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EDITORIAL NOTE

I have the delight and privilege to write as Editor-in-chief of the *Rima International Journal of Education (RIJE)*, an official research publication of the Faculty of Education, Sokoto State University. This edition (Volume 5: No. 4) of the *RIJE* has fifteen (15) articles from distinguished scholars and educators, poised to report cut-edge research findings and discourse on contemporary educational issues with implications for pedagogy, national and global development.

The dictum of “publish or perish” is in vogue in any worthwhile research-based institutions, hence strict adherence to publications in any reputable and recognized Journal, as such *RIJE* is recognized as complimentary to contemporary dissemination and propagation of knowledge. Therefore, the Editorial Board of *RIJE* wishes to use this medium to solicit well researched articles for publication from teeming population of academics and researchers globally. The Journal would always be subjected to thorough peer review and proper editorial vetting.

Assc. Prof. M.S. Nawait,
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The Editorial Board invites interested scholars and researchers to submit original manuscripts for publication. Published quarterly by the Faculty of Education, Sokoto State University, Sokoto, this journal disseminates relevant research findings in all fields of education. Both empirical and theoretical papers that are articulately written based on contemporary educational issues that have national and international relevance shall be accepted for publication. The manuscript shall not be under consideration elsewhere for publication.

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- i. **Language:** Manuscripts meant for submission should be written in English language with strict adherence to British standard.
- ii. **Paper Size, Font and Length:** Manuscript prepared for submission should be typed in Microsoft Word on A4 paper size using Times New Romans, font size 12 and 1.5-line spacing. The manuscript should not be more than 15 pages including references.
- iii. **Title Page:** The title page should capture the title of the manuscript which should not be too lengthy, the author(s) name(s) with surname in Upper Case, institution's affiliation, current mailing address, valid e-mail address, Phone No(s) and full postal address of the main author and co-authors.
- iv. **Abstract:** Manuscripts must be accompanied with an abstract of not more than 200 words comprising essential components of the manuscripts. Avoid citations in the abstract. After the abstract, the authors should provide maximum of 5 key words.
- v. **Organization:** The manuscript should be explicitly presented under various headings and sub-headings. The ideas should be properly organized. Coherent and sequential. More importantly, the following should be made conspicuous while preparing empirical papers: **Introduction** (indicating rationale for the study, review of related literature, problem statement, and purpose of the study), **Methodology**, **Results**, **Discussion**, **Conclusion** and **Recommendations**.
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A Study on the Impact of Cultural Activities on Primary Schools Pupils Academic Achievement in Got Regea Area, Siaya County Kenya

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Abstract

This study investigated the impact of cultural activities on primary school pupils' academic achievement in Got Regea Area, Siaya County, Kenya. A descriptive survey design under a mixed-methods approach was employed. The sample comprised 40 participants (20 pupils, 12 teachers, 8 stakeholders) selected through purposive sampling. Questionnaires and interview guides were used to collect data, with quantitative data analyzed using descriptive statistics (SPSS v.21) and qualitative data through thematic analysis. Findings revealed that 77.7% of pupils and 81.9% of stakeholders agreed that extended night vigils disrupt school attendance, while 66.6% of pupils and 70% of teachers agreed that Disco Matanga contributes to learners' inability to complete assignments. Other identified impacts included early marriage (qualitative), wife inheritance conflicts (60% teacher agreement), and childcare practices (88.8% pupil agreement). The study concludes that cultural activities negatively affect academic achievement through school dropout and poor performance. Recommendations include community education programs on cultural practices' educational impacts.

Keywords: Cultural Activities, Academic Performance, Traditional Dance

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Introduction

This study focuses on the impact of cultural activities on primary school's pupils academic achievement in Got Regea area, Siaya County Kenya. According to Ouma (2016), cultural activities are the art, customs and habits that characterize a particular society or nation. Dimitra, (2020) also comments that cultural activities are the systematic planned activities which are practiced within the nation and provide the identity of the nation. Thus, cultural activities are the events prepared within the society to pronounce the society values and norms, example of those activities are: Burial rites, Traditional dances and Female Genital Mutation (FGM).

Causadias (2020) explains that culture refer to the sociology and social anthropology which include beliefs, customs, and work of art like sings song and drawing. Moreover, she continues to explain that cultural activities are the activities practiced in the society reflecting their traditional norm and belief. Thus, culture refer to the spiritual activities practiced in the society or a group of people to give it the identity.

Cultural activities practices in the society are very important as some of the cultural activities are used for economic gains in the society when tourists visit a country to see some of the cultural practices of some tribes within a nation (Ouma, 2016). Contrary to this Rodionova et al. (2022) argues that some of the cultural activities such as early marriages, FGM have negative effect to academic achievement. Therefore, cultural activities within the society have an advantage and disadvantage in regards to the way it they are practiced within a given society.

According to Gurgenidze and Mamuladze, (2017) cultural event plays a great role in the provision of education to the learner. Students acquire knowledge and skills in the field of arts where the students gain knowledge about historical events, cultural traditions and they develop dancing skills, music, drawing, sculpturing and other similar skills. They further argue that cultural activities provide awareness to the students about their culture in the society. Thus, cultural activities practiced in the society influences differently the provision of education.

Luos who live in Siaya County practice different cultural activities such as elaborate burial rights when member of the community passes away; For

example, when a member of the community passes away, members of community are required to conduct night vigils. In these vigils, live bands or disco, raiders are often invited to entertain the bereaved. These activities attract most of the schools going children. Statistical data obtained from the District Education Officer Gem shows that performance examinations is not very good in the three primary schools found in the area as indicated in Table 1.

This situation raised the interest of the researcher to conduct the study so as to find out the impact of cultural activities on primary schools' pupils' academic achievement in Got Regea area, Siaya County Kenya.

Table 1: Performance in KCPE in Primary schools found in Got Regea Area

Name of School	Year	Performance in KCPE (Mean score)
Got Regea	2021	227
Mundo ware	2021	223
Got Kokwiri	2021	202

Source: District Education Officer (2022)

Theoretical Framework

This study is anchored in Bronfenbrenner's Ecological Systems Theory (1979), which conceptualises human development as shaped by a series of interacting environmental systems. The theory identifies five nested systems: the *microsystem* (immediate environment such as family and school), the *mesosystem* (interactions between microsystems), the *exosystem* (external settings that indirectly affect the child), the *macrosystem* (cultural values, laws, and customs), and the *chronosystem* (environmental change over time).

The macrosystem is particularly relevant to this study, as it encompasses the cultural norms, traditions, and community practices that define life in Got Regea Area. Bronfenbrenner (1979) argued that macro-level cultural forces profoundly shape children's immediate environments, with direct consequences for educational engagement and achievement. When community-wide practices such as Disco Matanga, night vigils, and traditional childcare obligations permeate the microsystem of the home, they disrupt the child's study time, sleep patterns, and school attendance. The theory thus provides a conceptual lens through which to understand why children embedded in culturally intensive communities may exhibit lower academic achievement not due to individual deficits, but because of the systemic cultural pressures exerted on their developmental ecology.

By applying Ecological Systems Theory, this study moves beyond a deficit framing of cultural activities and situates academic underperformance within the broader socio-cultural environment. This perspective also informs the study's recommendations, which call for interventions at multiple ecological levels, including household awareness, school policy, and community leadership.

Literature Review

Cultural activities refer to the activities practiced within a society or in a group of people to show their spiritual belief (Causadias 2020). In line with this statement the author comments that the cultural activities practiced in the society have an impact in the provision of education. For example, FGM has an impact on the provision of education the children who concentrate on the cultural activities and to engage in those activities and not in their studies will not succeed. Thus, has an impact on the provision of education to the children whereby it may lead to school dropouts and poor academic achievement.

In the Kenya society there are different cultural activities that have an impact on the effective provision of education to children one of this activity is early marriage (Hussein, 2016). Thus, early marriage may interfere with both teaching and learning process. Once this student is married off at an early age, they end up losing their concentration in class hence making it hard for the learning process to be effective. Likewise, Rodionova et al. (2022) assert that in Kenya provision of education to children is affected by marriage. Generally, the reviewed studies conclude that early marriage as one among the cultural activities practiced in Kenya interferes with the process of learning in schools.

Moreover, Hussein, (2016) comments that in Kenya there are different cultural practices within the society. Not all cultures practiced in the society influence the provision of education positively there are some of the cultural activities that have a negative influence to the provision of education. Hussein, (2016) continues clarifying that most of the societies in Kenya are pastoralist who strongly believe in different traditional cultural practice where the practices interfere with the provision of education. For example, the society in Kenya beliefs that educating a girl is a total wastage of time thus this cultural belief interferes with the provision of education to the girl child. Furthermore, the author asserts that early marriages interfere with the process of provision education.

Damas, (2016) asserts that there are different cultural activities practiced in Tanzania. These cultures have an impact on the provision and access of education in different ways based on how these cultural activities are practiced and perceived within the society. This author continues to argue that, different cultural activities practiced in the society such as early marriages and forced marriages have a negative impact on the access of education to girls. The society's perception on access to education has an impact on education whereby the girl child is not given an equal opportunity to access education as compared to the boy child and this is as a result of the different cultural practice's that majorly affects the girl child.

Additionally, Mansory (2007) discovered that early marriages are the leading cause of early school dropout of girls in Afghanistan; when girls reach puberty parents consider it as a ripe time for them to be married and push on to arrange the marriage instead of allowing them proceed or continue with school. Therefore, its observed that early marriage it's a major factor that interferes with the provision of education to students.

According to Kapur, (2018) every society has its own culture which shapes the society and guides the society to further developments. He further states that cultural activities practiced in different society has an impact on the provision of education to its people, it has a strong impact on the education system within a given society.

Objectives of the Study

The study was guided by the following objectives:

1. To identify cultural activities practised in Got Regea Area that impact pupils' academic achievement.
2. To examine the relationship between participation in Disco Matanga and primary school pupils' academic performance.
3. To assess the effect of traditional childcare practices on school attendance and learning outcomes.
4. To determine community stakeholders' perceptions of how cultural activities influence academic achievement.

5. To recommend interventions to mitigate the negative impacts of cultural activities on primary school education.

Research Questions

The study was guided by the following research questions:

1. What cultural activities practised in Got Regea Area affect primary school pupils' academic achievement?
2. How does participation in Disco Matanga influence pupils' completion of academic assignments and school attendance?
3. What is the effect of traditional childcare practices on school attendance and learning outcomes?
4. What are the perceptions of teachers, parents, and community administrators regarding the impact of cultural activities on academic achievement?
5. What strategies can be employed to mitigate the negative effects of cultural activities on academic achievement in Got Regea Area?

Methodology

The study adopted a mixed methods research approach, integrating both quantitative and qualitative data within a single inquiry framework (Creswell & Creswell, 2018). The research design employed was a descriptive survey, selected because it enables the collection of data from a defined population at a specific point in time and is well-suited for examining perceptions, attitudes, and behavioural patterns (Kothari, 2004). The descriptive survey design was further justified by the exploratory nature of the study, which sought to describe and explain cultural phenomena as they naturally occur in Got Regea Area rather than manipulate variables.

The target population comprised 50 individuals, including 45 primary school teachers, four head teachers, one assistant chief, and parents of Class 8 pupils drawn from the three primary schools in Got Regea Area. Using Yamane's (1967) formula for finite population sampling at a 95% confidence level and a margin of error of 0.05, a sample of 40 participants was determined to be statistically adequate for the target population size, as confirmed by prior

studies utilising comparable rural community populations (e.g., Kahise, 2013). Purposive sampling was used to select head teachers, the assistant chief, and parent representatives on the basis of their direct knowledge of community cultural practices, while simple random sampling was applied to select classroom teachers.

Two instruments were used for data collection. A structured Likert-scale questionnaire was administered to teachers, head teachers, and parents to collect quantitative data on the perceived impact of specific cultural activities on academic performance. A semi-structured interview guide was used with key informants to elicit in-depth qualitative perspectives. Content validity was established by submitting the instruments to three subject-matter experts in educational research who reviewed items for relevance, clarity, and adequacy. Reliability was assessed through a pilot study involving five participants drawn from a neighbouring sub-county, and Cronbach's alpha coefficient was computed at $\alpha = 0.78$, confirming acceptable internal consistency (Nunnally, 1978).

Quantitative data were analysed using descriptive statistics including frequencies and percentages with the aid of SPSS Version 21, and results were presented in tabular form. Qualitative data obtained through interview transcripts were analysed using thematic analysis following Braun and Clarke's (2006) six-phase framework: familiarisation with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. Throughout the study, ethical protocols were observed, including the procurement of formal research clearance, written informed consent from all participants, and assurances of confidentiality and anonymity. All sources cited in this study are acknowledged in accordance with APA 7th Edition referencing conventions..

Results and Discussion

The respondents were asked to indicate their level of agreement with the statement which relates with the impact of traditional cultural activities practiced in Got Regea area. The findings for pupils, teachers and other stakeholders were presented in table 2, 3 and 4 respectively.

Table 2: Pupils Response on the Impact of Traditional Cultural Activities Practiced in Got Regea area, Siaya County, Kenya

Statements	SD (%)	F (%)	D (%)	F (%)	N (%)	F (%)	A (%)	F (%)	SA F (%)
Extended night vigils disrupt school attendance	1 (11.1)		1 (11.1)		0 (0.0)		3 (33.3)		4 (44.4)
Disco Matanga contributes to learners' inability to complete assignments	1 (11.1)		0 (0.0)		2 (22.2)		3 (33.3)		3 (33.3)
Overstaying in funerals after a relative's death affects performance	2 (22.2)		0 (0.0)		0 (0.0)		3 (33.3)		4 (44.4)
Traditional childcare of leaving younger children with school-going older siblings affects learning	1 (11.1)		0 (0.0)		0 (0.0)		4 (44.4)		4 (44.4)
Leaving orphaned children with elderly grandparents affects performance	2 (22.2)		1 (11.1)		1 (11.1)		2 (22.2)		3 (33.3)
Sending school-going children on errands during school days affects performance	1 (11.1)		1 (11.1)		1 (11.1)		2 (22.2)		4 (44.4)

Source, Field Data (2022)

Table 2 presents pupils' responses regarding the impact of cultural activities on their academic life. A combined 77.7% of pupils agreed or strongly agreed that extended night vigils disrupt school attendance, while 22.2% disagreed and none were neutral. This finding suggests a strong pupil awareness of the disruptive role of overnight community ceremonies. The high agreement rate is consistent with Cheptoo (2010), who found that cultural activities in Kenyan rural communities frequently encroach upon school preparation time. However, the present study extends this finding by demonstrating that pupils themselves recognise the disruption — not merely as reported by adults pointing to a self-awareness that could be leveraged in school-based sensitisation programmes.

Similarly, 66.6% of pupils agreed that Disco Matanga contributes to their inability to complete academic assignments, with only 11.1% disagreeing and 22.2% neutral. The mechanism here is not merely attendance: even when pupils are present in school, the fatigue and sleep deprivation resulting from late-night attendance at funeral events impairs cognitive functioning, attention, and homework completion. This finding aligns with Onyango et al. (2015), who documented assignment non-completion as a direct consequence of community ceremonial obligations in Central Nyanza. The neutral responses (22.2%) may reflect pupils who attend Disco Matanga less frequently or whose households enforce stricter curfews, suggesting that household-level

protective factors can moderate the impact of macrosystem cultural forces, as theorised by Bronfenbrenner (1979).

Furthermore, 88.8% of pupils agreed that the traditional practice of assigning child-minding responsibilities to older school-age siblings affects learning. This finding is particularly significant because it points to a form of cultural disruption that is continuous and domestic rather than episodic, affecting pupils on a daily basis rather than only during community events. The near-universal agreement among pupils on this item underscores the pervasive nature of this cultural obligation and its educational cost.

Table 3: Teachers Response on the Impact of Traditional Cultural Activities Practiced in Got Regea area, Siaya County, Kenya

Statement	SA		A		N		D		SD	
	F	P	F	P	F	P	F	P	F	P
Extended night vigils disrupt school attendance	5	25.0	7	35.0	2	10.0	3	15.0	3	15.0
Conflicts brought about by wife inheritance affects performance	4	20.0	8	40.0	0	0	4	20.0	4	20.0
Disco matanga contributes to learners' inability to do their assignments as expected	8	40.0	6	30.0	0	0	4	20.0	2	10.0
Overstaying in funerals after death of a relative affect's performance	7	35.0	5	25.0	2	10.0	3	15.0	3	15.0
Traditional childcare practice of leaving younger children with older siblings who are school going affects learning	5	25.0	7	35.0	0	0	5	25.0	3	15.0
Traditional practice of leaving orphaned children with old grandparents affects performance/learning	7	35.0	5	25.0	3	15.0	2	10.0	3	15.0
Traditional culture of child disobedience which in sending school going children on errands on school days affects performance/learning	5	25.0	8	40.0	2	10.0	3	15.0	2	10.0

Source, Field Data (2022)

Table 3 displays the findings through a Likert scale question on the impact of cultural activities practiced by the people of Got Regea. The findings revealed that 60 percent of the respondents agreed that extended night vigils disrupt school attendance, though 10 percent of the respondents were neutral to the statement, 30 percent of the respondents disagreed with the statement. Also, 60 percent of the respondents agreed that conflicts brought about by wife inheritance affects performance, though 40 percent of the respondents

disagreed with the statement. Despite the agreement none of the respondents were neutral.

Furthermore, the findings reveal that 70 percent of the respondents agreed that disco matanga contributes to learners inability to do their assignments as expected. Though, 30 percent of the respondents disagree with that statement. 60 percent of the respondents agreed that overstaying in funerals after the death of a relative affects performance contrary to this 30 percent of the respondents disagreed with the statement, despite this only 10 percent of the respondents were neutral to the statement that overstaying in funerals after death of a relative affects performance.

Furthermore, the findings show that 60 percent of the respondents agreed with the statement that traditional childcare practice of leaving younger children with older siblings who are school going affects learning, however 40 percent of the respondents disagreed with the statement. Despite the agreement none of the respondents were neutral to the statement that traditional childcare practice of leaving younger children with older siblings who are school going affects learning.

Additionally, the findings show that 60 percent of the respondents agreed that traditional practice of leaving orphaned children with old grandparents affects performance/learning, however 25 percent of the respondents were neutral to the statement. Despite this 15 percent of the respondents were neutral to the statement that traditional practice of leaving orphaned children with old grandparents affects performance/learning. 65 percent of the respondents strongly agreed that traditional culture of child obedience which entails sending school going children on errands during school days' affects performance/learning, however 25 percent of the respondents disagreed with the statement. Despite these 10 percent of the respondents were neutral to this statement.

Table 4. Stakeholder Response on the Impact of Traditional Cultural Activities Practiced in Got Regea area, Siaya County, Kenya

Statement	SA		A		N		D		SD	
	F	P	F	P	F	P	F	P	F	P
Extended night vigils disrupt school attendance	5	45.5	4	36.4	0	0	1	9.1	1	9.1
Conflicts brought about by wife inheritance affects performance	4	36.4	3	27.3	1	9.1	1	9.1	2	18.2
Disco matanga contributes to learners' inability to do their	5	45.5	3	27.3	2	18.2	0	0	1	9.1

assignments as expected												
Overstaying in funerals after death of a relative affect's performance	5	45.5	2	18.2	0	0	2	18.2	2	18.2		
Traditional childcare practice of leaving younger children with older siblings who are school going affects learning	5	45.5	5	45.5	0	0	0	0	1	9.1		
Traditional practice of leaving orphaned children with old grandparents affects performance/learning	6	54.5	3	27.3	0	0	1	9.1	1	9.1		
Sending school going children on errands on school days affects performance/learning	7	63.6	2	18.2	0	0	1	9.1	1	9.1		

Source; Field Data, (2022)

Table 4 shows findings on the level of agreement on the impact of cultural activities at Got Regea. The findings show that 81.9 percent of stakeholder agreed with the statement that extended night vigils disrupts school attendance, these was disagreed on by 18.2 percent of the respondents either way none of the stakeholders was neutral to the statement that extended night vigils disrupts school attendance. However, the findings show that 63.7 percent of stakeholder agreed with the statement that conflicts brought about by wife inheritance affects performance, and 27.3 percent of stakeholders disagreed with that statement. Despite the agreement only 9.1 percent of the respondents were neutral to the statement that conflicts brought about by wife inheritance affects performance.

Moreover, these findings show that 72.8 percent of stakeholder agreed that disco matanga contributes to learner's inability to do their assignments as expected. However, 9.1 percent of the respondents disagreed to the statement. Despite this 18.2 percent of the respondents were neutral to this agreement. Furthermore, the findings show that 63.7 percent of stakeholder agreed that overstaying in funerals after death of a relative affect's performance, though 36.4 percent of the respondents disagreed to that statement. Despite all these none of the respondents were neutral to the statement that overstaying in funerals after death of a relative affects performance.

Additionally, the findings show that 91 percent of stakeholder agreed that traditional childcare practice of leaving younger children with older siblings who attend school consequently affects their learning, despite this 9.1 percent

of the respondents disagreed to the statement and none was neutral to the statement.

As well 81.8 percent of the respondents agreed with the statement that traditional practice of leaving orphaned children with old grandparents affects performance/learning, though 18.2 percent of the respondents disagreed with the statement. However, none of the respondents disagreed with the statement that traditional practice of leaving orphaned children with old grandparents affects performance/learning. In addition, the findings show that 81.8 percent of the respondents agreed that sending school going children on errands on school days' affects performance/learning, however 18.2 percent of the respondents disagreed with the statement. Despite the agreement none of the respondents were neutral to the statement that sending school going children on errands on school days' affects performance/learning.

Thematic Analysis: Qualitative Findings

Qualitative data obtained through interviews were subjected to thematic analysis, yielding two major themes: (i) School Dropout and Attendance Disruption, and (ii) Diminished Academic Performance. These themes are discussed below.

School Dropout and Attendance Disruption

Interview respondents across all three schools consistently identified cultural activities as direct causes of irregular attendance and school dropout. The second school interviewee explained that pupils who regularly attend *Disco Matanga* ceremonies "spend most of their time engaging in different cultural activities and end up missing school attendance, as a result they drop out" (Interview, Second School, 2022). This qualitative account reinforces the quantitative finding that 77.7% of pupils reported attendance disruption from night vigils, and extends it by identifying the long-term outcome of sustained absenteeism: permanent disengagement from schooling.

The third school interviewee highlighted early marriage as a compounding factor, noting that "Got Regea community members are used to practising early marriages... most of the children fail to attend school due to being married off at a young age" (Interview, Third School, 2022). This testimony corresponds with Hussein (2016) and Damas (2016), both of whom documented early marriage as a primary mechanism linking cultural practice

to school dropout in Kenya and Tanzania respectively. However, the present study adds specificity by locating this dynamic within the Got Regea context, where the intersection of Disco Matanga attendance, early marriage, and sibling caregiving obligations creates a multi-layered educational disadvantage.

Diminished Academic Performance

The second major theme emerging from qualitative data was a reduction in academic performance attributable to cultural time demands. The first school interviewee stated that cultural activities at Got Regea "lead to consumption of time that could have been used in studies, which eventually leads to poor academic performance" (Interview, First School, 2022). This mechanism cultural time displacement offers a concrete explanatory link between participation in community ceremonies and measurable academic decline. It aligns with Kapur's (2018) broader theoretical argument that cultural systems exert a strong influence on educational outcomes by determining how children allocate their time and attention.

The pattern of poor KCPE mean scores presented in Table 1, which shows all three schools performing below district averages in 2021, is thus explicable not merely as a product of resource deficits or teacher quality, but as an outcome of sustained cultural pressure on pupils' study time and school attendance. Importantly, this finding challenges single-factor explanations for educational underperformance and calls for culturally sensitive, multi-level interventions. The evidence suggests that *Disco Matanga* is not simply a leisure activity but a structurally embedded cultural obligation whose educational costs have remained invisible due to the absence of systematic empirical documentation a gap the present study partially addresses.

Conclusions and Recommendations

This study set out to examine the impact of cultural activities on primary school pupils' academic achievement in Got Regea Area, Siaya County, Kenya. Based on findings from quantitative surveys and qualitative interviews across three primary schools, the study concludes that prevalent cultural activities in Got Regea Area — including Disco Matanga, extended funeral night vigils, early marriage, wife inheritance conflicts, and the assignment of caregiving responsibilities to school-age children — exert a predominantly

negative effect on pupils' academic achievement. These practices disrupt school attendance, reduce study time, and contribute to school dropout, resulting in below-average KCPE performance across the three schools studied.

The application of Bronfenbrenner's Ecological Systems Theory proved analytically productive, demonstrating that cultural disruptions at the macrosystem and exosystem levels permeate the household and school microsystems, with direct consequences for pupil learning. Significantly, the near-universal agreement between pupils, teachers, and community stakeholders on the disruptive effects of these practices provides a strong evidential basis for community-led reform.

Based on these conclusions, the study recommends the following:

- i. The national and county governments should design and implement community sensitisation campaigns in Got Regea Area targeting parents and community leaders, specifically addressing the educational costs of Disco Matanga, extended night vigils, and early marriage.
- ii. The Ministry of Education should work with local administrators to enforce school attendance policies that are sensitive to community ceremonial calendars, including the exploration of flexible scheduling during high-incidence cultural event periods.
- iii. Primary schools in Got Regea Area should introduce school-based counselling and peer education programmes that equip pupils with the knowledge and skills to balance cultural obligations with academic responsibilities.
- iv. The County Government of Siaya should establish early childhood care facilities to reduce the childcare burden placed on school-going older siblings, thereby protecting their academic participation.
- v. Future research should employ larger probability samples and longitudinal designs to establish causal relationships between specific cultural practices and academic achievement

trajectories in Siaya County and comparable Kenyan communities.

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Effects of Station Rotation Model on Students' Academic Performance in Algebraic Expressions among Senior Secondary Schools in Kebbi State, Nigeria

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Abstract

This study investigated the effect of Station Rotation Model on senior secondary school students' academic performance in algebraic expressions in Kebbi State, Nigeria. A quasi-experimental pre-test and post-test non-randomized research group design was adopted. The sample of 134 students selected from two public secondary schools through purposive sampling using intact classes assigned to experimental (66 students) and control (68 students) groups. The experimental group was taught using the Station Rotation Model, while the control group received instruction through the demonstration teaching method. Data were collected using the Student Algebraic Expression Performance Test (SAEPT), a 25-item multiple-choice instrument validated by experts, with a reliability coefficient of 0.80. Descriptive statistics (mean and standard deviation) and inferential statistics (independent and paired sample t-tests) were used for data analysis at a 0.05 level of significance. The findings revealed that students taught using the Station Rotation Model performed significantly better than those taught using the demonstration method. Furthermore, a significant difference was observed in the performance of male and female students in the experimental group, with male students outperforming their female counterparts. The study concluded that the Station Rotation Model enhances students' understanding, engagement, and academic performance in algebraic expressions. It was therefore recommended that mathematics teachers adopt the Station Rotation Model in classroom instruction and that educational stakeholders provide adequate training and resources to support its effective implementation.

Keywords: Academic Performance, Algebraic Expressions, Station Rotation Model

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Introduction

Algebraic expressions is a fundamental part of mathematics that involve the use of letters, numbers, and mathematical operations (such as addition, subtraction, multiplication, and division) to represent relationships and solve problems. They are used to describe patterns, model, real-life situations, and make generalizations using symbols. As a key component of algebra, algebraic expressions play an essential role in helping students to develop mathematical reasoning and problem-solving skills. Algebra as a whole is a cornerstone of modern mathematics and global development of its applications in science, technology, engineering, and mathematical disciplines (Kathuria, 2024). Algebraic forms the basis for logical reasoning and critical thinking, which are crucial for innovation and advancement in today's world (Babu, Nagaraju & Johnson, 2023) Beyond the classroom, algebra is applied in various fields such as computer programming, financial modeling, data analysis, and engineering design. Therefore, mastery of algebra, particularly algebraic expressions, is vital for students' academic performance Kebbi State, as it prepares them for more advanced mathematical topics like calculus, statistics, and linear algebra, by improving their ability to represent and solve complex problems symbolically.

Furthermore, algebraic expressions play a vital role in mathematics education by helping students develop the ability to generalize patterns, manipulate symbols, and solve real-world problems (Root, 2016). These expressions act as a bridge between basic arithmetic and more advanced mathematical concepts, supporting the development of abstract reasoning and logical thinking skills that are important not only in academic settings but also in daily decision-making (Alam & Mohanty, 2024). Building a strong foundation in algebraic expressions is especially important for success in secondary school mathematics and serves as a stepping stone to advanced studies and careers in Science, Technology, Engineering, and Mathematics (STEM) fields (Musi, 2022).

Regardless of its importance, teaching and learning algebraic expressions continue to present significant challenges. One major difficulty is the abstract nature of algebra, which often makes it hard for students to move from concrete arithmetic operations to symbolic representations (Alzubaidi & Abdah, 2025). Many students struggle to understand how variables function,

how to structure expressions, and how to apply algebraic rules to solve equations (Ferretti et.al., 2020). This shift in thinking requires a high level of cognitive flexibility, which some students find it difficult to achieve. Moreover, teachers also face difficulties in effectively teaching these abstract concepts, particularly in environments where instructional resources and training in student-centered strategies are lacking (Ray, 2024). These difficulties contribute to persistent underachievement performance in algebra among students, affecting their overall academic performance in both secondary and higher education, where algebra remains a foundational subject.

Additionally, in Kebbi State, this challenge is particularly pronounced. Students in these areas often show limited understanding of basic algebraic concepts (Jega & Bashir, 2018). The concept involves the use of variables, the formation of algebraic expressions, and the application of algebraic operations to solve mathematical problems effectively (Juraev & Bozorov, 2024). To further respond to persistent difficulties in learning algebra, education stakeholders are increasingly exploring more effective and innovative instructional approaches tailored to meet students' diverse learning needs (Hott et.al., 2019).

Moreover, the integration of basic digital tools within a station rotation setup in Nigerian classrooms such as a dedicated technology station with preloaded educational videos or mobile apps could create a more dynamic and interactive learning environment compared to static, whole-class textbook instruction (Jayaraman & Aane, 2024). However, as noted by Oshowole (2024), the adoption of models like station rotation remains limited due to systemic challenges such as inadequate infrastructure, insufficient teacher training in managing rotational pedagogies, unsteady electricity supply, and poor internet connectivity, especially in rural communities like parts of Kebbi State. These constraints significantly hinder the full-scale implementation of technology integrated rotational models in Nigerian classrooms (Algarni, 2021).

The Station Rotation Model (SRM) is an instruction strategy in which students move through different learning stations on fixed schedule or at the teacher's discretion (Ogude & Chukweggu, 2019). Each station is designed to provide unique learning experience such as individual work, collaborative activities, and digital learning tasks allowing students to engage with content in multiple ways. (Belize & Ganapathy, 2021). Typically, these stations include teacher-

led instruction, collaborative or group work, and independent or online learning, allowing for a combination of direct teaching, peer interaction, and self-paced digital practice (Belazi & Ganapathy, 2021). The SRM supports differentiated instruction by enabling teachers to tailor activities and materials to meet diverse learner needs while maximizing classroom time efficiency (Puri & Puri, 2025). It also promotes student engagement and autonomy, as learners take responsibility for their progress through various learning modalities. This model is particularly effective in classrooms integrating technology, as it blends traditional face-to-face instruction with digital tools to enhance personalized learning experiences. According to Yılmaz and Açıkgül (2024), Station Rotation Model provides a structured yet flexible framework that encourages active learning and helps bridge the gap between traditional and online education.

The station rotation model offers significant advantages by structuring learning into targeted stations, which can include teacher-led instruction, collaborative problem-solving, and independent digital practice (Ojaleye, 2016). This model leverages multimedia content, simulations, and video tutorials at dedicated stations to clarify abstract algebraic concepts, such as variables, expressions, and equations. It systematically sustains essential teacher-led discourse while simultaneously allowing learners to engage with algebraic content at their own pace, revisit challenging concepts at practice stations, and access differentiated resources based on their proficiency levels. By designing stations that support multiple learning styles (visual, auditory, and kinesthetic). The station rotation model promotes deeper conceptual understanding and fosters learner autonomy. Ultimately, its structured yet adaptable framework makes it an effective strategy for addressing common obstacles in algebra instruction, potentially improving students' comprehension, retention, and academic achievement (Egara & Mosimege, 2024).

Theoretical Foundations

The theoretical foundation encompasses the theories underpinning this study which includes: Vygotsky's Social Constructivist Theory and Cognitive Theory of Multimedia Learning. Figure 1: illustrates the theoretical framework of the study.

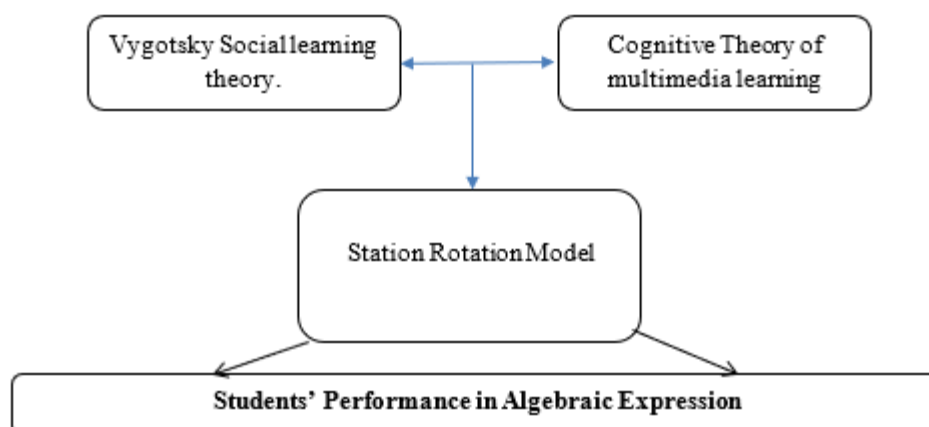


Figure 1: Theoretical Framework

The figure presents the theoretical framework of the study, showing that the Station Rotation Model is grounded in two major theories: Vygotsky's Social Learning Theory and the Cognitive Theory of Multimedia Learning. The framework implies that students learn more effectively when they interact with one another, receives guidance, and engage with learning materials in different formats. These theories support the use of the Station Rotation Model because the model allows students to move through different learning stations, interact with peers, and learn various instructional activities and improves students' performance in algebraic expression.

The station rotation model, as a key of blended learning approach, can be particularly effective for teaching algebraic expressions. In this model, students rotate through multiple learning stations designed to address specific performance indicators. For example, at the teacher-led station, students receive targeted instruction and guided practice on simplifying expressions; at the online learning station, they engage with adaptive digital tools that provide instant feedback and differentiated tasks; and at the collaborative station, they work in small groups to apply algebraic reasoning to real-world or project-based problems (Horn & Staker, 2014). This structure allows for continuous assessment of performance, catering to diverse learning needs while promoting autonomy and engagement.

Despite the growing recognition of the station rotation model and the many educational benefits associated with it, there are still limited empirical studies that specifically examine its effect on students' mastery of algebraic content.

This gap in the literature highlights the need for further inquiry into how this structured rotational approach influences learners' understanding and performance in algebra. Performance in learning algebraic expressions is best evaluated through students' performance to demonstrate mastery in understanding, applying, and manipulating symbols and variables to represent and solve mathematical problems (Musi, 2022). Within a performance-based framework, learners are assessed not only by their ability to recall procedures but also by how effectively they can apply algebraic concepts in novel contexts. In senior secondary education, this competence forms the foundation for advanced mathematical reasoning in topics such as equations, functions, and calculus (Brimah, 2020). To enhance performance outcomes, integrating blended learning, which combines face-to-face instruction with digital and interactive components, provides a flexible, student-centered environment that supports conceptual understanding and skill application (Graham et.al., 2019).

To address these persistent challenges and close the widening gaps in academic performance in algebraic expressions, there is an urgent need to explore alternative instructional strategies such as Station Rotation Model, which combines traditional face-to-face instruction with computer-based learning. In light of this, the present study aims to investigate the Effect of the Station Rotation Model on Students' Performance in Algebraic Expressions among Senior Secondary schools in Kebbi State, Nigeria.

Statement of the Problem

Algebraic expressions form a foundational pillar of secondary school mathematics, essential for advanced STEM learning and problem-solving in daily life. However, a widespread challenge in Nigerian education is students' underperformance in algebraic expressions. Students often perceive algebra as an abstract, and difficult topic leading to low achievement scores and negative attitudes that hinder their academic progression. Research attributes this hinderance to prevalent, traditional teacher-centered pedagogies dominated by rote memorization, which fail to make algebraic concepts concrete or engaging for learners. Consequently, students in Kebbi State classrooms are often passive recipients of information, lacking the active, meaningful learning experiences necessary to master abstract topics in mathematics (Abdurrahman & Sani, 2020).

While blended learning models like the Station Rotation Model (SRM) have been shown internationally and in some Nigerian contexts to improve

engagement by promoting active, differentiated, and student-centered learning, there is a critical gap in localized research. Specifically, there is a lack of empirical studies investigating the effect of the Station Rotation Model on the academic performance of senior secondary school students in algebraic expressions within the unique educational landscape of Kebbi State. Therefore, this study seeks to address this gap by investigating the effect of the Station Rotation Model on the performance of senior secondary school students in algebraic expressions in Kebbi State, Nigeria. Without such targeted intervention-based research, the cycle of low achievement in algebra is likely to persist, limiting the academic and future opportunities for students in the state.

Objectives of the Study

The objective of the study is to investigate the effect of Station Rotation Model on Students academic Performance in algebraic expression among Senior Secondary School Students in Kebbi State, Nigeria, and the specific objectives are to:

- I. Determine the difference between academic performance scores of senior secondary school students taught algebraic expression using the Station Rotation Model and those taught using a conventional method in Kebbi State, Nigeria.
- II. Compare the difference between the academic performance scores of male and female senior secondary school students taught algebraic expressions using the Station Rotation Model in Kebbi State, Nigeria.

Research Questions

The research questions were stated as follows:

- I. What is the difference between the academic performance scores of senior secondary school students taught algebraic expression using the Station Rotation Model and those taught using a conventional method in Kebbi State, Nigeria?
- II. What is the difference between the performance scores of male and female senior secondary school students taught algebraic expressions using the Station Rotation Model in Kebbi State, Nigeria?

Null Hypotheses

In line with the research questions raised, the following null hypotheses were tested at 0.05 level of significance

H₀₁: There is no significant difference between the academic performance scores of senior secondary school students taught algebraic expression using the Station Rotation Model and those taught using a conventional method in Kebbi State, Nigeria.

H₀₂: There is no significant difference between the academic Performance scores of male and female senior secondary school students taught Algebraic Expressions using the Station Rotation Model in Kebbi State, Nigeria.

Methodology

The study used a quasi-experimental pre-test and post-test control group design. Two groups were involved: an experimental group taught algebraic expressions using the Station Rotation Model, and a control group taught with the conventional method. The study involved Senior Secondary School II (SS II) students in Kebbi State, Nigeria, with a population of 26,625 students from 215 public senior secondary schools.

