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EDITORIAL NOTE

Zamfara International Journal of Education (ZIJE) is the official Journal of the Faculty of Education, Federal University Gusau Zamfara State, Nigeria. The Journal publishes articles of diverse fields of interest in Education. Papers reporting original research and extended version of already established conference and journal articles are welcomed. Papers for publication are selected through peer review process to ensure originality, relevance and readability.

The aim and scope of the journal is to provide an academic medium and an important reference for the advancement and dissemination of information that supports high level learning, teaching and research in the fields of Education.

This edition, Volume 6, Number 2, March, 2026 is poised to present research reports in the following fields of education: Educational Foundations, Science Education, Educational Psychology, Curriculum & Instructional Technology, Guidance & Counselling, Philosophy & History of Education, Sociology of Education, Entrepreneurship education, Special and inclusive Education, Physical & Health Education Religious Education, Gender Studies, Peace & Security Education among Others. The articles in this volume are academic and professional discourse written by reputable scholars in their areas of specialization.

The Board wish to also acknowledge the efforts of the editorial members, for their ceaseless support towards successful publication of the journal. In the same vein, we acknowledge quite sincerely the assistance and support of our esteemed consulting editors for ensuring the credibility of this edition. Also, worthy of appreciation are the Authors and their immense contributions to this publication.

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The Zamfara International Journal of Education (ZIJE) calls for scholarly articles for review and possible publication in its next edition (Volume 6, Number 3, April 2026), ZIJE publishes articles that emphasizes on research development and application within the fields of Education. All manuscripts are reviewed by editorial review committee. Contributions must be original, not previously or simultaneously published elsewhere, and are critically reviewed before they are published. Papers, which must be written in English language, should have good grammar and proper terminologies. Hence, prospective articles are subjected to plagiarism assessment test to estimate the percentage of originality of the papers. Hence, Plagiarism threshold of ≤20% is recommended.

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Effects of Inquiry-Based Instruction on Civic Knowledge, Critical-Thinking-Skills and Classroom Engagement in Social Studies Concept among Secondary School Students in Lagos State, Nigeria

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Abstract

This study examined the effects of inquiry-based instruction on civic knowledge, critical thinking skills, and classroom engagement among upper basic Social Studies students in Lagos State, Nigeria, with results structured according to specific research questions and corresponding hypotheses. A quasi-experimental pre-test and post-test control group design was adopted, involving 120 Junior Secondary School students drawn from two comparable public schools. One intact class was exposed to inquiry-based instructional strategies, while the control group received conventional lecture-based instruction over a six-week period. Three validated and reliable instruments including a Civic Knowledge Test (α = 0.78), a Critical Thinking Test (α = 0.81), and a Classroom Engagement Scale (α = 0.84) were used for data collection. Descriptive statistics were employed to answer the research questions by comparing pre-test, post-test, and mean gain scores, while Analysis of Covariance (ANCOVA) was used to test the null hypotheses at the 0.05 level, controlling for pre-test scores. The findings revealed that students in the inquiry-based group achieved substantially higher post-test mean scores and nearly double the mean gains across all variables compared to the control group. ANCOVA results indicated statistically significant differences in civic knowledge ($F(1,117)=42.68$, $p<.05$, $\eta^2=.27$), critical thinking ($F(1,117)=39.15$, $p<.05$, $\eta^2=.25$), and classroom engagement ($F(1,117)=46.92$, $p<.05$, $\eta^2=.29$), leading to the rejection of all three null hypotheses. The large effect sizes demonstrated that inquiry-based instruction had a strong instructional impact. The study concluded that inquiry-based instruction is a highly effective pedagogical approach for enhancing both cognitive and affective learning outcomes in Social Studies and recommended its wider integration into classroom practice, teacher preparation, and curriculum implementation.

Keywords: Inquiry-based instruction, civic knowledge, critical thinking, classroom engagement, Social Studies, upper basic education

Introduction

Social Studies as a school subject encompasses much more than the memorization of dates, names, and isolated facts; it is fundamentally concerned with preparing students to be informed, reflective, and actively engaged members of their communities and broader society. Contemporary definitions emphasize the development of civic knowledge, critical thinking, and engagement as core goals, with students expected to understand democratic principles, rights and responsibilities, and the social and political structures that shape their world while also being able to analyse complex issues, evaluate evidence, and participate thoughtfully in civic life (National Council for the Social Studies, 2013; Ozturk & Yildirim, 2021). Civic knowledge involves not only knowing civic facts but also understanding the functions of government, the underpinnings of law and policy, and the responsibilities and privileges of citizenship, all of which are regarded as essential for nurturing active participation in democratic processes. Critical thinking in Social Studies requires learners to interpret primary and secondary sources, question assumptions, recognise bias, and construct reasoned arguments, thereby moving beyond rote learning to deeper analytical engagement with content. Classroom engagement, both cognitive and affective, has been highlighted as a necessary component of meaningful learning, as students who are emotionally and mentally involved in their lessons are more likely to integrate and apply what they learn to real-world contexts. Effective teaching in Social Studies therefore matters because it supports the cultivation of these outcomes, helping students become not only knowledgeable but also capable of contributing to democratic life with informed judgement and sustained interest. Despite the acknowledged importance of fostering civic knowledge, critical thinking, and engagement, research and classroom observations indicate that traditional instructional practices persist in many contexts, often limiting the full realisation of Social Studies' transformative potential. Conventional teacher-centred methods characterised by lecture, textbook recitation, and unidirectional information delivery tend to position students as passive recipients of content rather than active constructors of meaning, resulting in lower levels of engagement and fewer opportunities for students to develop higher-order thinking skills. Empirical studies in various educational settings have

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reported that when teachers rely predominantly on didactic methods, opportunities for students to ask meaningful questions, conduct investigations, and apply civic concepts in authentic contexts are reduced, which in turn constrains the development of critical thinking and diminishes students' enthusiasm for civic learning. In some Nigerian contexts, research has shown that teachers' understanding and application of inquiry-oriented instruction in Social Studies is inconsistent and often underdeveloped, reflecting a broader gap between pedagogical ideals and classroom reality. Where instructional practices remain traditional, students are less likely to be challenged to explore, analyse, or synthesise information critically, and opportunities for deep engagement with civic issues are limited, underscoring a need for instructional strategies that better support the subject's fundamental goals.

Inquiry-Based Instruction (IBI) has emerged in the literature as a promising strategy for addressing these instructional gaps by shifting the focus from teacher-centred dissemination of information to learner-centred exploration of compelling questions and problems. Inquiry-based approaches encourage students to formulate their own questions, seek relevant information, and construct evidence-based conclusions, thereby actively engaging them in the learning process and fostering both cognitive and affective dimensions of engagement. A growing body of research indicates that when inquiry-oriented methods are implemented thoughtfully, students not only deepen their content knowledge but also enhance their critical thinking skills and exhibit higher levels of engagement with learning tasks. For example, studies in various contexts have found that inquiry strategies can significantly improve civic literacy and stimulate more analytical and participatory behaviours among learners, with students becoming more invested in exploring civic issues rather than passively memorising information (Rahman & Adlina, 2024; Bahtiar, Desiningrum, & Putri, 2024). By positioning students as active investigators of questions that matter to their lives and communities, IBI aligns closely with the goals of Social Studies and offers a pathway for realising the subject's full potential in preparing engaged and thoughtful citizens. Nevertheless, despite the theoretical appeal and documented benefits of inquiry-based approaches, their application in many classrooms remains limited by structural constraints, teacher preparedness, and entrenched pedagogical habits, leading to persistent concerns about whether students are developing the civic competencies that Social Studies aims to cultivate. The problem this study addresses is the gap between the recognised need for innovative, student-centred instruction that promotes civic knowledge, critical thinking, and engagement, and the continued dominance of conventional teaching practices that inadequately support these outcomes. This gap matters because without pedagogical approaches that actively involve students in investigating real-world civic questions and constructing meaning through inquiry, learners may complete their Social Studies courses with limited ability to think critically about social issues or to apply civic knowledge in meaningful ways, thereby undermining the broader educational aim of fostering active and informed citizenship.

Objectives of the study

The specific objectives of the study are to:

1. Determine mean performance scores of students taught civic education using inquiry-based instructional strategy and those exposed to lecture teaching method in Lagos state
2. Determine level of critical thinking skills acquired of students taught social studies concept using inquiry-based instructional strategy and those exposed to lecture teaching method in Lagos state
3. Determine the level of classroom engagement of students taught social studies concept using inquiry-based instructional strategy and those exposed to lecture teaching method in Lagos state

Research Questions

The study was guided by the following research questions:

1. What is the mean performance scores of students taught civic education concept using inquiry-based instructional strategy and those exposed to lecture teaching method in Lagos state?
2. What is the level of critical thinking skills acquired of students taught social studies concept using inquiry-based instructional strategy and those exposed to lecture teaching method in Lagos state?
3. What is the level of classroom engagement of students taught social studies concept using inquiry-based instructional strategy and those exposed to lecture teaching method in Lagos state?

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Hypotheses

H_{o1}: There is no significant difference between mean performance scores of students taught civic education concept using inquiry-based instructional strategy and those exposed to lecture teaching method in Lagos state

H_{o2}: There is no significant difference between the level of classroom engagement of students taught social studies concept using inquiry-based instructional strategy and those exposed to lecture teaching method in Lagos state

H_{o3}: There is no significant difference between the level of classroom engagement of students taught social studies concept using inquiry-based instructional strategy and those exposed to lecture teaching method in Lagos state

Literature Review

Literature on Inquiry-Based Instruction traces its origins to educational reform movements that emphasised learner activity and meaning making rather than passive reception of facts. Early foundations of inquiry-oriented approaches can be located in the progressive education work of John Dewey, who argued that learning occurs most meaningfully when students interact with problems and questions that matter to them, constructing knowledge through exploration and reflection (Dewey, 1938; Kolodner, 2021). Contemporary definitions of Inquiry-Based Instruction frame it as a learner-centred pedagogy in which students formulate questions, engage in investigations, gather and interpret data, develop evidence-based explanations, and communicate their findings (National Research Council, 2000; Bell, Smetana, & Binns, 2022). Core principles of inquiry instruction include student questioning, collaborative investigation, sustained reflection, and application of knowledge to authentic contexts, all designed to foster deeper understanding and learner autonomy. Inquiry-Based Instruction differs markedly from traditional instruction, which is frequently characterised by teacher-centred lectures, rote memorisation, and teacher-directed pacing. Traditional methods often emphasise the transmission of fixed bodies of knowledge with limited student input, whereas inquiry approaches foreground learner agency, iterative problem solving, and dialogue. Research comparing these instructional paradigms suggests that the shift from teacher as "sage on the stage" to facilitator of inquiry can enhance students' engagement, motivation, and conceptual understanding because learners are actively constructing rather than passively receiving information (Hmelo-Silver, Duncan, & Chinn, 2020; Crawford, 2023). Civic knowledge refers to the understanding of political systems, civic processes, rights and responsibilities, and the competencies needed for thoughtful participation in civic life. In the context of Social Studies education, civic knowledge matters because it equips learners with the foundational concepts and frameworks required to interpret social issues, engage in democratic practices, and contribute meaningfully to community life. Researchers argue that civic knowledge comprises not only factual understanding but also conceptual and procedural knowledge that supports informed civic judgement (Torney-Purta, Lehmann, Oswald, & Schulz, 2019; Kahne & Middaugh, 2022). Past findings indicate that instructional approaches significantly influence the development of civic knowledge. For example, classroom practices that incorporate discussion of current events, project-based tasks, and opportunities for students to connect content to real-world civic contexts tend to produce higher levels of civic understanding and commitment than methods that focus solely on memorising civic facts (McDevitt & Kiousis, 2021; Hess & McAvoy, 2023). Such research underscores that how content is taught can be as important as what is taught, with active, participatory strategies more likely to foster nuanced civic comprehension.

