, 2020). Vocational training should be tailored to the needs of the local economy, taking into account the specific skills in demand in different regions. Local businesses, government agencies, and NGOs can collaborate to provide training programs and apprenticeships that give Almajiris real-world experience and prepare them for productive roles in society (Omotayo, 2019).

3. **Improvement of Infrastructure and Learning Environment**

A critical aspect of restructuring the *Almajiri* system is the improvement of the infrastructure and learning environments in which the children study. Many *Almajiri* schools operate in overcrowded, unsanitary, and unsafe conditions that hinder effective learning. To ensure that children benefit from an integrated education system, the physical conditions of these schools must be improved. This includes building and maintaining classrooms, providing learning materials (such as textbooks, writing materials, and computers), and ensuring safe, hygienic dormitories for students who reside in the schools (Solomon et al., 2025; Abubakar, 2020). In partnership with state governments and local communities, religious leaders and educational authorities must collaborate to ensure that these schools are adequately resourced. This would also involve establishing health and welfare programs to safeguard the well-being of the children, who often suffer from malnutrition, inadequate medical care, and exposure to disease due to poor conditions (Akorede et al., 2022; Kadiri, 2021).

4. **Collaboration between Government, Religious Institutions, and Communities**

The integration of the Almajiri system with formal education cannot succeed without the active involvement of religious leaders, local communities, and the government. Religious leaders (Mallams) play an essential role in the education of *Almajiris*, and their buy-in is crucial for the success of any reforms. Collaboration between the

state and religious institutions would foster mutual respect and understanding, allowing for a more seamless integration of secular and religious education (Aminu & Ibrahim, 2020). The government must create policies that encourage religious leaders to adopt a more holistic approach to education. This could involve providing incentives for those who participate in the reformation of the *Almajiri* system, such as grants, training, and resources. Additionally, local communities should be empowered to take ownership of the *Almajiri* schools, ensuring that the integration process aligns with local cultural and religious values (Babatunde, 2018).

5. **Training and Capacity Building for Almajiri Teachers**

Teachers who work within the *Almajiri* system are often not trained in formal pedagogical methods or modern educational practices. For successful integration with formal education to occur, it is essential to invest in the training and professional development of these teachers. This would ensure that they are equipped with the skills necessary to deliver both religious and secular education effectively (Kadiri, 2021). Professional development programs should include training in curriculum development, classroom management, child psychology, and educational technologies. In addition, teachers should be encouraged to adopt child-centred learning approaches that focus on the individual needs of each student. Training religious leaders to become more inclusive and receptive to secular education would also ensure that the *Almajiri* system remains relevant in the 21st century (Omotayo, 2019).

6. **Government Incentives and Funding**

Finally, the Nigerian government must commit to providing financial support and incentives for the restructuring of the Almajiri system. Funding should be allocated to establish and expand schools that offer integrated curricula, enhance teacher training, and improve infrastructure. The government should also provide scholarships, stipends, or subsidies to families who send their children to integrated *Almajiri* schools, ensuring that poverty does not remain an obstacle to education (Mamman, 2020). Public-Private-Partnerships (PPPs) can also play a crucial role in supporting the restructuring process. NGOs, international development organisations, and the private sector can contribute resources, expertise, and funding to create sustainable solutions for the integration of the *Almajiri* system with formal education.

Conclusions

The *Almajiri* system of education in northern Nigeria, deeply rooted in the region's cultural and religious traditions, has evolved into a complex educational structure. Initially designed to offer Qur'anic and religious instruction, the system has become a focal point of concern due to its negative socio-economic implications, including poverty, child exploitation, and social marginalisation. The *Almajiri* children, often left to beg or perform menial tasks for survival, represent a segment of society that is excluded from formal education and is vulnerable to further exploitation. The author concluded that despite its challenges, the *Almajiri* system holds significant cultural and religious value and can continue to play a crucial role in preserving Islamic teachings. However, its current form is insufficient in addressing the socio-economic needs of its participants and the wider society. Proscribing or completely abolishing the *Almajiri* system, as some policymakers have suggested, may not be the most effective solution. Instead, restructuring and integrating the system into the formal educational framework offers a more sustainable way forward. By combining religious education with practical, skills-based learning, the *Almajiri* system can contribute positively to the development of both individuals and society, ensuring that these children are equipped to participate fully in modern economic and social life.

Recommendations

The author, therefore, recommended that:

1. There is a need to integrate formal and Qur'anic Education by the government to help achieve a dual-curriculum approach, where students receive a comprehensive education that includes Islamic teachings alongside literacy, numeracy, and vocational skills.
2. There is a need to improve the infrastructure of *Almajiri* schools by the Government and non-governmental organisations to provide better living and learning conditions, such as adequate shelters, learning materials, and trained teachers who are capable of teaching both religious and secular subjects.

3. The *Almajiri* system should incorporate vocational training to equip children with practical skills such as carpentry, tailoring, plumbing or agriculture. These skills would provide *Almajiris* with alternative sources of income, reducing their dependence on begging and increasing their economic opportunities.
4. Religious leaders must be brought into the conversation for collaboration between government agencies and local communities for the restructuring of the *Almajiri* system.
5. Government and regulatory bodies should establish guidelines to monitor and regulate *Almajiri* schools, ensuring that they adhere to basic educational standards and child welfare requirements. The establishment of oversight mechanisms would ensure that *Almajiri* centres operate in the best interests of the children, protecting them from exploitation and ensuring that they receive a balanced education.