A sample of 134 students was purposively selected from two public secondary schools that possessed adequate ICT facilities. The participants were divided into an experimental group (66 students), taught using the Station Rotation Model, and a control group (68 students), taught using the conventional teaching method. Two instruments were employed for data collection: the Senior Secondary School Students' Algebraic Expressions Performance Test (SSSAEPT), consisting of 25 multiple-choice items, and the Senior Secondary School Students' Algebraic Expressions Interest Questionnaire (SSSAEIQ), comprising 20 items on a four-point Likert scale. The instruments were validated by experts in Mathematics Education and Measurement and Evaluation, while reliability coefficients obtained through Cronbach's alpha were 0.80 and 0.85, respectively. A pilot study involving 40 students outside the sample was conducted to refine the instruments. Both groups were given a pretest before the intervention. The experimental group received instruction through the Station Rotation Model, whereas the control group received conventional instruction for six weeks, with two lessons per week. At the end

of the treatment period, a posttest was administered to determine the effect of the intervention. Data collected were analyzed using SPSS version 20. Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to answer the research questions, while the hypotheses were tested at 0.05 level of significance using the independent samples t-test.

Results

This section presents the results obtained from the study.

Research Question One: What is the difference between the academic performance scores of senior secondary school students taught Algebraic expression using the Station Rotation Model and those taught using a conventional method in Kebbi State, Nigeria?

In answering this research question, the scores obtained from the two groups were analyzed using mean, standard deviation and mean difference. The scores were categorized based on: Experimental Group (Station Rotation Model) and the Control Group (Conventional Method) using conventional method as presented in Table 1

Table1: Summary of Descriptive Statistics of the Academic Performance Scores of Experimental and Control Groups.

Groups	N	Mean	Standard Deviation	Mean Difference
Experimental Group (SRM)	66	35.79	5.89	4.71
Control Group (Conventional)	68	31.07	4.46	

Table 1 Presented the summary of descriptive statistics on the performance of 66 participants in the experimental group with mean score of 35.79 (SD = 5.89) and 68 participants in control group with a mean score of 31.01(SD = 4.46) with the mean different of 4.71. The results revealed that the participants in the experimental group performed better than those in the control group which implies that station rotation model is effective in improving students' Academic performance in algebraic expressions.

Research Question Two: What is the difference between the Performance scores of male and female senior secondary school students taught Algebraic Expressions using the Station Rotation Model in Kebbi State, Nigeria?

In answering this research question, the scores obtained from the two groups in which 34 were male and 32 were female was analyzed using mean, standard deviation and mean difference. The scores of the gender were grouped according to male and female in the experimental group, which employed the Station Rotation Model (See Table 2).

Table 2: Summary of Descriptive Statistics on the Performance Scores of Male and Female Students in the Experimental Group

Group	Gender	N	Mean	Standard Deviation	Mean difference
Experimental Group	Male	34	40.41	3.73	9.53
	Female	32	30.88	3.09	

Table 2 presented the descriptive statistics of performance scores for male and female students in the experimental group. The results showed that male students were 34 with mean scores of 40.41 (SD = 3.73), while female students were 32 with mean scores of 30.88 (SD = 3.09). The mean difference of 9.53 indicates that male students performed better than their female counterparts in algebraic expression after being exposed to the Station Rotation Model. This suggested that the station rotation model had a greater positive effect on the performance of male students compared to female students in the study.

Testing the null Hypotheses

This section presented inferential statistical analysis of all the null hypotheses formulated to guide the study. The null hypotheses were tested at 0.05 level of significance in the performance of student thought Algebraic Expression using Station Rotation Model.

Hypothesis One

There is no significant difference between the Performance scores of senior secondary school students taught Algebraic Expression using the Station Rotation Model and those taught using a conventional method in Kebbi State, Nigeria.

The null hypothesis was tested using independent sample t- test at 0.05 level of significance on SPSS Statistics and the result is presented in Table 3 below

Table 3: Summary of Independent sample T-test for Experimental and Control Group

Group	N	Mean	SD	Df	t-value	p- value	Decision
Experimental	66	35.76	5.89	132	5.236	0.000	Rejected
Control	68	31.07	4.46				

α - value= 0.05

Table 3 showed the result of an independent t-test analysis on performance of students in Algebraic Expression between the experimental group of students exposed to Station Rotation Model and the control group of students exposed to conventional method using conventional method. The experimental group had a mean score of 35.76 with standard deviation of 5.89. While the control group had a mean of score of 31.07 with standard deviation of 4.46. This result indicated that the value of $t = 5,236$ with degree of freedom (df) = 132 and the value of $P=0.000$, whoever student Exposed to conventional method.

The results of the analysis revealed that However, since the p-value of 0.000 was less than α - value of 0.05 ($P < \alpha$) level of significance, the null hypothesis 1 is rejected. This implies that Station Rotation Model was significantly more effective on improving academic performance of students in Algebraic Expressions than the conventional method in Kebbi State, Nigeria.

Hypothesis Two

There is no significant difference between the Performance scores of male and female senior secondary school students taught Algebraic Expressions using the station rotation model in Kebbi State, Nigeria. Null hypothesis was tested using independent sample t-test at 0.05 level of significance on SPSS Statistics and the result is presented in Table 4

Table 4: Summary of Independent sample T-Test of Academic Performance Scores of Male and Female Students in the Experimental group.

Group	Gender	N	Mean	SD	Df	t-value	p- value	Decision
Experimental Group	Male	34	40.41	3.73	64	11.283	0.000	Rejected
	Female	32	30.88	3.09				

α - value= 0.05

Table 4 showed the result of an independent sampled t-test analysis conducted to test the significance of the Mean Performance scores of male and female senior secondary school students taught algebraic expressions using the station rotation model. The results showed that 34 male students obtained a Mean a

mean score of with 40.41 (SD = 3.73) while 32 female students recorded mean score of 30.88 (SD = 3.09). The results of the analysis revealed that there was statically significance difference between the performances of male and female students in Station Rotation Model in favor of the male students. The result indicated that the value of $t=11.283$ with degree of freedom (df) = 64 and the value of $P=0.00$, $t(64) = 11.283$, $P = 0.000$. However, since the p-value of 0.000 was less than α - value of 0.05, the null hypothesis 3 is rejected. This implies that this means that there is a statistically significant difference between the performance of male and female senior secondary school students taught algebraic expressions in the experimental group in Kebbi State, Nigeria.

Summary of the Major Findings

The following are major findings of this study:

- I. The findings revealed that students taught using the Station Rotation Model performed significantly better than those taught using the conventional teaching method.
- II. The study found that male students performed better than the female students taught Algebraic Expression using station rotation model.

Discussion

The first finding of the study revealed that students taught Algebraic Expressions using the Station Rotation Model (SRM) performed significantly better than those taught using the conventional method in Kebbi State, Nigeria. This finding is supported by Mondragon and Acelajado (2018), who reported that students taught using the Station Rotation Model achieved higher academic performance and developed more positive attitudes toward mathematics compared to those taught using traditional methods. Similarly, Osuji and Abraham (2024) found that the Station Rotation Model significantly improved students' academic performance in science subjects. In addition, Ayob, Abd Halim, and Zulkifli (2020) reported significant improvement in students' achievement in Chemistry after exposure to the Station Rotation Model, further confirming the effectiveness of the approach.

The superior performance observed in the present study can be explained by Vygotsky's Zone of Proximal Development (ZPD), which emphasizes that learners achieve higher levels of understanding when provided with

appropriate guidance and social interaction. Through the Station Rotation Model, students engaged in collaborative learning, teacher-guided instruction, and technology-supported activities that provided scaffolding within their zone of proximal development. These interactions enabled students to construct mathematical knowledge more effectively and solve Algebraic Expression problems beyond what they could achieve independently.

The effectiveness of the Station Rotation Model can also be interpreted through Mayer's Multimedia Learning Theory. The model activated several multimedia learning principles, including the multimedia principle, whereby students learned better from the combination of words, symbols, visual representations, and digital resources than from verbal explanations alone. The modality principle was also evident as information was presented through both visual and auditory channels, thereby reducing cognitive overload. In addition, the segmenting principle allowed students to learn Algebraic Expressions in smaller and manageable stages through different learning stations, while the interactivity and feedback embedded in technology-enhanced activities promoted active learning and improved understanding.

However, some studies present contrasting findings. Mondragon (2018) reported no clear evidence that the Station Rotation Model significantly improves student engagement and achievement in mathematics. Likewise, a meta-analysis by Ramadan et al. (2025) indicated that while many studies showed positive effects, others reported negative or non-significant differences when compared with conventional teaching methods. These inconsistencies suggest that the effectiveness of the Station Rotation Model may depend on factors such as subject content, implementation strategy, availability of technological resources, and the learning environment.

The second finding of the study revealed that male students performed better than their female counterparts when taught Algebraic Expressions using the Station Rotation Model in Kebbi State, Nigeria. This finding agrees with Ojaleye and Awofala (2018), who reported that gender significantly influenced students' achievement in algebra when exposed to innovative instructional strategies such as the Station Rotation Model and Problem-Based Learning. The observed difference may be attributed to differences in students' confidence levels, engagement patterns, and familiarity with technology-based learning environments, which may influence the extent to

which learners benefit from the scaffolding opportunities provided through the Station Rotation Model.

However, the result contradicts Ogude and Chukweggu (2019), who found no significant difference in the performance of male and female students taught using the Station Rotation Model, although females had slightly higher mean scores. Overall, these inconsistencies suggest that the influence of gender on students' performance under the Station Rotation Model is not definite and may depend on factors such as instructional strategy, classroom environment, and learner characteristics. Further research is therefore needed to better understand how gender interacts with innovative teaching methods to promote equitable learning outcomes.

Conclusion

The study concluded that the Station Rotation Model is more effective than the conventional teaching method in improving students' performance in teaching algebraic expressions. It promotes active participation, engagement, collaboration, and problem-solving among students. Although both male and female students benefited from the model, some differences in their performance levels were observed. Overall, the Station Rotation Model is an effective instructional strategy for teaching algebraic expressions in senior secondary schools in Kebbi State, Nigeria.

Recommendations

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

- I. Mathematics teachers in senior secondary schools should adopt the Station Rotation Model in teaching Algebraic Expressions and other mathematics topics
- II. Teachers should ensure equal participation opportunities for both male and female students during teaching using the Station Rotation Model. Special attention should be given to female students through encouragement, guided practice, and active engagement strategies to reduce performance gaps in mathematics.

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Availability And Utilization of Emerging Technologies among the Lecturers of Tertiary Institutions in Sokoto Metropolis, Sokoto State Nigeria

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Abstract

This study investigated the availability and utilization of Emerging Technologies (ETs) among lecturers of tertiary institutions in Sokoto Metropolis, Sokoto State, Nigeria. The study was guided by three research questions and objectives. The study employed a descriptive survey research design. The population of 2,692 comprised all the lecturers from the eight tertiary institutions within Sokoto Metropolis. A sample of 242 was selected using stratified sampling technique. An Instrument titled Emerging technologies Availability and Utilization Questionnaire (ETAUQ) was used for Data collection. The instrument was validated by two experts from Test and Measurement and Educational Technology. A Cronbach Alpha reliability coefficient of 0.78 was obtained. The data were analyzed using descriptive statistics such as frequency counts and percentages. The study showed that some Emerging Technologies are frequently available, and their utilization are moderate/ in the teaching activities among lecturers in the study area. However, major challenges including the poor internet connectivity, limited technical support, high cost of Emerging Technologies (ETS) facilities, lack of training and development, and epileptic power supply, were the major challenges hindering the effective utilization of ETs among respondents. The researcher recommended the provisions of effective Internet connectivity, provision enough technical support, provision of ETs facilities and provision of steady power supply to the institution for effective utilization of ETs in the affected institutions.

Keywords: Availability, Emerging technologies, Tertiary Institutions, Utilization

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Introduction

The integration of emerging technologies into tertiary institutions has changed the dynamics of education, opening exciting possibilities for enhancing the teaching and learning experience (Nyakongo & Ronoh, 2024). Many developed nations have integrated technology into their educational systems. Over the past few years, the education sector has experienced a major change and digital transformation which redefines how knowledge is delivered and consumed. Valued as one of the fastest-growing segments in the digital sector, the global educational technology and smart classroom market is experiencing rapid expansion (Johnson, 2024).

Technology is described as a network of interconnected systems that enable complex operations and processes across various domains, from manufacturing to information management. It underscores the interdependence of technological components and the importance of system integration in achieving optimal outcomes. Similarly, Mishra (2024) defines technology as the product of applying scientific knowledge for practical use. With digital transformation in education, traditional classrooms are evolving into dynamic hubs of innovation, blending Artificial Intelligence (AI), Virtual Reality (VR), mobile apps, and cloud technology to unlock new innovative ways of teaching and learning with many of students now using digital tools this evolution is accelerating rapidly.

Emerging technologies refer to new and innovative technologies currently being developed, tested, and implemented to improve teaching, learning, and assessment. Examples include Artificial Intelligence (AI), Virtual and Augmented Reality (VR/AR), Mobile Learning, Cloud Computing, and Gamification. According to Onyema (2019), the adoption of emerging technologies enables educators and students to interact beyond traditional classroom settings, facilitating flexible learning environments. These tools can modify the teaching and learning process to accommodate diverse learners, enhance research activities, and improve academic and job performance in educational environments. Emerging technology is driving a new era of learning, which is more personalized, inclusive and adaptable equipping learners everywhere with the skills they need to succeed in a digital future. Digital transformation in education sector is the meaningful integration of modern digital technologies in teaching, learning, and school operations. It

involves use of Artificial Intelligence (AI), Virtual Reality (VR) Augmented Reality (AR), Internet of Thin (IoT), Cloud Computing/Systems etc.

Emerging technologies are designed to improve the quality of education, offer flexible, interactive, and engaging learning experiences. One of the most impactful emerging technologies is Artificial Intelligence (AI). AI-powered adaptive learning systems adjust content difficulty based on individual students' progress, allowing personalized learning. (openai.com Moreover, AI-driven chatbots and virtual assistants streamline communication between students and lecturers. Virtual and Augmented Reality (VR/AR) represent another significant advancement. These immersive tools help students explore complex concepts in interactive 3D environments. For instance, VR can transport learners to historical locations, while AR can bring scientific concepts like human anatomy to life, enhancing comprehension and engagement.

A key characteristic of emerging technologies as noted by Zango (2023) that they may evolve over time and become transformative when used in new ways to help people achieve their goals. When appropriately managed, emerging technologies can redefined entire teaching-learning process affecting the roles of lecturers, learners, subject content, and delivery methods. Despite their transformative potential, the availability and utilization of these emerging technologies by lecturers in Nigerian tertiary institutions limit their benefits. Emerging technologies hold the power to revolutionize teaching in Nigerian tertiary institutions. With proper adoption, they can enable immersive, personalized, and effective learning experiences, equipping students with the skills needed to thrive in the 21st century.

Statement of the Problem

With the advent of technology and indeed emerging technologies, many aspects of human activities have been made less tasking. The field of education has also witnessed the emergence of technology as the technological devices and gadgets have flourish into classroom setting thereby making instructional delivery to assume new dimension that is in line with 21st century pedagogical process. The problems with using these emerging technologies in education is that most lecturers in the tertiary institutions may not be aware they exist, those that are aware of their existence may not have access to these technologies particularly where the school management were not able to

provide or make the infrastructures available. Others may not possess the requisite skill and technical know how to apply these innovative tools in the delivery of their lectures. Other hindrances on the application of new technologies by lecturers in the teaching process identified by Akinsola and Apeji (2015) are lack of steady power supply, poor or outright lack of access to internet connectivity, funding constraints as well as the rapidity with which these hard and soft-wares are replaced by newer discoveries

In Sokoto State in particular, the state has a good number of tertiary institutions and the rapid adoption and utilization of emerging technologies in tertiary institutions in Sokoto Metropolis is yet to be totally incorporated into the teaching and learning due to some challenges as stated by Benedicta (2023) which includes incessant nature of power supply, inadequate computer hardware, inadequate funding and lack of in service training contribute to the inability of lecturers to utilize modern technology in the execution of their duties. Therefore, inadequate utilization and adoption of emerging technologies by lecturers could consequence in the non-coverage of the required syllabus in appropriate time which lead to production of graduates with only theoretical knowledge and low in the knowledge required to keep them relevant in the 21st Century society. The lecturers are expected to equip students with relevant technology skills for effective performance in the prevailing global world. They need to embrace the use of emerging technologies facilities to build up their competencies in the digital age. However, the adoption of digital technology has virtually changed the content, nature, procedure, tools and practices of human endeavor (Owan & Agunwa, 2019). Consequently, availability and utilization of these facilities have been observed to be of essence as they stand to enhance the quality of teaching as well as learning in the tertiary institutions.

Objectives of the Study

The objective of the study is to assess the availability and utilization of emerging technologies among lecturers of tertiary Institutions in Sokoto Metropolis, Sokoto State, Nigeria.

However. The specific objectives are meant to:

- I. Find out the level of availability of emerging technologies among lecturers of tertiary Institutions within Sokoto Metropolis, Sokoto State, Nigeria.

- II. Ascertain the level of utilization of emerging technologies among lecturers of tertiary institutions in Sokoto Metropolis, Sokoto State, Nigeria.
- III. Identify the challenges facing lecturers in utilizing emerging technologies in tertiary Institutions in Sokoto Metropolis, Sokoto State, Nigeria.

Research Questions

The following research questions will guide the study.

- I. What is the level of availability of emerging technologies among lecturers of tertiary institutions within Sokoto Metropolis, Sokoto State, Nigeria?
- II. What is the level of utilization of emerging technologies among lecturers of tertiary institutions in Sokoto Metropolis, Sokoto State, Nigeria?
- III. What are the challenges facing lecturers in utilizing emerging technologies in tertiary institutions in Sokoto Metropolis, Sokoto State, Nigeria?

Methodology

The study employed descriptive survey research design. Descriptive survey research design according to Nworgu (2015) aims at collecting and analyzing data from a sample of the same group, considered being a representative of the entire group. The design is considered appropriate for this study because it helped in eliciting information from the respondents on the availability and utilization of emerging technology among lecturers of tertiary institution within Sokoto Metropolis, Sokoto State.

Table 1: Distribution of Population and Sample size of the study

S/No.	Name of Institution in the State	Population	Sample Size
1	Shehu Shagari College of Education, Sokoto	708	64
2	Umaru Ali Shinkafi Polytechnic, Sokoto	391	35
3	State College of Basic and Remedial Studies, Sokoto	74	7
4	Usmanu Danfodiyo University, Sokoto	925	83
5	College of Nursing Sciences, Sokoto	94	8
6	Shehu Shagari University of Education, Sokoto	174	16

7	Sokoto State University, Sokoto	284	25
8	College of Nursing Sciences, UDUTH	42	4
	Total	2,692	242

Table 1, Indicated the Population and a sample size of 242 lecturers drawn using stratified sampling technique. Stratified sampling technique enables each subgroup representation from the general group (Dhaval Makwana et al, 2023), the rate of the response was 100%.

The instrument was developed by the researcher using google form titled: titled Emerging technologies Availability and Utilization Questionnaire (ETAUQ) for data collection.

The instrument was adapted from Mbonu et al (2024) and used to obtain quantitative information from the lecturers and the instrument ETAUQ has three parts A, B and C with a total of thirty (30) items, Part A will elicit data on the availability of emerging technologies, Part B will seek information on the level of utilization of emerging technologies and part C sought data on the challenges faced by lecturers when utilizing emerging technologies in their teaching activities.

The instrument was validated by two experts; from Measurement and Evaluation and Educational Technology that checked the face and content validity of the instrument. The reliability index of 0.78 was established using Cronbach alpha statistical measured to ascertain the internal consistency of the questionnaire items. The Instrument was administered through WhatsApp platform with the help of research assistant from each institution. The data were retrieved and analyzed using frequency count and percentages.

Decision rule

For answering research questions one and two which use dichotomous rating (Yes/No) it is indicated that any item with high percentage regarded to stand whereas for the likert scale, the researcher collapsed the two extremes of strongly agreed + agreed to give agree and strongly disagree + disagree to give Disagree.

Results

Research Question One: What is the level of availability of emerging technologies among lecturers of tertiary institutions in Sokoto Metropolis, Sokoto State, Nigeria?

To answer this question, responses obtained from 242 lecturers, as presented in the table below:

Table 2: Frequency counts and percentage of Availability of Emerging Technologies among lecturers of Tertiary Institutions in Sokoto Metropolis

S/No.	Items	F (available)	%	F (Not available)	%	Decision
1	Web 2.0 device (Smartphone)	242	100	0	0	Available
2	Google classroom	124	52	118	48	Available
3	Video conferencing tools	143	59	99	41	Available
4	Interactive whiteboards for lectures	119	49	124	51	Not Available
5	Cloud computing like Google Drive, google Docs	149	62	93	38	Available
6	Google meet	126	52	118	48	Available
7	WhatsApp for quick communication and sharing of lecture materials	226	93	16	7	Available
8	Augmented Reality (AR) to create interactive and engaging	87	36	155	64	Not available
9	Facebook to broadcast lectures	159	66	83	34	Available
10	Zoom for conducting live online lectures	133	55	109	45	Available

Table 2 showed the frequency count and percentages of availability of emerging technologies in the tertiary institutions in the study area. The tables reveals that all the items except items 4 and 8 score the acceptable percentage by the respondents which shows the availability of emerging technologies facilities in the tertiary institutions within Sokoto Metropolis, Sokoto State, Nigeria.

Research Question Two: What is the extent of utilization of emerging technologies among lecturers in tertiary institutions in in Sokoto Metropolis, Sokoto State, Nigeria?

To answer this question, responses obtained from 242 lecturers who was filled the questionnaire were sorted and analyzed using frequency count and percentages as presented in the table: 3

Table 3: Frequency Counts and Percentages of Level of Utilization of Emerging Technologies in tertiary Institutions within Sokoto Metropolis

S/N	Emerging Technologies	Highly utilized (%)	Moderately Utilized (%)	Not Utilized(%)	Decision
1	ChatGPT to create interactive, simulate conversations about the subject matter, likewise in generating personalized lecture content and lecture notes	54(22.3%)	75(31%)	113(46.7%)	Not utilized
2	Google classroom for managing post- assignments, distribute resources, and provide feedback	47(19.4%)	59(24%)	136(56.2%)	Not utilized
3	Video conferencing tools	24(9.9%)	31(12.8%)	187(77.2%)	Not utilized
4	Interactive whiteboards for lectures	44(18.1%)	53(21.9%)	146(60.3%)	Not utilized
5	Cloud computing like Google Drive, Google Docs and Dropbox which allows for collaborative work, easy distribution of resources and share lecture materials online, making them accessible to students anytime,	59(24.3%)	121(50%)	63(26%)	Moderately utilized
6	Google meet which offers features like screen sharing, real-time captions, and recording capabilities, for	76(31.4%)	125(51.7%)	38(15.70%)	Moderately utilized

	conducting virtual/online lectures likewise meetings				
7	WhatsApp for quick communication and sharing of lecture materials	159(65.7%)	78(32.2%)	5(2%)	Highly utilized
8	Augmented Reality (AR) to create interactive and engaging	0	0	242(100%)	Not utilized
9	Facebook to broadcast lectures likewise facilitate real-time interaction with students	0	0	242(100%)	Not utilized
10	Zoom for conducting live online lectures, allowing for real-time interaction between students and educators	98(40.5%)	128(52.9%)	19(7.9%)	Moderately utilized

Table 3 shows the frequency count and percentages of lecturers' level of utilization of emerging technologies in tertiary institution within Sokoto Metropolis. The results of item 7 indicated that 159 (65.7%) out of 242 respondents had a high level of utilization of WhatsApp 78(32.2%) moderate level and 5(2%) were not utilized WhatsApp for quick communication and sharing of lecture materials. Also, item 5 on Cloud Computing had 121(50%) moderate level, 63(26%), not utilized and 59(24.3%) highly utilized, item 6 Google meet 125(51.7%) Moderate utilized, 76(31.4%) highly utilized and 38(15.70%) not utilized and item 10 Zoom 128(52.9%) Moderate utilized, 98(40.5%) highly utilized and 19(7.9%) not utilized the zoom for conducting live online lectures. The items such as ChartGPT 113(46.7%) not utilized, 54(22.3%) highly utilized, 75(31%) moderately utilized CHARTGPT to create interactive simulate conversation about subject matter, Video conferencing tools 187(77.2) not utilized, 31(12.8%) moderately utilized and 24(9.9%) highly utilized, interactive white board 146(60.3%) not utilized, 53(21.9%) moderately utilized and 44(18.1%) highly utilized. The remaining items Augmented Reality (AR) 242(100%), and Facebook242(100%) are not been utilize at all by the respondents.

Research Question Three: What are the challenges faced by teachers while utilizing emerging technologies in daily teaching activities?

To answer this question, responses obtained from 242 lecturers who was filled the questionnaire were sorted and analyzed using frequency count and percentages as presented in the table 4:

Table 4: Summary of Challenges faced by Lecturers while utilizing Emerging Technologies

S/N	Challenges of using Emerging Technologies	Strongly Agree	Agree	Disagree	Strongly Disagree	Decision
1	Poor Internet connectivity	66(27.2)	91(37.6)	42(17.3)	43(17.8)	Agree
2	Lack of steady power supply	74(30.8)	90(37.1)	32(13.2)	46(19)	Agree
3	Low ICT literacy level	79(32.6)	62(25.6)	52(21.5)	49(20.2)	Agree
4	High-cost price of Emerging Technologies facilities	99(40.9)	73(30.1)	46(19)	24(10)	Agree
5	Habit of resistance to change among some lecturers	45(18.2)	63(26)	82(33.9)	52(21.5)	Disagree
6	Lack of proper policy implementation	41(19.9)	51(21)	65(26.6)	83(34.3)	Disagree
7	Excess workload on the part of the lecturers	31(12.8)	83(34.2)	50(20.6)	78(32.2)	Disagree
8	Training and Development programmes	89(36.8)	94(38.8)	47(19.4)	12(4.9)	Agree
9	Scarce technological knowhow on resolving issues regarding facilities	82(33.9)	44(18.2)	68(28)	48(19.8)	Agree
10	Maintenance of Emerging technologies infrastructure	70(28.9)	67(27.9)	60(24.8)	45(18.6)	Agree

Table 4 shows the challenges faced by lecturers while utilizing emerging technologies in tertiary Institutions within Sokoto Metropolis, it has been indicated that the respondents agreed with all statement on the challenges faced by lecturers while utilizing emerging technologies except item 5, 6 and 7 which they didn't agreed with the challenges faced by lecturers while utilizing emerging technologies. This shows that the utilizations of emerging technologies suffer challenges such as; poor internet connectivity, lack of steady power supply, low literacy level, high cost of emerging technologies facilities, Training and Development programmes, scarce technological knowhow on resolving issues regarding facilities as well as Maintenance of Emerging technologies infrastructure.

Summary of Major Findings

The following are the major findings of this study:

- I. The findings revealed that emerging technologies are available in the tertiary institution in tertiary institutions within Sokoto Metropolis.
- II. The study shows the moderate level of utilization of emerging technologies facilities except in the case of WhatsApp which is highly utilized by the lecturers in the study area.
- III. The study also indicated the challenges faced by lecturers in utilizing emerging technologies includes poor internet connectivity, lack of steady power supply among others.

Discussion

The first finding of this study revealed that, the emerging technologies are available within the tertiary institutions in the study area.

The finding is in line with the finding of Bates (2015), who noted that higher education institutions are increasingly providing emerging technologies to enhance teaching, learning, and research. The finding has significant implications for teaching and learning in tertiary institutions. As noted by Siemens (2015), emerging technologies have the potential to transform the way students learn and interact with educational content. Therefore, tertiary institutions need to prioritize the adoption and integration of emerging technologies to enhance teaching, learning and research.

The second finding revealed that the utilization of these emerging technologies is very low despite their availability in the tertiary institutions in the study area. This is in agreement with the research by Bridget Chinalu Ujah-Ogbuagu (2021), who found that many lecturers in higher education institutions are not effectively utilizing emerging technologies into their teaching practices. The study discovered that the major barriers to emerging technology utilization in Nigeria include low ICT Literacy, maintenance of infrastructure, low human capacity development, and policy inefficiency. This finding is in line with the study by Hermócrates Gomes Melo Júnior et al. (2025), which highlighted the importance of providing lecturers with ongoing support and training to enhance their technology integration skills. The study further found that

pedagogical and institutional factors, such as habit of resistance to change among some lecturers contribute to the low utilization of available emerging technologies among lecturers. The study reveals that WhatsApp platform is reported as the highest web 2.0 platform ((132) (55)) for communication and information sharing and this is in agreement with (Gurajena, et al, 2021) that emerging technologies have transformed the teaching and learning process by supporting educators and students to interact more outside the classroom. Zoom also found to be most widely utilize emerging technology after WhatsApp in the tertiary institutions in the study area. The findings of this study have significant implications for teaching and learning in tertiary institutions.

The third finding of this study revealed that there are several challenges faced by lecturers while utilizing emerging technologies, which include poor Internet connectivity, limited technical support, high-cost price of Emerging Technologies facilities, lack of training and development as well as maintenance of infrastructure. This is in line with the research by Onuegbu Okolie Benedicta (2023), who found that lack of training and technical support are major barriers to the effective integration of technology in higher education. The result of this study is in line with findings of Ngozi et al (2022) which found the technological challenges, such as poor internet connectivity and Low ICT literacy level, hinder lecturers' ability to utilize emerging technologies. The finding of this study moreover highlights institutional challenges, such as training and development programmes and Maintenance of ICT infrastructure as challenges that hinder lecturers' utilization of emerging technologies.

Conclusion

In conclusion, the emerging technologies in teaching have become an essential component of modern education. It has opened up new avenues for interactive and engaging learning experiences, making teaching more effective and efficient in tertiary Institutions in Sokoto Metropolis, Sokoto State, Nigeria.

Recommendations

Based on the results and findings of the study, the following recommendations would go a long way to solve the problems of accessibility and utilization of emerging technologies among lecturers of tertiary institutions in Sokoto Metropolis, Sokoto State, Nigeria.

- I. Government should endeavor to Provide of necessary technologies required for teaching/learning in the institutions which include reliable internet connectivity, hardware, and software, to support the adoption and utilization of emerging technologies
- II. Lecturers in the tertiary institution within Sokoto Metropolis should be encourage to acquire the needed skills that will equipe them with use of emerging technologies in their teaching and learning activities.
- III. Lecturers of the tertiary Institutions within Sokoto Metropolis should be assisted to have access to different workshops and conferences to enhance their productivity in the utilization of emerging technologies.

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Baseline Study of Teachers' Knowledge and Implementation of Gender-Responsive Pedagogy at Basic Education Level in Sokoto State, Nigeria

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Abstract

The main thrust of the study was to assess teachers' level of knowledge of gender-responsive pedagogy and determine the extent of its implementation in classroom practices. The study adopted a mixed-method research design, combining a descriptive survey design for the quantitative component and a phenomenological design for the qualitative component. The population comprised 1,111 teachers across 24 public basic education levels in Sokoto metropolis. A total of 278 teachers were selected for the quantitative phase using the Research Advisors (2006) sample size table and stratified random sampling technique, among which 17 teachers were purposively selected for qualitative interviews. The instruments used for data collection were a structured questionnaire titled Teachers' Knowledge and Implementation of Gender-Responsive Pedagogy Questionnaire, classroom observation checklist and an interview guide. The instruments were validated by experts in Educational Measurement and Sociology of Education, while reliability of the questionnaire was established using Cronbach's Alpha coefficient of 0.70 and 0.73. Data were analyzed using descriptive statistics of mean score, while qualitative data were analyzed thematically. The findings revealed that teachers had a generally low level of knowledge of gender-responsive pedagogy (grand mean = 2.49), while the extent of implementation was moderate (grand mean = 2.50). The study concluded that teachers demonstrate limited conceptual understanding but moderate application of gender-responsive practices in classrooms. It recommended continuous teacher training and capacity-building programmes to strengthen teachers' knowledge and ensure more consistent implementation of gender-responsive pedagogy in basic education schools in Sokoto State.

Keywords: Gender-Responsive Pedagogy, Teachers' Knowledge, Classroom Implementation, Basic Education, Stopped

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Introduction

Education is globally recognized as a fundamental instrument for promoting social justice, equity and sustainable development. It serves as a strategic mechanism for reducing inequality, empowering marginalized population and fostering inclusive societal development. The adoption of the Sustainable Development Goals by the United Nations reinforces the critical role of education in achieving social transformation. Specifically, Goal 5 seeks to achieve gender equality and empower all women and girls through the elimination of discrimination in all social institutions, including education (United Nations Educational, Scientific and Cultural Organization, 2021). Achieving this goal requires educational systems to adopt deliberate strategies that ensure equitable participation and learning opportunities for both boys and girls. One such strategy is Gender-Responsive Pedagogy (GRP), which depends significantly on teachers' professional knowledge and their capacity to translate such knowledge into classroom practice.

Gender-Responsive Pedagogy is an instructional approach designed to address gender-specific learning needs while eliminating stereotypes and discriminatory classroom practices that hinder equitable participation. According to the Forum for African Women Educationalists (2018), GRP involves integrating gender-sensitive approaches into lesson planning, instructional delivery, classroom interaction, assessment and classroom management to ensure fairness and inclusiveness. It creates enabling classroom environments where both male and female learners can participate actively and achieve academic success without gender-based limitations. Effective implementation of GRP depends on teachers possessing sufficient pedagogical knowledge and professional competence.

The significance of Gender-Responsive Pedagogy is particularly pronounced at the basic education level because this stage forms the foundation of learners' academic identity, self-esteem and social orientation. Teachers at this level shape learners' perceptions of academic potential through instructional practices and classroom interactions. Studies indicate that teachers with adequate pedagogical competence are more likely to foster equitable participation and improve learner outcomes (Darling-Hammond, Hyler & Gardner, 2017). In Sokoto State, Ladan and Jabbi (2025) found that student-teachers in teacher training institutions demonstrated deficiencies in key

pedagogical areas such as classroom management, use of instructional aids, and learner engagement strategies, suggesting possible limitations in teachers' readiness to implement specialized pedagogical practices such as gender-responsive teaching.

Despite efforts toward inclusive education in Nigeria, gender disparities in educational participation and achievement remain significant. These disparities are often linked to socio-cultural beliefs, weak teacher preparation systems, inadequate gender-sensitive instructional resources and institutional limitations affecting classroom inclusiveness (United Nations Children's Fund, 2021). Although educational policies emphasize equality of opportunity, effective implementation depends largely on teachers' understanding and classroom application of inclusive pedagogical principles.

The challenge of gender inequality in education is particularly pronounced in Northern Nigeria, especially in states such as Sokoto, where socio-cultural and religious factors continue to shape educational participation patterns. UNICEF (2021) indicated there is a consistently lower female enrolment, retention and completion rates at basic education compared to male learners in many northern states of Nigeria. In line with this, Ibrahim et al. (2020) considers poverty, early marriage and household responsibilities as factors that continue to hinder equitable educational participation at basic education level. While, parental perceptions of girls' education was considered by Olanrewaju, Anthony and Fashola (2026) as another factor for gender imbalance. These realities underscore the need for classroom-based pedagogical strategies capable of supporting inclusive participation and improved learning outcomes for both genders.

Recent empirical evidence also suggests that classroom experiences significantly influence learners' academic confidence and participation. Gender stereotypes communicated through classroom interaction, teacher expectations and instructional materials can shape pupils' academic identity and self-concept. When learners are exposed to inclusive and supportive instructional environments, they are more likely to participate actively and perform better academically. This highlights the importance of teachers possessing sufficient knowledge of gender-responsive pedagogy.

Despite increasing attention to gender-sensitive education globally and nationally, empirical evidence on teachers' knowledge of Gender-Responsive Pedagogy and the extent of its implementation in basic education classrooms

in Sokoto State remains limited. Existing studies in Nigeria have focused mainly on structural educational challenges such as school access, enrolment, retention, completion rates and barriers to girl-child education, with insufficient empirical attention given to teachers' preparedness for implementing gender-responsive classroom practices (UNESCO, 2021; UNICEF, 2022). Yet, teachers' professional knowledge remains a critical determinant of pedagogical effectiveness. Since knowledge influences instructional behaviour and classroom practice, this omission represents an important empirical gap requiring investigation.

Addressing these gaps is essential for strengthening teacher professional development, improving instructional supervision and promoting equitable educational outcomes in Sokoto State. Without empirical evidence on teachers' knowledge levels and implementation practices, interventions designed to improve gender-responsive pedagogy may lack contextual relevance and effectiveness.

It is against this background that this study seeks to examine the level of teachers' knowledge of Gender-Responsive Pedagogy and determine the extent to which teachers implement gender-responsive pedagogical practices in basic education classrooms in Sokoto State, Nigeria.

Statement of the Problem

Despite growing global and national emphasis on gender equality in education, effective implementation of gender-responsive pedagogy in basic education classrooms remains uncertain, particularly in Northern Nigeria where socio-cultural factors continue to influence educational participation and classroom experiences of learners. In Sokoto State, although the introduction of Universal Basic Education improves access to education for both boys and girls, evidence still shows disparities in participation, retention and academic outcomes, especially among female learners. These disparities suggest that classroom instructional practices may not be sufficiently gender responsive to promote equitable learning opportunities.

Effective implementation of gender-responsive pedagogy depends largely on teachers' knowledge and professional competence. However, there is limited empirical evidence on the level of teachers' knowledge of gender-responsive

pedagogy and the extent to which such knowledge is translated into classroom practice in basic education schools in Sokoto State.

The absence of such empirical evidence creates a gap in educational planning and teacher professional development, thereby limiting the design of context-specific interventions for promoting inclusive classroom practices. It is against this concern that this study seeks to examine teachers' knowledge of gender-responsive pedagogy and determine the extent of its implementation in basic education classrooms in Sokoto State, Nigeria.

Theoretical Framework

This study is anchored on the Gender Socialization Theory, originally developed by Talcott Parsons (1955) and later expanded by scholars such as Ann Oakley (1972) and Sandra Bem (1981). The theory explains how individuals learn and internalize gender roles, norms and expectations through social interaction within institutions such as the family, school, religion and media. Socialization shapes attitudes, beliefs and behaviours toward gender roles and determines how individuals perceive gender relations in society.

Thus, for pupils at basic education teachers' classroom Pedagogical practices are part of what Giddens (2009) refers to as process through which individuals acquire cultural norms and values necessary for social participation, including expectations relating to gender identity and roles. Similarly, Haralambos and Holborn (2013) explained that gender identity is socially constructed and reinforced through social institutions, particularly schools, where cultural expectations are transmitted across generations. In the same vein, Macionis (2012) noted that schools act as important agents of socialization through both formal and hidden curricula, often reproducing traditional gender expectations unless deliberate intervention occurs.

On the basis of above, it can be understood that school serves as a powerful site for gender socialization where teachers shape learners' understanding of gender and gender role expectations through classroom interaction. Gender role expectations as maintains by Rao and Chand (2019) are transmitted and preserved by social institutions through repeated interaction. Educational institution in particular is an important tool for transforming gender relations.

This theory directly supports therefore the first research question, which seeks to assess teachers' knowledge of gender-responsive pedagogy. Teachers'

knowledge is influenced by their socialization experiences and professional training. As Oakley (1972) emphasized, gender awareness develops through exposure to alternative perspectives that challenge traditional role expectations.