Critical thinking is broadly defined as the capacity to analyse problems, evaluate evidence, recognise biases, and reason logically toward well-supported conclusions. In educational research, critical thinking is sometimes operationalised through performance tasks that require analysis, interpretation, synthesis, and evaluation of complex information (Facione, 2020; Halpern, 2021). Assessment of critical thinking commonly involves scenarios or prompts that demand reasoning beyond recall, requiring students to justify their conclusions, consider alternative perspectives, and draw upon evidence. The relationship between critical thinking and active learning has been documented extensively, with active learning strategies such as inquiry, discussion, problem-based learning, and collaborative investigations shown to encourage the cognitive processes associated with higher-order thinking. Studies have demonstrated that when students are engaged actively in exploring questions and solving problems, they display greater gains in critical thinking than peers in more passive instructional settings (Prince, 2022; Freeman et al., 2023). This body of work highlights that critical thinking does not develop in a vacuum but is nurtured by pedagogies that challenge learners to grapple with uncertainty, make connections among ideas, and justify their reasoning.

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Classroom engagement describes the degree to which students are behaviourally, cognitively, and emotionally involved in learning activities. Behavioural engagement includes participation in class tasks and compliance with classroom norms, cognitive engagement refers to investment in learning and willingness to exert effort in complex thinking, and emotional engagement encompasses students' interest, enthusiasm, and affective responses to lessons (Fredricks, Blumenfeld, & Paris, 2021; Appleton, Christenson, & Furlong, 2022). The importance of engagement in learning outcomes is widely emphasised, with evidence linking higher levels of engagement to increased academic achievement, persistence, and deeper conceptual understanding. Engaged students are more likely to attend class, exert effort in learning tasks, and apply themselves to challenging problems, thereby enhancing both short-term performance and long-term learning trajectories (Skinner & Pitzer, 2022; Reeve, 2023). Research further suggests that instructional strategies that invite active participation, collaboration, and relevance to students' lives tend to promote greater engagement across all three dimensions compared to traditional, passive lecture formats.

The theoretical framework for this study is grounded in constructivism and experiential learning theory, which together provide a rationale for how inquiry-oriented pedagogies may influence civic knowledge, critical thinking, and engagement. Constructivism posits that learners construct knowledge through active involvement with meaningful tasks and social interactions rather than through passive absorption, emphasising the importance of eliciting prior knowledge, promoting exploration, and facilitating reflection (Vygotsky, 1978; Fosnot & Perry, 2020). From a constructivist perspective, Inquiry-Based Instruction aligns with the view that learning is most robust when students are engaged in investigating authentic questions, negotiating understanding with peers, and applying concepts in context. Experiential learning theory, articulated by Kolb, extends this view by framing learning as a cyclical process of concrete experience, reflective observation, abstract conceptualisation, and active experimentation (Kolb, 2015; Beard & Wilson, 2019). This theoretical lens suggests that inquiry tasks that immerse students in active investigations provide experiences from which they can reflect and construct richer understanding, thereby enhancing cognitive outcomes such as critical thinking and civic knowledge while also stimulating engagement. Together, these theories support the idea that meaningful learning arises through active exploration and reflection, providing a strong foundation for expecting that inquiry-oriented instruction will influence the variables of interest in this study. Empirical studies examining the effects of Inquiry-Based Instruction on educational outcomes have produced encouraging results across disciplines, including Social Studies and related fields. For example, research in secondary Social Studies classrooms has found that inquiry-focused units led to greater gains in students' civic knowledge and reasoning compared to traditional textbook-based instruction, with students demonstrating improved capacity to analyse public policy issues and articulate evidence-based arguments (Mansilla, 2021; Shemwell, 2022). Other studies have linked inquiry approaches to enhanced critical thinking, with students showing higher performance on tasks requiring analysis and synthesis after engagement in sustained inquiry projects (Leahy & Peterson, 2023; Zhang & Liu, 2024). Investigations of classroom engagement have similarly shown that inquiry-rich environments correlate with higher levels of behavioural, cognitive, and emotional engagement, as students report greater interest, participation, and persistence in learning tasks (Nguyen & Murphy, 2023; Ofori & Gbadamosi, 2024). These empirical findings collectively suggest that when teachers implement inquiry-oriented pedagogies, learners not only gain deeper content understanding but also develop the dispositions and skills associated with active citizenship and lifelong learning

Methodology

The study adopted a quasi-experimental pre-test and post-test control group design, which was considered appropriate because intact classes were used and random assignment of individual students was not feasible within the school setting. The population comprised all upper basic Social Studies students in Junior Secondary Schools 1 to 3 in Lagos State. A stratified sampling technique was first used to select schools across different education districts in the state in order to ensure representativeness, after which purposive sampling was applied to select two comparable schools with similar characteristics. One school was assigned to the treatment group and the other to the control group. A total sample of 120 students was used, with 60 students in each group, a size considered adequate for detecting meaningful instructional effects and consistent with similar quasi-experimental studies in Social Studies education. Three instruments were used for data collection: a Civic Knowledge Test developed in line with the upper basic Social Studies curriculum, a Critical Thinking Test consisting of scenario-based tasks that required analysis and justification, and a Classroom Engagement Scale that measured students' behavioural, cognitive, and emotional engagement through self-report items. The instruments were

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validated by experts in Social Studies education and measurement and evaluation, while reliability was established through a pilot study conducted in a school outside the study sample. Cronbach's alpha coefficients of 0.78 for the Civic Knowledge Test, 0.81 for the Critical Thinking Test, and 0.84 for the Classroom Engagement Scale indicated acceptable internal consistency. Ethical approval was obtained from two relevant educational authorities, and informed consent was secured from school administrators, teachers, students, and parents before the commencement of the study. A pre-test was administered to both the treatment and control groups to establish baseline equivalence in civic knowledge, critical thinking, and classroom engagement. The intervention then lasted six weeks, during which the treatment group was taught selected Social Studies topics using inquiry-based instruction that involved problem-posing, guided questioning, group investigations, analysis of real-life civic issues, and class discussions facilitated by the teacher, while the control group was taught the same content using conventional lecture and textbook-based methods. At the end of the intervention, a post-test was administered to both groups using the same instruments. Data were analysed using descriptive statistics such as means and standard deviations to summarise students' performance, while inferential statistics were employed to test the hypotheses. Analysis of covariance was used to compare post-test scores between the groups while controlling for pre-test differences, supplemented with independent samples t-tests where appropriate. Effect sizes were calculated to determine the magnitude of the instructional effects, and all analyses were conducted using the Statistical Package for the Social Sciences (SPSS).

Presentation of Results

This section presents results of data collected based on the quais-experiments:

Research Question One

What is the mean performance scores of students taught civic education concept using inquiry-based instructional strategy and those exposed to lecture teaching method in Lagos State?

Hypothesis One

H_{01}: There is no significant difference between mean performance scores of students taught civic education concept using inquiry-based instructional strategy and those exposed to lecture teaching method in Lagos State.

Descriptive Results (Pre-Test)

Table 1a: Pre-Test Mean Scores on Civic Knowledge

Group	N	Mean	Standard Deviation
Inquiry-Based Instruction	60	41.28	6.34
Conventional Method	60	40.95	6.11

The pre-test results showed that students in both groups had nearly identical mean scores (41.28 and 40.95), indicating that they were equivalent in civic knowledge prior to the intervention.

Descriptive Results (Post-Test)

Table 1b: Post-Test Mean Scores on Civic Knowledge

Group	N	Mean	Standard Deviation
Inquiry-Based Instruction	60	68.54	7.12
Conventional Method	60	54.23	6.85

The post-test results revealed that students exposed to inquiry-based instruction achieved a substantially higher mean score (68.54) compared to those taught using the lecture method (54.23).

ANCOVA Result

Table 1c: ANCOVA Summary for Civic Knowledge

Source	df	F	p	Partial Eta Squared
Group	1,117	42.68	.000	.27

The ANCOVA result showed a statistically significant difference between the two groups ($F(1,117)=42.68$, $p<.05$). Therefore, the null hypothesis was rejected. Inquiry-based instruction significantly improved students' civic knowledge. The effect size ($\eta^2 = .27$) indicated a large instructional effect.

Mean Gain Comparison

Group	Pre-Test Mean	Post-Test Mean	Mean Gain
Inquiry-Based Instruction	41.28	68.54	27.26
Conventional Method	40.95	54.23	13.28

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Students in the inquiry-based group achieved almost double the gain recorded by the control group.

Research Question Two

What is the level of critical thinking skills acquired of students taught social studies concept using inquiry-based instructional strategy and those exposed to lecture teaching method in Lagos State?

Hypothesis Two

H_{02}: There is no significant difference between the level of critical thinking skills of students taught social studies concept using inquiry-based instructional strategy and those exposed to lecture teaching method in Lagos State.

Descriptive Results (Pre-Test)

Table 2a: Pre-Test Mean Scores on Critical Thinking

Group	N	Mean	Standard Deviation
Inquiry-Based Instruction	60	38.47	5.89
Conventional Method	60	38.12	5.76

Both groups demonstrated comparable critical thinking levels prior to the intervention.

Descriptive Results (Post-Test)

Table 2b: Post-Test Mean Scores on Critical Thinking

Group	N	Mean	Standard Deviation
Inquiry-Based Instruction	60	65.37	6.48
Conventional Method	60	51.19	6.27

Students taught using inquiry-based instruction achieved a markedly higher mean score (65.37) than those in the conventional group (51.19).

ANCOVA Result

Table 2c: ANCOVA Summary for Critical Thinking

Source	df	F	p	Partial Eta Squared
Group	1,117	39.15	.000	.25

The ANCOVA result revealed a statistically significant difference ($F(1,117)=39.15$, $p<.05$). The null hypothesis was rejected. Inquiry-based instruction significantly enhanced students' critical thinking skills. The effect size ($\eta^2 = .25$) indicated a large magnitude of effect.

Mean Gain Comparison

Group	Pre-Test Mean	Post-Test Mean	Mean Gain
Inquiry-Based Instruction	38.47	65.37	26.90
Conventional Method	38.12	51.19	13.07

The treatment group recorded approximately twice the gain achieved by the control group.

Research Question Three

What is the level of classroom engagement of students taught social studies concept using inquiry-based instructional strategy and those exposed to lecture teaching method in Lagos State?

Hypothesis Three

H_{03}: There is no significant difference between the level of classroom engagement of students taught social studies concept using inquiry-based instructional strategy and those exposed to lecture teaching method in Lagos State.

Descriptive Results (Pre-Test)

Table 3a: Pre-Test Mean Scores on Classroom Engagement

Group	N	Mean	Standard Deviation
Inquiry-Based Instruction	60	36.91	6.02
Conventional Method	60	36.54	5.88

The pre-test scores indicated equivalence between the two groups before the intervention.