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EMPOWERING THE MARGINALIZED: SUSTAINABLE SOLUTIONS FOR OUT-OF-SCHOOL CHILDREN IN NIGERIA AMIDST SOCIOECONOMIC CHALLENGES

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Abstract

Nigeria is home to over 10 million out-of-school children, many of whom are marginalised and vulnerable due to socio-economic challenges. This paper explores sustainable solutions to empower these children, promoting inclusive education and social equity. The paper examines the complex interplay of factors driving out-of-school children, including poverty, conflict and cultural barriers. The research highlights innovative approaches, such as community-led initiatives, mobile learning and vocational training, which have shown promise in reaching marginalised children. A multi-stakeholder approach involving government, civil society and private sector partnership is crucial for scaling up sustainable solutions. By prioritising inclusive education and empowerment, we can unlock the potential of Nigeria's most vulnerable children, fostering a brighter future for generations to come.

Keywords: Marginalised, Sustainable Solutions, Out-of-School Children, Socioeconomic Challenges

Introduction

Nigeria faces a critical educational crisis, with approximately 18.3 million children currently out of school; the highest globally (UNICEF, 2024). This alarming figure highlights the severe challenges within the nation's education system, which include poverty, inadequate infrastructure, cultural norms, and insecurity, particularly in the northern regions. The situation is exacerbated by internal conflicts, displacement caused by Boko Haram insurgency, and a lack of investment in educational infrastructure. These challenges disproportionately affect vulnerable groups such as girls, children with disabilities, and those in rural areas, creating an enduring cycle of poverty and marginalisation.

Education is a cornerstone of economic and social development, driving innovation, reducing inequality, and fostering stability. In Nigeria, the large number of out-of-school children represents a significant threat to the nation's growth prospects. Without access to quality education, these children face limited opportunities for upward mobility, contributing to a persistent skills gap in the labour market and perpetuating socioeconomic disparities. Addressing this crisis is not only essential for fulfilling global commitments like the Sustainable Development Goals (SDGs) but is also crucial for securing Nigeria's future as a stable, prosperous nation (World Bank, 2024).

This article explores sustainable solutions to address the challenges facing out-of-school children in Nigeria. It aims to identify key barriers to educational access, evaluate existing interventions, and propose innovative strategies for fostering inclusivity and equity in the education system. By examining socioeconomic, cultural, and systemic factors, the article seeks to provide actionable recommendations for policymakers, educators, and stakeholders. The focus is on creating pathways that empower marginalised children and ensure that no child is left behind in Nigeria's journey toward sustainable development. Recent data and case studies are utilised to emphasise the urgency of the issue and to demonstrate the transformative potential of targeted interventions.

Statement of the Problem

Nigeria is grappling with an unprecedented educational crisis, as approximately 18.3 million children remain out of school, the highest number in the world (UNICEF, 2024). Of this alarming figure, over 60% are girls, and many belong to marginalised communities, including internally displaced populations due to conflict. Despite government initiatives like the Universal Basic Education program, the dropout rate remains high, and enrollment figures stagnate, signalling systemic challenges that hinder educational access and retention. Over 40% of Nigerians live below the poverty line, making education an unaffordable luxury for many families (World Bank, 2024). Children from low-income households often prioritise income-generating activities over schooling, perpetuating cycles of illiteracy and economic hardship.

Armed conflict and insecurity, particularly in the northern regions, have displaced millions of families, disrupting access to education. Schools are frequently targeted by insurgent groups like Boko Haram, leading to closures and a climate of fear that discourages parents from sending their children to school (Akorede et al., 2022). Deeply rooted cultural norms and gender biases significantly impact educational access, especially for girls. Early marriage and child labour are prevalent in some regions, depriving children of opportunities for formal education (UNESCO, 2024).

Many schools lack basic facilities such as classrooms, learning materials, and trained teachers. In rural areas, students often travel long distances to access schools, further discouraging attendance. The inadequate funding of public education exacerbates these issues, leaving millions of children without a viable path to learning. Educational inequalities are starkly pronounced across Nigeria's regions. Northern states, such as Borno, Yobe, and Adamawa, bear the brunt of the crisis due to ongoing insurgencies and systemic neglect. For example, while literacy rates in southern states exceed 70%, some northern states struggle with rates below 30% (Vanguard, 2024). These disparities reflect deep-seated structural inequalities that hinder national cohesion and development. Addressing these interconnected challenges requires a comprehensive, multi-stakeholder approach that targets the root causes of educational exclusion while promoting inclusive and equitable solutions.

Socioeconomic Challenges

1. The Interplay between Poverty and Educational Exclusion

Poverty remains a significant barrier to education in Nigeria, with over 40% of the population living below the poverty line (World Bank, 2024). Families struggling to meet basic needs often prioritise immediate survival over long-term investments in education. Consequently, children are compelled to engage in income-generating activities such as farming, street vending, or domestic labour, leaving little or no time for schooling. Poverty also limits access to essential school materials, uniforms, and transportation, perpetuating a cycle of educational exclusion and economic hardship.