The theory also supports the second research question, which examines the extent to which teachers implement gender-responsive pedagogy in classrooms. According to Bem (1981), internalized gender schemas influence behaviour and decision-making. Thus, teachers' classroom practices often reflect their beliefs about gender equality and fairness.

Therefore, Gender Socialization Theory provides an appropriate framework for this research problem focusing on examining teachers' knowledge and implementation of gender-responsive pedagogy at the basic education level in Sokoto State.

Objectives of the Study

The objectives of the study are as follows:

- I. To determine the level of teachers' knowledge of gender-responsive pedagogy at the basic education level in Sokoto State
- II. To examine the extent to which teachers implement gender-responsive pedagogy in basic education classrooms in Sokoto State, Nigeria.

Research Questions

The research questions for the study are:

- I. What is the level of teachers' knowledge of gender-responsive pedagogy at the basic education level in Sokoto State?
- II. To what extent do teachers implement gender-responsive pedagogy practices in basic education classrooms in Sokoto State?

Methodology

The study adopted a mixed-method research design, combining a descriptive survey design for the quantitative component and a phenomenological design for the qualitative component. This is to enable a comprehensive

understanding of teachers' knowledge and implementation of gender-responsive pedagogy at the basic education level in Sokoto State, Nigeria. The quantitative component employed a descriptive survey design to determine the level of teachers' knowledge and extent of implementation of gender-responsive pedagogy, while the qualitative component adopted a phenomenological design to explore teachers' experiences and perceptions regarding gender-responsive classroom practices.

The population of the study comprised 1,111 teachers across 24 public primary schools offering lower and upper basic education within Sokoto metropolis. For the quantitative component, a sample of 278 teachers was selected using the Research Advisors (2006) Table for Determining Sample Size. A stratified random sampling technique was employed to ensure adequate representation of teachers across schools and grade levels. For the qualitative component, 17 teachers were purposively selected for in-depth interviews. This sample size was considered adequate based on Creswell's (2014) recommendation that qualitative saturation is often achieved between 12 and 20 participants.

Three instruments were used for data collection: the 15 item, 4-point Teachers' Knowledge and Implementation of Gender-Responsive Pedagogy Questionnaire (TKIGRPQ), 15 item, 4-point Classroom Observation Checklist and in depth Interview Guide. TTKIGRPQ consisted of two sections. Section A measured personal information of respondents while section B assessed teachers' knowledge of gender-responsive pedagogy. Items on the checklist however measured the extent of implementation of gender-responsive practices in classroom instruction. The in depth Interview Guide was designed to elicit qualitative data on teachers' understanding, experiences and classroom realities relating to gender-responsive pedagogy. The interview explored teachers' awareness of gender issues, classroom implementation strategies and perceived challenges affecting effective practice.

To ensure content validity, the instruments were subjected to expert review by two specialists: one in Educational Measurement and Evaluation and the other in Sociology of Education. Their observations guided item refinement for clarity, relevance and comprehensiveness. Similarly, 2 items on the TKIGRPQ considered irrelevant were expunged.

To establish reliability, the questionnaire and checklist were pilot-tested on 20 teachers drawn from public primary schools outside the study area but with

similar characteristics. Internal consistency was determined using Cronbach's Alpha, which yielded reliability coefficients of 0.70 and 0.73 indicating acceptable reliability. For the qualitative instrument, trustworthiness was ensured through member checking and repeated questioning in varied forms, as recommended by Best and Kahn (2015).

Data collection was conducted in two phases. In the first phase, copies of the questionnaire were administered to the sampled teachers with the assistance of two trained research assistants and later classroom observations whereby the researchers were physically presented, classrooms sessions were observed using the checklist. In the second phase, the researchers conducted in-depth interviews with the 17 purposively selected participants. Each interview lasted 30–45 minutes and responses were recorded using a voice recorder and field notes. Quantitative data were analyzed using descriptive statistics of mean score while qualitative data were analyzed using thematic analysis, involving transcription, coding of responses, categorization into themes and interpretation of emerging patterns to complement the quantitative findings

Results

Data obtained from Quantitative instrument was analysed using mean score and presented in table 1 and 2.

Table 1: Teachers' Knowledge of Gender-Responsive Pedagogy

SN	Item	Mean	Decision
1	Understanding of gender-responsive pedagogy	2.45	Low
2	Awareness of equal participation of boys and girls	2.85	Moderate
3	Knowledge of gender bias in teaching	2.30	Low
4	Understanding of inclusive classroom practices	2.70	Moderate
5	Exposure to training on gender-responsive pedagogy	1.95	Low
6	Awareness of gender-sensitive instructional materials	2.55	Moderate
7	Ability to design gender-fair lesson plans	2.25	Low
8	Knowledge of strategies for promoting gender equity in the classroom	2.68	Moderate
9	Awareness of gender stereotypes and their effects on learners	2.74	Moderate
10	Understanding of gender-sensitive classroom management techniques	2.60	Moderate
11	Knowledge of gender-responsive assessment practices	2.20	Low
12	Awareness of policies promoting gender equality in education	2.58	Moderate
13	Ability to identify and address gender-related barriers to learning	2.42	Low

Decision rule is 3.50 – 4.00 = High 2.50 – 3.49 = Moderate and 1.00 – 2.49 = Low

Table 1 presents teachers' knowledge of Gender-Responsive Pedagogy at the basic education level in Sokoto State. The results reveal a mixed pattern of knowledge across the measured indicators. Teachers demonstrated moderate knowledge in areas such as awareness of equal participation of boys and girls (Mean = 2.85), understanding of inclusive classroom practices (Mean = 2.70), awareness of gender-sensitive instructional materials (Mean = 2.55), knowledge of strategies for promoting gender equity (Mean = 2.68), awareness of gender stereotypes and their effects on learners (Mean = 2.74), understanding of gender-sensitive classroom management techniques (Mean = 2.60), and awareness of policies promoting gender equality in education (Mean = 2.58). However, teachers recorded low mean scores in understanding of gender-responsive pedagogy (Mean = 2.45), knowledge of gender bias in teaching (Mean = 2.30), exposure to training on gender-responsive pedagogy (Mean = 1.95), ability to design gender-fair lesson plans (Mean = 2.25), knowledge of gender-responsive assessment practices (Mean = 2.20) and ability to identify and address gender-related barriers to learning (Mean = 2.42). The lowest score was observed in exposure to training on gender-responsive pedagogy (Mean = 1.95), suggesting limited opportunities for formal professional development in this area.

The grand mean of 2.49 indicates that teachers' knowledge of gender-responsive pedagogy is generally low, although the moderate scores recorded in several indicators suggest that teachers possess some awareness of gender-related educational issues but lack sufficient professional knowledge and training for effective implementation of gender-responsive pedagogy.

Table 2: Extent of Teachers' Implementation of Gender-Responsive Pedagogy

SN	Item	Mean	Decision
1	Teacher provides equal opportunities for boys and girls to participate during lessons	2.45	Low
2	Teacher distributes questions fairly among male and female pupils	2.60	Moderate
3	Teacher uses gender-neutral language during classroom interaction	2.35	Low
4	Teacher encourages girls and boys equally to answer questions	2.75	Moderate
5	Teacher provides equal feedback and reinforcement to both genders	2.50	Moderate
6	Teacher uses instructional materials that portray both genders positively	2.40	Low
7	Teacher avoids making gender-biased comments or assumptions	2.55	Moderate
8	Teacher maintains gender-balanced seating arrangements where applicable	2.20	Low
9	Teacher challenges gender stereotypes when they arise during	2.38	Low

	lessons		
10	Teacher assigns classroom responsibilities fairly to boys and girls	2.68	Moderate
11	Teacher encourages girls' participation in science and mathematics activities	2.30	Low
12	Teacher promotes respectful interaction between male and female pupils	2.72	Moderate
13	Teacher ensures equal access to learning resources for boys and girls	2.65	Moderate
14	Teacher uses examples and illustrations that reflect gender inclusiveness	2.42	Low
15	Teacher monitors classroom interaction to prevent gender domination by either group	2.58	Moderate

Decision rule is 3.50 – 4.00 = High 2.50 – 3.49 = Moderate and 1.00 – 2.49 = Low

Table 2 presents the findings from the classroom observation checklist on teachers' implementation of Gender-Responsive Pedagogy in basic education classrooms in Sokoto State. The results indicate a moderate level of implementation of gender-responsive practices, with a grand mean of 2.50. Observed areas of moderate implementation include fair distribution of questions among pupils (Mean = 2.60), equal encouragement of boys and girls to participate (Mean = 2.75), provision of equal feedback (Mean = 2.50), avoidance of gender-biased comments (Mean = 2.55), fair assignment of classroom responsibilities (Mean = 2.68), promotion of respectful interaction between genders (Mean = 2.72), equal access to learning resources (Mean = 2.65) and monitoring classroom interaction to prevent gender domination (Mean = 2.58).

However, several indicators recorded low mean scores, including the use of gender-neutral language (Mean = 2.35), use of gender-sensitive instructional materials (Mean = 2.40), gender-balanced seating arrangements (Mean = 2.20), challenging gender stereotypes (Mean = 2.38), encouraging girls' participation in science and mathematics activities (Mean = 2.30) and use of gender-inclusive examples and illustrations (Mean = 2.42). The lowest score was recorded in gender-balanced seating arrangements (Mean = 2.20), suggesting that classroom organization remains insufficiently gender-responsive.

The findings suggest that while teachers demonstrate some observable gender-responsive practices in classroom interaction and learner participation, important aspects of gender-responsive pedagogy remain inadequately implemented in classroom instruction. This indicates the need for further

professional support and capacity-building to strengthen teachers' application of gender-responsive teaching practices.

Thematic Analysis of Interview

The interview responses of the 17 teachers were analyzed thematically to complement the quantitative findings, which revealed a low level of teachers' knowledge of gender-responsive pedagogy at the basic education level in Sokoto State. The qualitative data revealed varied responses among participants, ranging from complete unfamiliarity with the concept to partial understanding of its meaning and application. Four major themes emerged from the analysis.

Theme 1: Poor Conceptual Understanding of Gender-Responsive Pedagogy

A dominant issue that emerged was teachers' weak conceptual understanding of gender-responsive pedagogy. Several respondents admitted that they had either never encountered the concept formally or could not define it professionally. As Teacher A explained: "I have heard people mention it during school discussions, but I cannot explain what it actually means." Similarly, Teacher D stated: "Honestly, this is my first time hearing the full term clearly." Teacher K remarked: "I do not really understand what makes teaching gender-responsive because we were not taught that in detail." Teacher Q also noted: "The concept sounds familiar, but I cannot confidently define it."

These responses suggest that a significant number of teachers possess very limited conceptual knowledge of gender-responsive pedagogy. However, a few respondents demonstrated partial understanding. For instance, Teacher H stated: "I think it means making sure boys and girls are equally considered during teaching." Similarly, Teacher N explained: "It is about avoiding discrimination and ensuring fairness to both genders in class." Although these responses show some awareness, they remain simplistic and lack technical depth.

Theme Two: Misconceptions and Narrow Interpretation of the Concept

Another major issue was the prevalence of misconceptions and narrow interpretations of gender-responsive pedagogy. For example, Teacher B stated: “It simply means allowing boys and girls to sit together during lessons.” Similarly, Teacher F explained: “I believe it is mainly about making sure both boys and girls attend school.” Teacher L remarked: “It is about giving girls more attention so they can catch up with boys.”

These responses reveal misunderstanding of the concept, reducing it to classroom seating arrangement, school access or preferential treatment rather than inclusive instructional strategies. However, Teacher J demonstrated broader understanding when stating: “It involves using teaching methods that allow both boys and girls to participate confidently and equally.” This variation suggests uneven knowledge levels among teachers.

Theme Three: Limited Knowledge of Practical Classroom Strategies

The findings also showed that most teachers lacked practical knowledge of how to implement gender-responsive pedagogy during lesson delivery. As Teacher C admitted: “Even if I know the meaning, I do not know the exact classroom methods to use.” Similarly, Teacher E stated: “I have never learned how to prepare lesson plans that are gender-responsive.” Teacher G remarked: “Nobody has shown us how to select gender-sensitive examples or learning materials.” Likewise, Teacher M explained: “I do not know how to monitor classroom interaction to ensure equal participation.” Teacher P added: “We teach all pupils together, but we do not have specific guidelines for this kind of teaching.” These responses reveal gaps in practical pedagogical competence. A few respondents, however, demonstrated some awareness of practical strategies. Teacher O stated: “A teacher should avoid calling only boys to answer difficult questions and should involve girls equally.” This suggests isolated understanding among a small number of participants.

Theme Four: Inadequate Training and Institutional Support

Participants consistently identified inadequate training opportunities as a key reason for their low knowledge level. As Teacher I explained: “We have not attended any workshop specifically on gender-responsive pedagogy.”

Similarly, Teacher J stated: "Training programmes mostly focus on general classroom management." Teacher P remarked: "Government seminars rarely discuss gender-sensitive teaching practices." Teacher Q added: "Teachers need practical training because many of us are not familiar with this area."

Some respondents linked the issue to institutional neglect. Teacher M observed: "Schools do not emphasize gender-responsive teaching during supervision." Likewise, Teacher R noted: "Even administrators rarely mention it as an expectation." These responses indicate weak systemic support for professional development in this area.

From the foregoing, data from interview thematically analysed revealed low and uneven knowledge of gender-responsive pedagogy among teachers at the basic education level in Sokoto State, confirming the quantitative findings. While a few respondents demonstrated partial awareness of fairness and inclusion principles, many lacked conceptual clarity, held misconceptions about the meaning of the concept and showed limited knowledge of practical classroom application. The findings further revealed that inadequate professional training and weak institutional emphasis significantly contribute to the low level of teachers' knowledge of gender-responsive pedagogy in the study area.

Summary of Major Findings

Based the analysis of Qualitative and Quantitative data, the following are findings of the study:

1. The study found that teachers have a generally low knowledge of gender-responsive pedagogy (grand mean = 2.49). While some demonstrated moderate awareness of gender equity and inclusive practices, many lacked adequate understanding of key concepts and practical strategies.
2. The study also found a moderate level of gender-responsive pedagogy implementation among teachers (grand mean = 2.50). Although some practices like equitable participation and fair interactions were observed, many key aspects were inconsistently applied, indicating a need for further professional training to improve implementation.

Discussion

This study investigated teachers' knowledge and implementation of gender-responsive pedagogy (GRP) at the basic education level in Sokoto State, Nigeria. The first major finding revealed that teachers possess a generally low level of knowledge of gender-responsive pedagogy (grand mean = 2.49). This indicates that many teachers in basic education schools in Sokoto State are not sufficiently familiar with the principles, strategies and classroom implications of gender-responsive teaching, although a few demonstrate partial awareness of gender equity concepts.

The thematic analysis strongly reinforced this result, as several respondents admitted weak conceptual understanding and unfamiliarity with the concept. For instance, one respondent stated, "I have heard people mention it during school discussions, but I cannot explain what it actually means" (Teacher A), while another confessed, "Honestly, this is my first time hearing the full term clearly" (Teacher D). These responses reveal notable conceptual gaps among teachers.

The interviews further exposed misconceptions and narrow interpretations of GRP. Some teachers reduced the concept to simplistic practices such as seating arrangements or equal physical access to schooling. For example, one respondent remarked, "It simply means allowing boys and girls to sit together during lessons" (Teacher B). Such responses indicate limited professional understanding of gender-responsive instructional principles.

This finding aligns with international and national education reports which emphasize that effective implementation of inclusive education depends heavily on teacher preparedness and professional competence UNESCO, (2021) and that of UNICEF (2022). It also supports earlier observations that teacher education institutions in Northern Nigeria may not adequately prepare teachers for specialized pedagogical approaches such as GRP. Specifically, Ladan and Jabbi (2025) reported pedagogical competence gaps among student-teachers in Sokoto State, particularly in instructional delivery and classroom management.

From the perspective of Gender Socialization Theory, this finding reflects the influence of institutional training and professional exposure in shaping teachers' knowledge systems. Where pre-service and in-service training do not

sufficiently emphasize gender-responsive frameworks, teachers are less likely to develop strong conceptual understanding of such pedagogical practices.

The study also showed that the extent of teachers' implementation of gender-responsive pedagogy is moderate (grand mean = 2.50). This suggests that while some gender-responsive practices such as equitable learner participation and fair classroom interactions are occasionally observed, many key components such as gender-sensitive instructional planning, balanced questioning and inclusive learning materials—are not consistently applied.

The thematic analysis further revealed variability in teachers' classroom practices. Some respondents indicated partial awareness but limited practical application skills. One teacher explained, “Even if I know the meaning, I do not know the exact classroom methods to use” (Teacher C), while another stated, “Nobody has shown us how to prepare lesson plans that are gender-responsive” (Teacher E). These responses suggest that moderate implementation may reflect surface-level practice rather than deep pedagogical integration.

The interviews also revealed that many teachers operate without deliberate frameworks for gender-sensitive instruction. As one respondent stated, “We teach all pupils together, but we do not have specific guidelines for this kind of teaching” (Teacher P). This indicates that implementation is often informal and inconsistent.

This finding is consistent with UNICEF (2022), which reported that gender disparities in classroom participation and learning outcomes persist in Northern Nigeria due to socio-cultural and instructional limitations. It also aligns with UNESCO (2021), which emphasized that policy commitment alone is insufficient without effective classroom-level implementation. Furthermore, it supports Darling-Hammond, Hyler and Gardner's (2017) argument that teacher effectiveness depends strongly on sustained professional development and practical pedagogical competence.

From the perspective of Gender Socialization Theory, teachers' instructional behaviour reflects deeply internalized norms and institutional practices. Since both male and female teachers are socialized within similar educational and cultural environments, their classroom practices tend to reflect shared constraints rather than gender-based differences.

From the foregoing discussion, it can be understood that, quantitative and thematic findings reveal a consistent pattern: limited teacher knowledge contributes to only partial and inconsistent implementation of gender-responsive pedagogy. The qualitative evidence highlights conceptual confusion, inadequate training and lack of practical guidance as central barriers.

Conclusion

Based on the findings of this study, it is concluded that teachers at basic education levels in Sokoto State have a generally low level of knowledge of gender-responsive pedagogy, while their classroom implementation of gender-responsive practices is moderate but inconsistent. This indicates a gap between partial awareness and effective pedagogical application, necessitating structured training and sustained professional development.

Recommendations

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

- I. The Ministry of Education, with teacher training institutions, should organize regular training, workshops and seminars to improve teachers' knowledge of gender-responsive pedagogy and strengthen their understanding of gender equality in classroom teaching.
- II. Head-teachers, their assistants and supervisors should provide ongoing support and monitoring, along with clear instructional guidelines and teaching materials, to help teachers apply gender-responsive practices more consistently and effectively.

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Innovative Learning Designs and Delivery Systems: Enhancing Pedagogical Practices in English Language Classrooms in Nigeria

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Abstract

This study examines how innovative learning designs and delivery systems can enhance English language teaching in Nigeria, focusing on adaptive teaching strategies for diverse learners. It addresses prevailing challenges such as resource scarcity, inadequate teacher training, and the lack of culturally responsive materials to provide insights for boosting language acquisition and retention. Employing a descriptive correlational research design, an initial simple random sample of 300 undergraduate students was selected from the Departments of English and Arts and Social Sciences Education at the National Open University of Nigeria. Following a rigorous data-cleaning procedure, a final analytical sample of 249 respondents was utilised for statistical configurations. Multiple regression and correlation analyses revealed that innovative learning designs significantly improve pedagogical practices. The combined model accounted for 37.6% of the variance in pedagogical practices ($R^2 = 0.376$, Adj. $R^2 = 0.371$, $F(2, 246) = 74.03$, $p < 0.05$), demonstrating a moderate positive correlation ($R = 0.613$). Individually, innovative learning designs exerted a strong predictive influence, while delivery systems showed a lesser but still significant relative impact ($B = 0.179$, $\beta = 0.125$, $p < 0.05$). Based on these findings, it is recommended that educational stakeholders prioritise continuous professional development for educators, focusing heavily on technology integration, collaborative learning frameworks, and differentiated instructional design tailored to the Nigerian educational context.

Keywords: Innovative learning designs, delivery systems, pedagogical practices, Nigerian education.

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Introduction

The landscape of English language education in Nigeria has transformed significantly, driven by the need for innovative learning designs and enhanced pedagogical practices. Traditionally, English teaching at the elementary level relied on mechanical drills, vocabulary memorisation, and prolonged silences, typical of the grammar-translation and audiolingual methods. These approaches focused on repetitive drills to ensure students could articulate phrases accurately. As a result, English has become crucial in the curriculum, essential for success and future skills. Innovative practices like problem-based and cooperative learning have provided educators with new methodologies to design engaging teaching strategies. In the present-day world, there are more than 3.5 billion internet users, over two-thirds of whom are located in developing countries. (Mammen et al.2023).

With advancements in information and communication technology, education has experienced a revolution, leading to diverse delivery systems catering to various learners at different stages and outcomes. There is an increasing demand for innovative and flexible teaching approaches to integrate new technologies and devices, which are fundamentally transforming the educational experience for both learners and instructors. Traditional classroom setups are becoming obsolete. Any study's preliminary step is recognising the need for change, which must be justified by credible evidence. This paper aims to analyse how innovative learning designs and delivery systems enhance pedagogical practices in English language classes. Given the changing classroom dynamics, more effective teaching strategies need development, as current methods often lack engagement and novelty for students.

The Nigerian education system faces challenges like inadequate infrastructure, outdated teaching methods, and a lack of qualified teachers. In English classrooms, these issues are evident as students struggle academically and fail to develop essential language skills for their careers. The education landscape is evolving, requiring innovative learning designs and delivery systems to improve pedagogical practices, especially in English language settings. Given that English is a second language and the medium of instruction in Nigeria, educators must embrace innovative strategies to cater to diverse learner needs. This is vital for enhancing language proficiency and developing critical thinking and collaborative skills. Engaging learners through such designs

fosters active participation and personal investment in their education. Recognising the link between language learning and effective learning design is crucial in the twenty-first century. Technological advances have transformed communication, teaching, and learning. Tools and empirical studies have greatly enhanced TESOL and Computer-Assisted Language Learning. (Park & Son, 2022). Innovative learning systems, along with their design and delivery, promise to enhance the learning experience, especially in language learning. It's crucial to align innovative pedagogical practices with the diverse needs of learners to improve learning quality, rather than rigidly following a specific framework. Learning processes should prioritise student engagement and success, recognising the changing demographics of students and learning platforms. Teaching has evolved from passive knowledge transfer to active environments, such as flipped or hybrid classrooms, emphasising peer-to-peer learning. Researchers and practitioners are focusing on effectively integrating emerging innovative learning systems and tools into classrooms. This student-driven approach aims to significantly enhance students' classroom experiences and overall learning.

In Nigeria, the pedagogical practices employed in English language classrooms vary significantly, shaped by a multitude of factors including cultural context, teacher training, and available resources. These practices are often influenced by the curriculum outlined by educational authorities, as well as the varying levels of proficiency among both teachers and students. The education system in Nigeria is organised into three levels: primary, secondary, and tertiary education. Although there has been progress in increasing access to education, the quality of education still poses major challenges (Ngozi et al., 2024). Traditional teaching methods dominate education in Nigeria, focusing on a teacher-centred approach where the teacher holds primary authority. Practices like lectures, note-taking, and memorisation often fail to effectively engage students, not addressing diverse learning styles, which hinders critical skills development such as critical thinking and creativity. Low engagement levels arise from the passive nature of these methods, leading to disinterest. Traditional practices offer few opportunities for enhancing critical thinking, limiting innovation. To rejuvenate Nigeria's education system, innovative teaching methods are essential. Adopting these strategies can inspire a generation of learners with necessary skills for a complex world, but the challenges must be met with well-thought-out solutions. During the 21st century, many educators have faced challenges incorporating technology into language teaching, finding it often more difficult than expected (Irunokhai et

al., 2024). Teachers have voiced concerns about technology integration, citing minimal training in best practices, insufficient time, resources, and external support for developing new materials, and a lack of encouragement for genuine innovation. Educators in rural areas of Nigeria often face access and privilege issues like poor internet network services and funding. Additionally, even if modern tools are provided free to more learners, not all educators may be equipped to utilise them effectively.

To integrate gamified learning effectively, teachers need development resources, even if they lack gaming experience. Resource disparities can limit technology use, often due to inadequate resources, resistance to change, or equity concerns. This inequality significantly affects students and schools, particularly when technology is not integrated equitably. Policymakers should work with well-resourced teachers and encourage personal device usage among students. Resource-sharing initiatives can help discuss potential solutions and address policymakers' concerns about inadequate support, which poses a serious risk. Engaging various stakeholders and developing institutional policies is essential for building trust and effective implementation.

Despite technology's benefits for language learning, many teachers aren't trained, leading to underutilisation. Resources exist, but the digital divide limits access for some students. Resistance to change, inadequate equipment, and lack of exploration hinder integration. Educators worry technology could increase their workload or diminish authority. Financial constraints create unequal access, leaving some students without devices. Effective integration must address unique student needs and evaluate technology to find and resolve issues. Teachers view themselves as effective change agents.

Effective pedagogical practices in English language classrooms are essential for creating an engaging environment that enhances linguistic proficiency and cultural awareness. These practices promote language acquisition and encourage collaborative learning that reflects classroom diversity. Teachers should incorporate interactive activities to foster communication and critical thinking, actively involving students in their learning. This approach includes group discussions, role-plays, and problem-solving tasks. A supportive environment encourages students to express their ideas and develop language skills. Integrating technology further enhances engagement and supports personalised experiences.

Virtual reality (VR) has emerged as a transformative technology in education, offering immersive experiences that can significantly enhance language learning and engagement in English language classrooms across Nigeria. As an innovative delivery system, VR provides immersive, interactive and engaging experiences that simulate real-world environments. In education, VR enhances student engagement, retention and understanding (Chinedu, 2024). It allows learners to practice language skills in context which enhances their ability to apply language rules and vocabulary in real-life situations. It also offers personalised learning experiences, remote access and cost-effectiveness. VR enables learners to engage in role plays and simulations that practice language skills such as conversations, negotiations and presentations. Virtual Reality is used to create interactive stories and games that teach language vocabulary, grammar and pronunciation.

Language instructors with access to electronic devices, like computers or smartphones, can utilise many online platforms and applications. Some are open source and free or offer premium features for teachers and students. These resources, whether for computer or mobile use, benefit learners by enhancing listening, pronunciation, and reading skills in enjoyable ways. Many use personalised designs to enhance the learning environment and offer instant feedback on pronunciation and translation, aiding visually oriented individuals and those needing extra support. (Chinedu, 2024). These are valuable tools for learning English in particular due to its global use and importance in international business and communications.

The rise of free platforms for second language instructors is notable due to technology advancements. However, these tools may challenge novice educators wanting to implement gamification and modern teaching methods that focus on pronunciation and speaking, beyond traditional lessons. Digital literacy is essential for leveraging these platforms, and access to hardware whether in labs or at home remains a key concern for teachers. With the right features through mobile apps or funded resources, these tools could transition students from rote learning to improved retention and test performance, a crucial factor for teachers linked to assessment ratings. Moreover, incorporating brief, blended activities on current resources can enhance engagement, fostering an environment for conversation and role-playing.

Statement of the Problem

In Nigerian education, traditional English language instructional frameworks are increasingly struggling to satisfy the complex and diverse learning needs of contemporary 21st-century classrooms. Despite structural curriculum revisions, pedagogical approaches to English as a Second Language (ESL) across tertiary institutions remain heavily teacher-centred, relying on passive memorisation, rote learning, and mechanical language drills. This pedagogical inertia has resulted in low student engagement, depressed motivation, and a persistent inability among undergraduates to develop critical linguistic competence, collaborative fluency, and communicative skills required for professional environments.

While contemporary literature heavily champions the independent integration of educational technology or digital infrastructure to mitigate these educational deficits, a critical operational mismatch persists. Educational institutions and policymakers across Nigeria routinely focus on expanding "delivery systems" such as distributing hardware, installing internet facilities, or establishing computer laboratories under the flawed assumption that infrastructure automatically translates into improved teaching quality. However, structural placement of hardware without an intentional, underlying "instructional architecture" or learning design frequently results in underutilisation, learner cognitive overload, and instructional disconnection. Conversely, robust pedagogical designs cannot achieve systemic scalability if they are constrained by obsolete or fragmented delivery environments.

The core of the problem lies in the empirical scarcity of localised research that evaluates how Innovative Learning Designs (the software, pedagogical blueprints, and interactive tasks) and Delivery Systems (the hardware, virtual platforms, and physical media) jointly interact to influence actual Pedagogical Practices within the unique socioeconomic constraints of Nigerian Open and Distance Learning (ODL) environments. Most local studies look at these elements in isolation, creating a fragmented picture that fails to guide educators on how to blend pedagogical strategy with infrastructural delivery.

If this pedagogical and operational mismatch is left unaddressed, English language classrooms in Nigerian universities will continue to suffer from low instructional engagement, poor retention rates, and widening digital divide inequalities. Educators will remain trapped in passive knowledge transfer

paradigms, and massive capital investments in institutional technology will continue to go to waste. Therefore, this study empirically addresses this gap by comprehensively analysing the individual, joint, and relative contributions of innovative learning designs and delivery systems to the optimisation of classroom pedagogical practices at the National Open University of Nigeria.

Objectives of the Study

The objectives of the study were to determine the following:

- I. the relationship between the independent variables (innovative learning designs, delivery systems) and pedagogical practices in English Language classroom
- II. the joint contribution of the independent variables (innovative learning designs and delivery systems) and pedagogical practices in English language classrooms as determined by multiple regression analysis
- III. the relative contribution of the independent variables (innovative learning designs and delivery systems) to pedagogical practices in English language classroom

Research Questions

- I. What is the relationship between the independent variables (innovative learning designs, delivery systems) and pedagogical practices in English Language classroom?
- II. What is the joint contribution of the independent variables (innovative learning designs and delivery systems) and pedagogical practices in English language classrooms as determined by multiple regression analysis?
- III. What is the relative contribution of the independent variables (innovative learning designs and delivery systems) to pedagogical practices in English language classroom?

Theoretical Framework

Over time, various pedagogy theories have emerged. Modern professional development underscores the importance of clear theoretical frameworks for

teachers and curriculum designers in instruction and assessment. These frameworks aid educators in enhancing knowledge, improving classroom learning, and supporting English language learners. This section showcases frameworks like constructivism and connective education that guide innovative pedagogical practices.

Constructivism draws from Philosophy, Sociology, Psychology, and Education, leading to interpretations like Personal Constructivism by Jean Piaget and Social Constructivism by Lev Vygotsky (Tasos, 2024). It emphasises constructivist education models and brain research that enhance student learning. Advocates support the "construction learner" concept, arguing these methods resonate with the brain's non-linear functioning, unlike traditional approaches. Learning is seen as meaning-making with collaborative inquiry. Cognitive psychology aims to improve student engagement with technology, affecting teaching methods. It emphasises key concepts like constructivism, which views learners as active creators and fosters critical thinking through inquiry-based, cooperative learning, and problem-solving tasks. Social constructivism further underscores collaboration, indicating that learning arises from both independent efforts and interactions within the environment. In language learning, this socially constructed knowledge is crucial in a community of learners (Zajda, 2023). As learners create meanings, they shape their knowledge through interaction, reflection, and discussion with peers and teachers. Engaging with their environment and social activities helps them construct complex mental representations, ultimately enhancing their language understanding and proficiency over time.

Researchers commonly concur that a constructivist approach to education is founded on the principle that cognition arises from the mental constructions made by students. Learners assimilate new information by integrating it with their existing knowledge. According to Thompson (2015), A constructivist learning model yields better outcomes than the conventional model, where the teacher mainly controls discussions. In constructivist settings, teachers play a crucial role in creating enriching experiences by choosing appropriate media, designing real-world collaborative problems, and offering varied engagement through role-playing and simulations. They connect students with community role models and involve them in relevant projects. Teachers act as principal learners, investigators, and managers of the learning environment, exemplifying expected skills while ensuring content coverage. Key tasks focus

on understanding, transforming, and applying students' ideas, emphasising meaningful engagement for effective learning.

Connectivism was developed by George Siemens and Stephen Downes in 2005. It is a flexible learning theory bridging complexity theory, educational technology, and knowledge management, emphasising learning as crucial for human adaptation tied to evolutionary psychobiology (Mukhlis et al.2024). It is significant in e-learning and distance education, particularly in adult learning, leveraging online social networks, face-to-face interactions, and technologies for social learning enhancement.

The use of digital technologies in connectivism focuses on developing digital literacy, a crucial skill for learning in the digital age (Peter & Ogunlade, 2024). Educators are essential in helping students gain skills for safe and ethical online engagement. They should encourage digital literacies and citizenship, allowing students to connect with external knowledge for better learning. Connectivism mirrors communities of practice, shaping curriculum design to foster experiences that build personal and professional networks. The curriculum must include 'netweaves' that promote social engagement and teamwork among peers, mentors, and clients. Key elements involve collaborative, project-based tasks in real contexts, chances for students to tackle real problems, and platforms for sharing their work online via blogs or podcasts, either anonymously or with their names (Peter & Ogunlade, 2024). Continuous learning and network development should be supported through the learning environment and digital tools.

In this model, learners and educators are interconnected, with educators acting as programmers of an existing, distributed learning network. This fosters a culture of connectivity (Wordu & Azery, 2021). Learners engage in a vast information network, enhancing digital inclusion and access. Social justice improves as they understand, critique, and use digital tools for language and learning. Connectivist environments require skills to navigate knowledge spaces, present information across fields, and critically evaluate data. Teachers must foster social learning and skill-sharing that link local and global knowledge. Connectivism emphasises non-linear knowledge relationships over retention, focusing on connections essential for locating information.

Methodology

This study adopted a descriptive research design of the correlational type. This design is appropriate because it allows the researcher to examine the direction and strength of the relationship between the independent variables, which are innovative learning designs and delivery systems, and the dependent variable, representing pedagogical practices, without any direct manipulation of the variables.

The target population for this study comprised undergraduate students at the National Open University of Nigeria. A simple random sampling technique was utilised to select participants from the Department of English within the Faculty of Arts, as well as the Department of Arts and Social Sciences Education within the Faculty of Education. Specifically, 150 300-level students were randomly selected from each department, totalling an initial sample size of 300 participants. However, following a rigorous data-cleaning process, 51 instruments were discarded due to incomplete or non-responsive entries. Consequently, the final analytical sample utilised for the subsequent statistical configurations was 249 respondents, which perfectly aligns with the degrees of freedom presented in the regression analysis.

Three distinct instruments were deployed to collect data for this investigation. The first was a student-administered Questionnaire on Innovative Learning Designs, which was designed to gauge student perceptions of modern instructional frameworks and yielded a Cronbach's alpha reliability coefficient of $r = 0.75$. The second instrument was a Checklist on Delivery Systems, which was utilised as an investigative logging tool by the researcher to audit and map the available digital infrastructure, hardware, and virtual learning platforms within the institution. The third instrument was an Observation Schedule on Pedagogical Practices, which served as a direct observation tool used by the researcher to evaluate actual classroom instructional behaviours. This observation instrument achieved a reliability coefficient of $r = 0.78$, and the observations focused specifically on the instructors handling the sampled 300-level courses to assess the integration of interactive, collaborative, and technology-driven pedagogy.

The collected quantitative data were clean-coded and processed using the Statistical Package for the Social Sciences. The analysis was systematically structured around the study's core research questions, with all statistical

hypotheses tested at an alpha significance level of $\alpha = 0.05$. Specifically, Research Question 1 was addressed using the Pearson Product-Moment Correlation matrix to evaluate the direction and strength of the linear relationships between the variables. Research Questions 2 and 3 were analysed using Multiple Regression Analysis to determine the joint composite contribution and the relative predictive contribution of the independent variables on the dependent variable, respectively.

Results

Research Question 1: What is the relationship between the independent variables (innovative learning designs, delivery systems) and pedagogical practices in English Language classroom?

Table 1: Correlation Matrix Showing the Relationship between Innovative Learning Designs, Delivery Systems and Pedagogical Practices in English Language Classroom

Variables	Pedagogical Practices in English Language Classroom	Innovative Learning Designs	Delivery Systems
Pedagogical Practices in English Language Classroom	1		
Innovative Learning Designs	0.606 0.000	1	
Delivery Systems	0.214 0.001	0.154 0.015	1
Mean	60.66	61.57	60.48
STD.D	9.95	9.87	6.90

Denotes significant at $p < 0.05$

Table 1 shows that there is a statistically significant positive relationship between innovative learning designs and pedagogical practices in the English language classroom ($r = 0.606$, $p < 0.05$). This indicates that more advanced and adaptive learning designs directly correspond with enhanced pedagogical practices. Additionally, a lower but statistically significant positive relationship was found between delivery systems and pedagogical practices ($r = 0.214$, $p < 0.05$). This implies that while both components are related to instructional improvements, enhancing innovative learning designs holds a stronger linear association with classroom practice outcomes.

Research question 2: What is the joint contribution of the independent variables (innovative learning designs and delivery systems) and pedagogical practices in English language classrooms as determined by multiple regression analysis?

Table 2: Summary of Multiple Regression Analysis on Composite Contribution of Independent Variables to Pedagogical Practices in English Language Classroom

Sources of Variance	Sum of Squares	Df	Mean Square	F	Significant
Regression	9129.892	2	4564.946	74.03	.000
Residual	15168.502	246	61.661		
Total	24298.394	248			

R = 0.613
R Square = 0.376
Adjusted R Square = 0.371
Std. Error of the Estimate = 7.85242

Table 2 indicates that the joint composite contribution of the independent variables to the prediction of pedagogical practices is statistically significant, utilising the empirical data from the 249 valid respondents [$F(2, 246) = 74.03$, $p < 0.05$]. Specifically, the coefficient of determination ($R^2 = 0.376$) demonstrates that when innovative learning designs and delivery systems are taken together, they jointly account for 37.6% of the variance in pedagogical practices within the English language classroom, yielding an Adjusted R^2 value of 0.371. Furthermore, Table 2 reveals a multiple correlation coefficient ($R = 0.613$), indicating a strong and positive joint relationship between the predictive model and the dependent variable.

Research question 3: What is the relative contribution of the independent variables (innovative learning designs and delivery systems) to pedagogical practices in English language classroom?

Table 3: Summary of Multiple Regression Showing Relative Contribution of Independent Variables on Pedagogical Practices in English Language Classroom

Model	Unstandardised Coefficients		Standardised Coefficient	Rank	T	Sig.
	Beta	Std. Error	Beta (β)			
(Constant)	13.777	5.045			2.731	0.007
Innovative Learning Designs	0.585	0.051	0.581	1st	11.399	0.000
Delivery Systems	0.179	0.073	0.125	2nd	2.453	0.015

Table 3 displays the relative contribution of each independent variable based on the analysed sample of 249 students. The results indicate that innovative learning designs made the most significant unique contribution to the predictive model ($\beta = 0.581$, $t = 11.399$, $p < 0.05$).