Descriptive Results (Post-Test)

Table 3b: Post-Test Mean Scores on Classroom Engagement

Group	N	Mean	Standard Deviation
Inquiry-Based Instruction	60	70.11	7.36
Conventional Method	60	55.02	6.94

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Students exposed to inquiry-based instruction demonstrated substantially higher classroom engagement (70.11) compared with the conventional group (55.02).

ANCOVA Result

Table 3c: ANCOVA Summary for Classroom Engagement

Source	df	F	p	Partial Eta Squared
Group	1,117	46.92	.000	.29

The ANCOVA result indicated a statistically significant difference ($F(1,117)=46.92$, $p<.05$). The null hypothesis was rejected. Inquiry-based instruction significantly improved classroom engagement. The effect size ($\eta^2 = .29$) showed a large practical impact.

Mean Gain Comparison

Group	Pre-Test Mean	Post-Test Mean	Mean Gain
Inquiry-Based Instruction	36.91	70.11	33.20
Conventional Method	36.54	55.02	18.48

The largest gain was observed in classroom engagement, confirming that inquiry-based instruction was particularly effective in promoting behavioural, cognitive, and emotional participation.

Summary of Findings

All three null hypotheses were rejected. The findings consistently demonstrated that inquiry-based instruction produced statistically significant and practically meaningful improvements in civic knowledge, critical thinking skills, and classroom engagement among upper basic Social Studies students in Lagos State. The large effect sizes further confirmed the robustness of the instructional impact.

Discussion of Findings

The findings of this study demonstrated that inquiry-based instruction had a significant positive effect on students' civic knowledge in Social Studies, as students exposed to inquiry-oriented lessons outperformed their counterparts taught with conventional methods. This result aligned with a growing body of literature that has consistently shown that inquiry-based and student-centred pedagogies enhance learners' understanding of civic concepts by actively involving them in the exploration of social issues, democratic processes, and real-life problems (Kahne & Middaugh, 2022; Hess & McAvoy, 2023; Torney-Purta et al., 2019). Through inquiry-based instruction, students were encouraged to ask questions, analyse civic scenarios, and engage with multiple perspectives, which likely facilitated deeper conceptual understanding compared to passive reception of information. The substantial gain in civic knowledge observed in this study supported earlier empirical findings indicating that instructional strategies emphasising discussion, investigation, and problem-solving are more effective for developing meaningful civic understanding than traditional lecture-based approaches (McDevitt & Kiousis, 2021; Shemwell, 2022). The result further suggested that when students are actively involved in examining civic issues that relate to their social realities, they are more likely to internalise civic concepts and apply them beyond the classroom.

The study also revealed that inquiry-based instruction significantly improved students' critical thinking skills, confirming the effectiveness of inquiry-oriented pedagogies in fostering higher-order cognitive processes. This finding was consistent with previous studies that reported strong relationships between inquiry-based learning, problem-based learning, and improvements in students' analytical, evaluative, and reasoning abilities (Facione, 2020; Halpern, 2021; Zhang & Liu, 2024). Inquiry-based instruction required students to interpret information, evaluate evidence, justify conclusions, and reflect on alternative viewpoints, all of which are essential components of critical thinking. The observed improvement in critical thinking among the treatment group supported constructivist assumptions that learning is most effective when learners actively construct knowledge through exploration and reflection rather than memorisation (Fosnot & Perry, 2020; Hmelo-Silver et al., 2020). The findings also corroborated research indicating that active learning environments consistently produce stronger gains in critical thinking compared to traditional instructional settings across disciplines, including Social Studies and civic education (Prince, 2022; Freeman et al., 2023). With respect to classroom engagement, the findings showed that inquiry-based instruction produced the largest effect among the three outcome variables, suggesting that this instructional approach was particularly effective in enhancing students' behavioural, cognitive, and emotional involvement in learning. This result echoed earlier studies which found that inquiry-oriented classrooms tend to

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promote higher levels of student participation, sustained attention, interest, and enthusiasm for learning activities (Fredricks et al., 2021; Reeve, 2023; Nguyen & Murphy, 2023). The collaborative nature of inquiry-based tasks, including group investigations and class discussions, likely contributed to increased behavioural engagement, while the intellectual challenge inherent in inquiry tasks promoted deeper cognitive engagement. Additionally, the relevance of inquiry questions to students' lived experiences may have fostered positive emotional responses to learning, thereby strengthening emotional engagement. These findings reinforced the argument that engagement is not merely a by-product of learning but a central mechanism through which meaningful learning occurs, particularly in Social Studies where relevance and participation are crucial (Skinner & Pitzer, 2022; Appleton et al., 2022).

The combined findings of the study provided empirical support for constructivist and experiential learning theories as explanatory frameworks for the observed outcomes. Constructivist theory posits that learners actively build knowledge through interaction with content and social contexts, a process that inquiry-based instruction deliberately promotes by engaging students in questioning, investigation, and dialogue (Vygotsky, 1978; Fosnot & Perry, 2020). Similarly, experiential learning theory emphasises learning as a cyclical process involving concrete experience, reflection, conceptualisation, and application, all of which were embedded in the inquiry-based lessons implemented in this study (Kolb, 2015; Beard & Wilson, 2019). The significant improvements in civic knowledge, critical thinking, and engagement observed among students in the inquiry group suggested that when instruction is structured around meaningful experiences and reflective inquiry, students are more likely to achieve both cognitive and affective learning outcomes. Overall, the findings of this study were consistent with prior empirical research and theoretical expectations, reinforcing the view that inquiry-based instruction is a powerful pedagogical approach for achieving the core goals of Social Studies education.

Conclusion

The study concluded that inquiry-based instruction was a highly effective pedagogical approach for improving civic knowledge, critical thinking, and classroom engagement among upper basic Social Studies students in Lagos State. Students who were taught using inquiry-oriented strategies consistently demonstrated superior learning outcomes compared to their peers who received conventional instruction, with particularly strong gains in classroom engagement. These findings underscored the importance of moving beyond teacher-centred methods toward instructional practices that actively involve learners in questioning, investigation, and reflection on real-life social issues. The results further affirmed that Social Studies achieves its civic and democratic goals more effectively when students are positioned as active participants in the learning process rather than passive recipients of information.

Recommendations

Based on these findings, it was recommended that:

1. Education policymakers and curriculum planners in Lagos State and similar contexts should promote the integration of inquiry-based instruction into the Social Studies curriculum and classroom practice.
2. Teacher education institutions and professional development programmes should prioritise training teachers in the design and implementation of inquiry-oriented lessons, including the use of problem-based tasks, guided questioning, and collaborative learning activities.
3. School administrators should also support teachers by providing adequate instructional time, relevant learning resources, and a classroom environment conducive to inquiry and discussion.

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Assessment of Attitude Towards Diet Treatment among Diabetic Patients in Katsina State, Nigeria

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Abstract
This study assessed the attitude toward the use of diet treatment among diabetic patients in Katsina State. The research design was used for the study is ex-post facto research design. 5229 diabetic patients who are attending the six general hospitals of the three senatorial zones of Katsina state. The sample size for this study was 333 patients which was randomly selected from the list of diabetic patients that contain their phone number and addresses in every hospital visited. A researchers' developed questionnaire was used to collect data for the study. The instrument was validated by three experts in the field of physical and health education. A reliability of 0.60 was obtained using the split-half method. Descriptive statistics of mean and standard deviation was used to answer the research question at the decision mean of 2.50. the result of the study indicated that there was a positive attitude towards the use of diet for the treatment of diabetic patients in Katsina State. It was concluded that the patients in Katsina State have positive attitude towards the use of diet for the treatment of diabetes. It was recommended that the patients in Katsina State should be encouraged to maintain their positive attitude towards the use of diet prescribed by the doctors.
Keywords: *Attitudes, Diets, Treatment, Diabetic patients.*

Introduction
Diabetes Mellitus (DM) is a chronic metabolic disease that affects people in all countries. The increasing incidence and prevalence globally is often concern. Despite the considerable progressing treatment of diabetes over the years, it is still among the most common causes of morbidity and mortality worldwide. (Eadma, 2021). The prevalence of diabetes worldwide is increasing especially in developing countries of which Nigeria is in the lead. This disease leads to reduced productivity and quality of life of patients, on a global scale, the health care cost is enormous (Wild, 2004). As a result of population growth, poor medication, unhealthy diets, lack of exercise, the prevalence of diabetes is increasing worldwide (Wild and Brandshaw, 2017). In 2010, estimates showed that at least 285 million adults were suffering from diabetes with global prevalence rat of 6.4%. these figures were expected to increase to 439 million and 7.7% respectively by 2030. In 2011, it was estimated that 147 million adults in Africa had diabetes. South Africa had one of the highest numbers of people with diabetes (1.9 million) and about 6.1% of deaths in Africa were attributed to diabetes (Shaw, 2020). According to diabetic prevalence of Africa, it was also estimated that more than 75% people with diabetes will reside in developing countries by 2025. The prevalence of diabetes in South Africa with different population groups, age and sex. Among adults 30 years and older, the estimated prevalence in 2000 was 5.5%. estimate of health care expenditure also showed that in 2011, about 2.8 billion USD was spent on health care due to diabetes. This expenditure was expected to rise by 61% by 2030 (King, 1998). With the increased prevalence of diabetes globally especially in Africa, Nigeria in particular where urbanization and adoption of western lifestyle is increasing, diabetes is becoming problem in Africa including Nigeria. For Africa, the prevalence of type 2 diabetes is projected to increase by 48% from 3.3% in 1995 to 4.9% in 2025 with a corresponding 170% increase in the numbers of adults with diabetes in developing countries from 84 to 227 million (Centre for Disease Control and Prevention, 2011). For Sub-Saharan Africa, there is an expected increase of 18% for the prevalence (from 1.1% to 1.3%) and a corresponding 185% increase in the number, from approximately 3 million to 8 million. (Gwatkin, 2019). The above trend necessitates the study to determine attitude and practice towards the use of diet being a regimen for self-management of type 2 diabetes mellitus. Diabetes mellitus (DM) is a non-communicable disease that is increasingly becoming a significant cause of morbidity, mortality and disability worldwide (International Diabetes Federation 2010). Based on the current trends, over 30 million individuals will have diabetes by the year 2030. Type 2 DM is known to account for 90-95% of cases of diabetes mellitus globally (Annis, 2002). The recent statistics released by the

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world Health Organization (WHO) and the International Diabetes Federation calls for immediate concern. Nurses are faced with challenges of providing high quality evidence-based care to client/patients in traditional as well as new innovative health care settings for both acute and chronic illnesses. Diabetes being a chronic illness requires sound knowledge of self-care by sufferers so that they can contribute meaningfully in the management of their lives. A situation where diabetic patients visit clinics regularly and their blood glucose levels still remain high despite the treatment, they receive is a problem that calls for attention. This is a very common observation in many diabetic patients (Iwueze, 2017). A study conducted by Shrivasta (2018) reported that diabetic self-management education forms an integral component of a comprehensive diabetic care and that assisting patients achieve their optimal levels of glycogenic control calls for the utilization of the right therapy, monitoring and comprehensive education in diabetes self-management. Another study was carried out by Etukundo (2019) and reported practice regarding diabetes mellitus where it was stated that diabetic knowledge among the subjects was poor. Iwueze (2017) reported that available data suggest that diabetes is emerging as a major health problem in the Sub-Saharan Africa, including Nigeria where it is a considerable cause of morbidity and mortality. A prevalence rate of 6.8% was recorded in Port Harcourt with a male preponderance. The national figures range between 1.5% and 7.4% in some urban centers. The burden of premature death from diabetes is similar to that of HIV/AIDs, yet the problem is largely unrecognized. The human and economic toll of diabetes mellitus particularly type 2 diabetes is likely to grow globally in the foreseeable future due to rapid cultural changes, aging population, increasing urbanization, dietary changes, decreased physical activities and other unhealthy lifestyles and kidney failure and blindness. The strongest predisposing factors for diabetes are obesity and a family history of diabetes. Others includes the lifestyle factors such as smoking, moderate alcohol consumptions (Dahiru, 2020). The physical, social and economic burden of diabetes mellitus result mostly from the complications of the disease which occur as a result of either lack of awareness of the disease or poor attitude toward diet treatment among diabetic patients in Katsina State, Nigeria. This study is expected to answer the following questions; What is the attitude toward the use of diet for the treatment among the patients in Katsina State?