2. Effects of Armed Conflict and Displacement on Access to Schooling

The ongoing insurgency in Nigeria's northern region has displaced millions of families, disrupting children's education. According to UNICEF (2024), more than 2 million children in northeastern Nigeria are out of school due to the destruction of schools, loss of teachers, and fear of attacks by insurgent groups like Boko Haram. Schools are often targeted in conflict zones, leading to closures and the breakdown of community-based education systems. Displaced children face additional challenges such as a lack of documentation, overcrowded refugee camps, and limited access to safe learning spaces.

3. Cultural and Gender Norms as Barriers to Education

Cultural and gender norms significantly impede educational access, particularly for girls. In many rural areas, traditional beliefs prioritise early marriage and domestic responsibilities over formal education for girls (UNESCO, 2024). Families often perceive educating boys as a better investment, leaving girls disproportionately excluded from learning opportunities. Additionally, societal stigmas around menstruation and inadequate sanitation facilities in schools further discourage girls from attending school regularly (Harande et al., 2025; Solomon et al., 2025).

4. Infrastructure and Resource Limitations in Underserved Areas

In many parts of Nigeria, particularly rural and conflict-affected regions, schools lack basic infrastructure, including classrooms, desks, textbooks, and trained teachers. According to recent studies, over 10 million children attend schools without adequate learning facilities, with some sitting on bare floors under trees (Vanguard, 2024). The student-to-teacher ratio in some areas exceeds 100:1, undermining the quality of education. Poor road networks and long distances to schools further exacerbate the challenges, making education inaccessible for many children.

Opportunities for Intervention

Role of Government Policies and International Frameworks

Government policies and international frameworks provide critical avenues for addressing the out-of-school children crisis in Nigeria. The Universal Basic Education (UBE) program, introduced in 1999, is a key initiative aimed at ensuring free and compulsory education for children up to the junior secondary level. Despite challenges in implementation, the program has the potential to increase enrollment and retention rates if adequately funded and monitored (UNESCO, 2024). International frameworks such as the Sustainable Development Goals (SDGs), particularly Goal 4, emphasise inclusive and equitable education for all and provide a blueprint for aligning national efforts with global standards. Strengthened policy enforcement, increased budget allocation, and targeted interventions for marginalised groups can further enhance the impact of these frameworks.

Community-Based Initiatives to Promote Education

Grassroots efforts driven by community organisations play a vital role in bridging educational gaps. Community-based initiatives often focus on engaging parents, religious leaders, and local stakeholders to prioritise education. Programs such as the Safe Schools Initiative, launched in 2014, have worked to rebuild schools in conflict-affected regions and foster local ownership of education (UNICEF, 2024). Additionally, mentorship programs, after-school tutoring, and community learning centres have proven effective in encouraging school attendance, particularly for children in rural and underserved areas. Empowering communities to take active roles in educational planning and monitoring can yield sustainable improvements.

Leveraging Technology for Remote and Alternative Learning Models

The rise of digital technology presents significant opportunities to reach out-of-school children, especially in hard-to-reach or conflict-affected areas. E-learning platforms, radio-based education programs, and mobile learning apps offer flexible and cost-effective solutions for delivering quality education. For instance, initiatives like the Nigeria Learning Passport, developed in partnership with UNICEF and Microsoft, provide digital resources aligned with the national curriculum to support remote learning (UNICEF, 2023). These tools can complement traditional classroom learning, ensuring continuity during emergencies and reaching children in remote areas where schools are inaccessible.

Public-Private Partnerships in Education Funding and Development

Collaboration between the public and private sectors is essential for scaling up educational access and improving infrastructure. Public-private partnerships (PPPs) can mobilise resources, expertise, and innovative solutions to address systemic challenges. For example, corporate social responsibility programs from companies like MTN Foundation have supported the provision of classroom facilities, scholarships, and teacher training (World Bank, 2024). By fostering collaboration among government agencies, private corporations, and non-governmental organisations (NGOs), PPPs can create sustainable models for funding and managing educational initiatives.

Sustainable Solutions

Enhancing Teacher Training and Capacity Building

A well-trained and adequately supported teaching workforce is essential for improving educational outcomes. In Nigeria, many teachers lack formal training, particularly in rural and underserved areas, where the student-to-teacher ratio can be as high as 100:1 (Vanguard, 2024). Sustainable solutions include investing in teacher training programs to enhance pedagogical skills, subject knowledge, and classroom management. Programs such as the Teacher Professional Development initiative, supported by international organisations like UNESCO, have demonstrated success in equipping educators to meet the diverse needs of learners. Providing incentives such as competitive salaries, housing, and professional growth opportunities can also help attract and retain qualified teachers in marginalised regions.

Promoting Gender-Sensitive Education Strategies

Addressing gender disparities in education requires strategies that focus on inclusivity and the unique challenges faced by girls. Gender-sensitive curricula, safe school environments, and the provision of sanitary facilities are critical for improving enrollment and retention rates among girls (UNICEF, 2024). Advocacy campaigns and conditional cash transfer programs have proven effective in encouraging families to send their daughters to school. Initiatives like the Girls' Education Project, implemented by the Nigerian government in partnership with the UK Department for International Development (DFID), focus on empowering girls through mentorship, scholarships, and life skills training.