Concurrently, Delivery Systems exerted a lower but significant relative predictive influence ($B = 0.179$, $\beta = 0.125$, $t = 2.453$, $p < 0.05$) on pedagogical practices in English language classrooms. This implies that while both variables are critical, innovative learning designs hold a stronger relative weight in shaping instructional outcomes.

Discussions

Findings from this study revealed that Innovative Learning Designs have a moderate to strong positive relationship with pedagogical practices, meaning more effective implementation enhances these practices. Delivery Systems, with a weak positive relationship, also affect pedagogical practices, but to a lesser extent. This result aligns with Marcial (2018), indicating that innovative pedagogies improve teaching efficacy and foster interactive learning environments. Participants experienced positive changes from using technology in classrooms, despite common obstructions. Marcial (2018) and Yu, et al (2021) emphasise the importance of innovative learning strategies to enhance pedagogical practices today.

The multiple regression analysis computed across the 249 valid respondents indicates that innovative learning designs and delivery systems jointly exert a significant influence on pedagogical practices ($F(2, 246) = 74.03$; $p < 0.05$). Together, the independent variables explain approximately 37.6% of the variance ($R^2 = 0.376$) in pedagogical practices, with an Adjusted R^2 of 37.1% (Adj. $R^2 = 0.371$) establishing a moderate-to-strong positive correlation ($R = 0.613$) within the model. This finding mirrors the work of Watson et al. (2023), whose study supports the assertion that both innovative learning designs and delivery systems significantly influence pedagogical practices, thereby directly corroborating the empirical findings derived from the current study's regression matrix.

Ultimately, the final finding of this study revealed that both independent variables significantly predicted pedagogical practices, though to varying degrees. While innovative learning designs proved to be the primary driver, delivery systems also demonstrated a distinct relative predictive influence ($\beta = 0.125$, $p < 0.05$). This finding aligns with contemporary digital pedagogy literature, which stresses that infrastructure alone cannot transform the classroom unless it is structurally paired with sound instructional architecture.

For instance, Gopinathan et al. (2021) found that cognitive processes, gamification, and curriculum improvements correlate positively with innovative delivery methods. Similarly, Alvarez-Bell et al. (2017) identified a four-factor engagement framework consisting of teamwork participation, commitment, attitudes towards team learning, and academic challenge, alongside a three-factor framework for instructional practices spanning guidance, self-directed learning skills, and cognitive engagement. Their regression analysis revealed that student perceptions of team-based learning and instructional guidance significantly affected learning outcomes, irrespective of confounding demographic variables like gender, GPA, or parental education. Collectively, these empirical benchmarks affirm the conclusion of this study: innovative learning designs profoundly shape modern pedagogical methodologies, while delivery systems play a vital, supporting, and relevant role.

Recommendations

To ensure the successful implementation and sustainability of innovative learning designs in English language classrooms across Nigeria, this work proffered the following recommendations to all the stakeholders in education on the need to collaborate effectively and ensure the following for successful implementation and sustainability.

- I. **Teacher Training:** Government and School Management, should focus on equipping educators with the necessary skills to implement innovative teaching methods effectively. This includes professional development programs that emphasise the use of technology in the classroom, collaborative learning strategies, and differentiated instruction techniques. Professional development is essential for enabling teachers to adopt and employ innovative teaching methods effectively. By investing in ongoing training, educators can remain informed about the latest trends in pedagogy and advancements in technology. Various formats, such as workshops, seminars, and online courses, are designed to provide teachers with practical skills and strategies relevant to specific teaching approaches. Moreover, professional development workshops specifically aimed at the integration of technology into lesson plans further enhance teachers' capabilities. With this new knowledge and access to resources, educators are better prepared to engage students through interactive

multimedia presentations, virtual field trips, and collaborative online projects.

- II. Curriculum Development: A comprehensive review and redesign of the English language curriculum should be undertaken to integrate innovative learning designs that cater to diverse learning styles. The curriculum should be revised to align with 21st-century skills and societal needs.
- III. Infrastructure: This must be put in place to support innovative learning designs and effective delivery systems. Adequate resources, including technology and access to learning materials, are essential to create an environment conducive to enhanced pedagogical practices. Collaborating with government agencies or non-profit organisations allows schools to obtain essential funding and resources. Such collaborations enable programs aimed at enhancing classrooms with advanced technology, supplying educational materials, and supporting teacher training initiatives. By combining resources and expertise, schools can develop comprehensive learning experiences that go beyond conventional limits.

These strategies face challenges like funding constraints, bureaucratic barriers, and inadequate infrastructure. Advocacy initiatives are crucial for gaining support from stakeholders and policymakers. By highlighting the measurable benefits of innovative teaching methods, educators can push for increased investment in education and improved administrative processes. Collaboration and professional development are crucial for overcoming challenges to innovative teaching in Nigerian schools. By forming strategic alliances and focusing on teacher training, institutions can create dynamic environments that promote creativity, critical thinking, and lifelong learning. With collective effort, we can significantly improve education in Nigeria.

Conclusion

In conclusion, the implementation of innovative learning designs and delivery systems has the potential to significantly enhance pedagogical practices in English language classrooms across Nigeria, providing a foundation for further research into effective educational strategies. Therefore, by adopting these approaches, educators can promote deeper language acquisition, increase student engagement and provide personalised learning opportunities.

However, addressing challenges posed by lack of infrastructure, teacher training, cultural and contextual considerations will be paramount to the successful implementation of these innovations. This article calls for educators to embrace innovative learning design and delivery systems that can significantly enhance the pedagogical practices in English language classrooms.

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Assessment of the Quality of Secondary School Mathematics Multiple-Choice Questions Using Difficulty and Discrimination Indices among Selected Schools in Ondo State, Nigeria

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Abstract

This study assessed the quality of secondary school mathematics multiple-choice questions (MCQs) in selected schools in Ondo State, Nigeria, using difficulty and discrimination indices. A total population of 5,831 senior secondary students was considered, and a sample of 374 students was selected from Akoko North-West and Okitipupa local government areas. The Mathematics MCQ test, covering algebra, geometry, trigonometry, statistics, probability, and mensuration, was analyzed to determine how challenging the items were and how well they differentiated between high- and low-performing students. Results showed that the majority of items had moderate difficulty and good discrimination, indicating their effectiveness in assessing students' knowledge. However, some items were either too easy, too difficult, or poorly discriminating, suggesting the need for revision. Hypothesis testing revealed significant differences in performance between high- and low-achieving students, confirming that most items effectively distinguish student ability. The study concludes that while the test items are partially effective, systematic item analysis and regular review are essential. Recommendations include revising poorly performing items, enhancing teacher training in test construction, and aligning assessments with the curriculum to improve fairness and validity.

Keywords: Mathematics assessment, multiple-choice questions, difficulty index, discrimination index, item analysis, Ondo State

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Introduction

Assessment is an essential part of teaching and learning because it provides feedback on student understanding, guides instructional planning, and influences academic decisions. In secondary school mathematics, multiple-choice questions (MCQs) are widely used because they allow teachers to efficiently assess a large body of content and objectively score student responses. However, the quality of MCQs is not always guaranteed, as poorly constructed questions can lead to misleading conclusions about what students know and can do. This is particularly concerning in settings where test scores influence progression, placement, and curriculum decisions. Two important ways of evaluating the quality of MCQs are the difficulty index and the discrimination index variables that reflect how challenging each item is and how well it distinguishes between high-performing and low-performing students. The difficulty index shows the proportion of students who answered an item correctly, while the discrimination index reflects how effectively an item differentiates between students with stronger versus weaker overall performance (Rezigalla *et al.*, 2024). Together, these indices help teachers and researchers judge whether items are fair, appropriately challenging, and useful for accurate assessment.

Recent literature highlights the need for systematic evaluation of MCQ quality in mathematics assessments. Studies conducted in various educational settings have shown that many MCQ items fail to meet acceptable psychometric standards, often exhibiting extreme difficulty levels or weak discrimination power (Ayodeji *et al.*, 2024; Cobbinah & Ntumi, 2022). For example, item analysis research in Nigerian secondary schools found significant variation in the quality of mathematics test items, with some items being too easy and others so difficult that they did not contribute meaningfully to assessing student ability (Jimoh *et al.*, 2022). Similarly, research in West African educational contexts has emphasized that weak distractors, ambiguous wording, and inappropriate cognitive demands can compromise the effectiveness of MCQs (Adebowale & Oluwole, 2023). These findings suggest that although MCQs are widely used, their psychometric properties especially difficulty and discrimination indices are not always routinely examined, leading to questions about the validity and fairness of mathematics tests administered to students.

Despite these insights, there remains a limited focus on the quality of mathematics MCQs in Ondo State secondary schools. In many schools within the state, teachers design their own tests without adequate item evaluation, and administrators may rely on test scores without knowing whether individual items are truly measuring student knowledge. This practice raises concerns about fairness, instructional feedback, and the overall usefulness of mathematics assessments in the state. Therefore, there is a need to examine the quality of mathematics MCQ items systematically, using established item analysis measures to ensure that test items are both appropriately challenging and capable of distinguishing between different levels of student achievement.

The purpose of this study is to assess the quality of secondary school mathematics multiple-choice questions in selected schools in Ondo State, Nigeria, by computing and interpreting their difficulty and discrimination indices. Specifically, the study seeks to determine how challenging the items are for students, how well they discriminate between high- and low-performing students, and which items meet acceptable psychometric standards or require revision.

To guide the investigation, the following research questions are posed:

- I. What are the difficulty levels of secondary school mathematics multiple-choice questions in selected schools in Ondo State?
- II. To what extent do the mathematics multiple-choice items discriminate between high-performing and low-performing students?
- III. Which mathematics MCQ items meet acceptable quality standards, and which items need revision?

Correspondingly, the study tests the following research hypotheses at the 0.05 level of significance:

- I. There is no significant difference in performance between high-achieving and low-achieving students on the mathematics multiple-choice items.
- II. Mathematics multiple-choice items do not significantly discriminate between high-performing and low-performing students in selected secondary schools.

By examining both difficulty and discrimination indices, this study contributes to improving the quality of mathematics assessments, supports better instructional decisions, and enhances the fairness and interpretability of test scores in secondary school settings.

Methodology

This study adopts a descriptive survey research design, which is appropriate because it allows for the systematic evaluation and description of the quality of secondary school mathematics multiple-choice test items without manipulating any variables. The study is non-experimental in nature, focusing on existing test items and students' responses.

The population of the study consists of all senior secondary school students in selected schools from two local government areas in Ondo State, Nigeria: Akoko North-West Local Government Area (North Senatorial District) and Okitipupa Local Government Area (South Senatorial District). The total population is 5,831 students. A sample of 374 students was selected using the stratified random sampling technique to ensure proportional representation across schools, locations, and class levels.

The instrument used for data collection is the Mathematics Multiple-Choice Achievement Test (MMCA). The test consists of 40 carefully selected multiple-choice items drawn from key areas of the senior secondary school mathematics curriculum, including algebra, geometry, trigonometry, statistics, probability, and mensuration. Content validity was ensured by aligning all items with the approved senior secondary school mathematics curriculum, and experienced mathematics teachers alongside a test construction specialist reviewed the items for clarity, relevance, accuracy, and appropriateness.

A pilot test was conducted using 40 students drawn from schools outside the selected study areas to avoid contamination of the main sample. These students were not included in the final study. The pilot data were analyzed using the Kuder-Richardson Formula 20 (KR-20) to determine internal consistency, yielding a reliability coefficient of 0.70, which indicates that the instrument is adequately reliable for measuring students' mathematics achievement. Based on the pilot results, minor revisions were made to some items that showed ambiguity or poor functioning, particularly those with unclear distractors or extreme difficulty levels.

The final test was administered under standardized examination conditions in classroom settings. All students received uniform instructions, and adequate supervision was provided to ensure consistency and prevent examination malpractice. The test duration was 60 minutes, which was sufficient for students to attempt all 40 items.

Each correctly answered item was awarded one mark, while incorrect responses attracted zero marks, with no penalty for guessing. For item analysis, students were ranked according to their total scores and divided into performance group.

Results

Research Question 1: *What are the difficulty levels of secondary school mathematics multiple-choice questions in selected schools in Ondo State?*

The difficulty index (P) of each item was calculated using the formula:

$$P = \text{Number of students who answered correctly} / \text{Total number of students}$$

Table 1; Difficulty Levels of Mathematics Multiple-Choice Questions (N = 374)

Item No.	Number Correct	Difficulty Index (P)	Difficulty Level
1	220	0.59	Moderate
2	280	0.75	Easy
3	90	0.24	Difficult
4	310	0.83	Very Easy
5	150	0.40	Difficult

Table 1 presents a sample of five mathematics multiple-choice items selected from the 40 items analysed items administered to 374 students. The difficulty index measures the proportion of students who answered each item correctly, with values ranging from 0 (very difficult) to 1 (very easy).

Item 1 (P = 0.59, Moderate): About 59% of students answered correctly, indicating the item is of moderate difficulty. This is ideal for assessing students' understanding because it neither too easy nor too hard.

Item 2 (P = 0.75, Easy): 75% of students answered correctly, making it relatively easy. While it can build confidence, items at this level may not effectively challenge students or differentiate performance levels.

Item 3 (P = 0.24, Difficult): Only 24% of students answered correctly. This indicates a difficult item, which may challenge most students. If too many items are like this, the test could become discouraging or fail to measure typical student performance accurately.

Item 4 (P = 0.83, Very Easy): 83% of students answered correctly, making it very easy. Items this easy provide little information about differences in students' abilities and may not contribute effectively to assessing knowledge.

Item 5 (P = 0.40, Difficult): 40% of students answered correctly. This is considered difficult but still within a reasonable range for identifying students with stronger understanding.

Research Question 2: *How well do the mathematics multiple-choice items discriminate between high-performing and low-performing students?*

The discrimination index (D) was calculated using:

$$D = \frac{U - L}{N}$$

Where:

- I. U = number of students in the upper group who answered correctly
- II. L = number of students in the lower group who answered correctly
- III. N = number of students in one group

Table 2: Discrimination Indices of MCQ Items

Item No.	Upper Group Correct (U)	Lower Group Correct (L)	D Value	Item Quality
1	48	18	0.60	Very Good
2	50	30	0.40	Very Good
3	30	28	0.04	Poor
4	40	32	0.10	Poor
5	38	20	0.36	Good

Table 2 presents the discrimination indices (D) of five selected mathematics multiple-choice items. The discrimination index indicates how well an item differentiates between students with high overall performance (upper group)

and those with low performance (lower group). Values range from -1 to +1, with higher positive values indicating better discrimination

Item 1 ($D = 0.60$, Very Good): This item strongly discriminates between high- and low-performing students. The large difference between the upper group (48 correct) and lower group (18 correct) indicates that the item effectively identifies students who understand the material.

Item 2 ($D = 0.40$, Very Good): This item also shows strong discrimination, with more upper group students answering correctly than lower group students. It is a well-constructed item for differentiating student ability.

Item 3 ($D = 0.04$, Poor): The small difference between upper (30 correct) and lower (28 correct) groups shows that this item barely discriminates between students. High-performing students are almost as likely to get it wrong as low-performing students. This may indicate ambiguous wording, guessing, or a miskeyed question.

Item 4 ($D = 0.10$, Poor): Similarly, this item shows poor discrimination. It fails to separate high-ability from low-ability students, suggesting revision is needed.

Item 5 ($D = 0.36$, Good): This item has acceptable discrimination. While not as strong as items 1 and 2, it still helps differentiate between stronger and weaker students.

Research Question 3: *Which items meet acceptable psychometric standards, and which require revision?*

Based on both difficulty and discrimination indices, items were classified as follows:

Table 3: acceptable psychometric standard

Item No.	Decision
1	Retain
2	Retain
3	Revise/Remove
4	Revise/Remove
5	Retain

Table 3 summarizes the final decisions regarding the quality of five mathematics multiple-choice items based on their difficulty and discrimination indices.

Items 1, 2, and 5 (Retain): These items are considered of acceptable quality, showing moderate difficulty levels and good to very good discrimination indices. They are effective in measuring students' understanding of mathematics concepts and differentiating between high-performing and low-performing students. Retaining these items will contribute positively to the reliability and validity of the test.

Items 3 and 4 (Revise/Remove): These items show poor quality, either because they are too difficult or too easy, or because their discrimination indices are very low. They do not adequately distinguish between students of different ability levels. Such items should be revised to improve clarity and challenge or removed from the test to maintain fairness and accuracy in assessment.

Hypothesis 1 (H1): *There is no significant difference in performance between high-achieving and low-achieving students on the mathematics multiple-choice items.*

Table 4: Test of Hypothesis 1 for Mathematics MCQ Items (N = 374)

Test Statistic	df	p-value	Decision
t = 15.32	373	< .001	Reject

The table 4 shows a significant difference in performance between the upper (high-achieving) and lower (low-achieving) student groups. High-achieving students scored better than low-achieving students, indicating that the test can effectively separate students based on ability. Therefore, H1 is rejected.

Hypothesis 2 (H2): *Mathematics multiple-choice items do not significantly discriminate between high-performing and low-performing students.*

Table 5: Test of Hypothesis 2 for Mathematics MCQ Items (N = 374)

Test Statistic	df	p-value	Decision
t = 12.48	373	< .001	Reject

The result in table 5 shows that the MCQ items **significantly discriminate** between high- and low-performing students. Items with higher discrimination indices contributed to this effect, confirming that the test is capable of differentiating students' abilities. Therefore, H2 is rejected.

Discussion

The purpose of this study was to evaluate the psychometric quality of secondary school mathematics multiple-choice questions (MCQs) in selected schools in Ondo State using item difficulty and discrimination indices. The findings provide important evidence on how well the test items function in measuring students' mathematics achievement and differentiating ability levels.

From the perspective of Classical Test Theory (CTT), item difficulty and discrimination are core indicators of item quality. CTT posits that a well-constructed test should contain items that are neither too easy nor too difficult, and that effectively distinguish between high- and low-ability examinees (Ebel & Frisbie, 2019; Crocker & Algina, 2008). The results revealed that most of the 40 items fell within the acceptable difficulty range (0.30–0.70), suggesting that the test was generally appropriate for the target population. This implies that the items were capable of producing meaningful score variability, which is essential for reliable measurement of student achievement.

However, a proportion of the items were either too easy or too difficult. According to educational measurement standards, items with extreme difficulty indices tend to reduce test effectiveness because they contribute little to differentiating student performance (Nitko & Brookhart, 2014). Very easy items often result in ceiling effects, while very difficult items produce floor effects, both of which weaken the diagnostic value of an assessment (Haladyna & Rodriguez, 2013). The presence of such items in the test suggests the need for careful review and revision in future test development.

The discrimination index results further showed variability in item quality. While several items demonstrated strong discrimination, effectively distinguishing between high- and low-performing students, others showed weak or near-zero discrimination. In CTT, poor discrimination indicates that an item does not align well with the underlying construct being measured (Downing & Haladyna, 2006). This may arise from several factors, including

ambiguous item wording, poorly functioning distractors, or misalignment with instructional content.

One possible explanation for poor item performance is curriculum misalignment. When items do not adequately reflect what has been taught, students' performance may not reflect their true ability but rather exposure differences (Aiken, 2003). Items that were too difficult may have assessed topics insufficiently covered in instruction, while overly easy items may have focused on low-level recall that does not reflect intended learning outcomes.

The findings can also be interpreted using Bloom's Taxonomy of Educational Objectives, which categorizes cognitive demand into lower-order (remembering, understanding) and higher-order thinking skills (applying, analyzing, evaluating) (Anderson & Krathwohl, 2001). Some of the very easy items likely measured only recall-based knowledge, while the more difficult items may have required higher-order reasoning. However, difficulty alone does not necessarily indicate cognitive complexity; poorly constructed items can also appear difficult due to unclear wording rather than genuine cognitive demand.

Another important factor influencing item performance is guessing behaviour in multiple-choice testing. According to measurement theory, guessing can inflate scores and distort item discrimination, particularly when distractors are weak or implausible (Haladyna, Downing, & Rodriguez, 2002). Items with low discrimination indices may have allowed students of differing ability levels to select correct answers through chance rather than knowledge, thereby reducing the validity of score interpretation.

The analysis further has implications for validity and reliability. Validity refers to the degree to which a test measures what it is intended to measure, while reliability refers to the consistency of measurement (Nitko & Brookhart, 2014). Although content validity was established through expert review and curriculum alignment, item analysis provides additional evidence supporting construct validity. Items that demonstrate appropriate difficulty and strong discrimination enhance validity, whereas poorly functioning items introduce construct-irrelevant variance that threatens score interpretation (Downing, 2003). Similarly, the KR-20 reliability coefficient of 0.70 indicates acceptable internal consistency, although improvement could be achieved through refinement of weak items.

The hypothesis testing results further confirm the psychometric adequacy of the test. The significant difference between high- and low-achieving students indicates that the instrument is capable of differentiating ability levels, which is a key requirement in achievement testing (Ebel & Frisbie, 2019).

Overall, the findings suggest that while the mathematics MCQ test contains a substantial number of well-functioning items, several items require revision due to poor discrimination or inappropriate difficulty levels. Systematic item analysis should therefore be integrated into routine test development to ensure alignment with curriculum objectives, appropriate cognitive demand, and reduction of guessing effects. This will ultimately improve the validity, reliability, and fairness of classroom and standardized assessments (Haladyna & Rodriguez, 2013; Nitko & Brookhart, 2014).

Conclusion

The findings of this study reveal that while the majority of mathematics multiple-choice questions administered in selected secondary schools in Ondo State were of moderate difficulty and demonstrated good discrimination, a number of items were either too easy, too difficult, or poorly discriminating. This indicates that although some items effectively measure students' understanding and differentiate between high- and low-performing students, others compromise the overall quality and reliability of the assessment. Items with extreme difficulty or low discrimination fail to provide meaningful information about students' abilities and may negatively affect both learning outcomes and the fairness of examinations. Therefore, it can be concluded that the mathematics MCQs in the selected schools are partially effective in assessing students' knowledge and that systematic evaluation of test items is essential to enhance the validity, reliability, and fairness of mathematics assessments in Ondo State.

Recommendations

Based on the findings and conclusion of the study, the following recommendations are made. First, mathematics teachers and examination bodies in Ondo State should regularly perform item analysis using difficulty and discrimination indices before finalizing tests. Items identified as too easy, too difficult, or poorly discriminating should be revised or removed to improve clarity, cognitive demand, and fairness. Second, teacher training programs should emphasize test construction and item evaluation skills,

ensuring that teachers are equipped to design balanced and effective assessments. Third, school administrators and curriculum planners should encourage evidence-based assessment practices, including regular review and alignment of test items with the mathematics curriculum. Finally, incorporating a range of item difficulties and ensuring that items effectively discriminate between high- and low-performing students will improve the accuracy of assessment results, support instructional decision-making, and enhance student learning outcomes.

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Tackling 21st-Century Conflict through Teaching and Learning Security Education Among Social Studies Students in Ondo West Local Government Area

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Abstract

This study investigated tackling 21st-century conflict through teaching and learning security education among Social Studies students in Ondo West Local Government Area (LGA), Ondo State, Nigeria. The study was based on Bandura's Social Learning Theory theoretical framework, also adopted a descriptive survey design. A sample of 300 students was drawn from ten secondary schools through stratified random sampling. Data were collected using a validated, researcher-developed instrument the Security Education Teaching and Conflict Tackling Questionnaire (SETCTQ) which yielded a reliability coefficient of 0.84 via Cronbach's Alpha. Four research questions guided the study, and three null hypotheses were tested at the 0.05 level of significance. Descriptive statistics (mean and standard deviation), independent samples t-test, one-way Analysis of Variance (ANOVA), and Pearson Product Moment Correlation were used for data analysis. Findings revealed that security education instruction significantly enhanced students' conflict awareness (grand mean = 3.65); that male students recorded marginally higher security education outcomes than female students ($t = 2.14, p = .034$); that instructional method significantly influenced conflict management competencies ($F = 5.87, p = .003$); and that a significant positive correlation existed between security education engagement and conflict resolution skills ($r = .612, p < .001$). The study recommended robust integration of security education into the Social Studies curriculum, teacher capacity development in participatory instructional strategies, and community-inclusive security education programming in Ondo West LGA.

Keywords: Security Education, 21st-Century Conflict, Social Studies, Conflict Resolution

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Introduction

The 21st century has ushered in a complex and rapidly evolving security landscape characterised by unprecedented forms of conflict that transcend traditional boundaries of war and diplomacy. In Nigeria, the security situation has grown increasingly multifaceted, encompassing insurgency, ethno-religious violence, cybercrime, farmer-herder clashes, cultism, kidnapping for ransom, and politically motivated unrest (Akintunde & Babalola, 2023). These conflicts have had devastating consequences on communities, institutions, and individuals, threatening the foundations of national development and social cohesion. Schools, which ought to be sanctuaries of learning, have not been insulated from these threats; indeed, many have become sites of conflict expression, recruitment by extremist groups, and disruption of educational continuity (Nwachukwu & Eze, 2021). Within this context, the imperative to equip younger generations with the knowledge, dispositions, and skills necessary to recognise, prevent, and manage conflict has become urgent. Security education defined as the systematic process through which individuals acquire competencies to identify and respond to threats to personal and collective well-being has emerged as a critical domain within formal schooling (Afolabi & Omotunde, 2021). In Nigeria, security education content is largely delivered through the Social Studies subject at the junior secondary level and Civic Education at the senior secondary level, both of which aim to produce informed, responsible, and security-conscious citizens (Federal Ministry of Education [FME], 2022). However, the extent to which the teaching and learning of these subjects is translating into genuine conflict-tackling competencies among students remains an empirical question deserving systematic investigation like inter and intra school clashes and cult group activities etc

Ondo West Local Government Area (LGA), the administrative headquarters of Ondo State, presents a compelling micro-context for this investigation. The LGA has experienced rising incidences of youth restiveness, gang-related violence, and inter-community tensions in recent years, many of which have involved school-age adolescents (Ogundele & Adeyemi, 2022). Social Studies teachers in the area have reported challenges in making security education content relevant, engaging, and actionable for their students, partly due to insufficient professional development in conflict-sensitive pedagogy and partly due to inadequate curriculum materials (Ibrahim & Lawal, 2022). The

gap between the aspirations of the National Policy on Education and the realities of classroom practice in Ondo West LGA represents a significant challenge that warrants systematic inquiry.

This study, therefore, sought to empirically examine how the teaching and learning of security education within the Social Studies curriculum influences secondary school students' capacity to tackle 21st-century conflict in Ondo West LGA.

Theoretical Framework

The study is theoretically grounded in Bandura's (1977) Social Learning Theory, which emphasises the role of modelling and observational learning in behavioural formation which help learners on behavioural inspiring and character modelling for better future outcomes which situates individual development within nested layers of social context. These frameworks collectively provide a robust lens through which to understand both how security behaviours are learned and what environmental factors mediate that learning. The study contributes to the growing body of empirical literature on security education in Nigerian secondary schools and provides a localised evidence base for curriculum reform and teacher professional development in Ondo State.

Statement of the Problem

Despite the widespread acknowledgement that security education is critical for addressing 21st-century conflict, empirical evidence consistently reveals a persistent disconnect between policy intent and classroom practice in Nigerian secondary schools. The Nigerian National Security Education Policy (FME, 2022) and the Social Studies curriculum both envision students who are security-conscious, conflict-aware, and capable of contributing to peaceful coexistence. Yet, recurring reports of youth involvement in violence, cult activities, and communal conflict in Ondo State particularly in the Ondo West LGA suggest that existing educational interventions have been insufficiently effective in translating security education content into behavioural competencies (Akintunde & Babalola, 2023).

Several factors have been identified as contributors to this gap. First, many Social Studies teachers continue to rely predominantly on lecture-based instructional methods that prioritise content transmission over the

development of critical thinking and conflict-resolution skills (Okafor & Ugwu, 2023). Second, the lack of trained, conflict-sensitive teachers in many secondary schools in Ondo West LGA means that security education is often treated as a peripheral rather than a central component of Social Studies instruction (Ogundele & Adeyemi, 2022). Third, there is limited empirical data at the local government level to inform targeted intervention and policy decisions. Most existing studies on security education in Nigeria have been conducted at the state or national level, leaving a significant knowledge gap regarding the micro-level dynamics of security education delivery and impact.

The problem is further compounded by the gendered nature of students' engagement with security education and the differential effects of various instructional strategies, both of which have received inadequate attention in the context of Ondo West LGA. Without empirical evidence on how gender and pedagogy interact with security education outcomes, curriculum planners and school administrators are unable to make informed decisions about equitable and effective security education programming. This study, therefore, addressed the problem of how the teaching and learning of security education can be optimised to effectively build students' capacity to tackle 21st-century conflict in Ondo West LGA.

Scope of the Study

This study was delimited in scope to secondary school students in Ondo West Local Government Area, Ondo State, Nigeria. It focused specifically on Junior Secondary School Three (JSS 3) and Senior Secondary School Two (SSS 2) students who were enrolled in Social Studies and Civic Education respectively the two principal subjects through which security education content is formally delivered in Nigerian secondary schools. The study covered ten secondary schools (six public and four private) selected from the thirty-two approved secondary schools in Ondo West LGA, as registered with the Ondo State Universal Basic Education Board (SUBEB, 2024) and the Ondo State Ministry of Education.

Thematically, the study was confined to the following dimensions of security education: personal safety and security awareness, awareness and understanding of 21st-century conflicts (terrorism, cybercrime, communal violence, and cultism), conflict prevention attitudes, and conflict resolution competencies. Instructional method variables examined included lecture-based

instruction, cooperative learning, and role-play. The study was limited to the 2023/2024 academic year and did not extend to tertiary institutions or primary schools. Findings are, therefore, primarily generalisable to secondary schools in Ondo West LGA and, with caution, to analogous LGAs within Ondo State.

Objectives of the Study

The general purpose of this study was to examine the role of teaching and learning security education in tackling 21st-century conflict among Social Studies students in Ondo West LGA, Ondo State. Specifically, the study aimed to:

- I. Assess the level of security knowledge acquisition among Social Studies students through security education instruction in Ondo West LGA.
- II. Determine whether a significant difference exists in security education teaching outcomes between male and female Social Studies students in Ondo West LGA.
- III. Examine the level of conflict prevention attitudes exhibited by Social Studies students exposed to security education in Ondo West LGA?
- IV. Investigate the level of security education engagement among Social Studies students in Ondo West LGA?

Research Questions

The following research questions guided the study:

- I. What is the level of security knowledge acquisition among Social Studies students through security education teaching in Ondo West LGA?
- II. What is the level of students' awareness of 21st-century conflicts exists in security education teaching outcomes between male and female Social Studies students in Ondo West LGA.
- III. What is the level of conflict prevention attitudes exhibited by Social Studies students exposed to security education in Ondo West LGA?

- IV. What is the level of security education engagement among Social Studies students in Ondo West LGA?

Hypotheses

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

H₀₁: There is no significant difference in level of security knowledge acquisition among Social Studies students and security education teaching in Ondo West LGA?

H₀₂: There is no significant difference in conflict management competencies among Social Studies students exposed to different instructional methods in security education in Ondo West Local Government Area.

H₀₃: There is no significant relationship between security education engagement and conflict resolution skills among Social Studies students in Ondo West Local Government Area.

Methodology

This study adopted a descriptive survey research design. This design is appropriate for studies that seek to systematically collect data to describe the characteristics, opinions, attitudes, and behaviours of a defined population without manipulating any variables (Creswell & Creswell, 2023). The descriptive survey design was chosen because the study aimed to gather objective data on students' security education outcomes and conflict-tackling competencies in their natural school settings, covering a large and geographically dispersed sample within Ondo West LGA.

The target population comprised all JSS 3 and SSS 2 Social Studies and Civic Education students enrolled in approved secondary schools in Ondo West LGA, Ondo State, for the 2023/2024 academic year. According to records from the Ondo State Universal Basic Education Board and the State Ministry of Education (SUBEB, 2024), there are 32 approved secondary schools in the LGA, with an estimated population of 4,800 students in the two target class levels. A sample of 300 students (138 male, 162 female) was drawn from ten schools (six public, four private) using stratified random sampling, ensuring proportional representation across school type, gender, and class level. The

sample size was determined using Taro Yamane's (1967) formula, which confirmed 300 as statistically adequate. Table 1 presents the demographic profile of respondents.

Table 1: Demographic Profile of Respondents (N = 300)

Variable	Category	Frequency	Percentage (%)
Gender	Male	138	46.0
	Female	162	54.0
School Type	Public	180	60.0
	Private	120	40.0
Class Level	JSS 3	150	50.0
	SSS 2	150	50.0
Total		300	100.0

Data were collected using the Security Education Teaching and Conflict Tackling Questionnaire (SETCTQ), a researcher-developed instrument consisting of two sections. Section A gathered demographic information (gender, school type, and class level). Section B comprised 40 structured items rated on a 4-point Likert scale: Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). The items were organised under four subscales corresponding to the four research questions: Security Knowledge Acquisition (10 items), Awareness of 21st-Century Conflicts (10 items), Conflict Prevention Attitudes (10 items), and Security Education Engagement (10 items). A criterion mean of 2.50 was adopted, such that a mean score of 2.50 and above was interpreted as high and below 2.50 as low. Face and content validity were established through expert review by three specialists in Social Studies Education and one expert in Educational Measurement and Evaluation. Internal consistency reliability was estimated through a pilot study involving 30 students from schools outside the sample, yielding a Cronbach's Alpha coefficient of 0.84.

Formal permission was obtained from the Ondo State Ministry of Education and the respective school principals before data collection commenced. Trained research assistants administered the questionnaire to participants in their classrooms during designated Social Studies or Civic Education periods. Participants were briefed on the purpose of the study, assured of the anonymity and confidentiality of their responses, and informed of their right to

withdraw from the study without consequence. All 300 copies of the questionnaire distributed were retrieved, representing a 100% retrieval rate.

Descriptive statistics specifically mean (M) and standard deviation (SD) were used to answer the four research questions. Inferential statistics were used to test the three null hypotheses: an independent samples t-test for HO₁, a one-way Analysis of Variance (ANOVA) for HO₂, and Pearson Product Moment Correlation for HO₃. All analyses were conducted using the Statistical Package for the Social Sciences (SPSS), Version 27, at the 0.05 level of significance.

Results

Descriptive Statistics: Research Questions 1–4

Table 2 presents the means and standard deviations for the four SETCTQ subscales. All subscale means exceeded the criterion mean of 2.50, indicating that security education teaching was perceived to exert a high positive influence on students' security knowledge, conflict awareness, prevention attitudes, and overall engagement. The grand mean of 3.65 (SD = 0.61) confirms a consistently high level of security education impact across the sample.

Table 2: Descriptive Statistics for SETCTQ Subscales Corresponding to Research Questions 1–4 (N=300)

Subscale / Research Question	N	Mean	SD	Decision
RQ1: Security Knowledge Acquisition	300	3.74	0.61	High
RQ2: Awareness of 21st-Century Conflicts	300	3.68	0.58	High
RQ3: Conflict Prevention Attitudes	300	3.55	0.64	High
RQ4: Security Education Engagement	300	3.61	0.59	High
Grand Mean	300	3.65	0.61	High

Hypothesis Testing

HO₁: There is no significant difference in security education teaching outcomes between male and female Social Studies students in Ondo West LGA. An independent samples t-test was conducted to compare security education teaching outcomes between male and female students. Results presented in Table 3 revealed a statistically significant difference between the

groups ($t(298) = 2.14$, $p = .034$, two-tailed). Male students ($M = 3.77$, $SD = 0.62$) scored marginally but significantly higher than female students ($M = 3.58$, $SD = 0.60$). The null hypothesis HO_1 was therefore rejected at the 0.05 level of significance.

Table 3: Independent Samples t-Test: Gender Difference in Security Education Teaching Outcomes

Group	N	Mean	SD	Df	t	p-value
Male	138	3.77	0.62	298	2.14	.034*
Female	162	3.58	0.60			

* $p < .05$. Two-tailed test.

HO₂: There is no significant difference in conflict management competencies among Social Studies students exposed to different instructional methods. A one-way ANOVA was conducted to examine differences in conflict management competencies among students exposed to three instructional methods: lecture ($n = 100$), cooperative learning ($n = 100$), and role-play ($n = 100$). Table 4 shows that there was a statistically significant difference across the three groups ($F(2, 297) = 5.87$, $p = .003$). Post-hoc analysis using the Tukey HSD test revealed that students taught through cooperative learning ($M = 3.82$) and role-play ($M = 3.76$) scored significantly higher than those in the lecture group ($M = 3.42$), though no significant difference was found between the cooperative learning and role-play groups. The null hypothesis HO_2 was accordingly rejected.

Table 4: One-Way ANOVA: Effect of Instructional Method on Conflict Management Competencies

Source	SS	df	MS	F	p-value
Between Groups	18.42	2	9.21	5.87	.003*
Within Groups	464.30	297	1.57		
Total	482.72	299			

* $p < .05$.

HO₃: There is no significant relationship between security education engagement and conflict resolution skills among Social Studies students in Ondo West LGA. Pearson Product Moment Correlation was used to examine the relationship between security education engagement and three conflict-related outcome variables. As shown in Table 5, significant positive correlations were found between security education teaching and conflict resolution skills ($r = .612$, $r^2 = .375$, $p < .001$), civic awareness ($r = .578$, $r^2 =$

.334, $p < .001$), and peace attitudes ($r = .541$, $r^2 = .293$, $p < .001$). These findings indicate that security education engagement accounted for 37.5%, 33.4%, and 29.3% of the variance in conflict resolution skills, civic awareness, and peace attitudes, respectively. The null hypothesis H_{O3} was therefore rejected.

Table 5: Pearson Product Moment Correlation: Security Education Engagement and Conflict-Related Outcomes

Variable Pair	N	r	r ²	p-value
Security Education Teaching & Conflict Resolution Skills	300	.612	.375	.000*
Security Education Teaching & Civic Awareness	300	.578	.334	.000*
Security Education Teaching & Peace Attitudes	300	.541	.293	.000*

* $p < .001$.

Discussions

The finding from the descriptive analysis that security education instruction in Ondo West LGA yielded consistently high mean scores across all four subscales (grand mean = 3.65)—is an encouraging indicator of the perceived quality and impact of security education teaching in the study area. This finding aligns with Akintunde and Babalola (2023), who reported above-average security consciousness among students in Ondo State schools with structured security education programmes, and with Ogundele and Adeyemi (2022), who found that Social Studies instruction incorporating security themes significantly elevated students' security knowledge scores in Ekiti State. The high engagement scores may reflect the growing salience of security issues in students' everyday lives, which likely renders security education content more immediately relevant and motivating. However, the reliance on self-reported data necessitates caution in interpretation, as responses may be subject to social desirability bias.

The rejection of H_{O1} and the finding that male students recorded marginally higher security education outcomes than female students ($t = 2.14$, $p = .034$) is consistent with Adesanya and Fafunwa (2024), who reported similar gender-differentiated patterns in Lagos State, and with Afolabi and Omotunde (2021), who found that male students across four south-western states demonstrated higher initial security education engagement scores. This gender difference may be attributed to the greater exposure of male adolescents to security-

related environments and discourses outside the classroom including peer networks, community conflict mediation activities, and media consumption patterns which may prime them for deeper engagement with formal security education content (Akintunde & Babalola, 2023). Nonetheless, the practical magnitude of the difference was modest, suggesting that both male and female students in Ondo West LGA are benefiting meaningfully from security education instruction. This finding underscores the importance of gender-responsive pedagogical approaches that specifically address the security learning needs and experiences of female students.