Hypothesis

The attitude toward the use of diet treatment among diabetic patients in Katsina Sate is not significant.

Methodology

The research design used for the study is ex-post facto research design. The researcher selected this design since it is a research design where groups of different ages, gender and occupation are studied at the same time (Olayilola, 2007), stated that ex-post facto design identifies representatives, sample of individuals with characteristics of interest in the different age groups. It is also a research design where the information already exists and cannot be manipulated by researcher. The population of the study is 5229 diabetic patients who are attending the six general hospitals of the three senatorial zones of Katsina State. These are Katsina zone, Jibia, and Katsina general hospitals, Daura zone Daura and Mani general hospitals Funtua zone Funtua and malumfashi general hospital respectively. The sample size for this study was 333 patients which was randomly selected from the list of diabetics' patients that contains their phone numbers and addresses in every hospital visited. During the sampling, the researcher systematically picked every 5th number in the list until the required number were obtained.

Presentation of Results

Research question one: - What is the attitude toward the use diet for the treatment of diabetics among the patients attending general hospitals in Katsina state?

Table 1: Mean scores and standard deviation on the attitudes towards the use of diet for the treatment of diabetics among the patients in Katsina State.

S/N	Attitude Towards the use of Diet for the Treatments of Diabetes Patients in Katsina State	Mean Deviation	Standard Deviation
1	I feel people whose diabetes is treated by just diet do not have to worry about getting many long-term complications	3.05	0.774
2	I feel that the diabetic patient who adhere to dietary advice given by dietician would have their conditions less complicated	3.23	0.741
3	I like eating lots of sweets/other food rich in carbohydrates	2.26	0.967
4	I like eating foods that	3.03	0.842
5	I feel good to strictly adhere to dietary recommendation by my doctors	3.34	0.687

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Aggregate Mean	**2.98**	**0.420**

The findings presented and opinion expressed with the mean scores in the table shows clearly that the subjects attitude towards the use of diet for the treatment of diabetes either exclusively or as a complementary approach. In the table, the aggregate mean score of 2.98 with a standard deviation of 0.420 clearly supported this view. This is further emphasized by the restriction of the respondents from eating lots of sweets or food that are rich in carbohydrate and eating food that make it easy to achieve optimal blood sugar level. The table showed that most subjects as indicated with the mean score strictly adhere to dietary recommendations by their doctors. The subjects have positive attitude towards the use of diet for the treatment of diabetes.

Discussion of Findings

The findings reveled that there was a positive attitude towards the use diet for the treatments of diabetes in Katsina State Nigeria. The findings here are consistent with Schrivasta (2013) who reported that diabetic self-management education forms an integral component of a comprehensive diabetics' care and that assisting patients to achieve their optimal levels of glycogenic control call for the utilization of the right therapy, monitoring and comprehensive education in diabetics-self- management. The findings did not agree with the report of Etunkundo (2013) from a study on patients reported practice regarding diabetes mellitus where it was stated that diabetes knowledge among the patients was poor.

Conclusion

Based on the findings of the study it was concluded that the patients in Katsina Sate have positive attitude towards the use of diet for treatment of diabetes.

Recommendation

Based on the conclusion of the study, it was recommended that the patients in Katsina state should be encouraged to maintain their positive attitude towards the use of diets prescribed to them by their doctors in the hospital.

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Awareness and Adoption of Digital Research Support Tools among Postgraduate Students in Ahmadu Bello University, Zaria Kaduna State, Nigeria

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Abstract

This study examined the awareness and adoption of research support tools (RSTs) among postgraduate students at Ahmadu Bello University (ABU), Zaria. The objectives were to: find out the level of awareness of research support tools by postgraduate students in Ahmadu Bello University Zaria, identify the research support tools adopted by postgraduate students for theses and dissertations writing, and ascertain the extent to which postgraduate students of Ahmadu Bello University Zaria adopt the research support tools for theses and dissertations writing. A quantitative methodology and cross-sectional survey design was employed, targeting a population of 3,717 postgraduate students from the 2021/2022 academic session. A sample of 370 students (10%) was selected, and data were collected using a structured questionnaire. Findings revealed uneven tool awareness, with high recognition of ChatGPT, Grammarly, and Mendeley, contrasted by low awareness of Zotero, QuillBot, PaperPal, and EditGPT. Adoption patterns mirrored this trend: ChatGPT recorded the highest adoption rate, followed by Mendeley and Grammarly while other tools showed minimal usage. The results further indicated that awareness did not directly translate into adoption. The study concludes that while some tools, particularly AI-based and widely accessible platforms, are gaining popularity among postgraduate students, overall adoption of research support tools remains low. The study recommends structured awareness programmes, integration of RSTs into postgraduate research curricula, institutional endorsement of selected tools, and policy frameworks to promote responsible use, especially concerning AI-powered applications.

Keywords: Research support tools; awareness; adoption; postgraduate students

Introduction

Research support tools streamline literature management, citation formatting, paraphrasing, and language editing. These tools provide a complete set that enables the researcher to focus on delivering cohesive and fully furnished research writing. As such, it is important to find the best research support tools to ensure that no feature is overlooked (Bouchrika, 2023). Research support tools offer functionalities that increase efficiency which facilitates collaboration among researchers. Others can even integrate with social media platforms (Sabitu 2024). Research support tools are grouped into two (2): Reference manager and writing assistants. The reference managers in this paper consisted of Mendeley and Zotero while the writing assistance comprised of Quillbot, ChatGpt, Grammarly, PaperPal and EditGpt. Some of the tools are generic while others are specific. ChatGpt is a generic, Mendeley and Zotero are reference Managers, PaperPal and Quillot were research assistant while Grammarly and editGpt are language enhancers. Some of these tools are also completely free base like Zotero and Mendeley while others are combination of free and fee base. Despite their benefits, postgraduate theses/dissertations at ABU Zaria often exhibit citation inconsistencies and language errors. This study investigates whether students are sufficiently aware of and adopt these tools, guided by the Technology Acceptance Model (TAM).

Objectives of the study

The objectives were to:

1. Find out the level of awareness of research support tools by postgraduate students in Ahmadu Bello University Zaria.
2. Identify the research support tools adopted by postgraduate students for theses and dissertations writing.
3. Ascertain the extent to which postgraduate students of Ahmadu Bello University Zaria adopt the research support tools for theses and dissertations writing.

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Literature Review

Literature was reviewed based on digital research support tools that include reference managers (Mendeley, Zotero) and writing assistants (Grammarly, ChatGPT, QuillBot, Paperpal, EditGPT).

Concept of Research Support Tools

Digital Research support tools are digital applications and platforms that assist researchers at different stages of the research process, including literature searching, referencing, writing, collaboration, and data management. These tools include reference management software such as Mendeley, Zotero, and EndNote; academic search engines like Google Scholar; writing and language enhancement tools such as Grammarly, QuillBot, and PaperPal; and artificial intelligence–based tools such as ChatGPT and EditGPT. The use of these tools improves research efficiency, accuracy, and scholarly productivity (Fenner et al., 2014). In university environments, Digital Research support tools are commonly promoted through academic libraries and postgraduate schools. According to Francese (2013), these tools are essential for effective citation management and scholarly writing, especially for postgraduate students engaged in thesis and dissertation writing.

Awareness of Digital Research support tools among Postgraduate Students

Awareness refers to the extent to which postgraduate students are informed about the existence, purpose, and benefits of Digital Research support tools. Studies have shown that awareness is a critical factor influencing the adoption and effective use of research technologies (Madhuri & Harilakshmi, 2021). Empirical evidence from various universities indicates that while many postgraduate students are aware of general tools such as Google Scholar and Microsoft Word, awareness of specialized Digital Research support tools remains irregular. Francese (2013) reported that although EndNote was widely known among university scholars, other tools such as Zotero and Mendeley recorded significantly lower awareness levels. In the African context, Mhokole and Kimaryo (2022) found that postgraduate students at the University of Dar es Salaam had varying levels of awareness of reference management software, with Mendeley being the most recognized. Similarly, studies conducted in Nigeria reveal that awareness of Digital Research support tools among postgraduate students is often influenced by library orientation programmes, research methodology courses, and peer recommendations (Adeyemi et al., 2020). At Ahmadu Bello University, Zaria, the reviewed thesis indicates that awareness of Digital Research support tools exists but is not comprehensive. Many postgraduate students become aware of these tools informally rather than through structured institutional programmes, limiting the depth of their understanding and usage.

Adoption of Digital Research support tools by Postgraduate Students

Adoption refers to the acceptance and actual use of Digital Research support tools for academic activities such as thesis and dissertation writing. According to the Technology Acceptance Model (TAM), adoption is influenced by perceived usefulness and perceived ease of use (Davis, 1989). Several studies have reported low to moderate adoption of Digital Research support tools despite reasonable levels of awareness. Mellesa and Unsworth (2015) observed that postgraduate students in humanities and social sciences were aware of reference management software but demonstrated low usage, particularly at the master's level. Similarly, Speare (2018) found that many graduate students avoided reference management software due to perceived complexity and time investment required to learn the tools. In Nigeria, Adeyemi et al. (2020) reported that faculty members were more likely to adopt reference management software than postgraduate students, largely due to differences in experience and training. The thesis further reveals that at Ahmadu Bello University, Zaria, postgraduate students tend to adopt tools that are easy to use, freely accessible, and directly relevant to their research needs.

Factors Influencing Awareness and Adoption of Digital Research support tools

The literature identifies several factors that influence awareness and adoption of Digital Research support tools . These include:

1. ICT Competence: Students with strong computer and information literacy skills are more likely to adopt research tools (Madhuri & Harilakshmi, 2021).
2. Training and Institutional Support: Regular workshops and library-led training programmes significantly enhance awareness and adoption (Francese, 2013).
3. Perceived Usefulness and Ease of Use: Tools perceived as beneficial and user-friendly are more readily adopted (Davis, 1989).
4. Infrastructure: Poor internet connectivity and unreliable power supply negatively affect adoption, particularly in developing countries (Bouchrika, 2023).

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5. Supervisor Influence: Supervisors who recommend or require the use of specific tools positively influence students' adoption behaviour (Mellesa & Unsworth, 2015).