Expanding Vocational and Skill-Based Training Opportunities

For many out-of-school children, traditional academic pathways may not be feasible due to age or financial constraints. Expanding access to vocational and skill-based training programs can provide an alternative route to economic empowerment and self-sufficiency. Government-supported initiatives such as the National Youth Service Corps Skill Acquisition and Entrepreneurship Development program aim to equip young people with market-relevant skills. Partnering with industries to align vocational training with labour market needs ensures that graduates are prepared for employment opportunities (World Bank, 2024). Additionally, integrating entrepreneurial training into the curriculum can foster innovation and self-reliance among youth.

Strengthening Collaboration Between Stakeholders

Effective solutions require collaboration among government agencies, non-governmental organisations (NGOs), private sector entities, and local communities. Stakeholders must work together to pool resources, share expertise, and align goals. Multi-stakeholder platforms such as the Global Partnership for Education (GPE) have facilitated coordinated efforts to address educational challenges in Nigeria (GPE, 2024). Community involvement is particularly critical, as local leaders and parents play a key role in advocating for education and ensuring accountability. Strengthened partnerships can lead to more targeted interventions, efficient resource allocation, and long-term sustainability.

Case Studies and Success Stories

Examples of Successful Initiatives Addressing Out-of-School Children in Nigeria

2. **The Safe Schools Initiative (SSI):** Launched in 2014 in response to the Boko Haram insurgency, the Safe Schools Initiative (SSI) aimed to protect education from attacks in conflict-affected areas. Supported by the Nigerian government, international donors, and organisations like UNICEF, SSI focused on rebuilding schools, providing temporary learning spaces, and equipping teachers with conflict-sensitive training. It also facilitated the relocation of children from high-risk zones to safer areas (UNICEF, 2024).
3. **Girls' Education Project (GEP):** A collaboration between the Nigerian government and the UK Department for International Development (DFID), the GEP has successfully improved girls' access to education in northern Nigeria. Through scholarships, mentorship programs, and community mobilisation efforts, the project has increased enrollment and retention rates among girls. By

addressing gender-specific barriers, such as early marriage and cultural stigmas, GEP has demonstrated the transformative power of targeted, gender-sensitive interventions (UNESCO, 2024).

4. **Radio and Mobile Learning Initiatives:** During the COVID-19 pandemic, Nigeria leveraged radio-based education programs and mobile apps to reach out-of-school children. Initiatives like the Nigeria Learning Passport provided digital learning resources aligned with the national curriculum. These programs helped bridge the gap for children in remote or underserved areas and have been recognised as a scalable solution for future emergencies (World Bank, 2024).

Lessons Learned and Replicable Strategies

1. **Community Involvement is Key:** Programs that actively engage local communities have shown higher levels of success. For instance, community leaders and parents played a crucial role in mobilising resources and ensuring the sustainability of the Safe Schools Initiative. Building trust and ownership within communities fosters long-term commitment to education.
2. **Targeted Interventions Yield Results:** Gender-sensitive approaches, such as those implemented in the Girls' Education Project, demonstrate that addressing specific barriers leads to measurable improvements. Providing scholarships, safe learning environments, and mentorship programs can be replicated in other regions facing similar challenges.
3. **Leveraging Technology for Scalability:** Digital learning platforms, as seen during the pandemic, offer scalable solutions for reaching out-of-school children. Integrating technology into the education system can address geographic and financial barriers, ensuring that more children have access to quality learning opportunities.
4. **Collaboration Among Stakeholders Enhances Impact:** The success of initiatives like SSI and GEP highlights the importance of partnerships between governments, NGOs, and international organisations. Coordinated efforts enable the pooling of resources, sharing of expertise, and alignment of goals, which are critical for addressing systemic challenges.

Recommendations for Policymakers and Stakeholders

1. **Strengthen Policy Enforcement and Funding:** Policymakers must prioritise the education sector by significantly increasing budget allocations and ensuring that existing policies, such as the Universal Basic Education (UBE) Act, are effectively implemented. A more robust policy framework that holds both local and national governments accountable for meeting educational goals will help drive tangible progress. Additionally, enhancing the monitoring and evaluation mechanisms for education programs can ensure that resources are allocated efficiently, reaching the most marginalised populations (UNICEF, 2024).
2. **Implement Gender-Responsive Education Programs:** To close the gender gap in education, targeted programs focusing on girls' education are essential. These programs should address the root causes of gender disparities, such as early marriage, gender-based violence, and harmful cultural practices. Providing incentives for families to educate their daughters, offering scholarships, and creating safe school environments will help ensure that girls have equal opportunities to access education. Promoting gender-sensitive curricula and including more women in teaching roles can also contribute to a more inclusive education system (UNESCO, 2024).
3. **Invest in Teacher Training and Professional Development:** The quality of education is largely dependent on the competence of teachers. Policymakers should invest in comprehensive teacher training programs to equip educators with the necessary skills to handle diverse classrooms. Regular professional development, along with fair compensation and incentives, can help retain teachers in rural and conflict-affected areas. This will increase teacher motivation and ensure that children receive quality education, especially in marginalised communities (World Bank, 2024).