The significant difference in conflict management competencies across instructional methods ($F = 5.87$, $p = .003$), with cooperative learning and role-play producing superior outcomes relative to lecture-based instruction, corroborates the experimental findings of Okafor and Ugwu (2023) and the survey evidence of Ogundele and Adeyemi (2022). These results are theoretically grounded in Bandura's (1977) Social Learning Theory, which privileges participatory, observational, and socially mediated learning as the most effective mechanisms for behavioural acquisition. Cooperative learning provides students with structured opportunities to negotiate perspectives, practise conflict resolution scripts, and observe peers modelling pro-social conflict responses, all of which facilitate deeper internalisation of security competencies than passive information reception (Omotosho & Adeyemi, 2020). The implication for teachers of Social Studies in Ondo West LGA is clear: a deliberate shift from teacher-centred to student-centred, participatory instructional approaches is necessary for security education to fulfil its conflict-tackling mandate.

The significant positive correlation between security education engagement and conflict resolution skills ($r = .612$, $p < .001$), civic awareness ($r = .578$, $p < .001$), and peace attitudes ($r = .541$, $p < .001$) provides robust evidence that sustained engagement with security education has broad, positive spill over effects on students' pro-social competencies. The explained variance of 37.5% for conflict resolution skills is consistent with findings by Adeyemi and Olatunde (2023), who reported a similar correlation coefficient ($r = .59$) in a study of senior secondary students in Ondo State, and with Nwachukwu and Eze (2021), who documented significant associations between security education participation and civic engagement in Anambra State. Bronfenbrenner's (1979) Ecological Systems Theory helps to explain why the correlation, though strong, does not account for all variance in conflict

resolution skills: factors within the family, peer group, community, and broader societal macrosystem including poverty, exposure to violence, and cultural norms around conflict—also significantly shape students' conflict-handling capacities.

Conclusion

This study has provided systematic empirical evidence that the teaching and learning of security education within the Social Studies curriculum significantly influences secondary school students' capacity to tackle 21st-century conflict in Ondo West Local Government Area, Ondo State. The findings consistently demonstrated that security education instruction enhanced students' security knowledge, conflict awareness, and prevention attitudes at high levels. The study further established that gender, instructional method, and the degree of security education engagement are all statistically significant determinants of students' conflict resolution competencies. Male students showed marginally superior engagement outcomes; participatory instructional methods—cooperative learning and role-play were significantly more effective than lecture-based approaches; and active security education engagement correlated strongly and positively with conflict resolution skills, civic awareness, and peace attitudes.

These findings affirm the central theoretical claims of Bandura's Social Learning Theory and Bronfenbrenner's Ecological Systems Theory within a Nigerian LGA-level context, reinforcing the importance of participatory, socially embedded security education that is sensitive to both gender dynamics and community context. The study has generated a localised evidence base that complements existing state- and national-level research and provides actionable insights for curriculum reform, teacher professional development, and school security programming in Ondo West LGA and beyond. Future research should adopt mixed-method and longitudinal designs to trace the sustained impact of security education on students' actual conflict behaviours and to capture the qualitative dimensions of security learning that survey instruments alone cannot reveal.

Recommendations

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

- I. The Ondo State Ministry of Education and the Nigerian Educational Research and Development Council (NERDC) should explicitly and systematically integrate security education themes including 21st-century conflict types, conflict prevention strategies, and peace-building competencies into the Social Studies and Civic Education curricula at both junior and senior secondary levels, with clearly articulated and assessable learning outcomes.
- II. The Ondo State Teaching Service Commission (TESCOM) and school administrators in Ondo West LGA should prioritise the professional development of Social Studies and Civic Education teachers in participatory instructional strategies, specifically cooperative learning and role-play, which this study has confirmed to be significantly more effective than lecture-based approaches in developing students' conflict management competencies.
- III. School administrators and curriculum implementers should design and implement gender-responsive security education programmes that explicitly address the differential security experiences, vulnerabilities, and learning needs of male and female students, ensuring that female students receive the targeted support necessary to close the gender gap in security education engagement and outcomes.
- IV. The Ondo State Government, in collaboration with non-governmental organisations and community stakeholders, should invest in the provision of adequate and contextually relevant instructional materials for security education, including locally contextualised case studies, simulations, and multimedia resources that make security education content more engaging and applicable for students in Ondo West LGA.

Researchers in Social Studies education and security studies should pursue mixed-method and longitudinal research designs to deepen the understanding of the long-term behavioural impacts of security education, the role of family and community variables in mediating security learning, and the effectiveness of specific teacher professional development models in improving security education delivery in Nigerian secondary schools.

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School-Community Relationship and Management of Secondary Schools in Niger State, Nigeria

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Abstract

This study examined the influence of school-community relationship on management of secondary schools in Niger State, Nigeria. Descriptive survey research design was used for the study. The target population of the study was 4,968 respondents which comprises of 4,170 senior secondary school teachers, 266 principals and 532 School Based Management Committee officials from the 10 Education Zones in the state. Multistage sampling technique was used to select 346 sample of respondents for the study. A self designed questionnaire of twenty (20) items, tagged “School-Community Relationship and Management of Schools Questionnaire (SCAMOSQ)” was used to collect data for the study. Two (2) experts validated the instrument and the reliability index yielded 0.81 using Cronbach’s Alpha Method. Descriptive statistics of mean was used to answer the research questions while One-Way-Analysis of Variance (ANOVA) was used to test the formulated null hypotheses at 0.05 level of significance. The findings of the study revealed that cordial relationship between school and community enhance the provision of instructional materials such as textbooks, sport facilities and wall charts, in most secondary schools in Niger State. The study recommended that Principals should maintain good working relationship with the teachers, SBMC officials and other stakeholders so as to compliment government efforts in provision of instructional materials needed in schools.

Keywords: Discipline, Community, Instructional Facilities, School, School-Community Relationship

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Introduction

School is a formal organization set up by the society to fulfill its goals and objectives. To effectively achieve the expected objectives, it has to organize itself in a well coordinated and conducive environment. It is an undisputable fact that no school can operate in a vacuum without the society or community it serves. This is because; school is a system within a supra system. The school's immediate community may be a village, number of villages, a town and its adjoining villages in which the residents – parents and other citizens have a common interest in the school.

The school as an agent of socialization has been set up for the purpose of promoting good citizenship. It is in this regard that the Federal Republic of Nigeria (FRN, 2013) provides a stimulating glimpse into the nature of Nigerian schools. It describes the organization of schools as well as guiding principles upon which programmes will be devised. The intention was to transform all aspects of the nation's life without delay (Ladan, 2017). It also clearly states that the quality of instruction at all levels has to be oriented toward inculcating the respect for the worth and dignity of the individual, faith in man's ability to make rational decisions, moral and spiritual values in interpersonal and human relations, shared responsibility for the common good of the society and respect for dignity of labour (Abubakar, 2024).

School-community relationship entails the mutual dependence between the school and her host community. Garba (2021) described school-community relationship as the degree of understanding and goodwill achieved between the school and the community. It means that school-community relationship is that mutual understanding which binds the school and people, materials and other resources together and creates a favorable school environment for effective and efficient achievement of educational goals. Aliyu (2015) described school – community relationship as the nature of relationship that exist between the school and its community and which to some extent affect the smooth administration of school for the realization of educational aims and objectives. Amie-Ogan and Wuku (2021) noted that the obvious fact remains that, school community relationship is not a mandatory obligation compelling the community to perform some duties to the school. It is rather a relationship of persuasive influence on the community to extend helping hands to the school, to meet up some of its challenges and create the needed platform for

teaching and learning to take place effectively. It is the positively useful interactions that the school maintains with the community where it's located. The essence of this relationship is to establish a good rapport between the school and host community in order to achieve educational goals.

Of all the numerous problems facing school administrators in recent times, it could be said that the most persistent and agonizing is the problems associated with discipline among the students. Discipline is an important component of a human behavior as it directly defines the character of a human being. It is an essential element in school administration. Abubakar (2024) viewed school discipline as a process of training and learning that fosters growth and development in learners. The aim of discipline is therefore, to help the individual to be well adjusted, happy and useful to his society. Janguza (2015) opined that, discipline is understood as the ability of a student to respect the laws, rules and regulations of the school, and any behaviour contrary to these is termed as indiscipline in school. In recent times indiscipline among students in public schools has taken a new dimension ranging from late-coming to schools, truancy, absenteeism, stealing, bullying, disrespect for constituted authorities in the school to physical assault on fellow pupils (Ofeimu & Uloko, 2022).

The researchers, has keenly observed cases of students' lateness, absenteeism and other misconduct in most public secondary schools in Niger State. The most prevalent of these situations puts into serious doubt the fulfilment of the Federal Government's clarion call for community participation and collaboration in the management of education at secondary school level. In some schools, especially in rural areas, the students cannot learn when it is raining because of leaking roofs and teachers using palm shades as their staff rooms during dry season because the school blocks have become threats to lives. This is a big challenge to effective job performance of staff in schools. The situation is very pathetic and the researchers begins to wonder what role school-community relationship are playing to remedy the situation.

It is observed by the researchers that indiscipline among secondary school students in Niger State has become so rampant to the point that it has raised panic among stakeholders in the state. The rate at which students are engaging in different vices is breath taking. Many measures have been applied in recent past by government and school administrators in the bid to check the occurrence of indiscipline. However, the worry is that despite all stern

measures the rate of indiscipline among students is on the increase. This implies that measures have not adequately addressed the situation. The danger is that if the trends continue, the objectives of the secondary school education may be an illusion. It is against this backdrop that this research examined the influence of school-community relationship on management of secondary schools in Niger State, Nigeria.

Objectives of the Study

The following objectives were set for the study:

- I. examine the influence of school-community relationship on provisions of instructional materials in senior secondary schools in Niger State; and
- II. examine the influence of school-community relationship on maintenance of students' discipline in senior secondary schools in Niger State.

Research Questions

The following questions were raised to guide the study:

- I. What is the influence of school-community relationship on provisions of instructional materials in senior secondary schools in Niger State?
- II. What is the influence of school-community relationship on maintenance of students' discipline in senior secondary schools in Niger State?

Hypotheses

The following hypotheses were formulated to guide the study:

- H₀₁:** There is no significant difference in the opinions of teachers, principals and SBMC officials on the influence of school-community relationship on provisions of instructional materials in senior secondary schools in Niger State.

H02: There is no significant difference in the opinions of teachers, principals and SBMC officials on the influence of school-community relationship on maintenance of students' discipline in senior secondary schools in Niger State.

Methodology

Descriptive survey research design was used for the study. According to Adamu and Ezenwegbu (2016), in descriptive survey design, the researcher usually obtain information or data from other people whose representatives (samples) are used to give information about the larger population. Results are derived from the sample data and used to make inferences regarding the larger population. Since the main thrust of the research was to examine the influence of school-community relationship on management of secondary schools, descriptive survey design was relevant. The target population of the study was 4, 968 respondents which comprises of 4,170 senior secondary school teachers, 266 principals and 532 School Based Management Committee officials from the 10 Education Zones in the state. 346 sample of respondents for the study. The selection of 346 respondents was based on the recommendation of Researcher Advisor's Table (2006), for selection of sample size. The table suggested that for population of 3,500 to 5,000 at 95% confidence level and 5% margin error, the sample size of 346 respondents could be used. Multistage sampling technique was used for the study. At first stage, simple random sampling technique was used to select four zones from the ten zones in the state via balloting. The zones selected were Bida, Kontagora, Kutigi and Lapai. At the second stage, proportionate stratified sample technique was used to select the sample of principals, teachers and SBMC officials used for the study. At the third stage, purposive sampling technique was used to distribute the instrument to selected sample of respondents from the selected schools.

A self designed questionnaire of twenty (20) items, tagged "School-Community Relationship and Management of Schools Questionnaire (SCAMOSQ)" was used to collect data for the study. The instrument was structured on a five (5) points Likert's scale options of Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD) with the numerical values of 5, 4, 3, 2 and 1 respectively. Two (2) research experts in Educational Administration and Planning vet the instrument and their observations and suggestions were incorporated in the final draft of the

instrument. The researchers and two research assistants administered the instrument. A total of 346 copies of the questionnaire were distributed but only 326 copies were returned. The instrument reliability index yielded 0.81 using Cronbach's Alpha Method. Descriptive statistics of mean was used to answer the research questions while Analysis of Variance (ANOVA) was used to test the two (2) formulated null hypotheses at 0.05 level of significance. However, when the mean score of an item is greater than 3.00 set for the study, the item was regarded as agree by majority of the respondents. On the other hand, when the mean score of an item is less than 3.00, the item was considered disagree.

Results

Research Question One: What is the influence of school-community relationship on provisions of instructional materials in senior secondary schools in Niger State?

Table 1: Opinions of Respondents on the Influence of School-Community Relationship on Provisions of Instructional Materials in Secondary Schools In Niger State

S/N	Items	Mean	SD	Decision
1	Cordial relationship between school and community enhance the provision of textbooks in the school.	3.57	0.72	Agreed
2	Cordial relationship between school and community enhance the provision of exercise books in the school.	3.54	0.78	Agreed
3	Cordial relationship between school and community enhance the provision of laboratory equipment in the school.	3.62	0.84	Agreed
4	Cordial relationship between school and community enhance the provision of sport facilities in schools.	3.42	0.75	Agreed
5	Cordial relationship between school and community enhance the provision of maps in the school.	3.83	0.78	Agreed
6	Cordial relationship between school and community enhance the provision of chalk/white board maker in the school.	3.77	0.80	Agreed
7	Cordial relationship between school and community enhance the provision of mathematical set in schools.	3.34	0.76	Agreed
8	Cordial relationship between school and community enhance the provision of cardboard papers in school.	3.70	0.87	Agreed
9	Cordial relationship between school and community enhance the provision of instructional models in the school.	3.81	0.71	Agreed
10	Cordial relationship between school and community enhance the provision of wall charts in the school.	3.70	0.81	Agreed
	Grand	3.63	0.78	Agreed

Table 1 shows that statements 1-10 were all accepted. This is because they had response mean greater than the instrument scale mean of 3.00. This implies

that majority of the respondents agreed with all the above items as ways school-community relationship influenced the provision of instructional facilities in senior secondary schools in Niger State.

Research Question Two: What is the influence of school-community relationship on maintenance of students' discipline in senior secondary schools in Niger State?

Table 2: Opinions of Respondents on the Influence of School-Community Relationship on Maintenance of Discipline in Secondary Schools in Niger State

S/N	Items	Mean	SD	Remark
1	Through the efforts of members of the community students' late coming has reduced	3.11	0.84	Agreed
2	Through the efforts of members of the community students' truancy has reduced	3.34	0.73	Agreed
3	Through the efforts of members of the community students' bullying has reduced	3.19	0.82	Agreed
4	Through the efforts of members of the community students' drug abuse has reduced	3.82	0.68	Agreed
5	Through the efforts of members of the community students' absenteeism has reduced	3.53	0.88	Agreed
6	Through the efforts of members of the community students' examination malpractice has reduced	3.03	0.85	Agreed
7	Through the efforts of members of the community students' theft has reduced	3.44	0.74	Agreed
8	Through the efforts of members of the community students' impersonation has reduced	3.10	0.78	Agreed
9	Through the efforts of members of the community students' cultism has reduced	3.88	0.68	Agreed
10	Through the efforts of members of the community students' violence has reduced	3.28	0.77	Agreed
	Grand	3.37	0.78	Agreed

Table 2 shows that statements 1-10 were all accepted. This is because they had response mean higher than the instrument scale mean of 3.00. This implies that majority of the respondents agreed with all the above items as ways school-community relationship influenced maintenance of students' discipline in senior secondary schools in Niger State.

Hypotheses

H01: There is no significant difference in the opinions of teachers, principals and SBMC officials on the influence of school-community relationship on provisions of instructional materials in senior secondary schools in Niger State.

Table 3: Summary of ANOVA on the Influence of School-Community Relationship on Provisions of Instructional Materials in Secondary Schools in Niger State

Variation	Sum of Squares	Df	Mean Square	F-ratio	F-crit.	Sig.(P)
Between Groups	3.253	2	1.626	1.82	3.03	0.26
Within Groups	289.166	323	0.895			
Total	292.419	325				

P<0.05

Table 3 shows the Analysis of Variance (ANOVA) test. It revealed that the calculated Sig.(P) value of 0.26 is higher than 0.05 level of significant set for the study, while the calculated F-ratio value of 1.82 is less than the 3.03 F-critical value. Hence, the null hypothesis which states that there is no significant difference in the opinions of teachers, principals and SBMC officials on the influence of school-community relationship on provisions of instructional materials in senior secondary schools in Niger State is hereby retained.

HO2: There is no significant difference in the opinions of teachers, principals and SBMC officials on the influence of school-community relationship on maintenance of students' discipline in senior secondary schools in Niger State.

Table 4: Summary of ANOVA on the Influence of School-Community Relationship on Maintenance of Discipline in Secondary Schools In Niger State

Variation	Sum of Squares	Df	Mean Square	F-ratio	F-crit.	Sig.(P)
Between Groups	3.042	2	1.521	1.87	3.03	0.32
Within Groups	262.959	323	0.814			
Total	266.001	325				

P<0.05

Table 4 shows the Analysis of Variance (ANOVA) test. It revealed that the calculated Sig.(P) value of 0.32 is higher than 0.05 level of significant set for the study, while the calculated F-ratio value of 1.87 is less than the 3.03 F-critical value. Hence, the null hypothesis which states that there is no significant difference in the opinions of teachers, principals and SBMC officials on the influence of school-community relationship on maintenance of students' discipline in senior secondary schools in Niger State is hereby retained.

Discussions

The findings of the research question One revealed that cordial relationship between school and community enhance the provision of instructional materials such as textbooks, sport facilities and wall charts, in most secondary schools in Niger State. This agrees with the result of hypothesis one which was retained, meaning that there is no significant difference in the opinions of teachers, principals and SBMC officials on the influence of school-community relationship on provisions of instructional materials in senior secondary schools in Niger State. The variable tested that p-value is 0.26 which is higher than 0.05 level of significant and the grand mean score of 3.63 is higher than the instrument mean of 3.00. In line with this finding, Bolatito (2022) and Garba (2021) found that school-community relationship had influence on provision of instructional materials such as text books, mathematical set, chalk, exercise books, writing materials and sport facilities in most secondary schools in North-west Zone Nigeria. Sanusi (2018) also reported school-community relationship through the efforts of School-Based Management Committees influenced the provision of instructional materials in secondary schools in Funtua Senatorial Zone, Katsina State.

The findings of the research question two revealed that through the efforts of members of the community students' late coming, truancy and drug abuse has reduced in most secondary schools in Niger State This agrees with the result of hypothesis two which was retained, meaning that there is no significant difference in the opinions of teachers, principals and SBMC officials on the influence of school-community relationship on students' discipline in senior secondary schools in Niger State. The variable tested that p-value is 0.32 which is higher than 0.05 level of significant and the grand mean score of 3.37 is higher than the instrument mean of 3.00. In line with this finding, Garba (2021) found that school-community relationship influenced maintenance of discipline through community effort among principals, teachers, students and non-academic staff in most secondary schools in North-west Zone, Nigeria. Also, Yakubu (2017) reported that to a very large extent, parents and teachers were involved in the maintenance of discipline in secondary schools in southern Kaduna senatorial zone, Nigeria Bakwai and Ibrahim (2016) also found that, communities participate in the disciplinary processes in North-west Zone basic schools.

Conclusions

Based on the findings of the study, it was concluded that cordial relationship between school and community enhance the provision of instructional materials such as textbooks, sport facilities and wall charts, in most secondary schools in Niger State. Through the efforts of members of the community students' late coming, truancy and drug abuse has reduced in most secondary schools in Niger State.

Recommendations

In line with the findings and conclusions of the study, the following recommendations were made:

- I. Principals should maintain good working relationship with the teachers, SBMC officials and other stakeholders so as to compliment government efforts in provision of instructional materials needed in schools.
- II. Principals should work hand in hand with the teachers, SBMC officials and other stakeholders in the community so as to maintain students' discipline in schools.

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Assessing parents' Attitudes towards Girl-Child Western Education in Sokoto State, Nigeria

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Abstract

The paper examines parents' attitudes toward girl-child Western education in Sokoto State, Nigeria, with a focus on identifying influencing factors and proposing strategies to enhance female educational participation. Three research objectives and corresponding research questions guided the study. The descriptive research design of a survey type was adopted for the study. The population of the study consists of Parents across Dange Shuni local government area of Sokoto state using structured questionnaire. The descriptive statistics of simple percentage and frequency counts were used in answering the research questions. The findings reveal that while some parents demonstrate positive attitudes toward girl-child education, a significant proportion still hold reservations influenced by traditional beliefs, early marriage practices, religious interpretations, and economic constraints. Additionally, factors such as parental level of education, household income, and exposure to awareness campaigns were found to significantly affect attitudes. Based on the findings, the study recommends increased community sensitization programs, the involvement of religious and traditional leaders in advocacy, provision of financial incentives such as scholarships, and the implementation of policies that discourage early marriage and support compulsory basic education for girls. The study concludes that improving parents' attitudes is crucial for enhancing girl-child access to Western education and achieving broader educational development goals in Sokoto State.

Keywords: Early Marriage, Attitude, Western Education, Girl-Child

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Introduction

Education is one of the fundamental rights of individuals. Article 26 of the universal declaration of human right, which was adopted by the United Nations general assembly, stipulated that: (i) everyone has the right to education. This shall be free at least in the elementary and primary stages. (ii) Elementary education shall be compulsory while technical and professional education shall be made generally available. (iii) Higher education shall be equally accessible to all on the basis of merit. (iv) Parents have the prior right to choose the kind of education that shall be given to their children. (Nwangwu,1976) as cited in (Offorma, 2009).

A major concern for all nations since then has been to map out strategies for achieving the proposed goals of education for all. At the Addis Ababa Conference of African Ministers of Education in 1961, the year 1980 was set as a target for all the countries to achieve Universal Primary Education. This according to Mahuta as cited in Inuwa (2007), led to Nigeria's UPE Scheme in 1976 as one of the steps aimed at translating the various ideological statement in to concrete observable action.

However, in September 30th 1999, Nigeria launched another scheme for the provision of basic and compulsory education for all Nigerian children, Universal Basic Education (U.B.E) in Sokoto State.

The right to education which is a fundamental human right, is frequently denied to girls in some African countries, Nigeria and Northern Nigeria in particular. This has been stated in the 29th century by the Islamic scholar, Shehu Usman Danfodio that; "most of our educated men leave their wives, their daughters, and their captives morally abandoned like beast without teaching them what God prescribed should be taught to them, and without instructing in the articles of laws which concern them. Men treat these beings like household implement which become broken after long use and which are thrown on the dump heap. This is an unpardonable crime. Alas!, how they shut up their wives, daughters, captives in the darkness of ignorance while daily they impart knowledge to their students" Shehu Usman Danfodio, Nur-al Albab as cited in Muhammed, et al., (1987).

Also, the former United Nations' Secretary General, Kofi Annan, stated that, in Africa, when families have to make a choice due to limited resources of

educating either a girl or a boy child, it is always the boy that is chosen to attend school. Offorma, (2009). Within the six geo-political zones, there are also differences in gross attendance ratio by sex. The gender parity index favors males in all the zones except South-East and South-South, which have nearly equal parity. The GPI for the northern zone are lower (North-West 0.73, North East 0.82 and North Central 0.93) than those for the southern zones (South West 0.97, South East 1.00 and South-South 1.01). In essence, school attendance in the Northern zones tilts more in favours of males over females, but favours females in the Southern zones. National Population Commission (2011).

Table 1: 2025/2026 JSS and Primary School Enrollment in Dange Shuni LGA

School	Male number/%	Female number/%	Total number/%
Primary Schools	14538(68%)	6771(32%)	21309(100%)
JSS	2301(67%)	111(33%)	3412((100%)

Sources: Dange-Shuni Local Government Education Authority, 2026

The above table clearly indicates that, only 32% of children enrolled into primary schools in Dange-Shuni LGA are females while 68% are males. Similarly, only 33% of children enrolled into JSS are females while 67% are males. This has clearly indicated that, there is a greater percentage of male-child enrolment into both primary schools and JSS in Dange-Shuni LGA than their female counterpart.

The question now is; what are the factors that attributed to the negative attitude of parents towards girl-child education? Many researchers have identified among other things the following as the factors militating against girl-child education in Northern Nigeria.

- I. Early marriage
- II. Purdah system
- III. Financial problem
- IV. Family size
- V. Distance problem
- VI. Father's level of education

VII. Religious constraints

VIII. School atmosphere

Literature Review

The researcher reviewed critical views of different scholars who officially or personally feel concerned enough to write on the problems of girl-child western education. The review was conducted under these items: education, factors militating against girl-child education, attitude of parents towards girl-child education, and importance of girl-child education.

Education

The term education has been defined by different scholars in different ways. According to Ocho (2005) as cited in Offorma (2009). Education is the process through which individuals are made functional members of their society. It is a process through which the young acquires knowledge and realizes his/her potentialities and uses them for self-actualization, to be useful to himself/herself and others. it is a means of preserving, transmitting and improving the culture of the society. Education is the process of providing information to an inexperienced person to help him/her develop physically, mentally, socially, emotionally, spiritually, politically and economically. That is why at graduation ceremonies one hears the Vice-chancellors pronounce these words while awarding degrees to their institutions' graduates, "you have been found worthy in character and learning..." In education parlance, it means that, the individual has acquired adequate and appropriate knowledge, skills and attitudes and values known as cognitive, psychomotor

and affective behaviours to be able to function optimally as a citizen. These behaviours are the focus of training individuals in institutions of learning. The planned and systematic training given in an institution of learning is formal education. The programme is organized, planned and systematically implemented. In an informal education, there is no plan and the training is haphazard and incidental. In every society, education connotes acquisition of something good, something worthwhile.

Factors Militating Against Girl Child Education

Research has shown that, millions of girls do not have access to education despite the concerted efforts to push the cause forward. (Okeke, et al., 2008) as cited in Offorma (2009) identified child labour, poverty and lack of sponsorship, quest for wealth, bereavement, truancy, broken home, engagement of children as house helps as factors or the clog in the wheel of children's access to education in the report of the UNICEF A-field, made up of Abia, Akwa Ibom, Anambra, Bayelsa, Benue, Cross River, Ebonyi, Enugu, Imo and Rivers States. According to the World Bank (2003), more than 350 million people in Africa live below the poverty line of one dollar a day. This implies that, poverty too exclude children including the girl-child from schools. Mwangi (2004) wrote that, "a combination of poverty, disease and backward cultural practices continued to deny the girl-child her right to education".

Hussain et al., (2011) identified parents' educational level, income, social class, family size and occupation as factors affecting the education of their daughters. Purdah system is one of the factors inhibiting the growth in women education in Northern Nigeria especially among the Muslims. A father knowing fully that his daughter would observe Purdah will consider the money he would use in giving her proper education as waste. Mohammed, et al., (1987). He further stated that, early marriage among Hausa/Fulani has been considered as another factor militating against girl-child education.

Attitude of Parents Towards Girls-Child Education

The attitude of parents towards girl-child education could be rooted from the very long and old belief that labelled women as naturally inferior to men. This has been long considered and internalized by most cultures of today's societies. The internalization of such beliefs mixed with cultural and traditional values have so far made it too difficult for people in the society to designate and accept modern changes especially in rural areas.

In his research parents' attitude towards western education in Argungu division" Argungu as cited in Ahmad (1996) revealed that, "52% would like to spend their money for the education of their children but only 35% agree to spend that money for education of their daughters."

The former introduction of the system of education was used as a means of converting pagans and Muslims to Christianity. This has however made Muslim leaders and their supporters to suspect the motives of the Christians

Missionaries. They therefore opposed vehemently such education for their children. "Muslims education in Nigeria was retarded not because the Muslims were unprogressive or because their religion was opposed to formal education, but because education in those days tend to mean bible knowledge, Christian ethics and Christian moral instruction". Fafunwa (1974) as cited in Ahmad (1996).

The home is the most important-aspect, coupled with parents' wealth or educational level will affect the child education. In a home where parents talk about the existing things that go on in schools, their children usually look forward to attending the school, as they are emotionally and financially supported by parents. Crosmbatch (1977) in Inuwa (2007).

The meaning of western form of schooling to some parents is not clear as they still have skeptical thinking about their girl-child education, "The view is that, all forms of westernization, western socialization and Christianization are in the formal schooling system, this notion is strongly held by many", Inuwa (2007). He further revealed that, majority of parents attached negative notion to western education of their girl-child. In this regard, seventeen (17) respondents which constitute (15%) believed it is good to go to school while ninety one (91) parents representing (85%) stated that, the process of girl-child education in the area is not encouraging as parents are reluctant about the education of some of their girl- children.

It is believed among the Muslims that, western education breeds immoralities, it is permissive and as a result, destructive and if embraced, will disrupt the Islamic and Hausa culture. Sokoto (1982)

Importance of Girl-Child Education

There is an adage that says "to educate a man, you educate an individual, but to educate a woman, you educate a nation". The importance of education and knowledge in Islam cannot be overemphasized. There are many quotations both from the Holy Quran and Sunnah of prophet Mohammad (SAW) supporting the education of both men and women. This could be seen from the first revelation to prophet Mohammad (SAW), Quran 96:1-5 says:

"Recite in the name of your Lord who created man from a clinging substance. Recite and your Lord is the most

Generous who taught by the pen, taught man that which he knew not".

The above verses of the Quran are showing the importance Islam attaches to knowledge, and in chapter 29:43 Allah says;

"These are preamble we set forth for mankind, but none understand them except those who have knowledge"

In another verse, Almighty Allah even advised the prophet Mohammad (SAW) to pray for his intellectual advancement where he said in Quran 20:114:

"And say oh my Lord increase me in knowledge"

The ignorant were advised in the Quran chapter 16:43

"You inquired from the people who possess knowledge if you do not know it yourself"

Also there are many Hadiths supporting education and importance of knowledge in Islam some of which are as follows:

- I. "Seeking of knowledge is obligatory on every Muslim man and Woman"
- II. "Seek for knowledge even if it reaches China"
- III. "The ink of the pen of scholar is holier than the blood of the martyr (those who died in the holy wars)"
- IV. "He who leaves his home in search of knowledge walks in the path of God"
- V. "Lo! The angels lower their wings to the seeker of knowledge"
- VI. "The pursuit of knowledge is the best of worship."
- VII. "Knowledge is the very life and the pillars of Islam"
- VIII. "Whoever wishes to get the benefit of this world, let him acquire knowledge, who so ever wishes to have the benefit of

the next world, let him acquire knowledge, whoever wishes to have both together let him acquire knowledge" (Mahuta, 2011).

The above Hadiths have clearly shown the importance of knowledge in Islam.

This review has high-lighted the concept of education, factors militating against girl-child education, attitude of parents towards girl-child education, and importance of girl-child education. Thus, this study intends to investigate the relative truism with regard to the negative attitude of parents towards girl-child education in Sokoto State with particular reference to Dange-Shuni LGA.

Statement of the Problem.

Education is universally recognized as a fundamental human right and a powerful tool for social, economic, and political development. However, despite global and national efforts to promote universal access to education, the participation of the girl-child in Western education remains relatively low in many parts of Nigeria, particularly in the northern part. Sokoto State, like several other states in northern Nigeria, has persistently recorded poor enrolment, retention, and completion rates for the girl-child in formal schooling compared to boys.

Several government policies, international conventions, and non-governmental interventions have sought to bridge the gender gap in education. Yet, the realization of these goals is hindered by the prevailing attitudes of parents who serve as primary decision-makers in the educational pursuits of their children. In many communities within Sokoto State, parental attitudes are shaped by cultural, religious, and socio-economic factors which often favor early marriage, domestic roles, or Qur'anic education for girls rather than Western education. Such perceptions not only limit the opportunities available to girls but also perpetuate cycles of poverty and gender inequality.

While some parents may support girl-child education, others remain skeptical, fearing that Western education could undermine cultural values or reduce girls' submissiveness in marriage. In addition, poverty, insecurity, and inadequate school infrastructure further complicate parental decisions about sending their daughters to school. These challenges highlight a pressing need

to investigate and understand the attitudes of parents towards girl-child Western education in Sokoto State.

Objectives of the Study

The broad objective of this study is to assess the Attitudes of Parents towards girl-child western education in Sokoto State. The specific objectives are:

- I. To examine the prevailing attitudes of parent towards girl-child Western Education in Sokoto State.
- II. To identify factors influencing parent's attitudes towards girl-child western school in Sokoto State.
- III. To identify strategies perceived by parents as effective for promoting girl-child education in Sokoto State.

Research Questions

This study attempts to answer the following questions:

- I. What are the attitudes of parent towards girl-child Western Education in Sokoto State.
- II. What factors influence parent's attitudes towards girl-child western school in Sokoto State.
- III. What are the strategies perceived by parents as effective for promoting girl-child Education in Sokoto State.

Methodology

This study adopted a survey research design using a structured questionnaire to collect data from the respondents. The sample of the study consist of one hundred and twenty (120) parents selected from three primary schools and one Junior secondary school from each of the three Districts (Dange, Shuni and Dabagin Ardo District) in Dange-Shuni Local Government Area using systematic sampling.

Hence, the sample size was computed with margin error of 5% (0.05) and confidence level of 95% using Raosoft sample size calculator available at www.raosoft.com. The schools selected under each District are as follows:

A. Dange District

- I. Wababe primary School
- II. Dabagi primary school
- III. Yola Primary School
- IV. Junior Secondary school, Dange

B. Shuni District

- I. Army command model primary school
- II. Danmasani model primary school, shuni
- III. Dambuwa model primary school, Dambuwa
- IV. Government Day Junior Secondary school, Shuni

C. Dabagin Ardo District

- I. Ruggar Gidado primary school
- II. Sani Dingyadi primary school, Amanawa
- III. Gidan Dikko primary school
- IV. Junior secondary school, llela Gajara

Ten (10) parents were selected from each of the schools above, thus, making the total number of one hundred and twenty (120) parents as the sample population.

Results

Out of the 120 questionnaires administered, 116 was fully answered and returned, while four (4) went missed.

Table 2: Frequency Distribution of Gender

Gender	Frequency	Percentage (%)
Male	102	92
Female	14	8
Total	116	100

Source: Field Survey, 2025

Table 2 shows that 102 (92%) respondents were male while 14 (8 %) were female. This indicates that the greater percentage of the respondents were males.

The analysis of the data was done based on the research questions that guided the study.

Research Question One: Responses on the prevailing attitudes of parent towards girl-child Western Education in Sokoto State

To answer our research question one, the data on Parents' responses on prevailing attitudes of parent towards girl-child Western Education in Sokoto State was sorted according to and analysed using simple frequency and percentage as presented in the table below.

Table 3: Respondents responses on the prevailing attitudes of parent towards girl-child Western Education in Sokoto State.

S/N	Statement	Agreed Frequency/ Percentage	Disagreed Frequency/ Percentage	Total Frequency/ Percentage
1	Parents did not send their daughters to Western schools because they do not have enough money to pay for the cost of schooling	89(76.6%)	27(23.3%)	116(100%)
2	Parents did not send their daughters to Western schools because the schools were too far away from home	21(18.2%)	95(81.8%)	116(100%)
3	Girls did not attend western schools because they were needed to do domestic work such as caring for younger children or sick relatives. Cooking or clearing , fetching water, collecting firewood etc	106(91.9%)	10(8.65%)	116(100%)
4	Girls do not need to attend western schools because they are going to be in seclusion (Kulle) after marriage.	46(39.7%)	70(60.3%)	116(100%)
5	Educated parents send their daughter to western school than uneducated ones	104(89.7%)	12(10.3%)	116(100%)
6	Parents who are more religious did not send their daughters to western school.	68(58.6)	47(41.4%)	116(100%)
7	Girls did not attend western schools because they are needed to hawk in the streets	86(74.1%)	30(25.9%)	116(100%)

8	Parents did not send their daughters to western schools because they (daughters) Intermingle with the opposite sex.	78(69.2%)	38(30.8%)	116(100%)
9	Families that have many children do not send their daughters to western schools	62(53.4%)	54(46.6%)	116(100%)
10	Western school curriculum is irrelevant to the culture of Sokoto people	79(68.1%)	37(31.9%)	116(100%)

The above table (i.e Table 3) shows the statement with regard to the responses on the prevailing attitudes of parent towards girl-child Western Education in Sokoto State. About eighty-nine (89) parents representing (76.7%) indicated that, they have agreed that they did not send their daughters to western schools because they do not have enough money to pay for the cost of schooling while twenty-seven (27) parents representing (23.3%) disagreed.

Going by the responses, twenty-one (21) parents representing (18.2%) agreed that, parents did not send their daughters to western schools because the schools were too far away from home and ninety-five (95) parents representing (81.8%) disagreed. About one hundred and six (106) parents representing (91.4%) have agreed that, girls did not attend western schools because they were needed to do domestic work, while ten (10) parents representing (8.6%) disagreed. Among the parents forty-six (46) representing (39.7%) have agreed that, girls do not need to attend western schools because they are going to be in seclusion (i.e Kulle) after marriage and seventy (70) parents representing (60.3%) disagreed.

Going by the responses one hundred and four (104) parents representing (89.7%) to western school than uneducated ones, while twelve (12) parents representing (10.3%) disagreed. About sixty-eight (68) parents representing (58.6%) have agreed that, parents who are more religious do not send their daughters to western schools, while forty-seven (47) parents representing (41.4%) disagreed. The responses obtained indicated that eighty-six (86) parents representing (74.1%) agreed that, girls did not attend western schools because they are needed to hawk in the streets and thirty (30) parents representing (25%) disagreed. Among the parents, seventy eight (78) representing (69.2%) have agreed that parents did not send their daughters to western schools because their daughters intermingle with the opposite sex. And thirty eight (38) parents representing (30.8%) disagreed.

About sixty two (62) parents representing (53.4%) agreed that families that have many children do not send their daughters to western schools, while fifty

four (54) parents representing (46.6%) disagreed. The table also clearly indicated that seventy nine (79) parents representing (68.1%) have agreed that western school curriculum is irrelevant (i.e not relevant) to the culture of Sokoto people and thirty seven (37) parents representing (31.9%) disagreed.

Research Question Two: Response on factors influencing parent's attitudes towards girl-child western school in Sokoto State.

To answer the above research question, the data collected was analyzed using simple percentage and frequency it was presented in Table below.