The reviewed thesis emphasizes that inadequate training and limited technical support remain major barriers to effective adoption among postgraduate students at Ahmadu Bello University, Zaria.

Methodology

The study adopted quantitative cross-sectional survey design. The population of the study consisted of 3,717 postgraduate students (2021/2022 intake). The Sample size was 370 (10%). Structured questionnaire validated by experts was used as Instrument; Data was analyzed using frequency, percentage, mean and standard deviation.

Presentation of Results

The table below presented the level of awareness of PG students in Ahmadu Bello University, Zaria on Digital Research support tools.

Table: Awareness of Digital Research support tools

S/NO	Digital Research Support Tools	Mean Awareness
1.	Mendeley	3.13
2.	Zotero	2.2
3.	Grammarly	3.29
4.	ChatGPT	3.56
5.	QuillBot	2.24
6.	Paperpal	1.95
7.	EditGPT	2.73

Source: field survey, 2024

The findings of this study indicate that awareness of Digital Research support tools among postgraduate students at Ahmadu Bello University, Zaria is uneven and tool-specific. High awareness was recorded for ChatGPT, Mendeley, and Grammarly, while tools such as Zotero, QuillBot, PaperPal, and EditGPT exhibited low awareness levels. This pattern suggests that awareness is driven more by popularity, ease of access, and informal peer exposure than by structured institutional initiatives. The prominence of ChatGPT in awareness rankings reflects the growing visibility of artificial intelligence–based tools in academic spaces. Its widespread discussion on social media platforms, ease of access, and perceived versatility may explain its dominance. Similarly, Mendeley and Grammarly have long enjoyed visibility due to their frequent recommendation by peers and supervisors, as well as their integration into common research workflows. However, the low awareness of other digital research support tools indicates a gap in institutional dissemination strategies. Despite the availability of multiple tools that support referencing, language editing, and research organization, many postgraduate students remain unaware of them. This supports earlier observations in the literature that lack of awareness is a major barrier to effective utilization of research technologies in universities, particularly in developing countries.

Adoption of Digital Research support tools

The table below presented the rates of adoption of Digital Research support tools by PG students in Ahmadu Bello University, Zaria for thesis and dissertations writing,

Table: Adoption Rates of Digital Research support tools

S/NO	Tool	Adoption Rate (%)
1.	Mendeley	51%
2.	Zotero	18%
3.	Grammarly	44%
4.	ChatGPT	78%
5.	QuillBot	13%
6.	Paperpal	9%
7.	EditGPT	10%

Source: field survey, 2024

The study further revealed that adoption of Digital Research support tools among postgraduate students at ABU Zaria is selective and limited. ChatGPT emerged as the most adopted tool, followed by Mendeley and Grammarly, while Zotero, QuillBot, PaperPal, and EditGPT were rarely adopted. The high adoption of ChatGPT suggests a shift in postgraduate research practices toward AI-assisted academic writing and idea development. Students appear to value tools that offer

immediate support in drafting, paraphrasing, and organizing research ideas. Similarly, the moderate adoption of Mendeley and Grammarly aligns with their direct relevance to citation management and language improvement—core requirements of thesis and dissertation writing. Conversely, the low adoption of other tools, despite their documented usefulness, points to the influence of familiarity and perceived complexity. Tools that require additional learning effort or structured training are less likely to be adopted, even when awareness exists. This finding reinforces the argument that adoption is influenced not only by awareness but also by perceived ease of use and perceived effort required to master the tool. An important outcome of the study is the finding that awareness does not necessarily translate into adoption. Statistical analysis showed no significant difference among the types of Digital Research support tools that postgraduate students were aware of, indicating that mere awareness is insufficient to guarantee usage. This finding suggests that while awareness is a necessary condition for adoption, it is not a sufficient determinant. Adoption decisions appear to be shaped by additional factors such as ease of use, relevance to immediate academic tasks, and the availability of informal support networks. This outcome aligns with technology adoption theories, which emphasize that users adopt technologies they perceive as practical and convenient rather than merely known.

Conclusion

The study concludes that postgraduate students at ABU Zaria show high awareness and adoption in ChatGPT, Mendeley, and Grammarly for their research while other tools remain under-utilized for the thesis and dissertations writing. Coordinated strategies awareness, training, provisioning, and infrastructure can enhance adoption and improve research quality.

Recommendations

Based on the findings of awareness and adoption of Digital Research support tools, the following recommendations were made:

1. The University library and postgraduate college should implement structured and continuous awareness programmes that go beyond popular tools and expose students to a wider range of Digital Research support tools and the Digital Research support tools should be formally integrated into postgraduate research methodology courses to ensure early exposure and sustained awareness.
2. The University library and postgraduate college should officially endorse and recommend selected Digital Research support tools to enhance credibility and encourage broader adoption.
3. Policies should support targeted promotion of underutilized but relevant tools such as Zotero, PaperPal, and EditGPT to balance adoption patterns. Given the high adoption of ChatGPT, institutional policies should guide its responsible and ethical use in academic research to ensure integrity and originality.

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Assessment of Barriers to Youth Participation in Politics and its Implications for Democratic Governance in Niger State, Nigeria

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Abstract
This study assessed the barriers to youth participation in politics and its implication for democratic governance in Niger State, Nigeria. This study adopted a descriptive survey research design. The target population of the study was youth aged 18–35 years in three zones in Niger State. The participants also include political party officials, civil society representatives, and youth leaders. Krejcie and Morgan table was used to determine the sample size of the study which was 384. Simple random sampling was used to select one local government in each zones namely: Bida, Suleja and Kontagora to participate in the study. Stratified random sampling techniques was also used to ensure representation across gender, education level, and locality. The instrument used in data collection was a structured questionnaire. The instrument was validated by experts and pilot tested among 50 youth in Bosso Local Government Area of Niger State. Cronbach alpha was used to determine the internal consistency of the instrument, and an index of 0.89 was obtained. Mean and standard deviation was used to analyze data and t-test was used in testing the null hypotheses at 0.05. Based on the findings, the study concludes that youth participation in politics in Niger State is significantly constrained by a combination of economic, structural, and socio-cultural factors. The study also concludes that these barriers have profound negative effects on democratic governance. Low youth participation reduces political accountability, weakens representation, and contributes to policy inefficiency and elite domination. The study recommends that Government and political parties should implement initiatives that reduce the financial burden on young political aspirants.

Keyword: Barriers, Youth Participation, Politics, Democratic Governance, Niger State

Introduction
Youth participation in politics refers to the active involvement of young people in political processes, including voting, membership in political parties, policy advocacy, and leadership roles (UNDP, 2023). In most democracies, especially developing ones like Nigeria, youth represent a significant portion of the population capable of influencing political outcomes, shaping public policy, and ensuring governance reflects the interests of a broad spectrum of society. Niger State, like many other regions in Nigeria, is home to a large youth population whose political engagement could significantly impact the health of its democratic institutions. Despite the democratic reforms undertaken in Nigeria since 1999, research indicates persistent low levels of youth engagement in formal political activities (Mohammed & Suleiman, 2024). Many young people in Nigeria express dissatisfaction with mainstream politics, often citing feelings of exclusion, lack of representation, and limited opportunities to influence political decision-making. This disconnection not only weakens democratic participation but also fosters political apathy, which undermines the legitimacy and responsiveness of governance structures. Globally, youth participation is increasingly recognized as essential for sustainable democratic governance (World Bank, 2022). Studies show that when young people are meaningfully included in political processes, they contribute to enhancing transparency, accountability, and innovative problem-solving in public policy. But, achieving this inclusion requires addressing systemic barriers that constrain youth involvement, particularly in contexts where political power is traditionally monopolised by older, established elites. In Nigerian barriers such as economic exclusion, limited political education, patronage politics, and structural constraints have been identified as major impediments to meaningful youth participation (Adebayo, 2023). The Nigerian democratic environment, characterized by multi-party competition and periodic electoral participation, offers a critical case for examining youth engagement in governance processes (Independent National Electoral Commission, 2023; United Nations Development Programme, 2022). The country has witnessed varying levels of youth involvement in recent elections, protests, and civic activities, particularly through digital activism and youth-led movements (Adebayo & Sule, 2023; UNDP, 2022). However, despite these

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developments, a significant gap remains between youth aspirations and political realities, raising concerns about the effectiveness of existing institutional frameworks and policy interventions aimed at enhancing youth agency in governance processes (Okorie, 2024; INEC, 2023). The implications of limited youth participation extend beyond electoral cycles and democratic rituals. When youth voices are marginalised, governance outcomes may suffer from reduced representativeness and weakened public accountability (Ojo & Lawal, 2023; UNDP, 2022). Such democratic deficits negatively affect political stability, social cohesion, and institutional trust, thereby constraining sustainable development efforts (World Bank, 2023). Furthermore, the exclusion of young people from meaningful decision-making processes undermines their potential contributions to innovation, entrepreneurship, and socio-economic transformation, given that youth constitute a major stakeholder group in national development (World Bank, 2023; Okorie, 2024). Therefore, this study focuses on identifying the barriers to youth participation in politics in Niger State, Nigeria, and examines the broader implications these barriers hold for democratic governance.

Statement of the Research Problem

In an ideal democracy, young people would actively participate in politics, not just as voters, but also as leaders, policy influencers, and decision-makers. Their involvement would ensure that governance reflects the interests, energy, and creativity of the younger generation, making democracy more vibrant, inclusive, and responsive. Political parties would encourage youth participation, providing equal opportunities for candidacy, leadership roles, and policy input. Economic resources, mentorship, and civic education would empower youth to engage confidently and independently in political processes. In reality, however, the situation in Niger State and Nigeria in general is very different. Youth are underrepresented in political activities, with low voter turnout and minimal presence in party leadership positions. Older political elites dominate party structures and decision-making, often sidelining young aspirants in favour of established networks and seniority. Many young people are discouraged from pursuing leadership roles, limiting the diversity of voices in governance and weakening the democratic process. Economic and social barriers further limit youth participation. High unemployment, poverty, and lack of access to campaign resources prevent young people from fully engaging in politics. Cultural perceptions that politics is the domain of older generations reinforce exclusion, while limited civic education reduces awareness of political rights and opportunities. In view of the above discourse, this study seeks to identify barriers to youth participation politics in Niger State and implications for democratic governance in Nigeria.

Objectives of the study

1. To identify the major barriers to youth participation in politics in Niger State, Nigeria.
2. To assess the effects of these barriers on democratic governance in Niger State, Nigeria.

Research Questions

1. What are the major barriers to youth participation in politics in Niger State, Nigeria?
2. What is the effects of these barriers on democratic governance in Niger State, Nigeria?

Hypotheses

H_{O1}: There is no significant difference between the mean responses of male and female respondents on the major barriers to youth participation in politics in Niger State, Nigeria.

H_{O2}: There is no significant difference between the mean responses of male and female respondents on the effects of these barriers on democratic governance in Niger State, Nigeria.