4. **Improve Infrastructure and Accessibility:** Nigeria's education system faces significant infrastructure challenges, particularly in rural areas. Policymakers should prioritise the construction and renovation of schools, ensuring that all children have access to safe and conducive learning environments. Expanding transportation networks, providing mobile classrooms in remote areas, and integrating ICT infrastructure into schools can significantly improve accessibility for out-of-school children (Vanguard, 2024).

Long-Term Strategies for Creating an Inclusive and Resilient Education System

1. **Promote Vocational and Technical Education:** Not all children will pursue traditional academic routes, making vocational and skill-based education a crucial component of an inclusive education system. Policymakers should invest in vocational schools and partnerships with industries to align training with market demands. Expanding access to skills training will not only offer an alternative educational path for out-of-school children but will also contribute to the country's economic development by providing a skilled workforce (World Bank, 2024).
2. **Strengthen Education in Emergencies (EiE) Frameworks:** Given the frequency of conflicts and natural disasters in Nigeria, it is vital to develop a strong Education in Emergencies (EiE) framework. This should include providing temporary learning spaces, supporting displaced children with access to education, and ensuring the continuity of learning during crises. Building resilient education systems that can quickly adapt to emergencies is critical to minimising the disruption of education for out-of-school children in conflict zones (UNICEF, 2024).
3. **Create Inclusive Education Policies for Special Needs Children:** An inclusive education system should cater to the needs of children with disabilities. Policymakers should ensure that schools are equipped with the necessary infrastructure and trained staff to accommodate special needs children. Special education programs and support services should be incorporated into the mainstream educational system, ensuring that no child is excluded due to physical or mental challenges.
4. **Foster Local and Global Partnerships for Education:** A sustainable and inclusive education system requires collaboration across all sectors. The government must foster partnerships between local communities, international organisations, private companies, and civil society groups. These partnerships can enhance resource mobilisation, share best practices, and implement impactful initiatives. Initiatives like the Global Partnership for Education (GPE) have proven effective in pooling international resources and expertise to address the education crisis in Nigeria (GPE, 2024).

The Role of Global Partnerships in Addressing the Crisis

Global partnerships play an indispensable role in supporting Nigeria's efforts to address the education crisis. International organisations such as UNESCO, UNICEF, the World Bank, and the Global Partnership for Education (GPE) provide both financial and technical support. These partnerships facilitate knowledge exchange, best practice sharing, and resource mobilisation, which are essential for implementing large-scale interventions. Furthermore, global partnerships help ensure that Nigeria's education policies align with international standards, including the UN Sustainable Development Goals (SDGs), which aim to ensure inclusive and equitable education for all by 2030.

Global funding mechanisms, such as the Education Cannot Wait initiative, have been instrumental in providing emergency education services in conflict-affected regions. These global efforts not only bring critical financial resources but also technical expertise and policy frameworks that can be adapted to the Nigerian context.

Conclusion

Inclusive education is not merely a fundamental right; it is the cornerstone of national progress and sustainable development. In Nigeria, where millions of children remain out of school, addressing this crisis is critical for shaping a future of equality, opportunity, and growth. Education is a powerful tool for breaking the cycles of poverty, reducing inequalities, and driving economic advancement. When every child, regardless of gender, socioeconomic background, or geographic location, is allowed to learn, the entire nation benefits. By ensuring

that all children, particularly those in marginalised and conflict-affected areas, have access to quality education, Nigeria can unlock its full potential and move closer to achieving its development goals.

However, this transformation will not happen overnight. It requires the collective efforts of government agencies, civil society organisations, local communities, international partners, and the private sector. Policymakers must make education a top priority by implementing inclusive policies, ensuring adequate funding, and addressing the root causes of educational exclusion. Communities must take ownership of their children's education, while international organisations must continue to provide financial and technical support to scale effective interventions.

This is a call to action for all stakeholders to come together, overcome existing barriers, and make long-term commitments to empowering Nigeria's marginalised children. Only through these collective efforts can we ensure that no child is left behind and that every child in Nigeria has the opportunity to succeed and contribute to the nation's progress. Together, we can build an education system that is inclusive, resilient, and capable of shaping a brighter future for Nigeria and beyond.

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THE IMPLEMENTATION OF SCHOOL HEALTH POLICY IN FACILITY PROVISION IN PRIMARY SCHOOLS OF NIGERIA; A NECESSITY IN ADDRESSING THE CHALLENGES OF OUT OF SCHOOL CHILDREN IN NIGERIA

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Abstract

The need for non to be left behind in respect to education is a necessity that can not be overemphasized especially for the younger generation in this age of technological advancement. Thus, the concept of the School Health Policy (SHP) brings together parents, the community, experts and professionals from the education platform "the school" to provide a comprehensive primary health care (PHC) to children. As a tool or attraction and persuasion, the SHP targets primary schools and consists of five components: healthful school environment; school feeding services; skill-based health education; school health services; and school, home and community relationships (FME, 2006). Healthful school environment denotes all the consciously, organized, planned and executed efforts to ensure safety and healthy living conditions for all members of the school community. The objective of this paper is to unravel the possibilities of reducing the rate of out of school children through proper implementation of school health policy in respect to the availability or provision of health facility at our schools in Nigeria. Because the aim of healthful school environment is the provision of safe and inclusive learning, working and living conditions that optimize the organization of day-to-day experiences which influence the consistent enrollment of student, thus reducing the rate of out of school student and harnessing the great opportunity and skills imbibed in the minds of all children as members of the school community. This paper will look at the concept of school health policy and the possibilities of its implementation in reducing the rate of out of school students in our nation Nigeria, some school health problems that promote out of school children in Nigeria and suggestion on the need of implementation of school health policy in Nigeria schools a remedy to high rate out of school children in Nigeria.