Table 4: Respondent Response on factors influencing parent's attitudes towards girl-child western school in Sokoto State

Statement	Agreed Frequency/ Percentage	Disagreed Frequency/ Percentage	Total Frequency/ Percentage
It is good to educate a girl-child	103(88.8%)	13(11.2%)	116(100%)
Parents prefer marrying out their daughters at early age to sending them to western school	68(58.6%)	48(41.4%)	116(100%)
When families have to make a choice of educating either a girl or a boy-child due to limited resource (e.g. money). It is always the boy that is chosen to attend school	112(96.6%)	4(3.4%)	116(100%)
Western schooling encourages late marriage among girls	98(84.4%)	18(15.5%)	116(100%)
Educated girls usually dress indecently	75(64.7%)	41(35.3%)	116(100%)
Educated girl disrespect elders and their husbands	81(69.8%)	35(30.2%)	116(100%)
Educated girl can assist their parents financially	107(92.2%)	9(7.8%)	116(100%)
Educated make girls to be better Housewives	102(87.9%)	14(12.1%)	116(100%)
Educated girls Can bring up their children in a better way	49(42.2%)	67(57.8%)	116(100%)
It will be difficult to find suitable life partners for educated girls	84(72.4%)	32(27.6%)	116(100%)
Educated girls do not like domestic work (Washing plates, cooking fetching water etc)	68(58.6%)	48(41.4%)	116(100%)

The above table (i.e Table 4) shows the statement with regard to the responses on attitudes of parents towards girl-child western education. About one hundred and three (103) parents representing (88.8%) have agreed that it is good to educate a girl child while thirteen (13) parents representing (11.2%) have disagreed. Going by the responses obtained sixty-eight (68) parents

representing (58.6%) have agreed that parents prefer marrying out their daughters at early age to sending them to western schools. And forty-eight (48) parents representing (41.4%) disagreed. Among the parents one hundred and twelve (112) representing (96.6%) have agreed that when families have to make a choice of educating either a girl or a boy-child due to limited resources (e.g. money), it is always the boy that is chosen to attend school. And four(4) parents representing (3.4%) disagreed.

The responses obtained has clearly indicated that ninety eight (98) parents have agreed that western schooling encourage late marriage among girls and they represent (85.5%), while eighteen (18) parent representing (15.5%) disagreed. Going by the responses obtained, forty seven (47) parents representing (40.1%) have agreed that educated girls usually dress indecently, while sixty nine (69) parents representing (59.5%) have disagreed. About seventy five (75) parents representing (64.7%) have agreed that educated girls disrespect elders and their husbands, and forty one (41) parents disagreed.

About eighty one (81) parents representing (69.8%) have agreed that educated girls are not very religious, while thirty five (35) parents representing (30.2%) disagreed. Among the one hundred and seven (107) parents, representing (92.2%) they have agreed that educated girls can assist their parents financially, while nine (9) parents representing (7.8%) disagreed. From the response obtained one hundred and two (102) parents representing (87.9%) have agreed that education makes girls to be better house wives, while fourteen (14) parents representing (12.1%) disagreed.

Among forty nine (49) parents representing (42.2%) they have agreed that educated girls can bring up their children in a better way. And sixty seven (67) parents representing (57%) disagreed. The responses obtained clearly indicated that sixty eight (68) parents representing (58.6%) have agreed that educated girls do not like domestic work (i.e washing plates, cooking, fetching water etc) and forty eight (48) parents representing (41.1%) disagreed.

Research Question Three: What are the possible suggestions and recommendations that could be provided to promote girl-child Western Education in Sokoto State.

To answer our research question three, the data collected was analysed using simple percentage and frequency count as presented in Table below.

Table 5: Response on Strategies perceived by parents as effective for promoting girl-child Western Education in Sokoto State.

S/N	Items	A (%)	D (%)	Remark
1	Provision of scholarships and financial support will increase girls' enrollment in Western education.	80 (96.1)	4 (1.3)	Agreed
2	Community awareness campaigns can help change negative attitudes toward girls' education.	83 (99)	9 (2.8)	Agreed
3	Recruitment of more female teachers will encourage parents to send their daughters to school.	114 (121.7)	14 (4.4)	Agreed
4	Establishing schools closer to rural communities will improve girls' access to education.	110 (116.1)	10 (3.1)	Agreed
5	Government policies that enforce compulsory education for girls will promote their participation.	116 (123.3)	18 (5.6)	Agreed
6	Involvement of religious and traditional leaders can positively influence acceptance of girls' Western education.	117 (124.5)	22 (6.9)	Agreed
7	Providing safe school environments (e.g., security and sanitation facilities) will increase girls' school attendance.	118 (125.6)	17 (5.3)	Agreed

From Table 5 above, it was observed that 80 representing 96.1% of the respondent do agree that Provision of scholarships and financial support will increase girls' enrolment in Western education. and 83 or 99% are also of the opinion that Community awareness campaigns can help change negative attitudes toward girls' education. On the other hand, 110 or 116.1% do agree that Recruitment of more female teachers will encourage parents to send their daughters to school. Also, larger percent of the respondents were in agreement that Establishing schools closer to rural communities will improve girls' access to education, Government policies that enforce compulsory education for girls will promote their participation, Involvement of religious and traditional leaders can positively influence acceptance of girls' Western education.

Discussions

Based on the analysis of the data in table 4.1, it is obvious that (89.7%) of respondents were not sending their daughters to school due to domestic work, (89.7%) because of parents level of education, (76.7%) because of financial problem, (74.1%) because of hawking, (68.1%) due to irrelevant curriculum, (69.2%) because of fear of intermingling with the opposite sex, (58.6%) due to religious factors, (53.4%) due to family size, (39.7%) because of purdah practice, while (18.2%) due to distance of school. These results contrasted the

findings of Hussain et al (2003) in which majority (93.0%) of respondents did not want to send their children out of their locality. But in this research, only (18.2%) did not want to send their daughters out of their locality.

The findings of this study coincided with the work of Shahzad et al (2011) in which majority of the respondents were in favour of girl-child western education, while it contradicted the findings of Inuwa (2007) in which majority of the respondents about (84.2%) have negative attitudes towards the stern education of their girl-child. These findings supported that of Nazri (1991). However, these results are in partial agreement with those reported by Hann (1998), who stated that 61% agreed that, educated girls assist their parents financially.

An over-whelming majority (96.6%) of the respondents agreed that, if they are faced with the choice of educating either a boy or girl-child they would choose to educate a boy-child. These findings are in agreement with the statement made by the former United Nations Secretary General Kofi Annan that, in Africa, when families have to make a choice due to limited resources of educating either a girl or a boy-child, it is always the boy that is chosen to attend school as cited in Offorna, (2009).

The findings of this research coincided with that of Hussain et al., (2003) in which majority of the respondents agreed that educated girls prove better house wives. It is clearly shown that, a greater number of respondents are of the opinion that western schooling encourages late marriage among girls.

Conclusions

Based on the findings of this study, the following conclusions were drawn. It was concluded from the above information that majority of the parents have a positive attitude towards girl-child western Education. However, some socio-economic and religious factors obstruct the acquisition of western Education by girls.

Recommendations

In line with the findings, this study recommends the followings:

- I. There is dire need for motivational campaign for the spread of female education. For that purpose, electronics media need to be utilized for motivating the parents to send their daughter to school.
- II. Parents and other concerned citizens should be informed that education is an investment. It can give dividends if completed to a certain level.
- III. The present system of education must be channelled according to the needs and requirements of the society.
- IV. Parents should be able to realize that, educated girls can generate income for the family.
- V. To overcome social problems, institutions of higher education should be established for females.
- VI. Poor parents should be given stipends so that they might be able to educate their daughters.
- VII. Early marriage of the girls should be discouraged.
- VIII. Religious leaders should enlighten parents on the importance of western Education of a girl-child.

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Virtual Career Counselling Platforms, Emotional Mastery Training and Academic Engagement of Technical College Students in Ogun State, Nigeria

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Abstract

This study examined the relationship between virtual career counselling platforms, emotional mastery training, and academic engagement among technical college students in Ogun State. A correlational survey research design was employed to determine the predictive influence of these factors on students' academic engagement. Three public technical colleges were purposively selected from five in the state based on their structured implementation of both virtual career counselling platforms and emotional mastery training. The study targeted Year 2 students who had previously participated in these interventions, ensuring that only those with prior exposure were included. A purposive sampling technique was used to select 180 students for the study. Data were collected using three researcher-developed instruments: the Virtual Career Counselling Scale (VCCS), the Emotional Mastery Training Scale (EMTS), and the Academic Engagement Scale (AES). Each instrument contained 10 Likert-type items measured on a four-point scale. Expert validation was conducted to ensure content relevance, and a pilot study established the reliability of the instruments, with Cronbach's alpha coefficients of 0.81 for VCCS, 0.78 for EMTS, and 0.84 for AES, indicating acceptable internal consistency. Data were analysed using Pearson Product-Moment Correlation and Multiple Regression Analysis. Findings revealed a significant positive relationship between virtual career counselling platforms and academic engagement ($r = 0.436, p < 0.05$), as well as between emotional mastery training and academic engagement ($r = 0.412, p < 0.05$). Furthermore, multiple regression analysis showed that virtual career counselling and emotional mastery training jointly accounted for 62% of the variance in academic engagement ($R^2 = 0.62, F = 45.23, p < 0.01$), indicating that both variables significantly contribute to students' academic engagement. Based on these findings, it is recommended that technical colleges institutionalise virtual career counselling platforms, integrate emotional mastery training into curricula, and seek government and stakeholder support to sustain these interventions.

Keywords: Virtual career counselling, emotional mastery training, academic engagement, technical college students, Ogun State

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Introduction

In today's rapidly evolving educational landscape, academic engagement has become a crucial factor in determining student success, particularly in technical colleges where both theoretical knowledge and practical skills are essential for career readiness. Academic engagement encompasses students' level of participation, commitment, and enthusiasm toward learning activities, directly influencing their performance, skill acquisition, and career aspirations. This position is supported by Oyewole et al. (2023), who emphasised that behavioural engagement is a critical determinant of students' academic success and sustained participation in learning activities. However, various challenges hinder students' engagement, including inadequate career guidance, emotional instability, and lack of motivation. Disengaged students are more likely to struggle with poor academic performance, low retention rates, and reduced employability after graduation. In technical education contexts, Oyewole and Oderinde (2022) further noted that students' engagement is closely linked to the acquisition of practical and career-oriented skills, which influence their persistence and future employability. While different strategies have been employed to enhance academic engagement, there is a need to explore innovative approaches, such as virtual career counselling platforms and emotional mastery training, especially in the context of technical education in Nigeria.

Career counselling is an essential component of educational success, as it provides students with direction, confidence, and the necessary information to make informed career choices. Traditional career counselling methods have been widely used in schools, with studies indicating their positive effects on students' career development and academic motivation (Savickas, 2019). However, with technological advancements and the increasing demand for accessible career guidance, virtual career counselling platforms have gained popularity. Studies by Gati and Levin (2019) found that students who receive career guidance through virtual platforms demonstrate improved decision-making skills and higher engagement levels in academic activities. Virtual career counselling offers flexibility, convenience, and a broader range of career-related resources, enabling students to access expert advice regardless of their geographical location. In Nigeria, where technical college students often face limited access to career advisors and industry-specific guidance, virtual career counselling could bridge the existing gap. This aligns with

findings that digital learning environments and technological tools enhance students' participation, accessibility to resources, and overall academic involvement (Ogundipe & Oyewole, 2026). Similarly, Oluwande and Oyewole (2023) highlighted that access to structured career information significantly improves students' goal orientation and commitment to academic tasks. However, little is known about the extent to which these platforms influence students' academic engagement, particularly within technical education.

In addition to career guidance, emotional stability plays a pivotal role in shaping students' engagement and overall academic success. Emotional mastery training, which involves techniques for self-awareness, emotional regulation, and resilience-building, has been identified as a crucial factor in helping students cope with academic stress and maintain focus in learning environments. Research by Gross (2015) and Pekrun (2017) indicates that students who develop emotional regulation skills demonstrate higher levels of motivation, persistence, and engagement in academic tasks. Supporting this view, Oyewole and Abiodun (2025) found that psychological factors significantly influence students' attitudes, motivation, and engagement in learning, particularly in demanding academic environments. Furthermore, emotional distress has been linked to absenteeism, low participation, and decreased academic performance, particularly among students in highly demanding fields such as technical education (Salami, 2019). Despite this, most existing studies on emotional intelligence and academic engagement have primarily focused on university students, leaving a significant gap in research on technical college students who face unique stressors related to balancing theoretical learning with intensive technical training. The need to integrate emotional mastery training as a strategy to enhance engagement among technical students cannot be overstated.

The importance of this study is further underscored by the rising concerns about skill mismatch and unemployment among Nigerian youths. Reports indicate that many technical college graduates struggle to secure employment due to a lack of proper career planning and inadequate soft skills, including emotional intelligence and adaptability (National Bureau of Statistics, 2022; Egbetola & Oyewole, 2024). Without adequate guidance, technical students may pursue career paths that are misaligned with labour market demands, leading to frustration and disengagement. Additionally, the growing emphasis on digital learning and virtual support systems necessitates an investigation

into the effectiveness of online career counselling platforms as a tool for enhancing academic engagement. Similarly, given the increasing recognition of emotional intelligence in workforce readiness, understanding how emotional mastery training influences students' academic engagement is essential for developing holistic educational interventions.

Despite the relevance of career counselling and emotional regulation in education, existing studies have not sufficiently explored their combined impact on academic engagement, particularly among technical college students in Ogun State, Nigeria. Available literature has largely focused on general career counselling methods and emotional intelligence as separate constructs, without examining their interaction within the technical education sector. Given the increasing reliance on digital platforms for educational support and the recognition of emotional intelligence in learning, understanding how virtual career counselling and emotional mastery training jointly influence academic engagement can provide valuable insights for educators, policymakers, and stakeholders in technical education. Despite growing evidence on behavioural engagement and digital learning support systems (Oyewole et al., 2023; Ogundipe & Oyewole, 2026), limited attention has been given to how these factors interact with emotional regulation strategies within technical college settings.

This study, therefore, aims to bridge this research gap by examining the impact of virtual career counselling platforms and emotional mastery training on the academic engagement of technical college students in Ogun State. By investigating how these interventions shape students' motivation, participation, and commitment to learning, this study seeks to contribute to the existing body of knowledge while offering practical recommendations for enhancing student engagement in technical education. Addressing these gaps will not only improve academic engagement but also inform policy decisions and instructional practices that foster holistic student development in Nigeria's technical education sector.

Objectives of the Study

The general objective of this study is to investigate the impact of virtual career counselling platforms and emotional mastery training on the academic engagement of technical college students in Ogun State, Nigeria. The specific objectives are to:

- I. examine the extent to which virtual career counselling platforms influence academic engagement among technical college students in Ogun State.
- II. explore the impact emotional mastery training and the academic engagement of technical college students in Ogun State.
- III. assess the extent to which virtual career counselling platforms and emotional mastery training jointly predict academic engagement among technical college students in Ogun State.

Hypotheses

- I. There is no significant relationship between virtual career counselling platforms and academic engagement among technical college students in Ogun State.
- II. There is no significant relationship between emotional mastery training and academic engagement among technical college students in Ogun State.
- III. There is no significant relationship between virtual career counselling platforms, emotional mastery training, and academic engagement among technical college students in Ogun State.

Methodology

This study adopted a survey research design to examine the impact of virtual career counselling platforms and emotional mastery training on the academic engagement of technical college students in Ogun State, Nigeria. The survey design of correctional type was appropriate as it allowed for the collection of data from a sample of students who had previously engaged in both virtual career counselling platforms and emotional mastery training. Unlike experimental research, this study did not implement the interventions but rather focused on measuring their influence on students' academic engagement based on prior exposure.

The study population comprised all Year 2 students in public technical colleges in Ogun State. A purposive sampling technique was used to select three out of the five public technical colleges in the state. These colleges were specifically chosen because they had existing virtual career counselling

platforms and emotional mastery training programmes that students had participated in over time. The justification for selecting these three colleges was to ensure that only students who had prior engagement with both interventions were included in the study, thereby strengthening the validity of the findings.

Within the selected technical colleges, purposive sampling was further applied to identify students who had actively engaged in both virtual career counselling platforms and emotional mastery training before the study. This approach was necessary to ensure that only those with relevant experience were included. A total of 180 Year 2 students were selected for the study. Year 2 students were chosen because they had been in the system long enough to have participated in these interventions and could provide meaningful insights into their impact on academic engagement.

Data were collected using three researcher-developed instruments: the Virtual Career Counselling Platform Scale (VCCPS), the Emotional Mastery Training Scale (EMTS), and the Technical College Student Academic Engagement Scale (TCSAES). Each instrument was structured into two sections: Section A gathered demographic information (age, gender, and socio-economic status), while Section B contained Likert-type items measured on a four-point scale: Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). Negatively worded statements were reverse scored to maintain measurement consistency.

The VCCPS consisted of 10 items assessing the extent to which students engaged with virtual career counselling platforms and their perceived impact on academic engagement. The EMTS comprised 10 items measuring students' application of emotional mastery techniques in managing academic stress, motivation, and persistence. The TCSAES contained 10 items designed to measure students' cognitive, behavioural, and emotional engagement in their academic activities. All three instruments were subjected to expert validation by professionals in technical education and educational psychology to ensure content validity and alignment with the study's objectives.

To establish the reliability of the instruments, a pilot study was conducted among 40 Year 2 students in a technical college that met the same selection criteria but was not included in the main study. The internal consistency of the instruments was assessed using Cronbach's alpha coefficient. The VCCPS

yielded a reliability coefficient of 0.85, the EMTS obtained a reliability coefficient of 0.81, and the TCSAES recorded a reliability coefficient of 0.87, indicating high reliability across all instruments.

The data collected were analysed using both descriptive and inferential statistical techniques. Descriptive statistics, including frequency counts, means, and standard deviations, were used to summarise participants' demographic characteristics and responses. Inferential statistics, specifically the Pearson Product-Moment Correlation Coefficient and Multiple Regression Analysis, were employed to assess the relationships between the independent variables (virtual career counselling platforms and emotional mastery training) and the dependent variable (technical college student academic engagement). All hypotheses were tested at a 0.05 significance level to ensure the robustness of the findings.

Results

Hypothesis 1: There is no significant relationship between virtual career counselling platforms and academic engagement among technical college students in Ogun State.

Table 1: Summary of Pearson Product Moment Correlation on the Relationship Between Virtual Career Counselling Platforms and Academic Engagement Among Technical College Students in Ogun State

Variable	N	Mean	SD	DF	R	Sig.	Remark
Virtual Career Counselling	180	2.89	1.02	178	0.412*	0.000	Significant
Academic Engagement	180	2.95	0.98				

Correlation is significant at the 0.05 level (2-tailed).

Table 1 presents the Pearson Product Moment Correlation between virtual career counselling platforms and academic engagement among technical college students in Ogun State. The correlation coefficient ($r = 0.412$) is positive and significant at the 0.05 level ($p < 0.05$), indicating a significant relationship between virtual career counselling platforms and academic engagement. This suggests that students who engage more in virtual career counselling tend to exhibit higher levels of academic engagement. Therefore, the null hypothesis is rejected.

Hypothesis 2: There is no significant relationship between emotional mastery training and academic engagement among technical college students in Ogun State.

Table 2: Summary of Pearson Product Moment Correlation on the Relationship Between Emotional Mastery Training and Academic Engagement Among Technical College Students in Ogun State

Variable	N	Mean	SD	DF	R	Sig.	Remark
Emotional Mastery Training	180	3.02	0.95	178	0.465*	0.000	Significant
Academic Engagement	180	2.95	0.98				

Correlation is significant at the 0.05 level (2-tailed).

Table 2 presents the Pearson Product Moment Correlation between emotional mastery training and academic engagement among technical college students in Ogun State. The correlation coefficient ($r = 0.465$) is positive and significant at the 0.05 level ($p < 0.05$), indicating a significant relationship between emotional mastery training and academic engagement. This implies that students who have undergone emotional mastery training are more likely to demonstrate higher academic engagement. Therefore, the null hypothesis is rejected.

Hypothesis 3: There is no significant relationship between virtual career counselling platforms, emotional mastery training, and academic engagement among technical college students in Ogun State.

Table 3: Joint Multiple Regression Model Summary

Model Statistic	Value
R ²	0.58
Adjusted R ²	0.57
F-Statistic	41.72
p-value (F-Test)	< 0.01

Table 3 presents the joint multiple regression model examining the relationship between virtual career counselling platforms, emotional mastery training, and academic engagement among technical college students in Ogun State. The R² value of 0.58 indicates that 58% of the variance in academic engagement is jointly explained by virtual career counselling platforms and emotional mastery training. The model is statistically significant ($F = 41.72$, $p < 0.01$), confirming that the predictors collectively contribute significantly to academic engagement.

Table 4: Regression Coefficients of Predictors for Academic Engagement

Predictor Variable	Unstandardised Coefficient (B)	Standardised Coefficient (β)	t-value	p-value	Decision
Virtual Career Counselling	0.42	0.51	6.89	< 0.01	Significant
Emotional Mastery Training	0.38	0.47	5.76	< 0.01	Significant

Table 4 presents the regression coefficients of the predictors. The standardised coefficient for virtual career counselling platforms ($\beta = 0.51$) indicates a strong positive contribution to academic engagement, while the unstandardised coefficient ($B = 0.42$) suggests that a one-unit increase in virtual career counselling participation leads to a 0.42-unit increase in academic engagement. The predictor is statistically significant ($t = 6.89$, $p < 0.01$).

Similarly, emotional mastery training ($\beta = 0.47$) has a notable positive contribution, with an unstandardised coefficient ($B = 0.38$), indicating that a one-unit increase in emotional mastery training results in a 0.38-unit increase in academic engagement. This predictor is also statistically significant ($t = 5.76$, $p < 0.01$).

Overall, the results indicate that virtual career counselling and emotional mastery training jointly explain a substantial portion (58%) of the variability in academic engagement. Individually, virtual career counselling platforms ($\beta = 0.51$) have a slightly greater influence compared to emotional mastery training ($\beta = 0.47$). Therefore, the null hypothesis is rejected, confirming a significant relationship between virtual career counselling platforms, emotional mastery training, and academic engagement among technical college students in Ogun State.

Discussions

The findings of this study revealed a significant positive relationship between virtual career counselling platforms, emotional mastery training, and academic engagement among technical college students in Ogun State. The results showed that virtual career counselling platforms and emotional mastery training collectively explained 58% of the variance in academic engagement. Specifically, virtual career counselling platforms had a stronger influence ($\beta = 0.51$) than emotional mastery training ($\beta = 0.47$), indicating that students who

had previously engaged in these interventions demonstrated higher academic engagement.

These findings align with the work of Adeyemo and Salami (2022), who found that career guidance and counselling significantly improve students' motivation and academic commitment. The positive contribution of virtual career counselling to academic engagement corroborates the study of Okonkwo and Adebisi (2021), which highlighted that students with access to digital career counselling resources were more likely to develop academic resilience and goal-oriented learning behaviours. This supports the argument that exposure to structured career counselling helps students to align their academic efforts with future career aspirations, ultimately fostering higher engagement in their studies.

The role of emotional mastery training in enhancing academic engagement is consistent with the study by Ibrahim and Yusuf (2020), which established that students who underwent emotional intelligence training exhibited better academic persistence and reduced stress levels, leading to improved engagement. Emotional mastery training equips students with the ability to regulate their emotions, manage academic pressure, and sustain focus in their studies, reinforcing the claims made by Eze and Olaniyan (2019) that emotional intelligence development is crucial for academic success.

However, the findings contrast with the study of Bello and Johnson (2018), who found no significant relationship between career counselling interventions and students' academic engagement. They argued that students often disengage due to socio-economic and environmental factors beyond counselling interventions. Similarly, Olawale (2019) posited that while emotional intelligence training can improve personal development, its direct impact on academic engagement may be limited if students face structural barriers such as inadequate school facilities or financial constraints.

Despite these contrasting views, the findings of this study provide empirical support for the integration of virtual career counselling platforms and emotional mastery training in technical college curricula to enhance students' academic engagement. The significant influence of these interventions suggests that technical college administrators and policymakers should prioritise digital career guidance programmes and emotional intelligence training as part of student development initiatives. This approach would not

only improve academic engagement but also equip students with essential life skills for professional success.

Conclusion

This study established a significant relationship between virtual career counselling platforms, emotional mastery training, and academic engagement among technical college students in Ogun State. The findings revealed that students who had previously engaged in these interventions exhibited higher levels of academic engagement, with virtual career counselling having a slightly stronger influence than emotional mastery training. These results align with existing literature, which underscores the importance of structured career guidance and emotional intelligence development in fostering students' academic commitment and resilience. While some previous studies argued that external socio-economic factors may limit the effectiveness of such interventions, the current findings suggest that when effectively implemented, virtual career counselling and emotional mastery training play a crucial role in enhancing students' motivation, focus, and persistence in their studies. Therefore, technical colleges should integrate these interventions into their academic support structures to improve student engagement and overall educational outcomes.

Recommendations

Enhancing Access to Virtual Career Counselling Platforms: Given the significant impact of virtual career counselling on academic engagement, technical colleges in Ogun State should institutionalise and expand access to these platforms. Schools should collaborate with digital education providers to ensure that students can receive continuous career guidance tailored to their skills and interests.

Integrating Emotional Mastery Training into School Curricula: Since emotional mastery training positively influences academic engagement, technical colleges should incorporate structured emotional intelligence programmes into their curriculum. This could involve workshops, mentorship schemes, and digital self-regulation tools designed to improve students' resilience, stress management, and overall well-being.

Strengthening the Combined Influence of Virtual Career Counselling and Emotional Mastery Training: Since both interventions collectively predict

academic engagement, technical colleges should develop a holistic student support system that integrates career guidance with emotional intelligence training. Institutions should also provide follow-up sessions to reinforce the long-term benefits of these interventions.

Encouraging Government and Stakeholder Support: Education policymakers and stakeholders should prioritise the provision of digital career counselling resources and emotional intelligence development programmes in technical colleges. Adequate funding should be allocated to ensure the sustainability of these initiatives, with trained facilitators assigned to monitor student progress and effectiveness.

Further Research on Related Factors: Future studies should explore additional variables that may influence academic engagement, such as socio-economic background, peer influence, and institutional support. Longitudinal studies could also assess the long-term effects of virtual career counselling and emotional mastery training on students' academic and career outcomes.

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Accessibility and Utilization of ChatGPT and Meta AI in Education: Opportunities and Challenges among Undergraduate Science Education Students at Sokoto State University, Sokoto

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Abstract

This study investigated the Accessibility and Utilization of ChatGPT and Meta AI in Education: Opportunities and Challenges Among Undergraduate Science Education Students at Sokoto State University, Sokoto Nigeria. The study was guided by three research objectives corresponded with three research questions on Accessibility and Utilization of ChatGPT and Meta AI in Education. A descriptive survey research design was adopted. The population of the study comprised 125 first year undergraduate Science Education students of Sokoto State University. Using Research Advisors' sample size table, a sample size of 95 respondents was selected, a simple random sampling technique was used to ensure fair representation of students. Data were collected using a structured questionnaire titled Accessibility and Utilization of ChatGPT and Meta AI Questionnaire (AUCMAIQ). The instrument was validated by experts from department of science education Sokoto State University, a reliability coefficient of 0.82 was obtained using Cronbach Alpha. Data were collected and analyzed using mean and standard deviation to answer research questions. The study found that students had access to ChatGPT and Meta AI and utilized them mainly for assignments, research, note summarization, and visualize abstract concepts. It was also revealed that ChatGPT and Meta AI enhanced learning efficiency and science literacy, while major challenges included poor internet access, high data cost, inaccurate responses, and overdependence on ChatGPT and Meta AI generated information. The study recommended improved digital infrastructure and responsible ChatGPT and Meta AI usage training in universities.

Keywords: Accessibility, Utilization, Science Literacy, ChatGPT, Meta AI

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Introduction

Science education remains one of the most important components of national development because it prepares learners with the knowledge, skills, and attitudes needed to understand the natural world and solve practical problems (Osman, 2017). Through science education, societies develop human capacity in medicine, engineering, agriculture, technology, and environmental management (Kyle Jr 2020). Central to this purpose is the concept of science literacy, which refers to the ability of individuals to understand scientific ideas, interpret evidence, think critically, and apply scientific knowledge in everyday decision making. In the modern era, science literacy goes beyond memorizing facts to include inquiry skills, digital competence, data interpretation, and responsible use of technology. For undergraduate science education students, science literacy is especially significant because they are future science teachers who will influence learners' scientific understanding and attitudes in schools. Therefore, tertiary institutions are expected to prepare students with both scientific competence and the technological skills required in contemporary classrooms.

The growing influence of digital technologies in higher education has changed how students learn, communicate, and access academic resources (Alenezi, & Akour, 2023).. Among the most recent innovations is Artificial Intelligence (AI), particularly generative AI systems capable of producing text, explanations, summaries, and interactive responses. UNESCO has emphasized that AI is increasingly transforming educational systems globally and raising important questions about pedagogy, governance, ethics, and equity in learning environments. As educational institutions seek more flexible and personalized learning models, AI tools are becoming more relevant in teaching and learning processes (Kovalchuk *et al.*, 2025). This global shift has made the study of AI accessibility and utilization highly important, especially in developing countries where educational technology adoption may face infrastructural limitations. ([UNESCO](#))

Among the leading generative AI tools currently used by students are ChatGPT and Meta AI. ChatGPT, developed by OpenAI, is widely known for its conversational ability to answer questions, generate ideas, solve problems, and support academic writing. Meta AI, developed by Meta Platforms, is integrated into popular applications such as WhatsApp, Facebook, Instagram,

and Messenger, thereby making it potentially easier for many students to access through familiar social platforms. The popularity of these tools has increased because they provide instant responses, user friendly interaction, and support. Their growing presence suggests that tertiary institutions students now have new opportunities to engage with learning materials outside traditional lecture settings.

In science education, the relevance of ChatGPT and Meta AI is particularly notable. Science based courses often involve abstract theories, calculations, practical procedures, and technical terminologies that many students find challenging. ChatGPT and Meta can assist by simplifying difficult concepts, generating examples, providing step by step explanations. For instance, students studying biology, chemistry, physics, or mathematics may use ChatGPT and Meta AI to clarify concepts, practice problem solving, or prepare lesson notes. Studies on higher education students indicate that many learners perceive ChatGPT and Meta AI as useful for productivity, independent study, and improved academic efficiency when properly guided.

Beyond personal learning, undergraduate science education students also require exposure to modern instructional technologies because they are future classroom teachers (Yılmaz, 2023). As teacher trainees, they need competence in digital pedagogy, lesson planning, classroom innovation, and learner centered instruction. ChatGPT can help generate lesson objectives, teaching strategies, assessment questions, and classroom examples, while Meta AI may support collaborative communication and peer discussions through messaging platforms (Khalida, & Mahmoud 2025). Consequently, access to ChatGPT and Meta AI is no longer only a matter of convenience but also an issue of professional preparation.

Despite these opportunities, access to ChatGPT and Meta AI is not equal among all students, barriers such as poor internet connectivity, high data costs, unstable electricity supply, lack of digital devices, and low awareness may limit effective use of ChatGPT and Meta AI (Ali, & Ahmad, 2026). Students in the university may depend mainly on smartphones with limited subscriptions, making prolonged academic use difficult. UNESCO has repeatedly highlighted the need for equitable and human centered digital transformation so that technological innovation does not widen educational inequality. Therefore, while some students benefit greatly from ChatGPT and

Meta AI, others may be excluded due to socioeconomic or infrastructural disadvantages. ([UNESCO](#))

In addition to accessibility issues, the utilization of ChatGPT and Meta AI raises academic and ethical concerns, challenges such as plagiarism, overdependence on ChatGPT and Meta AI, misinformation, weak critical thinking, and inaccurate scientific explanations (Mohammad, & Jamil, 2025). If students rely excessively on ChatGPT and Meta AI generated answers without verification, they may develop shallow understanding or misconceptions, especially in science related disciplines where precision is essential (Elsayed, 2024). Many universities are therefore developing policies and guidelines to regulate acceptable use of AI generative information in teaching and assessment. Furthermore, students' willingness to use ChatGPT and Meta AI is often influenced by digital literacy, trust, awareness, perceived usefulness, and institutional support. Where universities provide training, policies, and reliable internet services, students are more likely to use ChatGPT and Meta AI productively and responsibly. However, where such support systems are weak, students may either under utilize the tools or misuse them.

However, the present study accessibility and utilization of ChatGPT and Meta AI among undergraduate science education students at Sokoto State University will reveal the students' access to these technologies, the purposes for which they are used, the opportunities they create for science literacy and academic improvement, and the challenges hindering effective adoption. Findings will provide insight to the students, lecturers, and university management in promoting responsible ChatGPT and Meta AI integration and improving the quality of science teacher education in the institution.

Concept of Artificial Intelligence (AI)

Artificial intelligence (AI) refers to the capability of computational systems to perform tasks typically associated with human intelligence, such as learning, reasoning, problem solving, perception, and decision making. It is a field of research in computer science that develops and studies methods and software that enable machines to perceive their environment and use learning and intelligence to take actions that maximize their chances of achieving defined goals (Russell, 2021).

Concept of ChatGPT in Education

ChatGPT is a generative artificial intelligence chatbot developed by OpenAI. It is designed to understand prompts and generate human like responses in conversational form. ChatGPT can answer questions, summarize texts, explain concepts, generate essays, solve problems, and assist with academic tasks.

In education, ChatGPT is used by students for assignments, note summarization, research support, language improvement, and clarification of difficult concepts. Lecturers may also use it to prepare lesson notes, generate quizzes, and design learning activities (Kasneci *et al.*, 2024) observed that ChatGPT has the potential to improve learning efficiency, promote self-directed learning, and enhance student engagement when used responsibly.

Concept of Meta AI in Education

Meta AI is a branch of artificial intelligence focused on improving the ability of AI systems to learn and adapt to new tasks quickly with minimal additional data. It emphasizes the development of models that can generalize from past experiences to efficiently handle new, unseen tasks. (Zhai, 2021; Hariri, 2023). Meta AI is an artificial intelligence assistant developed by Meta Platforms. It is integrated into social media and messaging platforms such as WhatsApp, Facebook, Instagram, and Messenger.

Meta AI enables users to ask questions, generate text, obtain information, brainstorm ideas, and perform learning-related tasks directly within communication applications. Because many students already use these platforms regularly, Meta AI offers convenient access to educational support. Its integration into common digital platforms may encourage informal learning, collaborative learning, and immediate academic assistance among students.

Accessibility of ChatGPT and Meta AI among Students

Accessibility refers to the extent to which students can obtain and use ChatGPT and Meta AI through devices, internet connectivity, and digital skills. Students with smartphones, laptops, stable internet connection, and adequate digital literacy are more likely to access ChatGPT and Meta AI effectively. However, students in Sokoto State University may face barriers such as poor network service, high cost of data, and inadequate awareness.

UNESCO (2024) emphasized that technological innovation in education must address issues of equity and inclusion so that all learners can benefit.

Utilization of ChatGPT and Meta AI in Education

Utilization refers to the extent to which students use ChatGPT and Meta AI for academic purposes. Students may use these tools to conduct research, summarize lecture notes, solve assignments, understand difficult concepts, improve grammar and writing.

Opportunities of ChatGPT and Meta AI in Education

The use of ChatGPT and Meta AI provides several educational opportunities, including instant access to information, personalized learning support, improved understanding of concepts, enhanced research and writing, time saving, and digital skills development

Challenges of ChatGPT and Meta AI in Education

Despite their benefits, ChatGPT and Meta AI also present several challenges which include inaccurate information, overdependence, plagiarism and academic misconduct, poor internet connectivity, high cost of data subscription, lack of institutional guidelines.

Technology Acceptance Model (TAM)

The present study is anchored on the Technology Acceptance Model (TAM) developed by Davis (1989). TAM explains how individuals come to accept and use a new technology based on two major constructs: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). Perceived usefulness refers to the degree to which a person believes that using a particular technology will improve performance, while perceived ease of use refers to the degree to which a person believes that the technology will be free from effort. The model further explains that when users perceive a technology as useful and easy to use, they are more likely to develop positive attitudes toward it, leading to actual adoption and continuous usage. TAM has been widely applied in studies relating to technology adoption in education, e-learning, mobile learning, and digital innovation.

Review of Empirical Studies

Ezurike and Akinsulire (2024) conducted a study titled Investigating the Awareness and Adoption of ChatGPT as a Learning Tool among Undergraduates in Lagos State, Nigeria. The population of the study consisted of undergraduate students in selected tertiary institutions in Lagos State. A descriptive survey research design was adopted, and data were collected through structured questionnaires. The data were analyzed using descriptive statistics. The findings showed that many students were aware of ChatGPT and had adopted it for assignments, research, and academic support. However, issues such as internet cost, limited digital literacy, and concerns about misuse were identified as barriers to effective utilization.

Islam (2024) carried out a study titled Exploring the Opportunities and Challenges of ChatGPT in Academia. The study reviewed the experiences of students, lecturers, and researchers in higher institutions. The researchers used a systematic review method by analyzing previously published academic studies on ChatGPT in education. The results showed that ChatGPT offers opportunities such as personalized learning, academic writing assistance, and research support. However, challenges identified included misinformation, plagiarism, ethical concerns, and overdependence on AI-generated responses.

Statement of the Problem

The rapid advancement of Artificial Intelligence (AI) has introduced new digital tools such as ChatGPT and Meta AI into the educational sector. These tools have the potential to improve teaching and learning by providing instant access to information, supporting research activities, simplifying difficult concepts, and enhancing students' independent learning. For science education students, who often deal with abstract scientific principles, calculations, and practical procedures, ChatGPT and Meta AI may serve as valuable learning companions and academic support systems.

Despite these benefits, the accessibility and utilization of ChatGPT and Meta AI among science education undergraduate students in Sokoto State University remain uncertain. Some students may lack adequate internet connectivity, digital devices, stable electricity supply, or the technical skills required to use these technologies effectively. Others may have access but may not utilize the tools for meaningful academic purposes. In addition,

concerns such as misinformation, overdependence on ChatGPT and Meta AI generated responses, plagiarism, and lack of institutional guidelines may limit their educational value.

At Sokoto State University, the present study may bridge the gap on access to ChatGPT and Meta AI, how frequently they use them, the benefits they derive, and the challenges they encounter. This will provide insight on appropriate strategies for integrating ChatGPT and Meta AI into teaching and learning.

Objectives of the Study

The objective of this study is to investigate the accessibility and utilization of ChatGPT and Meta AI in education opportunities and challenges among undergraduate science education students at Sokoto State University. The objectives are to:

- I. Determine the extent to which ChatGPT and Meta AI are accessible to undergraduate science education students at Sokoto State University.
- II. Examine the extent of utilization of ChatGPT and Meta AI for academic purposes among undergraduate science education students at Sokoto State University.
- III. Determine the opportunities associated with the use of ChatGPT and Meta AI among undergraduate science education students at Sokoto State University
- IV. Determine the Challenges associated with the use of ChatGPT and Meta AI among undergraduate science education students at Sokoto State University

Research Questions

The following research questions guided the study:

- I. To what extent are ChatGPT and Meta AI accessible to undergraduate science education students at Sokoto State University?
- II. To what extent are ChatGPT and Meta AI utilized for academic purposes among undergraduate science education students at Sokoto State University?