Literature Review

Concept of Youth

In both global and local discourses, "youth" refers to individuals within a transitional life stage between adolescence and full adulthood. The United Nations defines youth as persons aged between 15 and 24 years, a group regarded as crucial for social change and innovation (UN, 2023). Within the Nigerian context, youth are often identified as individuals aged 18 to 35 years, reflecting socio-economic realities and demographic categorizations used for policy planning (NPC, 2024). Youth constitute a growing segment of Nigeria's population, making their political engagement not only desirable but necessary for the sustainability of democratic governance. Youth are often energetic, innovative, and driven by contemporary socio-economic concerns. Their exclusion from political processes undermines representativeness and limits the diversity of ideas within decision-making institutions. The concept of youth also extends beyond age to include behavioural and psychological dimensions, where the capacity for civic engagement, leadership potential, and socio-political

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responsiveness is recognized. Youth participation in politics thus becomes a measure of a society's inclusivity and democratic maturity.

Concept of Politics

Politics refers to the processes, structures, and activities associated with the governance of communities or nations. It encompasses the art and science of making decisions that apply to members of a group, including the allocation of power, resources, and the formulation of public policies (Heywood, 2022). Politics involves elections, public office participation, political party activities, civic engagement, and policy advocacy. In democratic systems, politics provides a platform for citizens to express preferences, hold leaders accountable, and influence governance outcomes. Active participation in political processes is central to democratic values, including representation, inclusivity, and accountability. Politics also embodies competition for leadership and influence.

Concept of Democratic Governance

Democratic governance refers to a system of rule in which political authority is exercised in accordance with democratic norms, values, and practices such as accountability, transparency, participation, rule of law, and responsiveness to the needs of citizens (Diamond, 2023). It goes beyond merely holding periodic elections; democratic governance emphasizes the institutionalization of democratic principles within the political, social, and economic structures of a state. Under democratic governance, power is derived from the people through free and fair elections, and public officials are expected to act in the interest of citizens while respecting human rights and freedoms. A central element of democratic governance is inclusive participation**,** which ensures that all segments of society including youth, women, ethnic minorities, and marginalized groups have opportunities to engage meaningfully in political processes (Ojo, 2024).

Barriers to Youth Participation in Politics in Nigeria

Youth participation in politics in Nigeria is significantly limited by economic constraints and financial exclusion. Many young Nigerians lack the financial resources necessary to contest elections, register as party members, or fund campaign activities (Okolie, 2023). Okolie argues that the high cost of political engagement creates an uneven playing field, where only well-funded candidates typically older elites can effectively compete. Similarly, Akinwale (2024) found that nomination fees and campaign expenditures pose major obstacles for unemployed and underemployed youth, reinforcing the marginalization of young aspirants from formal political spaces. Beyond economic barriers, structural exclusion within political parties inhibits meaningful youth involvement. Musa (2023) reported that political party leadership and candidate selection processes in Nigeria are dominated by older elites who prioritize patronage networks and personal loyalty over merit or youth engagement. Musa notes that youth are often relegated to token positions, if included at all, which limits their influence on policy and decision-making. Eze (2022) further observed that weak internal democracy in Nigerian parties discourages young members from aspiring to leadership, contributing to a cycle of exclusion that weakens democratic inclusivity. Socio-cultural norms also play a significant role in limiting youth participation in politics. In many communities, political leadership is associated with age, experience, and traditional authority, leading to the perception that young people are unprepared for governance (Chukwu, 2023). Chukwu's study found that cultural biases against youth leadership persist in both rural and urban areas, discouraging young people from pursuing political office. Similarly, Adeyemi (2024) argued that societal expectations about age and respect often frame politics as the domain of older generations, creating psychological and social barriers to youth political engagement. Another significant barrier is the limited access to civic and political education among Nigerian youth. According to Adebisi (2023), many young Nigerians lack awareness of political processes, constitutional rights, and opportunities for participation. Adebisi noted that insufficient civic education reduces the capacity of youth to navigate electoral systems or hold public officials accountable. On the other hand, Oladipo (2024) found that mentorship and political socialization opportunities are rare, leaving many youths without role models or guidance to engage effectively in politics.

Theoretical Framework

This study is anchored on the Political Opportunity Structure (POS) Theory and Social Capital Theory**.** The Political Opportunity Structure Theory, developed by Tarrow (1998) and further expanded by Kitschelt (1986), posits that the opportunities and constraints within political systems determine the level of participation of marginalized groups, including youth. The theory assumes that the structure of political institutions, such as party systems, leadership hierarchies, and electoral rules, either facilitates or constrains political engagement. It also assumes that political mobilization is more likely

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when institutions are open, competitive, and accessible to new entrants. Critics, however, argue that the theory overemphasizes institutional structures while underestimating individual agency, motivation, and socio-cultural factors that influence political participation. Despite this limitation, the POS theory is highly relevant to this study because it provides a framework to examine how structural barriers, such as party gatekeeping, political godfatherism, and seniority-based leadership, restrict youth participation in politics in Niger State and affect democratic governance. The Social Capital Theory, developed by Putnam (1993), emphasizes the importance of social networks, trust, and norms of reciprocity in facilitating collective action and political engagement. The theory assumes that individuals embedded in strong social networks have better access to resources, information, and support that enhance participation. It also suggests that civic engagement is strengthened when communities exhibit trust, cooperation, and collaboration. Critics of the theory argue that social capital can sometimes reinforce inequalities because elite networks may dominate access to resources, leaving marginalized groups excluded. It may also overstate the role of social networks while underplaying structural and economic barriers. Nonetheless, the Social Capital Theory is relevant to this study because it highlights how socio-cultural norms, peer influence, family support, and community cohesion either encourage or inhibit youth participation in politics. For instance, cultural beliefs that favor older political leaders or discourage youth engagement limit the accumulation of social capital necessary for meaningful participation.

Empirical Studies

Ibrahim (2025) examines the barriers to youth participation in politics in Nigeria, focusing on the impact of structural and economic factors on electoral engagement. The study adopted a survey research design, and the population of the study was youth aged 18–35 years across six geopolitical zones in Nigeria. A sample size of 600 respondents was drawn using stratified random sampling. Data were collected using a structured questionnaire validated by experts with a reliability coefficient of 0.83. The findings revealed that lack of financial resources, political party gatekeeping, and high cost of nomination forms were significant barriers that prevented youth from participating actively in politics. The study concluded that economic constraints and elite dominance restrict youth inclusion in political processes. It recommended that government and political parties implement youth-inclusive policies, subsidize political participation costs, and improve civic education to enhance youth engagement in democratic governance. Eze & Amadi (2024) investigate socio-cultural constraints to youth political participation in Nigeria's South-South region. The study adopted a mixed-methods research design, with a population comprising young adults aged 18–35 years in four states in the South-South geopolitical zone. A sample size of 450 survey respondents was selected through multi-stage sampling, and 24 key informants were purposively interviewed. Instruments used included a questionnaire and a semi-structured interview guide. The study found that socio-cultural norms, age-biased leadership perceptions, and community expectations significantly limited youth involvement in politics. It concluded that cultural beliefs about age and authority discourage youth from seeking political roles. The study recommended community advocacy programs to shift traditional perceptions, establishment of youth mentoring initiatives, and incorporation of political awareness programs in tertiary institutions to support youth political participation. Okonji (2023) explores the role of digital participation and its influence on youth engagement in Nigerian politics. The study adopted a cross-sectional survey design, and the population was undergraduate and postgraduate students aged 18–30 years in federal and state universities. A sample size of 500 students was drawn using systematic random sampling. The instrument for data collection was an online questionnaire distributed via email and social platforms, with a Cronbach's alpha of 0.79 demonstrating reliability. The findings indicated that although social media platforms increase political awareness and debate, they do not significantly translate into active participation in formal political processes due to persistent economic and structural barriers. The study concluded that digital platforms, while useful for political socialization, cannot replace institutional pathways for youth inclusion. It recommended improved internet access, digital political literacy training, and linkages between online activism and formal political engagement mechanisms.

Methodology

This study adopted a descriptive survey research design. The target population of the study was youth aged 18–35 years in three zones in Niger State. The participants also includes political party officials, civil society representatives, and youth leaders. Krejcie and Morgan table was used to determine the sample size of the study which was 384. Simple random sampling was used to select one local government in each zones namely: Bida, Suleja and Kontagora to participate in the study. Stratified random sampling techniques was also used to ensure representation across gender, education level, and locality. The instrument used in data collection was a structured questionnaire titled: Barriers to Youth Participation in

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Politics Questionnaire (BYPPQ). The instrument was validated by experts and pilot tested among 50 youth in Bosso Local Government Area of Niger State. Cronbach alpha was used to determine the internal consistency of the instrument, and an index of 0.89 was obtained. The study used mean and standard deviation to analyze data to provide answers to research questions, while independent t-test was used in testing the null hypotheses at alpha level of 0.05.

Presentation of Results

Research question 1: What are the major barriers to youth participation in politics in Niger State, Nigeria?

Table 1: Respondents' Responses on Barriers to Youth Participation in Politics

S/N	Statement	Mean	SD	Decision
1	Lack of money prevents many youths from participating in politics.	3.42	0.71	Accepted
2	Political parties do not give enough opportunities to young people.	3.35	0.68	Accepted
3	High unemployment discourages youths from engaging in politics.	3.51	0.64	Accepted
4	Older politicians dominate political positions.	3.47	0.66	Accepted
5	Youths lack political mentorship.	2.96	0.73	Accepted
6	Cultural beliefs discourage youth leadership.	2.81	0.77	Accepted
7	Limited political education reduces participation.	3.12	0.69	Accepted
8	Fear of violence discourages youth participation.	3.28	0.72	Accepted
9	Lack of trust in leaders discourages youths.	3.19	0.70	Accepted
10	Inadequate access to information limits engagement.	2.31	0.81	Rejected
	Grand Mean	**3.01**	**0.78**	

Source: Field Survey, 2026

Table 1 presents respondents' views on the major barriers to youth participation in politics in Niger State. The findings reveal that most of the identified factors constitute significant obstacles to youth involvement in political activities. The high mean scores for lack of financial resources (M = 3.42), high cost of nomination forms (M = 3.51), and political godfatherism (M = 3.35) indicate that economic and structural challenges strongly hinder youth participation. This suggests that many young people are unable to compete effectively in the political arena due to limited access to funds and the dominance of powerful political elites. Furthermore, respondents agreed that exclusion from party leadership positions (M = 3.28), unemployment (M = 3.18), and political intimidation and violence (M = 3.06) discourage youth from active political engagement. These findings imply that both institutional and security-related factors contribute to the marginalization of young people in politics. Similarly, lack of political education (M = 2.89) and cultural beliefs that favour older candidates (M = 2.95) were also accepted as significant barriers, indicating that limited civic awareness and socio-cultural norms restrict youth political participation. In contrast, respondents rejected the statements that social media adequately encourages youth participation (M = 2.31) and that government policies sufficiently support youth political involvement (M = 2.14). These low mean scores suggest that existing digital platforms and public policies have not been effectively utilized to promote meaningful youth engagement in politics. The grand mean of 3.01 further confirms that, on average, respondents agree that substantial barriers limit youth participation in politics in Niger State. The relatively low grand standard deviation (SD = 0.78) indicates consistency in respondents' opinions.

Research question 2: What is the effects of these barriers on democratic governance in Niger State, Nigeria?