Keywords*:* Children, Healthful school. Policy, Out of school, School.

Introduction

A policy is a deliberate system of guidelines to guide decisions and achieve rational outcomes. It can also refer to a statement of intent and is implemented as a procedure or protocol. Policies are generally adopted by a governance body within an organization. Policies can assist in both subjective and objective decision making. Policies used in subjective decision-making usually assist senior management with decisions that must be based on the relative merits of a number of factors, and as a result, are often hard to test objectively, e.g. work–life balance policy. Moreover, governments and other institutions have policies in the form of laws, regulations, procedures, administrative actions, incentives and voluntary practices. Frequently, resource allocations mirror policy decisions (Gade, 2023).

Health policy can be defined as the decisions, plans, and actions that are undertaken to achieve specific healthcare goals within a society (World Health Organization, 2011). According to the World Health Organization, an explicit health policy can achieve several things: it defines a vision for the future; it outlines priorities and the expected roles of different groups; and it builds consensus and informs people. Health policy also includes the governance and implementation of health-related policy, sometimes referred to as health governance, health systems governance or healthcare governance. Conceptual models can help show the flow from health-related policy development to health-related policy and program implementation and to health

systems and health outcomes. Policy should be understood as more than a national law or health policy that supports a program or intervention (Barbazzaetal, 2014; Kuhlmann, 2015)

School Health deals with the health and wellbeing of school community stakeholders: Ministry of education, State Universal Basic Education Board, School children, teachers, administrators, security men, gardeners and every other person that works or lives in the school compound. Community health occupies a central position in every school which is located in one community or another. Again, every school is a sub-set of a community or society both having linkages with each other. When there is any disease condition (especially infectious diseases) in the school, a school member like the student or school staff can serve as an agent to transport the disease from the school into the community. On the other hand, when the problem is in the community, school children or workers can also serve as carriers to transport the health problem into the school.

School health programme is an important component of the overall care delivery system of any country. A well organized and properly executed school health programme can be used to create safe environment for school children. Next to the family, the school is the primary institution responsible for the development of young people worldwide (Ademokun et al., 2014). School health programmes in sub-Saharan Africa have continued to reveal obvious gaps in implementation of school policies. A good number of children spend a considerable part of their life in school, and are exposed to a variety of environmental influence. For this reason, the SHP was established to see to their welfare and ensure that adequate health care services are provided for them. School health programme is a health programme directed to meet the needs of school children and school personnel. It is the totality of projects and activities in a school environment, which are designed to protect and promote the health and development of the school community (Federal Ministry of Education, 2006).

Healthful school environment denotes all the consciously, organized, planned and executed efforts to ensure safety and healthy living conditions for all members of the school community. The aim of healthful school environment is the provision of safe and inclusive learning, working and living conditions that optimize the organization of day to day experiences which influence emotional, physical and social health of learners as well as the consistent enrollment of student, thus reducing the rate of out of school student, who are members of the school community so that maximum benefit from education can be achieved (FME, 2006).

Concepts of National School Health Policy in Nigeria

The National School Health Policy (NSHP) is an operational procedure which is to be used as guide or a point of reference on implementation of effective School Health Policy at all levels in Nigeria (Ogundoju, 2018). The policy is aimed at implementing child friendly school environment by assigning responsibilities and roles to relevant stakeholders. The policy was originally signed into operation in 2006 and to be reviewed every five years. The policy is to comply with global trends and meet the World Health Organization (WHO) standard for schools. To improve the general poor state of the School Health Policy and its practice that lacks standards in Nigeria, to be used as guide and appropriate national directions on implementation of effective School Health Policy at all levels in Nigeria (Ogundoju, 2018).

The National School Health Policy Nigeria keyed into WHOs health promotion school concept with the development and launching of the National School Health Policy (NSHP) in 2006. The NSHP is crucial for school based health promotion, and provides a common goal and strategy for all schools and other implementers across the country (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2012). Besides, augmenting the care for the populace, research indicates that effective school health policy helps to increase school attendance and academic performance, decrease school dropout rates (Bonell et al., 2011).

Furthermore, the goals of the NSHP according to Federal Ministry of Education (2006) are to: enhance the quality of health in the school community; and create an enabling environment for inter-sectoral partnership in the promotion of child friendly school environment, for teaching and learning and health development. This will involve the development of appropriate preventive and curative services for school children and school personnel, the improvement of environmental sanitation, and the promotion of health education in all schools.

The Implementation Guidelines of the NSHP outlined strategies for the implementation of the components of the SHP which include training and capacity building, partnership and collaboration, advocacy and resource

mobilization, sensitization and mobilization, information, education and communication, control of communicable diseases, participation, and monitoring and evaluation. Institutional roles in the implementation of the various components of the School Health Policy were also outlined in the NSHP Implementation Guidelines (Tochi, 2014).