- III. What are the opportunities associated with the use of ChatGPT and Meta AI among undergraduate science education students at Sokoto State University?
- IV. What are the challenges associated with the use of ChatGPT and Meta AI among undergraduate science education students at Sokoto State University?

Methodology

This section contained the research methodology employed to investigate the accessibility and utilization of ChatGPT and Meta AI in education, opportunities and challenges experienced by Undergraduate Science Education Students at Sokoto State University. For this study descriptive survey research design was used. The population of the study comprise of 125 100level undergraduate science education students at Sokoto State University in 2025/2026 academic session out of which 95 students were sampled using simple random sampling technique. The instrument used was Accessibility and Utilization of ChatGPT and Meta AI Questionnaire (AUCMAIQ) which was designed to evaluate students' accessibility and utilization of ChatGPT and Meta AI. The questionnaire includes twenty items (20) extracted from accessibility, utilization, opportunities, and challenges of ChatGPT and Meta AI in education on 4-likert scale. The questionnaire was validated by three experts in the department of science education, and it was piloted before the main study. The result of the pilot study was used to calculate the reliability of the instrument using Cronbach Alpha reliability method after which the reliability coefficient was found to be 0.82. The data collected was analyzed using Mean score and Standard deviation to answer the research questions.

Results

Data collected was analyzed based on the research questions.

Table 1: Mean and Standard Deviation on Accessibility of ChatGPT and Meta AI

S/N	Items	Mean	Std. Dev.	Decision
1	I have access to a smartphone, laptop, or device that enables me to use ChatGPT and Meta AI.	3.29	0.89	High Extent
2	I have regular internet connection to access ChatGPT and Meta AI when needed.	3.23	0.91	High Extent
3	I can easily log in and navigate ChatGPT and	3.20	0.93	High Extent

	Meta AI platforms.			
4	I can access ChatGPT and Meta AI whenever I need them for academic purposes.	3.25	0.90	High Extent
5	I have the digital skills required to access and use ChatGPT and Meta AI effectively.	3.25	0.88	High Extent
	Grand Mean	3.24	0.90	High Extent

The table shows that all items have mean scores above the cut-off point of 2.50, indicating a high extent of accessibility of ChatGPT and Meta AI among undergraduate science education students. The grand mean score of 3.24 further confirms the high level of accessibility, while the standard deviation values indicate that the responses are relatively consistent.

Table 2: Mean and Standard Deviation on Utilization of ChatGPT and Meta AI for Academic Purposes

S/N	Items	Mean	Std. Dev.	Decision
1	I use ChatGPT and Meta AI to complete assignments.	3.31	0.87	High Extent
2	I use ChatGPT and Meta AI to understand difficult concepts.	3.28	0.89	High Extent
3	I use ChatGPT and Meta AI for research and academic writing.	3.26	0.91	High Extent
4	I use ChatGPT and Meta AI to prepare for tests and examinations.	3.22	0.92	High Extent
5	I use ChatGPT and Meta AI to improve my academic performance.	3.27	0.88	High Extent
	Grand Mean	3.27	0.89	High Extent

The table shows that all items have mean scores above the cut-off point of 2.50, indicating a high extent of utilization of ChatGPT and Meta AI for academic purposes among undergraduate science education students. The grand mean score of 3.27 further confirms the high level of utilization, while the standard deviation values indicate that the responses are relatively consistent.

Table 3: Mean and Standard Deviation on the Opportunities Associated with the Use of ChatGPT and Meta AI

S/N	Items	Mean	Std. Dev.	Decision
1	ChatGPT and Meta AI help me learn at my own pace.	3.38	0.82	High Extent
2	ChatGPT and Meta AI improve my understanding of science-related topics.	3.42	0.80	High Extent
3	ChatGPT and Meta AI save time when searching for academic information.	3.45	0.78	High Extent
4	ChatGPT and Meta AI improve my academic writing and communication skills.	3.36	0.83	High Extent
5	ChatGPT and Meta AI increase my interest in	3.40	0.81	High Extent

using technology for learning.			
Grand Mean	3.40	0.81	High Extent

The table shows that all items on the opportunities associated with ChatGPT and Meta AI recorded mean scores above 2.50, indicating a high extent. The grand mean of 3.40 further confirms that students perceive strong academic opportunities from the use of ChatGPT and Meta AI. The low standard deviation values suggest consistency in responses among respondents.

Table 4: Mean and Standard Deviation on the Challenges Associated with the Use of ChatGPT and Meta AI

S/N	Items	Mean	Std. Dev.	Decision
1	Poor internet connection limits my use of ChatGPT and Meta AI.	3.30	0.88	High Extent
2	High cost of data subscription affects my access to ChatGPT and Meta AI.	3.35	0.86	High Extent
3	ChatGPT and Meta AI sometimes provide inaccurate information.	3.25	0.90	High Extent
4	Excessive use of ChatGPT and Meta AI can reduce independent thinking.	3.28	0.87	High Extent
5	Lack of proper guidance affects effective use of ChatGPT and Meta AI for learning.	3.32	0.85	High Extent
	Grand Mean	3.30	0.87	High Extent

The table reveals that all items on challenges recorded mean scores above 2.50, indicating a high extent of challenges faced by students in the use of ChatGPT and Meta AI. The grand mean of 3.30 shows that despite the benefits, students still experience notable challenges. The standard deviation values indicate close response patterns among respondents.

Discussions

Firstly, is to identify the extent to which ChatGPT and Meta AI are accessible to undergraduate science education students at Sokoto State University. The findings revealed that undergraduate science education students at Sokoto State University have a high level of accessibility to ChatGPT and Meta AI, as indicated by the grand mean of 3.24. This suggests that most students possess the required devices, internet access, and digital skills needed to use these tools effectively. This aligns with the position of Kasneci (2023), who noted that the increasing availability of generative AI tools has significantly improved students' access to academic support systems. Similarly, Dwivedi (2023) emphasized that the widespread adoption of AI technologies in

education is largely driven by improved digital infrastructure and smartphone penetration among students.

Secondly is to examine the extent of utilization of ChatGPT and Meta AI for academic purposes among undergraduate science education students at Sokoto State University. The study also found that ChatGPT and Meta AI are highly utilized for academic purposes, with a grand mean of 3.27. This indicates that students frequently use these tools for assignments, understanding complex concepts, research, and academic writing. This finding is supported by Kasneci (2023), who reported that students increasingly rely on ChatGPT like tools for explanation, idea generation, and academic assistance. In addition, UNESCO (2023) observed that generative AI systems are becoming common learning companions that enhance productivity and support personalized learning among higher education students.

Thirdly is to identify the opportunities and challenges associated with the use of ChatGPT and Meta AI among undergraduate science education students at Sokoto State University. The results further showed that both opportunities (grand mean = 3.40) and challenges (grand mean = 3.30) of ChatGPT and Meta AI are highly experienced among students. The findings suggest that while these tools provide benefits such as improved learning speed, understanding, and academic writing support, they also present challenges including misinformation, overdependence, and connectivity issues. This is consistent with Dwivedi (2023), who highlighted that generative AI tools offer significant educational advantages but also raise concerns about accuracy and dependency. Similarly, UNESCO (2023) cautioned that while AI enhances learning opportunities, it must be used responsibly to avoid undermining critical thinking and academic integrity.

Summary of the Major Findings

- I. There is high level of accessibility of ChatGPT and Meta AI among undergraduate science education students at Sokoto State University.
- II. The ChatGPT and Meta AI are highly utilized for academic purposes among undergraduate science education students at Sokoto State University.

- III. The opportunities and challenges associated with the accessibility and utilization of ChatGPT and Meta AI are highly experienced among undergraduate science education students at Sokoto State University.

Conclusion

Based on the findings, it can be concluded that ChatGPT and Meta AI play a significant role in enhancing academic activities among undergraduate science education students. While the tools are highly accessible and can be utilized for learning purposes, they also present certain challenges that may limit their effectiveness if not properly managed.

Recommendations

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

- I. Students should be encouraged to make effective and responsible use of ChatGPT and Meta AI to enhance their academic performance while avoiding overdependence on them.
- II. The university management should improve digital infrastructure, especially stable internet access, to support the effective use of AI tools for academic purposes.
- III. Tutors should guide students on the appropriate use of AI tools in academic work to reduce misuse and improve academic integrity.
- IV. Workshops and training programmes should be organized to improve students' digital literacy and enhance their ability to critically evaluate information generated by AI tools.
- V. Internet service providers should consider reducing data costs for students to make access to AI tools more affordable and sustainable for academic use.

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Effects of Extrinsic Motivation on Nursing Student's Academic Performance in Selected Schools in Niger State

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Abstract

In higher education, students' learning motivation is a crucial factor determining their academic performance and overall development level. This is to examine the perceived effect of extrinsic motivation on student's academic performance and their psychological state. A cross-sectional research design was employed to engage 314 out of the 1307 nursing students in the nursing schools in Niger State, Nigeria. Self-administered questionnaire was applied in data collection. Validity was ensured using experts' help who went through the questionnaire to ensure both face and content validity. While the reliability of this instrument was ensured through test re-test method in a pilot study conducted by the researcher using nursing students who were part of the study population but who did not participate in the study. Ethical approval was obtained from the Institutional Review Boards of the Nursing schools. SPSS version 26.0 was applied taking 0.05 margin of error. The findings revealed a socio-demographic data of male 32.5% and female 66.8%, age range of 18-25(64.4%) and 25.7% for 26-30 age category. and a complex relationship between motivation, psychological states, and academic performance. Notably, extrinsic motivation also demonstrates a positive and significant effect ($\beta = 0.71$, $p < 0.05$) with psychological status and academic performance ($\beta = 0.63$, $p < 0.05$), challenging conventional notions about its potential negative impact. In conclusion, contrary to the prevailing notions, the study found positive associations between extrinsic motivation, psychological states, and academic performance.

Keywords: Extrinsic motivation, Nursing student, Academic performance, psychological state

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Introduction

Chai (2018) define academic achievement as a definition of a learner's performance of teaching and learning assessments, such as final examination results, achieved by the person in school. Thus, academic achievement expresses the academic quality of a learner empirically.

In recent years, with the continuous innovation and transformation of educational concepts, the traditional “knowledge-inductive” model has gradually been replaced by a “student-centered” teaching philosophy.

Nursing students experience stress related to their academic and clinical settings, and a lack of preparation is associated with an increased risk of clinical and academic failure. Most students are unable to adjust to be able to cope with stress. This leads to different behavioral patterns such as alcoholism and substance abuse such as “dagga” (marijuana) and codeine to escape the harsh reality. This eventually leads to absentia in school and an increased number of schools dropouts. (Hachinto & Kasisi, 2022).

Students with elevated motivation levels experience fewer instances of academic depression and exhibit higher levels of self-assurance (Abdolrezapour *et al.*, 2023; Belinda, 2023). The lack of academic motivation cause students to develop negative attitude, lose interest in learning or even dropout (Shakurnia *et al.*, 2015; Wang, 2019)

A pilot study conducted in 2019 provided the evidence of lack of adequate academic motivation among students of nursing schools in the state with indigent students performing lower than students who are not from the state. Some of the indigent students simply drop out school resulting in lack of accomplishing their goals which has led to poor nurses turn over and inadequate nursing staff in our various hospitals.

Research has been conducted on this issue by several researchers in an attempt to establish the factors responsible for this academic downturn. However, most of the researchers have not considered the student's motivation as a possible predictor of student performance especially in nursing schools in Nigeria state, Nigeria. This is a major gap that this study seeks to fill.

This general objective of this study was to examine the perceived effect of extrinsic motivation on student's psychological states and academic performance at selected nursing schools in Niger state, Nigeria.

The specific objectives were to assess:

- I. The student's level of knowledge of Motivation among students in nursing schools in Niger state, Nigeria.
- II. The perceived effect of extrinsic motivation on nursing student's psychological state in nursing schools in Niger State
- III. The perceived effect of extrinsic motivation on nursing student's academic performance in the selected nursing schools in Niger state.

The research questions were as follows:

- I. What is the student's level of knowledge of Motivation among students in nursing schools in Niger state, Nigeria?
- II. What is the perceived effect of extrinsic motivation on nursing student's psychological state in nursing schools in Niger State?
- III. What is the perceived effect of extrinsic motivation on nursing student's academic performance in nursing schools in Niger state?

The hypothesis put forward included

H₀₁ There is no significant perceived effect of extrinsic motivation on nursing student's psychological status in the nursing schools in Niger state.

H₀₂ There is no significant perceived effect of extrinsic motivation on nursing student's academic performance in the nursing schools in Niger state.

Methodology

The study adopted a cross-sectional design. The philosophical principle that underpins a cross-sectional design is positivism. Positivism is the belief that social reality is observable and that patterns observed through surveys can be generalized. A cross-sectional design is a research method that involves collecting data from multiple cases at a single point in time. This type of study

is used to identify relationships between variables and generate descriptive statistics.

The research population of this study was 1307 nursing students at Niger state College of Nursing and specifically, Schools of Nursing Bida and Kontagora as well as the nursing students of the Standard College of nursing Minna. (School records, 2023). A total of 314 were recruited in the study.

For this study, total of 314 were recruited. This sample size was determined using sample size determination table by Krejcie and Morgan; (1970). Sample Size for $\pm 5\%$ and $\pm 10\%$ Precision Levels where Confidence Level is 95% and $P=0.5$. (Source: Krejcie & Morgan; 1970).

A purposive sampling was used to select the four nursing schools in Niger state whose total student population added to one thousand three hundred and seven (1307). This population met the criteria for selection in the study which was the availability of students in their intermediate and final years of study and post basic nursing students as well(these categories of students have spent at least one year in these schools). Based on the school's population, a proportionate sampling method was adopted to obtained samples to be used in the study from each of the schools selected. Simple random sampling was finally used to select the final total of 314 nursing students.

The instrument used for the study was a self-developed questionnaire entitled "Students' Perceived Effect of Extrinsic Motivation on Psychological state and Academic Performances" (SPEMPSPAP). The sets of questions in the questionnaire were designed to help determine the perceptions of nursing students on extrinsic motivation and how it affect their psychological states and academic performances. This tool was arrived at after comparing it to similar tool from other authors with similar research interest. The purpose and scope of the research guided the design of the tool, clarifying the research questions, hypotheses, objectives, and expected outcomes. Other considerations included the target population, sampling method, data sources, and data analysis plan. The validity and reliability of the instrument were ensured as indicated in the sections under validity and reliability of this instrument.

The questionnaire consisted of five sections. Section A was designed to elicit socio-demographic information of respondents.

Section B was designed to elicit information on nursing student's level of knowledge of motivation in the nursing schools in Niger state,

Section C was to obtain information regarding the perceived effects of extrinsic motivation on nursing students' psychological states in the nursing schools in Niger state.

Section D was designed to collect information on the perceived effects of extrinsic motivation on the academic performance of nursing students in nursing schools in Niger state. The questionnaire was scored as follows; items in section A were not scored but expressed in percentages and frequency table of respondents. In section B-D: responses were scored using the aggregates of frequencies and percentages and analyzed.

According to Kothari (2004) Validity is the most critical criterion that indicates the degree to which an instrument measures what it is supposed to measure. Validity of a research instrument assesses the extent to which the instrument measures what it is designed to measure (Robson, 2011). It is the degree to which the results are truthful. Validity is trying to explain the truth of research findings as explained by Zohrabi, (2013). For example, does IQ test measure intelligence? Validity is measured using both theoretical and empirical evidence. Theoretical assessment is where an idea of a construct is translated or represented into an operational measure. This was done by panel of experts who are my supervisors/ lecturers both from the nursing department and Faculty of education in this University that rated suitability of each item and evaluates its fitness in the definition of the construct. They also ensure that the face and content validity of the Questionnaire was good. The tool measured both the psychological states and academic performances it was meant to measure.

Then afterwards all necessary amendments were made based on their advice. Then content validity index was calculated using the following formula.

$$CVI = \frac{\text{NUMBER OF ITEMS RATED AS RELEVANT}}{\text{NUMBER OF ITEMS OF THE QUESTIONNAIRE}} \quad 47/53 = 0.887$$

The high content validity index means that the Questionnaire measured what it was meant to measure.

According to Drost (2011), reliability is “the extent to which measurements are repeatable when different people use the measurement on different occasion, under different condition, supposedly with alternative instruments which measure the construct or skill”. The reliability of this instrument was ensured through test re-test method in a pilot study conducted by the researcher using nursing students who were part of the study population but who did not participate in the study. The Pilot study took place three months before the study and in total seventy participants were used for the pilot study. The instrument was scrutinized for adequacy and completeness by the research panel consisting of two Professors and a Senior lecturer.

Out of the 314 questionnaires administered, 292 were found to be valid as these were well filled and returned to the researchers by the research assistants. Some were simply returned unfilled while others were wrongly filled and returned. The valid data collected was compiled, manually sorted out, coded using Statistical Package for Social Science (SPSS) software version 26.0 and descriptive statistics in the form of frequency, tables and percentages was utilized also.

Section A was analyzed using frequencies and percentages as this segment was concerned only with the Bio data of respondents and needs no further in-depth analysis.

Section B which was on the knowledge of motivation was analyzed using mean scores and percentages and as ‘good, moderate or poor knowledge’

Sections C-F were analyzed using mean scores and their corresponding standard deviations and interpreted afterwards.

Regression analysis was used to test the 2-hypothesis formulated and the results interpreted thereafter.

Letter of introduction was obtained from Department of Nursing Science, Ahmadu Bello University Samaru Zaria and submitted to the research ethical committee of Niger state Ministries of Health and Tertiary education to obtain Ethical approval.

After obtaining approval from these ministries which directly oversee these nursing schools, permission to conduct this research at the Niger State College

of Nursing sciences and the Standard College of Nursing Minna were obtained from the school authorities.

Informed- consent was obtained from the study participants after its content was approved by the research ethical committees of the Ministries concerned and only students who consented were involved in the study.

The respondents were fully briefed about the entire processes involved. Full confidentiality and anonymity were observed as no student identity was revealed throughout and even after the study.

Respondents were free to quit at any point of the study. Each participant was assigned a unique code. Researchers and data collectors were carefully trained on these ethical issues before data collection.

Results

Out of 314 of questionnaire administered, 292 were retrieved and formed the basis for the analysis.

Demographic Analysis of Respondents

Table 1: Distribution of the students according to their Socio-demographic characteristics (n= 292)

Variable	Frequency	Percent (%)
<i>Gender</i>		
Male	97	33.2
Female	195	66.8
<i>Age(years)</i>		
18-25	188	64.4
26-30	75	25.7
Above 30	29	10.0
<i>Religious Belief</i>		
Islam	169	57.9
Christianity	113	38.7
Others	10	3.4
<i>Marital Status</i>		
Married	10	36.3
Single	171	58.6
Divorced	3	1.0
Widowed	12	4.1

The demographic analysis presented in Table 1 sheds light on key characteristics of the respondents in the study, encompassing variables such as sex, age, religious belief, and marital status. In terms of sex, there were more female students than male, majority fall within the age bracket, 18-25 age. Overall, this demographic diversity is paramount for comprehending the composition of the study participants and holds the potential to inform analyses of how varying demographic factors may influence research findings or outcomes.

Assessment of Student's Knowledge of Motivation

Table 2: Distribution of the students according to their knowledge level on Motivation (n=292)

Statement	Mean	Standard Deviation	Remarks
Anything that encourages you to work harder	4.28	0.90	Agreed
Anything that makes one perform a task	3.47	0.88	Agreed
Something that enhances an individual's ability to do something	3.80	1.02	Agreed
The power to work at any given time and place	4.16	0.97	Agreed
Something that comes from the mind	4.19	0.99	Agreed
Something that makes you want to do work	4.29	0.93	Agreed
Anything that pushes one to achieve a desired objective	4.21	0.87	Agreed
Anything that makes you attain your goal or not	4.20	0.82	Agreed
Grand Mean	4.08	0.92	Agreed

This provides in-depth analysis on the student's level of knowledge of motivation, types and influences. Table 2 provide respondent responses on their knowledge of motivation.

The grand mean of 4.08 with a standard deviation of 0.92 indicates an overall agreement among students on the various motivational statements presented. This indicates that the respondents have a good level of knowledge of motivation.

Assessment of the perceived effect of extrinsic motivation on nursing student's psychological state in nursing schools in Niger State

Table 3: Distribution of Students according to their perceived Effects of Extrinsic Motivation on Psychological States

	As a student, I believe my psychological state is affected by	Mean	Standard deviation	Remark
1	Supportive and Understanding Family	4.37	0.91	Agreed
2	Good financial stability / instability	4.42	0.96	Agreed
3	Very conducive family environment	4.35	1.05	Agreed

4	Influence of Friends	4.30	1.13	Agreed
5	Safe and cohesive community	4.24	1.18	Agreed
6	Challenging School policies	4.10	1.04	Agreed
7.	Availability of Counseling/Mental health services	3.99	1.48	Agreed
8	Previous Academic results	3.52	1.21	Agreed
Grand Mean		4.16	1.12	Agreed

The analysis of student responses in Table 3 below reveals valuable insights into the complex interplay between extrinsic motivation and psychological states. The high mean scores across all statements indicate that students recognize the significant effects of extrinsic motivational factors on their psychological well-being.

Assessment of the Nursing Students' Perceived Effects of Extrinsic Motivation on their Academic Performance

Table 4: Distribution of Students according to their Perceived Effects of Extrinsic Motivation on Academic Performance

	As a student I perform better academically when there is	Mean	Standard Deviation	Remark
1	Positive and inclusive school climate	4.06	1.05	Agreed
2	Adequate and readily financial support	3.97	1.17	Agreed
3	Healthy relationship with school mates	4.33	0.98	Agreed
4	Strong family support	4.39	1.06	Agreed
5	Strong cultural and societal expectations	4.24	1.13	Agreed
6	Highly challenging academic programs	4.35	0.95	Agreed
	Mean	4.22	1.06	Agreed

This section provides detailed analysis on nursing students' perceived effects of extrinsic motivation on their academic performance. Hence, Table 4 revealed the student responses on the perceived effects.

Overall, the grand mean of 4.22 with a standard deviation of 1.06 suggests that students perceived extrinsic motivation as a factor that affects their academic performance.

Null Hypothesis One

H₀₁: There is no perceived effect of extrinsic motivation on nursing student's psychological status in nursing schools in Niger state

Table 5: Analysis of Effect of Extrinsic Motivation on Nursing Student's Psychological Status

Predictor	Coefficient Beta (β)	Standard Error	t-value	p-value	f ²
Extrinsic Motivation	0.71	0.21	2.18	0.00	0.42

*Significant at 0.05 level of significance (Source: Author Compilation, 2023)

The analysis of the perceived effect of extrinsic motivation on nursing student's psychological status among nursing students in the selected school was shown in Table 5.

The coefficient beta (β) associated with Extrinsic Motivation is 0.71. This coefficient indicates the strength and direction of the relationship between extrinsic motivation and nursing students' psychological status. The standard error for Extrinsic Motivation is 0.21, reflecting the variability in the coefficient estimate. The t-value for Extrinsic Motivation is 2.18, representing the ratio of the estimated coefficient to its standard error. Additionally, the p-value associated with Extrinsic Motivation is 0.00, which is less than the significance level of 0.05. This indicates that the coefficient for Extrinsic Motivation is statistically significant.

Therefore, based on the statistical analysis presented, the null hypothesis (Ho3) of no perceived effect of extrinsic motivation on nursing student's psychological status in the selected Nursing schools in Niger state is rejected.

Null Hypothesis Two

Ho2 There is no perceived effect of extrinsic motivation on nursing student's academic performance in nursing schools in Niger state.

Table 6: Analysis of Effect of Extrinsic Motivation on Nursing Student's Academic performance

Predictor	Coefficient Beta (β)	Standard Error	t-value	p-value	f ²
Extrinsic Motivation	0.63	0.34	3.59	0.00	0.35

*Significant at 0.05 level of significance (Source: Author Compilation, 2023)

The Table 6 shows the result of the regression analysis on effect of extrinsic motivation and nursing student's academic performance. The coefficient beta (β) associated with Extrinsic Motivation is 0.63. This coefficient indicates the strength and direction of the relationship between extrinsic motivation and nursing students' academic performance. The standard error for Extrinsic

Motivation is 0.34, reflecting the variability in the coefficient estimate. The t-value for Extrinsic Motivation is 3.59, representing the ratio of the estimated coefficient to its standard error. Additionally, the p-value associated with Extrinsic Motivation is 0.00, which is less than the significance level of 0.05. This indicates that the coefficient for Extrinsic Motivation is statistically significant.

Therefore, based on the statistical analysis presented, the null hypothesis (Ho₂) of no perceived effect of extrinsic motivation on nursing student's academic performance in the selected Nursing schools in Niger state is rejected.

Discussion

The results shows that a substantial proportion of students possess good knowledge of motivation, particularly in aspects such as "what enhances an individual's ability to do something" (89.4%), "what makes one perform a duty" (85.0%), and "anything that pushes one to achieve" (83.5%). These high percentages indicate that nursing students understand the critical role of motivation in their academic and professional lives. This understanding aligns with the definition provided by Schunk and DiBenedetto (2020), who describe motivation as the processes that instigate and sustain goal-directed activities, essential for achieving academic goals.

The highest mean scores were associated with a healthy relationship with schoolmates (mean = 4.33, SD = 0.98), strong family support (mean = 4.39, SD = 1.06), and highly challenging academic programs (mean = 4.35, SD = 0.95). These findings highlight the significance of a supportive social and familial environment, as well as the role of academic rigor in motivating students.

The findings support and expand on several empirical studies. Tokan and Imakulata's (2019) research, which indicated that extrinsic motivation did not significantly affect students' learning behavior without corrective action, suggests that targeted interventions can enhance the effectiveness of extrinsic motivators. This aligns with the current findings, which show that well-implemented extrinsic factors positively influence psychological states.

Ryan and Deci's (2000) Self-Determination Theory, which categorizes extrinsic motivation into various types with differing levels of autonomy, is

also relevant. The significant effects of extrinsic motivation observed in the current study could reflect higher levels of identified and integrated regulation, where students internalize external motivators, thus improving their psychological states and academic performance.

Strengths and limitation

Adequate sample size which enhances the power of the study and accurately represented the population of interest and reduced margin of error. However, the study would have been much more generalizable had more nursing schools being involved in this study.

Conclusion

In conclusion, the findings provide robust evidence that extrinsic motivational factors significantly affect nursing students' academic performance. The high mean scores from the survey and the statistically significant results from the regression analysis underscore the importance of a supportive educational environment, financial stability, and academic rigor in maintaining academic achievements. These findings align with and extend existing empirical literature, highlighting the need for targeted interventions to enhance extrinsic motivation and support students' academic success.

Funding

The primary study was self-sponsored but gained moral support from the Niger state government as the findings may likely improve indigent nurse's enrolment into the state civil service and hence a much better health services provision in the state.

Conflict of interest

All authors of this work declare no conflict of interest.

Clinical trial Number:

This is not applicable as the study was not a clinical trial.

Recommendations

There the need for the provision and maintenance of a safe and cohesive community which can actively support nursing education with essential resources and collaborate with educational institutions to establish robust support systems. Recognize the pivotal role of family support and financial aid in creating a conducive learning atmosphere. Safe and cohesive community can actively support nursing education with essential resources and collaborate with educational institutions to establish robust support systems.

Future studies should consider recruiting more nursing schools to explore the effect of extrinsic motivation on nursing student's psychological state and academic performance.

Recognize the pivotal role of family support and financial aid in creating a conducive learning atmosphere.

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Examining the Effect of Street Hawking on Academic Performance of Female Students in Sokoto State Secondary Schools

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Abstract

This study investigated the effect of street hawking on academic performance of female students in Sokoto state secondary schools. The study adopted descriptive survey research of correlational type to probe the opinions of the participants regarding relationship between street hawking and academic performance of female students in Sokoto state secondary schools. The study population consisted of 557 participants (female students) and the study take a sample of 234 out of 557 participants using Creswell (2012) table for determining sample size. The study employed convenience and simple random sampling techniques to carry out the study. The study used the following two (2) researcher-designed rating scale to collect data from the participants which include, Street Hawking among Female Students Rating Scale (SHFSRS) and Academic Performance Rating Scale (APRS) to collect data. The two questionnaires were validated by experts and professionals in educational management and policy studies, as well as, other experts in research methodology. The study conducted a trial testing of instrument using inter-Rater methods of reliability and it obtained 0.81 reliability index for Street Hawking among Female Students Rating Scale (SHFSRS) and 0.73 reliability index for Academic Performance Rating Scale (APRS) and this shows that the research instruments were found reliable for data collection. The study used descriptive statistics to answer research questions of the study, while Pearson Product Moment Correlation Coefficient (PPMC) to test the hypothesis at 0.05 level of significance with the aid of Statistical Package for Social Science (SPSS) software 20.0 version. The study found that Street hawking exposes female students to the act of immoralities, prostitution, regular road accident and other social vices that endanger their life. The study concluded that street hawking significantly hinders the educational development of female students in Sokoto state, this is because it reduces school attendances, increases truancy, enrollment and dropout rate which affects their academic performance and limit future opportunities. The study recommended that there is need for the state government through ministry of education to educate parents and guidance through sensitization and awareness creation programmes on the implication of street hawking on gild-child.

Keywords: Street Hawking, Female Students, Academic Performance

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Introduction

Education is widely recognized as a fundamental human right and a key driver of socio-economic development. It plays a pivotal role in shaping the future of individuals and communities, promoting gender equality and breaking the cycle of poverty. Girl child education in Sokoto state began when the Federal Government of Nigeria in collaboration with United Nations International Education Fund (UNICEF) recognized the need to reduce girl-child hawking abuse in the country (Fagunwa & Abidoye, 2025). Many parents were unconcerned about educating their female wards because they believe they would become someone else's property very soon, while others hide behind religion. Girl child are usually saddled with domestic work and the majority of them are withdrawn from schools to the labor market to fend for the whole family through hawking or petty trading (Fagunwa & Abidoye, 2025).

Street hawking is seen as a form of child-labor that is caused by greed, the quest to get riches propels female students into doing a lot of things they are not support to do all pursuit of livelihood instead of employing their youthful strength on farming to produce enough food for the family (Farcuta,2023). Street hawking is also exposes female students to a lot of risk and dangers like in most city centers, they can easily be knocked down by moving vehicles. Honesty and Okediran(2019) lamented that street hawking among female students have psychologically imposed other problem like sex networking behavior, juvenile delinquency behavior which takes most of the students' school time and leads to poor academic performance and dropout syndrome noticed among young female students.

Street hawking constitutes a social problem to female students and it exposes them to road accident, sexual harassment, kidnapping and so on. Street hawkers comes into contact with all sort of people including those with ignoble intention. Female students who engage in street hawking often do not attend school regularly and when they do they may not concentrate on their studies due to distractions, because their attention is often drawn to opportunities of making money thereby not taking their studies seriously. Oluwagbohunmi (2019) stated that female students who participated in hawking activities exhibited poor academic performance due to poor study habits. Street hawking has a negative effect on the level of education attained, school attendance, school grades, literacy and overall human capital

formation. A child who shares the school time with street hawking is always late to school and she bound to develop immoralities I school work which may include poor studying habits, lack of skills, low self-esteem and low academic performance in class resulting to failure or total dropping out of school. Experience as shown that some parents in town and cities withdrawn their female children from school in order send the hawking so as to make more money for the up keep (Umar, 2019).

Academic performance of female students who regularly involves in street hawking always below average as many of them find it difficult to combine schooling with hawking activities (Omorogiuwa,2016). The female students who engage in street hawking while also attending school often struggle with tardiness and many develop academic immoralities, including poor studying habits, lack of skills, low-self-esteem which have severe implication on their academic performance as many of them already have divided attention in the classroom during the lessons. The female students who constantly involve in street hawking always suffer poor academic performance and this will make to show sign of un-seriousness towards school activities as a result of tiredness and stress emanated from street hawking and this singular act might make them to develop school phobia. It is in view of the above background that this study deemed it necessary to investigate the relationship between street hawking and academic performance of female students in Sokoto state secondary schools.

Statement of the Problem

In Nigeria today, particularly Sokoto state, hawking by children specifically girl-child of school age is not entirely new in the society. Street hawking creates room for lack of seriousness and interest in school work, poor memory, learning difficult and under achievement in the classroom activities for the academic excellence. The researcher's experience indicated that most female students who engage in street hawking suffer from fatigue, irregular school attendance, lack of comprehension and motivation, improper socialization, exposure to risk of sexual abuse and high likelihood of being involve in all manners crimes and other social vices. Regular street hawking disrupted their education through absenteeism, tardiness and truancy leading to poor academic performance and poor academic performance culminate to increase in dropout rate. Female student hawkers are depriving of education which consequence is poor academic performance. This is because street hawking

contributes to students' moral laxity, laziness and truant behaviors capable of negatively influence their academic performance in school. Street hawking affect severely the girl child education negatively since the girl child suffers physical discomfort causing loss of concentration.

Objectives of the Study

The following objectives are to find out:

- I. The extent of street hawking among female students in Sokoto state secondary schools.
- II. The level of academic performance among female students in Sokoto state secondary schools.
- III. The relationship between street hawking and academic performance of female students of Sokoto state secondary school.

Research Questions

This study was guided by the following research questions

- I. What is the extent of street hawking among female students in Sokoto state secondary schools?
- II. What is the level of academic performance among female students in Sokoto state secondary schools?
- III. What is the relationship between street hawking and academic performance of female students of Sokoto state secondary school?

Research Hypothesis

Based on research questions and objectives, the study formulated and tested the following hypotheses at 0.05 level of significance

H₀₁: There is no significant relationship between street hawking and academic performance of female students of Sokoto state secondary school

Theoretical Framework

The study hinged on rational choice theory which was propounded by George Homes in 1961. Theory has been developed to understand the behavior of individuals and groups in various settings. It posits that individuals make rational choice based on their preferences and constraints with the aim of maximizing their utility. The theory has been widely applied in various fields such as economics, political sciences, sociology and psychology. In applying this theory to the present study, it can be seen that, children go into street hawking directly due to the limited resources and overflowing demand experienced by parents in meeting their financial obligation in the family as a result of the disturbing economic situations in the country. so, the choice of street hawking in the family becomes necessary to augment family income. This means that, parents and guidance make the choice of engaging their female children in the street hawking to augment the family income because of the constraint they experienced in meeting family needs.

Methodology

The study adopted descriptive survey research of correlational type to probe the opinions of the participants regarding relationship between street hawking and academic performance of female students in Sokoto state secondary schools. The study population consisted of 557 participants (female students) and the study take a sample of 234 out of 557 participants using Creswell (2012) table for determining sample size. The study employed convenience and simple random sampling techniques to carry out the study. The study used the following two (2) researcher-designed rating scale to collect data from the participants which include, Street Hawking among Female Students Rating Scale (SHFSRS) and Academic Performance Rating Scale (APRS) to collect data. The two questionnaires were validated by experts and professionals in educational management and policy studies, as well as, other experts in research methodology. The study conducted a trial testing of instrument using inter-Rater methods of reliability and it obtained 0.81 reliability index for Street Hawking among Female Students Rating Scale (SHFSRS) and 0.73 reliability index for Academic Performance Rating Scale (APRS) and this shows that the research instruments were found reliable for data collection. The study used descriptive statistics to answer research questions of the study, while Pearson Product Moment Correlation Coefficient (PPMC) to test the

hypothesis at 0.05 level of significance with the aid of Statistical Package for Social Science (SPSS) software 20.0 version.

Results

The section presented answer to research question using descriptive statistics such as mean ($\bar{x}$), standard deviation (SD), tables and frequency counts.

RQ1: What is the extent of street hawking among female students in Sokoto state secondary schools? The Research Question one is related to 1-5 items in the Street Hawking among Female Students Rating Scale (SHFSRS) and presented in Table 1.

Table 1: Showing Street Hawking among Female Students in Sokoto State Secondary Schools

S/N	Item Statements	Mean ($\bar{x}$)	SD	Remarks
1.	Street hawking exposes female students to the act of immoralities and other social vices	3.66	0.31	Significant
2.	Street hawking exposes female students to prostitutions and substance abuse	3.64	0.30	Significant
3	Street hawking exposes female students into regular road accident that can cause injuries	3.69	0.26	Significant
4.	Street hawking exposes female students into the risk of sexually transmitted infections	3.72	0.24	Significant
5.	Street hawking exposes female students to stereotypically stigmatization and bullied	3.68	0.30	Significant
Total Mean ($\bar{x}$)		3.68	0.29	Significant
Mean scale=2.50				

Table 1 indicated the descriptive statistics (mean and standard deviation) the extent of street hawking among female students in Sokoto state secondary schools. It is evident from the table that the general opinions of the participants presented by the grand mean scores of 3.68 are greater than the scale mean scores of 2.50. This implies that Street hawking exposes female students to the act of immoralities, prostitution, regular road accident and other social vices

RQ2: What is the level of academic performance among female students in Sokoto state secondary schools? The Research Question one is related to 1-5 items in the Academic Performance Rating Scale (APRS) and presented in Table 2.

Table 2: Showing the Level of Academic Performance among Female Students in Sokoto state Secondary Schools

S/N	Item Statements	Mean ($\bar{x}$)	SD	Remarks
1.	Street hawking among female students results to loss of concentration in the classroom that culminate to poor academic performance	3.69	0.31	Significant
2.	Street hawking among female students result to high dropout rate due to poor academic performance	3.68	0.29	Significant
3	Street hawking among female students result to absenteeism, truancy and tardiness due to poor academic performance	3.64	0.34	Significant
4.	Street hawking among female students lead to physical discomfort causing discouragement result to poor academic performance	3.71	0.26	Significant
5.	Street hawking among female students exhibit poor study habits affecting their academic performance.	3.68	0.23	Significant
Total Mean ($\bar{\bar{x}}$)		3.68	0.28	Significant
Mean scale=2.50				

Table 2 indicated the descriptive statistics (mean and standard deviation) about the level of academic performance among female students in Sokoto state secondary schools. Nigeria. It is evident from the table that the general opinions of the participants presented by the grand mean scores of 3.68 are greater than the scale mean scores of 2.50. This implies that street hawking reduces female students' study time, loss of concentration and overall ability to assimilate during class lessons which negatively affected their academic performance in school.

Hypothesis Testing

H₀₁: There is no significant relationship between street hawking and academic performance of female students in Sokoto state secondary schools. The hypothesis was tested by subjecting the scores of streets hawking and that of academic performance of female students to Pearson correlation analysis as shown in Table 3

Table 3: Relationship between Street Hawking and Academic performance of female Students of Sokoto State Secondary School

Variables	N	Mean	SD	Df	R	Sig	Decision
Street Hawking	234	20.23	3.16		0.457	0.001	H ₀₁

Academic Performance	234	19.56	1.50	332	Rejected
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Source: Field Survey, 2026

Table 3 indicated the results of descriptive statistics and correlation analysis for testing the relationship between street hawking and academic performance of female students of Sokoto state secondary schools. Street hawking has mean of 20.23 and standard deviation of 3.16 while academic performance of female students has mean of 19.56 and standard deviation of 1.50. The result of the correlation analysis revealed the coefficient (r) of 0.457 with p-value=0.000<0.05. This result shows that there is strong, positive and significant correlation between street hawking and academic performance of female students of Sokoto state secondary schools. Therefore, the null hypothesis H_{01} is rejected at 5% level of significance. This result revealed that there is significant relationship between street hawking and academic performance of female students of Sokoto state secondary schools. This means that female hawkers are not able to attend school regularly as a result of their hawking activities which culminated to poor performance.