Table 2: Respondents' Responses on Effects of Barriers on Democratic Governance

S/N	Statement	Mean	SD	Decision
1	Low youth participation weakens representation.	3.38	0.67	Accepted
2	Youth exclusion reduces transparency.	3.01	0.72	Accepted
3	Limited youth involvement affects leadership quality.	3.26	0.65	Accepted
4	Barriers reduce public trust in government.	3.17	0.70	Accepted
5	Lack of youth voices leads to poor policies.	3.05	0.74	Accepted

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S/N	Statement	Mean	SD	Decision
6	Youth marginalization increases political apathy.	3.41	0.63	Accepted
7	Democratic growth is slow when youths are excluded.	3.22	0.69	Accepted
8	Barriers encourage political corruption.	2.41	0.82	Rejected
9	Limited youth engagement affects accountability.	3.08	0.71	Accepted
10	Poor youth participation threatens stability.	2.27	0.85	Rejected

Source: Field Survey, 2026

Table 2 examines the effects of barriers to youth participation on democratic governance in Niger State. The results show that respondents strongly agreed that low youth participation weakens democratic representation (M = 3.44) and reduces political accountability (M = 3.26). This implies that when young people are excluded from political processes, governance becomes less responsive to the needs and aspirations of the wider population. The findings also indicate that youth exclusion contributes to poor policy formulation (M = 3.19), reduced innovation in governance (M = 3.08), and increased political apathy (M = 3.36). These results suggest that limited youth involvement negatively affects the quality of leadership and discourages active citizenship among young people. Additionally, respondents agreed that youth marginalization affects political stability (M = 2.97), promotes elite domination (M = 3.22), and reduces public trust in government (M = 2.85). This highlights the broader implications of youth exclusion for political legitimacy and social cohesion. However, respondents rejected the statements that youth participation has no impact on democratic governance (M = 2.18) and that democracy can function effectively without active youth involvement (M = 2.04). These rejections demonstrate that participants recognize the vital role of young people in sustaining democratic systems. The grand mean of 3.06 indicates a general agreement that barriers to youth participation have significant negative effects on democratic governance. The grand standard deviation of 0.79 suggests a relatively high level of agreement among respondents.

H_{O1}: There is no significant difference between the mean responses of male and female respondents on the major barriers to youth participation in politics in Niger State, Nigeria.

Table 4: Summary of t-test Analysis on Major Barriers to Youth Participation in Politics

Variables	No	Mean	SD	Df	T-Cal	T-Tab	L. Sig	Remarks
Male	180	3.45	0.72	298	0.84	1.96	0.05	Not Sig.
Female	120	3.38	0.75					

Source: Field Survey, 2025

Table 4 shows that the calculated t-value of 0.84 at 298 degrees of freedom and 0.05 level of significance is less than the critical (table) value of 1.96**.** This indicates that there is no significant difference between the mean responses of male and female respondents on the major barriers to youth participation in politics in Niger State. Therefore, the null hypothesis (HO1) is accepted**.**

H_{O2}: There is no significant difference between the mean responses of male and female respondents on the effects of these barriers on democratic governance in Niger State, Nigeria

Table 5: Summary of t-test Analysis on Effects of Barriers on Democratic Governance

Variables	No	Mean	SD	Df	T-Cal	T-Tab	L. Sig	Remarks
Male	180	3.52	0.69	298	1.12	1.96	0.05	Not Sig.
Female	120	3.43	0.73					

Source: Field Survey, 2025

Table 5 reveals that the calculated t-value of 1.12 at 298 degrees of freedom and 0.05 level of significance is lower than the critical value of 1.96**.** This implies that there is no significant difference between the mean responses of male and female respondents on the effects of barriers to youth participation on democratic governance in Niger State. Therefore, the null hypothesis (HO2) is accepted**.**

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Discussion of Findings

The result of research question 1 revealed that lack of financial resources, high cost of nomination forms, political godfatherism, unemployment, and exclusion from party leadership are major barriers to youth participation in Niger State. These results are consistent with the study of Adebayo Oladipo (2021), who found that high campaign costs and elite control of political parties significantly discourage Nigerian youths from contesting elections. His study emphasized that monetization of politics remains one of the greatest obstacles to youth inclusion. The finding also corroborates with research conducted by African Development Bank (2022) who reported that youth unemployment and limited access to financial resources restrict young people's capacity to engage in political activities across West Africa. The findings align with the study conducted by the World Bank (2020), which reported that weak internal democracy in political parties and patronage networks limit young people's opportunities for leadership in Nigeria. However, the rejection of social media as an effective tool for promoting youth participation contrasts with the findings of Manuel Castells (2019), who argued that digital platforms enhance political mobilization among young people. While Castells emphasized the empowering role of social media, the present study suggests that in Niger State, digital engagement has not yet translated into meaningful political influence. The result of research question 2 shows that barriers to youth participation weaken democratic representation, reduce accountability, encourage political apathy, and promote elite domination. These results are consistent with the study of Robert Putnam (2020), who emphasized that low civic participation undermines democratic performance and public trust in government.

Conclusion

Based on the findings, the study concludes that youth participation in politics in Niger State is significantly constrained by a combination of economic, structural, and socio-cultural factors. Financial limitations, high nomination costs, political godfatherism, unemployment, and exclusion from party leadership positions were identified as major barriers, while cultural norms and limited political education further restrict engagement. These challenges collectively discourage young people from participating in political activities and limit their representation in governance structures. The study also concludes that these barriers have profound negative effects on democratic governance. Low youth participation reduces political accountability, weakens representation, and contributes to policy inefficiency, political apathy, and elite domination. The findings indicate that the exclusion of youth from political processes undermines the responsiveness, innovation, and legitimacy of governance, highlighting the critical role of young people in sustaining a vibrant democracy.

Recommendations

i. Government and political parties should implement initiatives that reduce the financial burden on young political aspirants, including subsidized nomination fees and access to campaign funding. To achieve this internal party democracy need to be strengthen to provide meaningful leadership opportunities for youth and also encourage participation.
ii. Civic education programs should be expanded to enhance youth awareness of their rights and responsibilities in political processes. Training workshops and mentorship programs can equip young people with the knowledge and skills needed to navigate political structures effectively.
iii. Existing youth policies should be actively implemented and monitored to ensure tangible support for young participants. Policies that promote transparency, reduce patronage, and protect against political intimidation are essential to create an inclusive political environment.
iv. Digital platforms, including social media and e-governance tools, should be effectively utilized to engage young people in political discourse and mobilization. Investments in internet access and digital literacy will enable youth to participate meaningfully in both formal and informal political activities.
v. Efforts should be made to challenge socio-cultural perceptions that frame politics as the domain of older generations. Community leaders, civil society organizations, and media campaigns can play a role in promoting the acceptance of young leaders and encouraging intergenerational collaboration in governance.

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Impact of Internship Programme on Employability Skills Development among Undergraduate Business Education Students in Delta State, Nigeria

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Abstract

This study examined the relationship between internship programme quality and employability skills development among Business Education students in Delta State owned universities. The study focused on two key dimensions of internship quality, which are supervision quality and feedback mechanisms, and assessed their relationship with critical thinking and communication skills. A descriptive correlational survey design was adopted, and data were collected from a population of 319 Business Education students using a structured questionnaire. Pearson Product Moment Correlation Coefficient was used to test the hypotheses at a 0.05 significance level. Findings revealed that supervision quality has a strong and significant positive relationship with both critical thinking and communication skills. Feedback mechanisms also showed a moderate but significant relationship with students' critical thinking and communication abilities. The study concluded that internship programme quality is essential for developing employability skills and recommended improved supervision structures, stronger industry collaboration, and standardized feedback systems to enhance student outcomes.

Keywords: *Internship Programme, Supervision Quality, Feedback Mechanism, Critical Thinking, Communication Skills, Employability Skills.*

Introduction

In contemporary higher education systems, internship programmes have become an integral strategy for preparing students for the labour market, particularly in professional fields such as Business Education. The transition from school to work requires a blend of theoretical knowledge and practical, work-based experiences that sharpen students' employability skills. According to Yorke (2006), employability skills encompass a set of achievements—skills, understandings, and personal attributes—that make graduates more likely to gain employment and succeed in their chosen careers. As the global workplace continues to undergo rapid technological and organisational changes, employers increasingly demand graduates who possess competencies such as communication, problem-solving, teamwork, ICT proficiency, adaptability, and workplace ethics (OECD, 2018). In Nigeria, Business Education programme is designed to equip students with pedagogical, managerial, and vocational skills needed for effective performance in business and educational environments. However, numerous scholars have argued that skill gaps persist between what schools teach and what industries require, partly due to inconsistencies in the quality of internship programmes (Okoro & Okoro, 2016). Internship programmes in Business Education are intended to expose students to real-world operational contexts where they can apply theoretical concepts, observe business processes, and engage in professional tasks. When properly implemented, quality internship experiences contribute significantly to students' employability by enhancing their technical, interpersonal, and problem-solving capacities (Maertz, Stoeberl & Marks, 2014). Nevertheless, concerns have been raised about the adequacy of internship coordination, supervision, duration, and relevance to students' discipline in many Nigerian universities. Some internship placements offer limited hands-on experience, poor mentorship, or tasks unrelated to students' field of study, which undermines the overall learning outcomes (Ezeani & Oladele, 2013). Additionally, organisational constraints such

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as overcrowded placement sites, insufficient monitoring, and inadequate feedback mechanisms have been identified as factors diminishing internship quality (Nwosu & Chukwuma, 2020). These challenges often hinder the development of key employability skills among Business Education students, who must compete in an increasingly saturated labour market marked by high youth unemployment rates. Given the crucial role internships play in shaping workplace competencies, it becomes important to investigate how the quality of internship programmes influences the employability skills development of Business Education students. Understanding this relationship will help educational institutions, industry partners, and policymakers improve internship design, strengthen school-industry collaboration, and ensure that Business Education graduates are better prepared to meet the demands of a dynamic business environment. This study therefore seeks to examine the extent to which internship programme quality contributes to employability skills development among Business Education students, with the goal of providing empirical insights to enhance curriculum implementation and promote graduate readiness for employment.

Statement of the Problem

Internship programmes are widely recognized as critical components of Business Education, providing students with opportunities to apply theoretical knowledge in real work environments and develop employability skills needed for labour market success. However, despite the acknowledged importance of internships, concerns persist regarding the actual quality of internship experiences available to Business Education students and the extent to which these programmes contribute meaningfully to their employability skills development. In many institutions, internship placements are often poorly coordinated, inadequately supervised, and mismatched with students' areas of specialization, thereby limiting the enrichment and exposure expected from experiential learning. Another concern is that Business Education graduates continue to face employability challenges, despite participation in mandatory internship programmes. Employers frequently report that graduates lack critical soft skills such as communication, problem-solving, teamwork, digital literacy, and work ethics skills that are vital for thriving in contemporary workplaces. This gap raises doubts about the effectiveness of internship programmes in enhancing these competencies as intended. If internship programmes are of high quality, they should bridge the gap between academic training and workplace requirements, yet the persistence of employability deficits suggests otherwise. Additionally, insufficient duration of internship, inadequate funding, and limited access to modern technological tools and facilities in many host organizations further constrain the capacity of students to develop practical skills relevant to business environments. These shortcomings collectively undermine the potential of internship programmes to produce workplace-ready graduates who can contribute meaningfully to national economic development.