The Possibilities of Implementation of School Health Policy in Reducing out of school Children in Nigeria

School Health Policy is defined as one of the strategies for promoting primary health care services in the school community to keep them in a state of complete, physical, mental and social well -being throughout the years of schooling and to ensure overall healthy development of learners and optimum performance of the staff. SHP in the context of the national school health policy is also defined as a series of harmonized projects/activities in the school environment for the promotion of the health and development of the school community and this involves the collaborative efforts of the stakeholders (i.e. theschool administrators/teachers, parents, the community, agencies and health personnel. (NSHP,2006).

A school health centre is fundamental to the realization of the objectives of school health services. This is because this centre provides a setting with the physical and psycho-social arrangement needed for the discharge of school health services activities. A school health setting must have appropriate equipment and supplies for diagnosis, treatment and meeting of emergency and referral services. According to the Implementation Guidelines for School Health Programme, the school health service centre should be sited in the school premises to serve the school or not more than 10 primary and secondary schools clustered within 15 minutes‟ walk. The school health service centre must be easily accessible and designed to eliminate or diminish barriers to care for students and to participation by parents or guardians. Where an elaborate health centre is lacking, a sick bayor in the least, a dedicated room must be set aside for the care of children who suddenly take ill in school.

Some school health problems that increase the rates of out of school children in Nigeria

School health problems in Nigeria and many other West African countries are many and vary from one place to another. According to Kuponiyi et al. (2016) school health services are geared towards preventive, educative, curative, referral and even follow – up. The health of the school child is very important and should not be toiled with because the child of today is the leader of tomorrow and a sick nation is a poor and weak nation. Some common health problems among primary school age pupils can be classified into one or more of the following:

i. Accidental problems

ii. Sanitary problems

iii. Economic problems

iv. Nutritional problem

v. Social problems

vi. Infectious or communicable disease.

Accidental problems an accident is an undesired or unwanted event which could allow a hazard to cause harm or injury, loss or death to person and/or damage to property, environment or loss/interruption of work (Okpanku 1996). An accident is an unforeseen course or event without an apparent reasoning. Accidents such as falls, cuts, abrasion, sprains and strains are common among school children. All accidents are either directly or indirectly attributable to human failings. Children will naturally love to play and sometimes their play could become very rough. It is therefore advisable that a teacher or an adult should always be assigned to watch the children during their play periods. The school environment should also be such that would not encourage learners to have accidents. For instance the floors should not be broken. Furniture's should be safe and playgrounds, classrooms and the school environment in general should be free from materials and objects that can cause harm to the learners and other adults in the school because according to Okpanku (1996) the total loss both in human and economic resources and personal tragedies involved in accidents are virtually impossible to measure. He further stated that it is important to note that those accidents or incidents without any loss bearing, damage or injury which the school and its authorities ignore are on the increase and later cause serious accidents. All sources of

accident- or accident-prone areas in the school should be properly taken care of so that learner's health is given top priority in the school.

Sanitary problems are obvious in such ways that sanitary condition of the school environment and the pupils is very important (Abdulbaqi et al., 2021). According to Theresa (2020) is of the view that every school should pay attention to its water supply, disposal of excreta and rubbish, prevention of disease breeding and the condition of its buildings with regards to overcrowding, ventilation and lighting. Problems can arise if there is a poor source of drinking water in the school and if there are no or poor toilet facilities. Poor physical care of the learners can also expose them to health problems such as ringworm, eczema etc. which can affect their academic performance in school. Ogbebor (2010) also, suggests the use of health education to teach the child to improve their own health and to realize the part they can play in protecting the health of others in the community. To do this, the child must be given knowledge of how the body works, of the causes and prevention of the important diseases. Important topics like personal cleanliness and hygiene in the home, school and community should be taught to the children.

Economic Problems: Economic factors such as poverty level and illiteracy are some basic or root causes of school poor health conditions among school children which could have resulted in the parents not been able to give proper care and attention to their wards in school. The inequality in socio-economic background affects the child's education. Maduekwe (2015) stated that marginalized people in the society would include women, rural dwellers, nomadic groups, illiterate adults and poor citizens.

Nutritional problems usually caused by intake of foods that lack or have excess of some particular nutrients resulting in some of these problems; dwarfism, kwashiorkor (protein deficiency), Marasmus (protein and caloric deficiency), obesity (excessive fat), Anemia (shortage of red blood cells). Nutritional problems arise majorly as a result of illiteracy, poverty, ignorance, faulty dietary pattern and lack of care. Ogbebor (2010) reiterates the importance of school feeding, he is of the view that if children are to study well they should have something to prevent hunger, a school meal will provide opportunity for making sure each child gets what might be missing from his diet, especially protein and vitamins and foods given should always be ones that are locally suitable and can form part of the child's local diet. Ogbebor (2010) also suggests using school feeding as an aid to the teaching of nutrition and new food habit or even as a lesson in agriculture especially if the school has a garden which produces sufficient food for use by the learners.

Social problems such as deviancy**,** alcoholism, cigarette smoking are some social problems which though not too common among pupils but are sometimes present among teachers, guardians and parents and have social effect on the child. Social problems that can exist among the primary school children are shyness and inferiority complex. Onoyase (2013) is of the view that social problems among pupils and learners resulting in deviance which, is unwillingness to conform with the standards of behavior of that particular society or school as the case maybe, can be caused by many factors such as lack of parental care, lack of school materials, broken homes, and some other roles played by the society to have made the child a deviant. Co-operation between home and school, parent's show of concern for their children's welfare and teachers' good behavior at all times are some of the ways to ameliorate social problems.