- I. Based on results of the analysis, the following are the summary of the major findings
- II. The study found that Street hawking exposes female students to the act of immoralities, prostitution, regular road accident and other social vices that endanger their life.
- III. The study also found that street hawking contributes to female students' moral laxity, laziness and truant behavior capable of negatively influence in their academic performance.
- IV. The study also, found that there is significant relationship between street hawking and academic performance of female students of Sokoto state secondary schools. This means that female hawkers are not able to attend school regularly as a result of their hawking activities which culminated to poor performance.

Conclusion

Based on research findings this study concluded that, street hawking is highly detrimental to female students' psychological and social development which cannot be overlooked. In Nigeria, Sokoto state in particular, it appears that girl-child development is grossly abused through the increasing display of

hawking in almost all the streets in the state. The study also concluded that, street hawking significantly hinders the educational development of female students in Sokoto state, this is because it reduces school attendances, increases truancy, enrollment and dropout rate which affects their academic performance and limit their future opportunities.

Recommendations

Based on findings and conclusions of this study, the following have been recommended;

- I. There is need for the state government through ministry of education to educate parents and guidance through sensitization and awareness creation programmes on the implication of street hawking and how it exposes female students to the act of immoralities, prostitution, regular road accident and other social vices that endanger their life and this would discourage rampageous street hawking in the state.
- II. There is need for the school management to provide counselling services to female students in all female secondary schools in Sokoto state on how the street hawking would make them to become victim of sexual abuse, kidnapping, road accident moral laxity, and laziness and truant behavior capable of negatively influence in their academic performance.
- III. 3. There is need for collaborative efforts from government, stakeholders and communities to enforce protection of laws and promote access to quality education for the girl-child so as to adequately prepare them for the future opportunities in a modernize society.

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Enhancing Counselling Services Through Digitalization and Inclusiveness in the 21st Century: Challenges and Prospects

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Abstract

This paper explored Counselling Services through Digitalization and Inclusiveness in the 21st Century: Challenges and Prospects. The 21st century has witnessed significant changes in mental health service delivery, particularly with the advent of digital tools such as teletherapy platforms, artificial intelligence applications, mobile counselling apps, and virtual reality interventions. Simultaneously, the push for inclusiveness has led to the adoption of multicultural, gender-sensitive, and disability-inclusive counselling approaches. However, challenges persist, including digital illiteracy, uneven internet access, data security risks, and reduced interpersonal connection. On the inclusiveness front, while strides have been made in addressing cultural diversity and minority representation, structural and technological barriers still marginalize some groups. The study concludes that a collaborative, policy-driven approach that merges technology with inclusive values is essential for the future of equitable counselling services. Suggestions include continuous professional development, ethical guidelines for e-counselling, and investments in inclusive digital infrastructure.

Keywords: Digital Counselling Services, Digitalization and Inclusiveness

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Introduction

In the 21st century, the rapid advancement of information and communication technology (ICT) has significantly transformed various sectors, including education, healthcare, and mental health services. Counselling, as a critical support service in educational and therapeutic settings, has increasingly embraced digitalization to meet the evolving needs of clients in a tech-driven world. Digital platforms such as mobile applications, virtual counselling rooms, and artificial intelligence-assisted therapy tools are reshaping the traditional face-to-face counselling approach (Oluwatayo & Adebayo, 2022).

Moreover, the push for inclusiveness in contemporary counselling services emphasizes the need to accommodate individuals from diverse backgrounds, including those with disabilities, different cultural orientations, gender identities, and socio-economic statuses. Inclusivity ensures that counselling practices are sensitive, adaptive, and responsive to the specific needs of marginalized populations. Digitalization plays a vital role in fostering inclusiveness by providing customized digital tools, language translation services, and accessibility features such as screen readers and captioning systems for persons with disabilities (Okeke & Ezeani, 2023). The COVID-19 pandemic further accelerated the digital transformation of counselling services. As physical interactions were restricted, many institutions and mental health professionals resorted to online platforms to continue providing support to their clients. Tele-counselling, virtual therapy sessions, and digital mental health interventions became mainstream, emphasizing the importance of digital readiness among counsellors and clients alike (WHO, 2022). This shift not only highlighted the potential of digital counselling but also exposed digital divides, prompting urgent discussions on equitable access to digital infrastructure and training.

In addition to accessibility, digital counselling improves efficiency and engagement. Tools such as automated appointment scheduling, digital record keeping and client self-assessment apps streamline the counselling process and reduce administrative burdens. Furthermore, interactive digital resources like gamified therapy modules and virtual reality environments offer engaging ways to address complex psychological issues such as trauma, anxiety, and depression (Adeyemo & Yusuf, 2021). However, despite the advantages, digital counselling also presents several challenges. Issues surrounding data

privacy, confidentiality, and ethical considerations in virtual environments raise significant concerns. Additionally, the lacks of digital literacy among some clients and counsellors, as well as infrastructural limitations in rural and low-income regions, hinder the widespread adoption of digital counselling services (Eze & Okonkwo, 2023).

However, enhancing counselling services through digitalization and inclusiveness is not just a trend but a necessary evolution in the face of technological advancement and increasing societal diversity. To maximize the benefits, there must be a holistic approach that combines technological innovation with inclusive practices and ethical considerations. The integration of digital tools into counselling services promises to improve accessibility, effectiveness, and client satisfaction while promoting a more inclusive and equitable mental health landscape for all (UNESCO, 2023).

Counselling, as a professional discipline, is broadly defined as a process through which a trained individual (the counsellor) assists another individual (the counsellee or client) in understanding and resolving personal, social, educational, or psychological challenges. It is a structured, interactive, and goal-directed relationship that emphasizes trust, empathy, confidentiality, and support. According to Gibson and Mitchell (2018), counselling is a dynamic and purposeful relationship aimed at facilitating self-understanding, emotional growth, and positive change in behavior. It allows individuals to explore their thoughts, feelings, and experiences in a safe and non-judgmental environment, promoting self-awareness, decision-making, and problem-solving skills.

Counselling services refer to the wide range of professional interventions and support systems provided to individuals or groups to address specific issues related to mental health, education, career development, relationships, trauma, and social well-being. These services can take place in schools, hospitals, rehabilitation centers, workplaces, or community settings and may include academic advising, career counselling, marital therapy, grief counselling, and substance abuse rehabilitation. According to Omoniyi (2016), counselling services are essential in educational institutions as they aid students in adjusting to school life, managing academic stress, and making informed career choices. In the broader community, such services play a critical role in addressing mental health concerns and promoting overall well-being.

Furthermore, counselling services are guided by ethical principles, cultural sensitivity, and professional standards to ensure the dignity, privacy, and

welfare of clients are upheld. With the increasing complexity of modern life, the scope of counselling has expanded to include digital or e-counselling, crisis intervention, group therapy, and psychological first aid. As noted by Corey (2017), effective counselling services require not only technical skills but also a deep understanding of human development, personality theories, and interpersonal communication. The incorporation of evidence-based practices and continuous professional development ensures that counsellors remain effective in meeting diverse client needs in an ever-changing society.

Digitalization refers to the integration and application of digital technologies into various aspects of human activities, transforming traditional processes and services into more efficient, accessible, and automated formats. In the context of counselling and mental health services, digitalization involves the use of tools such as online platforms, mobile applications, virtual reality, artificial intelligence (AI), and tele-counselling to enhance communication, diagnosis, therapy, and follow-up services. According to Bharadwaj et al. (2022), digitalization enables real-time access to counselling services, bridging geographic and time-related gaps, and offering convenience to both clients and practitioners. It improves data management, enables remote intervention, and allows for scalable service delivery, particularly vital in resource-limited settings. The increasing dependence on digital technologies in the 21st century has made digital literacy and infrastructure essential components of modern professional counselling practice (OECD, 2023).

Inclusiveness is the practice of ensuring equal access, participation, and representation of all individuals, regardless of their background, abilities, gender, ethnicity, or socio-economic status. In counselling services, inclusiveness means designing and delivering interventions that are culturally sensitive, linguistically appropriate, and accessible to people with disabilities or marginalized identities. According to UNESCO (2022), inclusiveness involves the deliberate removal of systemic barriers that hinder participation in social services, including educational, psychological, and health-related interventions. Inclusive counselling practices ensure that every individual regardless of location, language, or condition—can benefit from support systems that respect their dignity and context. When combined with digitalization, inclusiveness can be scaled up to accommodate diverse needs through adaptive technologies, translation tools, and user-friendly digital interfaces (Smith & Adepoju, 2023).

The Role of Digital Technologies in Modern Counselling Services

Digital technologies have revolutionized the way counselling services are delivered, accessed, and managed in the 21st century. Traditionally, counselling relied heavily on face-to-face interactions within designated professional settings. However, the advent of digital tools has expanded the scope of service delivery, allowing counsellors to reach clients remotely, personalize support, and improve efficiency. According to Eze and Ajayi (2023), digital technology has introduced innovative platforms that support therapeutic interactions, assessment, diagnosis, and follow-up, making counselling more flexible, timely, and client-centered. These technologies not only enhance access to services, especially for clients in remote or underserved areas, but also facilitate ongoing support beyond the traditional office setting.

Some of the major digital technologies that are transforming counselling services include:

- I. **Tele-counselling and Video Conferencing Tools:** Platforms such as Zoom, Microsoft Teams, and Google Meet are now commonly used to deliver real-time virtual therapy. These tools allow for face-to-face interaction without physical presence, breaking geographical barriers and enabling continuous therapy sessions regardless of location (Afolabi & Usman, 2022).
- II. **Mobile Applications and Chatbots:** Digital mental health apps like *Wysa*, *Better Help*, and *Youper* offer AI-driven counselling interfaces, journaling features, guided self-help exercises, and mood tracking. These tools support clients between sessions and promote mental well-being in a discreet and accessible manner (WHO, 2023).
- III. **Online Assessment and Screening Tools:** Web-based platforms now host digital versions of psychological tests and diagnostic tools, allowing clients to complete self-assessments remotely. This enables counsellors to gather timely data and monitor progress over time with greater convenience and accuracy.
- IV. **Digital Record-Keeping and Case Management Systems:** Counsellors use secure electronic systems to store, retrieve, and update client

records. These systems improve documentation, confidentiality, and collaborative care among professionals.

- V. Virtual Reality (VR) and Augmented Reality (AR): In more advanced settings, VR and AR are used for exposure therapy, especially in treating phobias, PTSD, and social anxiety. These immersive environments simulate real-life scenarios, enabling clients to confront and manage their anxieties safely (Ifeanyi & Obasi, 2023).

Furthermore, digital platforms have created opportunities for counsellor training, supervision, and peer support through webinars, online workshops, and collaborative platforms. As noted by Nwachukwu and Bello (2022), digital technologies have significantly enhanced the scalability and responsiveness of counselling services, especially during emergencies such as the COVID-19 pandemic, when physical access to therapy was severely restricted. Nevertheless, the successful implementation of these technologies requires proper infrastructure, digital literacy, and adherence to ethical standards to protect client confidentiality and ensure the effectiveness of interventions.

Promoting Inclusiveness in Counselling Practices

Promoting inclusiveness in counselling practices involves ensuring that counselling services are accessible, equitable, and responsive to the diverse needs of all individuals, regardless of their background, ability, gender identity, religion, culture, or socioeconomic status. Inclusiveness in counselling is rooted in the principles of social justice and human rights, aiming to dismantle systemic barriers that hinder participation and engagement in mental health services. According to UNESCO (2022), inclusive counselling ensures that every client is treated with dignity, respect, and cultural sensitivity. It involves understanding the unique experiences and challenges faced by marginalized populations and adapting counselling approaches to accommodate these differences effectively.

In practice, inclusiveness can be promoted through several strategies. First, counsellors must undergo continuous training on cultural competence, disability awareness, gender sensitivity, and anti-discriminatory practices to build their capacity for inclusive engagement. Second, counselling settings must be physically and digitally accessible—for instance, offering services in

multiple languages, providing sign language interpreters, and ensuring compatibility with assistive technologies such as screen readers and captioning tools (Okonkwo & Abubakar, 2023). Furthermore, counsellors must create safe spaces where clients feel free to express themselves without fear of judgment or bias. This includes using inclusive language, respecting diverse family structures, and acknowledging non-traditional spiritual or cultural beliefs.

Digital technology also plays a significant role in promoting inclusiveness by breaking down barriers related to geography, mobility, and communication. Online platforms allow clients in rural or underserved areas to access professional support. Mobile apps can provide anonymous, stigma-free access to mental health tools, especially for youth, LGBTQ+ individuals, and persons with disabilities. However, promoting inclusiveness also requires bridging the digital divide ensuring that all individuals, regardless of their economic status, have access to the necessary digital infrastructure and literacy (Adepoju & Oladipo, 2023).

Challenges of Digital and Inclusive Counselling in the 21st Century

Despite the numerous advantages of digital and inclusive counselling practices, several significant challenges hinder their effective implementation in the 21st century. One of the foremost issues is the digital divide, which refers to the unequal access to digital devices, internet connectivity, and technical literacy among populations, especially in low-income or rural communities. In many developing countries, a substantial portion of the population still lacks the infrastructure or skills needed to benefit from digital counselling platforms (Adebayo & Musa, 2023). This digital inequality creates disparities in service delivery, where only tech-savvy or urban clients can effectively utilize online counselling tools, thereby excluding the very populations that inclusive practices aim to support.

- I. Data privacy, confidentiality, and ethical concerns. Digital counselling involves the storage and transmission of sensitive client information through electronic platforms, making it vulnerable to cyber threats, data breaches, or unauthorized access. Counsellors must adhere to strict ethical standards and data protection regulations, which are either weakly enforced or poorly understood in some contexts. According to Nwankwo and Salami (2022), many digital platforms used for counselling in Africa lack end-to-end encryption and proper user

authentication, raising questions about the safety of clients' personal data. In addition, clients may be reluctant to discuss intimate issues in digital settings due to fears of surveillance or misuse of their information.

- II. Lack of professional preparedness and digital competence among counsellors: Many practising counsellors, especially older professionals, may not be adequately trained to use digital tools effectively or deliver inclusive services that address the needs of culturally diverse or marginalized groups. This gap often results in miscommunication, misdiagnosis, or inappropriate interventions.
- III. Absence of inclusive digital content, such as counselling materials in local languages, platforms compatible with assistive technologies for persons with disabilities, or culturally relevant therapeutic frameworks (Okeke & Bakare, 2023). The rigidity of existing digital counselling platforms sometimes excludes clients who do not fit dominant cultural or linguistic norms.
- IV. Institutional and policy-related obstacles also pose challenges to digital and inclusive counselling. Many institutions lack comprehensive guidelines or standardized protocols for online counselling, resulting in inconsistent service delivery and limited accountability. Government support for inclusive mental health services is often weak, with inadequate funding, poor regulation, and limited investment in training programs. Additionally, the stigma associated with both mental health and digital help-seeking in some societies further discourages people from using these services, especially among older adults or traditional communities (UNDP, 2023). To address these challenges, there must be deliberate efforts to build digital infrastructure, improve counsellor training, and enforce ethical standards that uphold both digital security and inclusivity.

Prospects and Strategic Suggestions for Sustainable Integration

The prospects for enhancing counselling services through digitalization and inclusiveness in the 21st century are promising, especially as societies become more interconnected and technology-driven. One of the major prospects lies in the potential to expand access to underserved populations, including

individuals in rural areas, people with disabilities, and marginalized communities. With the increasing availability of mobile devices and internet penetration, even in remote regions, digital platforms can be used to deliver mental health services at scale. According to Oyetunde and Chukwu (2023), the continued integration of digital technologies into national mental health policies has the capacity to close service delivery gaps, promote early intervention, and support continuous care across diverse populations. This can reduce the burden on traditional in-person counselling systems, particularly in countries with a shortage of qualified professionals.

Another prospect is the use of Artificial Intelligence (AI), machine learning, and big data analytics to personalize and optimize counselling services. These technologies can be employed to monitor client progress, predict risks, automate scheduling, and provide real-time self-help interventions. Additionally, cloud-based platforms and mobile applications are enabling 24/7 support services, offering flexible and on-demand access to mental health resources. As counsellors become more digitally competent, virtual reality (VR), augmented reality (AR), and gamified mental health tools will further enhance therapeutic engagement, especially for children, adolescents, and trauma patients (Adegbite & Nwachukwu, 2023). These innovations open up new frontiers for client-centred, efficient, and proactive mental health care.

Suggestions

To ensure sustainable integration, the following strategic suggestions are essential:

- I. **Strengthen ICT Infrastructure:** Governments and stakeholders must invest in robust digital infrastructure, especially in low-income and rural areas, to ensure equitable access to online counselling platforms.
- II. **Capacity Building and Training:** Continuous professional development programs should be established to train counsellors in digital skills, inclusive practices, and ethical guidelines for online service delivery.
- III. **Policy and Regulatory Frameworks:** National policies should include clear protocols for digital counselling, addressing data privacy, professional accountability, and quality assurance mechanisms.

- IV. User-Centred Design: Developers of digital counselling tools must engage a diverse user group in the design process to ensure content is culturally relevant, language-sensitive, and accessible to people with disabilities.
- V. Public Awareness and Advocacy: Campaigns should be launched to reduce stigma around both mental health and digital help-seeking, encouraging clients to embrace innovative counselling methods.

Conclusion

In the 21st century, enhancing counselling services through digitalization and inclusiveness has become not only a necessity but a transformative approach to mental health and psychosocial support. The integration of digital technologies has significantly expanded the reach, flexibility, and responsiveness of counselling, making services more accessible to diverse populations across geographical and social boundaries. Simultaneously, embedding inclusiveness into counselling practice ensures that individuals from marginalized or disadvantaged backgrounds such as those with disabilities, language barriers, or limited economic resources are not left behind in the provision of support. Together, digitalization and inclusiveness provide a powerful framework for delivering equitable and effective mental health interventions in a rapidly evolving world. However, this transformation is not without its challenges. Issues such as digital illiteracy, infrastructural deficits, data privacy concerns, and lack of professional preparedness continue to hinder widespread adoption and equitable implementation. Many clients, particularly in rural or underserved areas, still face barriers to accessing digital counselling tools due to poor connectivity or technological exclusion. Addressing these challenges requires a coordinated and strategic effort from governments, educational institutions, non-governmental organizations, and counselling professionals. Looking forward, the prospects are encouraging. With proper investment in digital infrastructure, training, inclusive design, and policy development, the counselling profession can fully leverage the potential of technology to offer client-centered, culturally sensitive, and ethically sound services.

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Repositioning Teaching and Research Farms in Nigerian Higher Institutions: A Strategic Framework for Revitalizing Agricultural Education and Food Security

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Abstract

Nigeria's agricultural sector is important in the Nigerian economy. It is accountable for nearly 24 % of the GDP and employs close to 70% of the labor force. Yet it is contending with a worsening food insecurity crisis, with projections suggesting that 33.1 million people may be acutely affected by 2025. An important piece of correcting this situation is modernizing teaching and research farms at post-secondary institutions—facilities that have endured chronic underfunding, poor upkeep, and neglect for decades. This position paper is guided by the Agricultural Innovation Systems (AIS) framework and informed by peer-reviewed studies, government policies, and empirical data from Nigeria and Africa (2020–2026). It delves into the vital roles these farms play in agricultural education. It evaluates their impact on food security, identifies the structural and institutional hurdles that hinder their effectiveness, and suggests a comprehensive strategic framework for their revitalization. This framework includes dedicated government funding, fostering public-private partnerships, reforming the curriculum to include hands-on experiences, strengthening the links between research, extension services, and farmers, and promoting climate-smart agricultural practices. In line with the National Agricultural Technology and Innovation Policy (NATIP, 2022–2027) and the Sustainable Development Goals (SDGs) 2, 4, 8, and 13, the paper urges the government, universities, the private sector, and development partners to recognize teaching and research farms as vital national assets that are essential for transforming Nigeria's agricultural landscape.

Keywords: Teaching farms, Research farms, Agricultural education, Food security, Agricultural Innovation Systems, Nigeria

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Introduction

Agriculture is the mainstay of Nigeria's socio-economic development, contributing approximately 24% of GDP and employing 70% of the population (FAO, 2024; Oxford Business Group, 2024). With a population exceeding 220 million and projected to reach 400 million by 2050, the imperative to strengthen food production capacity is cogent, urgent, and existential. The World Food Programme (WFP, 2024) estimates that 33.1 million Nigerians will face acute food insecurity in 2025, driven by a food inflation rate of 35.41% in early 2024, Naira depreciation, climate variability, persistent insecurity in the northeast, and structurally weak agricultural production systems. Addressing these challenges requires a critical examination of agricultural education infrastructure in higher institutions, which constitutes the primary means of developing the human capital, innovations, and policies essential for effective national food systems (Egeru et al., 2024). In Nigeria, the Federal Ministry of Agriculture and Rural Development's NATIP (2022–2027) identifies higher institutions as vital contributors to food and nutrition security through 21st-century knowledge and technology (Federal Ministry of Agriculture and Rural Development (FMARD), 2022). Yet the infrastructure most critical to delivering agricultural education—teaching and research farms—continues to suffer from chronic underfunding, deteriorating facilities, and weak institutional coordination (Unizik Journal of Educational Laws and Leadership Studies [UNILAWS], 2024). In comparable African contexts, university farms have successfully bridged academia, agribusiness, and smallholder communities (Frontiers in Sustainable Food Systems, 2024); Nigerian institutions are increasingly unable to replicate this potential.

Theoretical Framework: Agricultural Innovation Systems

This paper is anchored on the Agricultural Innovation Systems (AIS) framework, which conceptualizes agricultural development as a dynamic, interactive process involving universities, research institutes, extension services, private firms, farmer organizations, and policy institutions. The quality of interactions among these actors determines the pace and quality of agricultural innovation (Cees et al., 2025). From an AIS perspective, teaching and research farms are crucial nodes linking knowledge creation (research), knowledge sharing (education and extension), and knowledge application

(farming practice). When these linkages weaken through underfunding, poor management, or inadequate collaboration, the entire innovation system underperforms. Conversely, well-resourced university farms can catalyze systemic change by generating locally relevant innovations, training skilled graduates, and facilitating technology diffusion to smallholder communities. The AIS framework provides both the analytical lens for diagnosing challenges and the theoretical foundation for the strategic framework proposed in Section 5.

Problem Statement

Teaching and research farms in Nigerian higher institutions are in a state of progressive decline. This directly undermines the quality of agricultural education, food security, and national agricultural transformation. Despite supportive frameworks—NATIP (2022–2027), the National Development Plan (2021–2025), and SDG 2 (Zero Hunger)—a critical implementation gap persists. Agricultural budget allocations have remained far below the Maputo Declaration's 10% benchmark, recorded at only 2.5% in 2022, 2% in 2023, and 3.5% in 2024 (Action Aid Nigeria, as cited in Afripoli, 2025); allocations to university farms within this already constrained budget are negligible. The consequences are severe: Nigeria's food trade deficit reached ₦9 trillion between 2021 and 2024 (FAO, 2024), and over 100 million Nigerians faced food insecurity in the first quarter of 2024 (Verivafrika, 2025). This vicious cycle of deteriorating infrastructure, underfunded research, inadequately prepared graduates, and insufficient support for farmers demands a comprehensive, evidence-based strategic framework.

Objectives

Four clear objectives guide this paper:

- I. to explore the roles of teaching and research farms in agricultural education within Nigerian higher institutions;
- II. to evaluate their direct and indirect contributions to food security in Nigeria;
- III. to identify the structural, financial, and institutional challenges limiting their effectiveness; and

- IV. to develop a strategic framework for repositioning teaching and research farms in order to enhance their contribution to national food security.

Research Questions

Correspondingly, four research questions were put together to guide the analysis:

- I. What roles do teaching and research farms fulfil in agricultural education within Nigerian higher institutions?
- II. How do they contribute, directly and indirectly, to food security in Nigeria?
- III. What structural, financial, and institutional challenges limit their effectiveness?
- IV. What strategic framework is required to reposition them as vital contributors to food security and agricultural transformation in Nigeria?

The remaining part of the paper follows in the following sections: Section 2 describes the methodology; Section 3 clarifies key concepts; Section 4 examines the state of teaching and research farms; Section 5 proposes the strategic framework; Section 6 presents conclusions and recommendations.

Methodology

This study is a position paper that synthesizes existing evidence to advance a clear analytical perspective and propose actionable recommendations, rather than generating primary data. A structured, thematic literature review was conducted across Google Scholar, Scopus, ScienceDirect, PubMed, the FAO digital repository, and FMARD policy portals. Search terms included: "teaching farms Nigeria," "research farms higher institutions Nigeria," "agricultural education food security Africa," "agricultural innovation systems Nigeria," "climate-smart agriculture Nigeria," "public-private partnerships agriculture Nigeria," and "food insecurity Nigeria 2020–2026." Inclusion criteria prioritized peer-reviewed articles, policy documents, institutional reports, and empirical studies published between 2020 and 2026, primarily

from Nigeria, with secondary coverage of sub-Saharan Africa. Seminal pre-2020 works providing theoretical grounding (Ayanda, 2013; Becker, 1964; Kolb, 1984) were included. Opinion pieces without scholarly citations, unverifiable grey literature, and non-African studies without comparative relevance were excluded. Thematic content analysis was applied with organizing materials around four domains aligned with the research questions: roles of teaching and research farms; contributions to food security; challenges; and strategic solutions. All themes were cross-referenced with the AIS framework. Counterarguments identified in the literature—including the fiscal feasibility of dedicated funding, barriers to curriculum reform, PPP performance in resource-constrained settings, and CSA scalability limitations—were critically engaged throughout.

Clarification of Concepts

Agricultural education refers to a structured process through which individuals acquire knowledge, skills, values, and dispositions for productive and sustainable agricultural engagement. In Nigerian universities, it spans undergraduate and postgraduate study in crop sciences, animal sciences, soil science, agronomy, extension, food technology, and agribusiness. Osagiede et al. (2024) argue that it must transition from lecture-dominated approaches to practical, farm-based experiential learning, positioning teaching farms at the centre of curriculum design.

Teaching farms are agricultural lands and facilities managed by or affiliated with higher institutions to provide structured, practical agricultural training. They translate theoretical knowledge into direct farming experience. The NUC-mandated Farm Practical Training (FPT) programme was designed to ensure this practical foundation (Ayanda, 2013; Bulya et al., 2021). This develops student competencies and prepare graduates for agricultural careers when the appropriate resources are available

Research farms: These are specialized experimental sites linked to universities and agricultural colleges, dedicated to field experiments, technology testing, variety development, and agronomic data generation. Olumide (2024) underscores that adequate funding for research farm infrastructure is essential for producing applicable technologies and providing technical support to farmers—support that is severely constrained across Nigeria.

Food security, according to FAO (2022), exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food meeting their dietary needs for an active and healthy life. It rests on four pillars: availability, accessibility, utilization, and stability (Otekunrin et al., 2023; Ojo et al., 2025). Nigeria's food insecurity is of many dimensions that require simultaneous attention to all four pillars.

The State of Teaching and Research Farms in Nigerian Higher Institutions

Skills Training and Human Capital Development

Teaching farms are the primary sites of experiential learning in Nigerian higher agricultural education, grounded in Kolb's (1984) Experiential Learning Theory and Becker's (1964) Human Capital Theory. Through direct participation in crop production, livestock management, irrigation, and post-harvest processing, students develop practical competencies in the classroom (Osagiede et al., 2024). However, Ikuemonisan *et al.* (2022) identify a critical misalignment between Nigerian agricultural degree programmes and the demands of agribusiness careers, reflecting inadequate practical infrastructure. Turyamureba et al. (2024) demonstrate from East Africa that deteriorating farm-based learning environments significantly reduce the relevance of agricultural education to practical farming, raising serious questions about Nigeria's capacity to equip graduates for food security roles.

Research, Innovation, and Technology Development

Research farms are designed to generate applied, location-specific knowledge through field trials on seed varieties, mechanization tools, pest management, and soil fertility. NATIP (2022–2027) designates universities as central innovation units (FMARD, 2022), yet this designation is increasingly aspirational given deteriorating equipment and funding deficits. Olumide (2024) rightly notes that designating universities as innovation hubs without commensurate resources reflects a fundamental contradiction in Nigerian agricultural policy. Cees et al. (2025) confirm that across Nigeria, Benin, Kenya, and Mali, agricultural innovation actors—including universities—struggle to transcend narrow productivity orientations due to inadequate

funding and weak institutional linkages. Critically, increased funding alone is insufficient: if research incentive structures reward publication over practice, and if farmers are excluded from agenda-setting, university farms risk replicating the same disconnected model at greater cost (Olayemi et al., 2020). Funding must therefore be accompanied by governance reforms aligning research priorities with smallholder needs.

Knowledge Transfer, Extension, and Community Engagement

Teaching and research farms hold significant potential as demonstration sites for technology transfer to smallholder farmers, extension workers, and rural communities. Frontiers in Sustainable Food Systems (2024) documents successful African cases where university-industry partnerships and demonstration farms accelerated knowledge diffusion and agribusiness entrepreneurship. In Nigeria, Agbidi et al. (2021) note persistent farmer dissatisfaction with extension officers' inability to transfer relevant innovations, a gap well-resourced university farms could bridge. However, Olayemi et al. (2020) caution that effective farmer-centered extension requires sustained institutional commitment and community trust beyond farm demonstration. Success, therefore, depends on intentional, structured outreach strategies embedded in institutional mandates and accountability frameworks, not infrastructure improvement alone.

Food Production, Value Chains, and Climate-Smart Agriculture

Teaching and research farms directly supplement local food supplies through commercial sales of crops, livestock, fish, and forestry products, while exposing students to the full agricultural value chain viz: production, processing, storage, marketing, and agribusiness management, preparing them for entrepreneurial careers (Adisa *et al.*, 2023). University research farms are also distinctively positioned to develop, test, and demonstrate climate-smart agricultural (CSA) practices that build resilience and reduce greenhouse gas emissions (Akpabio *et al.*, 2023). Igberi *et al.* (2022) and Sylvester et al. (2024) document CSA effectiveness among smallholder farmers in south-eastern and north-central Nigeria, while Saadu *et al.* (2024) show tangible food security benefits from CSA adoption in the northwest. Globally, CSA is among the most promising pathways to SDG 2 in sub-Saharan Africa (Akpabio *et al.*, 2023). However, many CSA practices are resource-intensive or technology-dependent, limiting transferability to resource-poor farmers without sustained extension support (Ojo *et al.*, 2025). University research

farms must therefore balance innovation ambition with practical accessibility, co-designing experiments with farmers to ensure real-world applicability.

4.5 Challenges Facing Teaching and Research Farms

Teaching and research farms face a constellation of interconnected challenges. Chronic underfunding is paramount: Nigeria's agricultural budget has consistently fallen below the Maputo Declaration's 10% benchmark—recorded at 2.5% in 2022, 2% in 2023, and 3.5% in 2024 (ActionAid Nigeria, as cited in Afripoli, 2025)—with allocations to university farms negligible within this constrained envelope. This perpetuates a cycle of decaying machinery, irrigation systems, seed banks, and laboratory facilities, directly constraining technology development and farmer support (Olumide, 2024). The near-total absence of functional public-private partnerships limits access to private investment, while the perception of agricultural lending as excessively risky deters capital flows (Oxford Business Group, 2024). Human resource constraints—shortages of skilled farm managers and technicians, poor remuneration, and limited professional development—further reduce operational capacity. Administrative bottlenecks, land encroachments, and weak institutional policies impede long-term planning, while Cees *et al.* (2025) identify weak institutional interactions as key structural impediments across AIS in Nigeria and comparable African countries. Climate change compounds these vulnerabilities through floods, droughts, and pest outbreaks that increasingly disrupt farm operations (Akinkuolie & Ogunbode, 2025).

Strategic Framework for Repositioning Teaching and Research Farms

1. Increased and Dedicated Government Funding

Federal and State Governments must substantially increase budgetary allocations for teaching and research farms, treating them as essential infrastructure rather than ancillary facilities, and working progressively towards the Maputo Declaration's 10% threshold. Dedicated intervention funds—modelled on TETFund and the National Research Fund—should target university farm revitalization, mechanization, irrigation, and research equipment, anchored within NATIP's NGN 5.6 trillion implementation budget (FMARD, 2022). A legitimate counterargument concerns Nigeria's constrained fiscal environment, where competing public demands make ring-

fenced university farm funding politically difficult. This is a real constraint. However, the long-term cost of food insecurity—WFP (2024) estimates 33.1 million Nigerians acutely affected—far exceeds the required investment. Furthermore, complementary mechanisms, including diaspora bonds, sovereign agricultural funds, and development finance, already mobilized in comparable African contexts, can reduce dependence on national appropriations (Coronation Merchant Bank, 2023).

2. Public-Private Partnerships and Commercialization

Universities must establish structured PPPs with agribusiness firms, seed companies, and development finance institutions, consistent with Coronation Merchant Bank's (2023) identification of PPP frameworks and agricultural credit as critical food security enablers. Viable models include joint research ventures, contract farming, technology licensing, and agribusiness incubation centres on university farms. Commercialization can enhance—not compromise—educational mandates by providing students authentic market exposure and generating sustainable revenue. However, PPPs in sub-Saharan African settings have a mixed record: Olumide (2024) notes that private actors often prioritize commercially viable enterprises over long-term capacity-building, making university farm PPPs vulnerable to mission drift. Power asymmetries between agribusiness firms and resource-constrained universities further enhance the risk of disproportionate commercial benefit. These risks require clear contractual frameworks specifying educational deliverables alongside commercial targets, independent oversight, and NUC involvement in PPP governance.

3. Curriculum Integration and Modernization

Curricula must be redesigned to position teaching farms as the primary site of competency development, not a classroom supplement. Drawing from eight African case studies, *Frontiers in Sustainable Food Systems* (2024) demonstrates the effectiveness of problem-based, industry-linked pedagogies that engage students in solving real agricultural challenges through farm participation. Digital agriculture tools such as precision farming, drone monitoring, IoT sensors, and agricultural data analytics must be integrated into farm-based instruction to equip the graduates with the skills needed for NATIP's digital agriculture agenda (UNILAWS, 2024; FMARD, 2022). Practical barriers to reform include staff resistance, NUC bureaucratic rigidity, workload pressures, and qualification gaps among farm instructors (Osagiede

et al., 2024; Ikuemonisan et al., 2022). Effective implementation requires revised NUC minimum academic standards, updated workload models that recognize farm-based teaching, sustained staff development, and a phased implementation that gradually builds institutional capacity incrementally. Faculty buy-in is best secured when lecturers co-design farm-integrated curricula rather than receive top-down mandates (Egeru et al., 2024).

4. Strengthening Research–Extension–Farmer Linkages

A critical AIS deficit in Nigeria is the weak knowledge flow from university research farms to extension workers and smallholder farmers. Research farms must institutionalize outreach mechanisms: farmer field days, demonstration plots, community trials, and digital extension platforms, disseminating improved technologies in accessible formats. Collaborative platforms linking research farms, Agricultural Development Programmes (ADPs), and farmer cooperatives should be formalized with performance indicators tied to technology adoption rates. Ojo et al. (2025) underscore the vital role of extension agents in disseminating CSA practices in north-central Nigeria, reinforcing the need for structured, formalized university-extension partnerships.

5. Embracing Climate-Smart Agricultural Practices

University research farms should serve as model sites for CSA practices tailored towards Nigeria's diverse agro-ecological zones, including water-efficient irrigation, carbon-conscious soil management, energy-efficient mechanization, and adaptive cropping systems (Igberi et al., 2022; ScienceDirect, 2025). Embedding CSA into research farm operations positions universities as credible climate adaptation hubs, contributing directly to SDG 2, SDG 4, SDG 8, and SDG 13 (Akpabio et al., 2023; Ojo et al., 2024). Given scalability constraints, research farms should adopt a tiered demonstration model, showcasing high-technology solutions for commercial actors while piloting low-input adaptations for smallholder farmers—ensuring CSA outputs serve the full spectrum of Nigeria's agricultural stakeholders without prioritizing one at the expense of the other.

Conclusion

There is no doubt that this paper has demonstrated, through the AIS framework, that teaching and research farms in Nigerian universities represent a truly and critically underutilized yet strategically indispensable resource for capacity building, with the potential to revolutionize the nation's agricultural sector. They are not just mere facilities; they are dynamic nodes where agricultural knowledge is created, transmitted, tested, and applied. Their progressive decline constitutes a gradual food security crisis that is producing ill-equipped graduates for a modernizing food economy, generating research of limited practical applicability, and failing the farming communities they were designed to serve.

Crucially, this paper has engaged honestly with the counterarguments and constraints that any credible reform agenda must confront: the fiscal limitations on government funding, the mixed performance record of PPP models, the institutional barriers to curriculum reform, and the scalability challenges of CSA at the farm level. These are not reasons for inaction; they are parameters the strategic framework is explicitly designed to navigate through phased, governance-anchored, and evidence-grounded interventions.

Nigeria's challenge is not about vision; its policy architecture already recognizes the importance of higher agricultural education, but of implementation fidelity, institutional accountability, and sustained political commitment. The strategic framework advanced here reflects the attention Nigeria's food security crisis demands. This is grounded in evidence from Nigeria and comparable African contexts, aligned with NATIP (2022–2027), the National Development Plan (2021–2025), and the relevant Sustainable Development Goals. The repositioning of teaching and research farms is not merely an educational reform. It is a food security imperative.

Recommendations

- I. Federal and State Governments should establish dedicated, ring-fenced intervention funds for teaching and research farm revitalization within the NATIP (2022–2027) framework, progressively increasing agricultural budget allocations towards the Maputo 10% threshold, and supplementing appropriations with diaspora bonds and development finance where fiscal space is constrained.

- II. University administrators should champion institutional reforms embedding teaching farms at the heart of agricultural curricula through revised NUC minimum academic standards, updated workload models recognizing farm-based teaching, and problem-based, industry-linked pedagogies co-designed with faculty.
- III. The private sector should engage as co-investors through structured PPP agreements governed by contractual frameworks specifying educational deliverables and commercial targets equally, with independent oversight to prevent mission drift.
- IV. FMARD, in collaboration with NUC, should develop a national university farm revitalization policy framework with clear performance benchmarks, accountability mechanisms, and formalized linkage protocols with ADPs and farmer organizations.
- V. Development partners should direct capacity-building support towards modernizing Nigeria's higher agricultural education infrastructure, with explicit focus on CSA integration and digital agricultural technologies, ensuring CSA demonstration programmes are designed with smallholder transferability as an explicit criterion.

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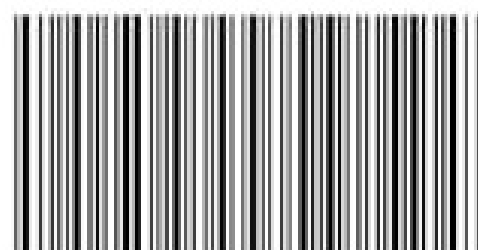
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