Infectious or communicable diseases are diseases that can be transferred from one person to another. These are common among primary school pupils and most times occur in epidemics. They are caused by bacteria, virus, fungus, parasites or nematodes either through direct or indirect contact with infected persons. Some very common infectious or communicable diseases in West African countries include conjunctivitis, louse infestations, dysentery, ringworm, measles, scabies, diphtheria, poliomyelitis, influenza and smallpox. Some of these diseases can be prevented from assuming epidemic proportions in schools by paying attention to environmental hygiene, immunization and early diagnosis and treatment (Ogbebor,2010).

Immunization against such diseases as smallpox, poliomyelitis, tuberculosis, diphtheria, tetanus and typhoid can be done in the school and quite often, Ogbebor (2010) believes it can be used as a way of persuading the rest of the community to be immunized. In most West African countries, children with certain infections and diseases are excluded from school for a period of time or the period the disease or infection lasts. Some common

examples provided in Epidemiology of Prevention of Communicable Diseases (2019) include some of the following:

1. Skin infection - caused by fungus
2. Common cold - caused by virus
3. Malaria - caused by malaria parasite
4. Dysentery (diarrhea) - caused by bacteria
5. Chicken pox - caused by bacteria
6. Measles - caused by a virus
7. Typhoid fever - caused by a bacteria
8. Tuberculosis - caused by a bacteria
9. Pneumonia (cough) - caused by a bacteria

The guideline also provides that the health centres must operate every day during school/boarding hours. Hours of duty must:

1. Be convenient to learners and staff and include some hours before and after school for day schools
2. Allow parents and guardians who wish, to participate in the care of their child
3. To the maximum extent possible, permit scheduled appointments that do not unnecessarily interrupt the student's classroom time.
4. Provide services to students in a manner which ensure the students and his/her family's right to privacy (Ogbebor, 2010).

Suggestion on the need of implementation of school health policy in Nigeria schools a remedy to high rate out of school children in Nigeria.

The need for the implementation of a School Health Policy in Nigeria is crucial for addressing the high rate of out-of-school children. A robust health policy within the education sector can serve as a direct remedy to the barriers that prevent children from attending school. Here are several suggestions on how such a policy could help: Poor health is a significant barrier to education in Nigeria. Malnutrition, untreated diseases (such as malaria and tuberculosis), and mental health issues often cause children to miss school. A school health policy can prioritize the provision of health services within schools, ensuring that children remain healthy and able to attend class regularly.

Subsequently, I will recommend the establishment of a health screening programs, routine vaccinations, and provide first aid training for school staff. Collaborate with local healthcare providers to offer treatment in schools to reduce absenteeism due to illness. Malnutrition and lack of proper nutrition are rampant in some Nigerian communities, leading to weakened immune systems, stunted growth, and impaired cognitive development, which affects learning. Thus, it is paramount to implement school feeding programs to ensure children receive nutritious meals that improve their overall health and academic performance. This would particularly benefit children from low-income families.

Mental health issues such as depression, trauma, and anxiety, particularly among children who have experienced conflict, poverty, or family instability, are often overlooked. This can contribute to disengagement from school and eventually dropping out. Therefore, to include mental health education as part of the school curriculum and create a system for counseling and psychological support in schools. Teachers can be trained to identify early signs of mental health challenges and refer children to professional help.

Many schools in Nigeria are located in areas with inadequate sanitation, water facilities, and safety, which can contribute to poor health outcomes. Unclean and unsafe environments can deter children from attending school, particularly girls, who may face additional challenges such as menstruation.

The policy should enforce the establishment of clean, safe, and gender-friendly school environments. This includes the provision of separate toilets for girls, clean water sources, and waste management systems.

Creating health education awareness as many parents and communities are not fully aware of the link between health and education. This lack of awareness can affect their decisions about whether to send their children to school, particularly when health issues arise.

A comprehensive school health education program can raise awareness about the importance of regular school attendance, proper health practices, and personal hygiene. It can also address specific health risks that children face, like the spread of infectious diseases.

Gender inequality is a major factor contributing to the high rate of out-of-school girls. Health-related issues like early pregnancy, menstruation, and sexual violence often disrupt girls' education. The policy should aim to ensure that girls have access to sanitary products, comprehensive sexuality education, and protection from sexual harassment. Schools should also create awareness about the importance of girls' education, with community engagement to challenge societal norms.

Conclusion

The implementation of a School Health Policy in Nigeria is critical for addressing the high rate of out-of-school children. By focusing on the health and well-being of students, ensuring access to essential healthcare services, and creating supportive learning environments, the policy can help overcome many of the barriers that prevent children from attending school. To ensure the success of a school health policy, that will in turn reduce the rate of high out of school children there should be systems in place to monitor and evaluate the program's effectiveness in reducing the number of out-of-school children. The government should implement regular assessments and use data to identify gaps in the system, ensuring continuous improvements. All these will not only improve the academic performance of children but also contribute to building a healthier, more educated future generation.

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