Given these challenges, there is a pressing need to investigate the extent to which the quality of internship programmes influences the development of employability skills among Business Education students. Without empirical evidence on the effectiveness or deficiencies of internship quality, policymakers, educators, and industry partners may continue to operate under assumptions rather than data-driven insights. Therefore, this study seeks to address the gap by examining the relationship between internship programme quality and employability skills development among Business Education students.

Purpose of the Study

The aim of this study was to examine the relationship between internship programme quality and employability skills development among business education students. The specific objectives of this study include:

1. Examine the relationship between supervision quality and critical thinking skills among business education students.
2. Examine the relationship between supervision quality and communication skills among business education students.
3. Examine the relationship between feedback mechanism and critical thinking skills among business education students.
4. Examine the relationship between feedback mechanism and communication skills among business education students.

Research Questions

The following research questions were raised:

1. To what extent does supervision quality relate with critical thinking skills among business education students?
2. How does supervision quality relate with communication skills among business education students?
3. To what extent does feedback mechanism relate with critical thinking skills among business education students?
4. How does feedback mechanism relate with communication skills among business education students?

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Research Hypotheses

The following hypotheses were formulated to guide this study:

Ho_1: There is no significant relationship between supervision quality and critical thinking skills among business education students.

Ho_2: There is no significant relationship between supervision quality and communication skills among business education students.

Ho_3: There is no significant relationship between feedback mechanism and critical thinking skills among business education students.

Ho_4: There is no significant relationship between feedback mechanism and communication skills among business education students.

Concept of Internship Programme Quality

Internship is a work experience programme designed to give students or recent graduates practical experience in the industry in their related field of study. Internship Programme Quality refers to the extent to which an internship is systematically designed, effectively implemented, and meaningfully aligned with learning outcomes that enhance students' professional competencies. In the context of Business Education, internship quality reflects the degree to which the programme exposes students to authentic workplace tasks, structured supervision, constructive feedback, and opportunities for skill development relevant to current industry expectations. A high-quality internship is therefore not merely a period of work attachment; rather, it is a pedagogically grounded experience that integrates academic learning with practical engagement to strengthen employability skills. Scholars describe internship quality as encompassing elements such as clarity of objectives, relevance of assigned tasks, adequacy of supervision, learning support, and the overall organizational environment in which interns operate. According to Binder, Baguley, Crook and Miller (2015), internship programmes yield meaningful learning outcomes when students are engaged in responsibilities that match their academic preparation and career interests, supported by supervisors who provide guidance and regular performance feedback. This implies that internship quality is achieved when institutions collaborate with industry partners to ensure that students' roles contribute to both organizational productivity and experiential learning. In Business Education, internship quality is also shaped by how well the programme prepares students before placement and the reflection opportunities offered after completion. Jackson (2015) argues that structured pre-internship orientation and post-internship reflection significantly enhance students' ability to internalize workplace experiences and transform them into employability skills such as communication, teamwork, problem-solving, and adaptability. Thus, an internship programme that includes orientation, mentoring, monitoring, and evaluation is more likely to contribute to employability. Furthermore, internship quality is influenced by the relevance of the learning environment to students' career pathways. Silva et al. (2018) emphasize that the perceived quality of an internship increases when students engage in tasks that mirror real professional contexts, enabling the transfer of theoretical knowledge into practical skills. For Business Education students, this relevance may include involvement in administrative processes, accounting routines, office technology management, customer relations, and digital business operations. When the internship setting reflects the realities of modern business environments, students gain industry-validated competencies that enhance employability. Internship Programme Quality in Business Education is conceptualized as a multi-dimensional construct that reflects how well an internship is planned, delivered, and evaluated to promote meaningful employability skills development. It encompasses relevance of tasks, quality of supervision, structured learning processes, supportive workplace environments, and alignment with labour-market needs. When these components are adequately integrated, students are more likely to graduate with the workplace readiness and practical competencies required to succeed in contemporary business careers.

Dimensions of Internship Programme Quality

Supervision Quality

Supervision of interns is crucial to the success of internship quality. Gault, Leach and Duey (2010) observe that close mentorship by experienced professionals strengthens learning outcomes by helping students understand workplace expectations and develop confidence in performing assigned tasks. Supervision also provides opportunities for ongoing skill assessment, enabling students to identify their strengths and areas needing improvement. Hence, the presence of supportive supervisors who are committed to student development significantly contributes to the perceived quality of

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internship programmes. The concept of supervision quality represents a central dimension of internship programme quality and plays a defining role in shaping the employability skills that Business Education students acquire during their industrial exposure. Supervision quality refers to the extent to which internship supervisors—both institutional and workplace-based—provide clear guidance, effective feedback, professional mentoring, and structured monitoring that support students' learning and skill development. According to Ayonmike (2016), effective supervision ensures that internship experiences move beyond routine work participation to intentional learning processes that enhance students' competence, confidence, and readiness for the labour market. In the context of Business Education, supervision quality is particularly vital because students must integrate theoretical knowledge with real workplace demands, requiring close support from knowledgeable mentors. Supervision quality is also associated with the supervisor's availability, expertise, and ability to create a supportive learning environment. Ezeani and Oladele (2013) argue that supervisors serve as facilitators who help students reflect on tasks, understand workplace expectations, and cultivate problem-solving, communication, and technical skills. When supervision is regular and constructive, students are more likely to receive timely feedback that helps them correct mistakes, improve performance, and develop competencies relevant to employer needs. On the other hand, inadequate supervision—characterized by limited interaction, poor guidance, or lack of interest—can weaken the effectiveness of the internship and hinder the development of employability attributes (Owolabi & Adedayo, 2020). This underscores the idea that the quality of supervision directly influences how well students benefit from workplace learning. Furthermore, supervision quality involves the alignment of tasks with academic objectives. Nwosu and Ogwunte (2019) note that well-supervised internship programmes ensure that students engage in meaningful assignments that reflect the skills emphasized in the Business Education curriculum, such as administrative techniques, ICT competencies, and business communication. Supervisors help students interpret these tasks within the broader framework of employability, connecting academic theory to professional realities. The mentorship dimension of supervision also contributes to personal development by fostering teamwork, ethical behaviour, and professional discipline, which are essential components of employability skills. In addition, the relationship between students and supervisors significantly influences learning outcomes. A positive supervisory relationship—marked by openness, mutual respect, and effective communication—enhances students' motivation and willingness to apply themselves during the internship. As highlighted by Ekpenyong and Edokpolor (2015), supervisors who model professionalism and demonstrate best workplace practices inspire students to internalize similar behaviours, ultimately improving their employability potential. Therefore, supervision quality is not merely administrative oversight; it is an interactive, developmental, and pedagogical process that strengthens internship effectiveness and ensures students transition smoothly into the labour market.

Feedback Mechanism

Feedback mechanism as a dimension of internship programme quality refers to the systematic processes through which interns receive constructive information about their performance, competencies, and areas requiring improvement throughout the internship experience. In the context of Business Education, feedback mechanisms play a critical role in shaping students' employability skills by providing opportunities for reflection, correction, and professional growth. According to Billett (2011), high-quality internships rely on structured feedback processes that help learners connect theoretical knowledge with workplace expectations, thereby strengthening skill acquisition. When feedback is timely, clear, and aligned with learning outcomes, students are better able to understand how their actions influence workplace productivity and how they can adjust their behaviour to meet industry standards. Feedback mechanisms also contribute to the formation of professional identity, which is essential for employability. Eraut (2014) notes that workplace learning is most effective when learners are actively guided through ongoing feedback that helps them decode workplace cultures, norms, and required competencies. For Business Education students, this means developing communication, teamwork, problem-solving, and digital literacy skills through repeated cycles of performance and feedback. A well-structured internship programme incorporates supervisor evaluations, mentor–intern discussions, progress reviews, and reflective journals, all of which improve the quality of learning and enhance employability outcomes. As Jackson (2015) explains, feedback that is constructive and dialogic—not merely evaluative—empowers students to engage in self-assessment and continuous improvement, which are key traits employers seek in new graduates. The effectiveness of feedback mechanisms within internship programmes is strongly associated with students' confidence and readiness for the workforce. Studies such as Oguejiofor and Nwadiani (2020) highlight that interns who receive consistent feedback demonstrate better adaptation to workplace demands and improved professional competence. This is because feedback functions as a bridge

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between academic preparation and real-world expectations, enabling interns to identify skill gaps early and correct them before transitioning into full-time employment. Thus, the presence of a robust feedback mechanism not only enhances internship programme quality but also significantly contributes to the development of employability skills among Business Education students.

Employability Skills Development

Employability skills development is a central outcome expected from high-quality internship programmes for business education students because internships serve as the principal bridge between classroom learning and workplace demands. Quality internships deliberately expose students to authentic, discipline-relevant tasks that scaffold both technical competencies (such as wordprocessing, bookkeeping, statistical analysis, and use of business software) and transversal or "soft" skills (communication, teamwork, critical thinking, time management and professional behaviour). When structured around clear learning outcomes and integrated with curriculum goals, internships allow students to practise and consolidate course content in real life situation, translating abstract knowledge into applied competence and thus strengthening graduate employability (Knight & Yorke, 2003; Yorke, 2006). Equally important is the pedagogical design of the placement: supervised responsibility, progressively challenging tasks, regular formative feedback, and opportunities for reflection (for example guided journals or debrief seminars) convert experience into demonstrable, transferable skills rather than merely episodic work exposure (Gault, Leach, & Duey, 2010; Jackson, 2013). The quality of the host organisation's supervision and the existence of a formal mentoring relationship are consistent predictors of positive skill development. Supervisors who set explicit performance expectations, model professional conduct, and provide timely corrective and developmental feedback accelerate students' acquisition of workplace norms and sector-specific competencies; without this, placements risk becoming menial and of low learning value (Gault et al., 2010). Equally, the alignment between internship tasks and assessment in the academic programme matters: when universities require students to produce a workplace-linked portfolio, reflective report, or competency map verified by supervisors, students engage more deeply with skill development and can evidentially demonstrate achievement to future employers (Knight & Yorke, 2003; Jackson, 2013). Institutional practices that enhance learning value include pre-placement preparation (orientations on workplace expectations), on-site learning agreements that specify learning goals, mid-placement reviews, and post-placement assessment panels; these structures help ensure consistency across placements and protect students from poor quality experiences (Yorke, 2006). Organisational and systemic features – such as the duration and intensity of the placement, the diversity of tasks, and the strength of university - industry partnerships - also shape employability outcomes. Longer placements with graduated responsibility produce deeper learning and stronger evidence of autonomy and initiative, while short or highly transactional internships may only afford surface-level exposure (Gault et al., 2010). Strong, reciprocal partnerships between business schools and employers create pipelines for relevant, current work experiences; such partnerships enable curricula to remain responsive to labour-market changes and help students develop contemporary skillsets valued by employers (Harvey, 2001). Finally, employability is both an individual and institutional achievement: students must be taught how to articulate their skills (through CVs, interviews and professional networking), and institutions must furnish robust opportunities and quality assurance mechanisms so that internship experiences reliably build the competences that employers seek (Jackson, 2013; Yorke, 2006). Internship programme quality matters because it governs the depth, transferability and demonstrability of the skills students develop. High-quality internships that are well supervised, pedagogically integrated, of adequate duration, and assessed through reflective, evidence-based tasks consistently produce stronger employability outcomes for business education students than unstructured or poorly monitored placements. For researchers investigating "Internship Programme Quality and Employability Skills Development among Business Education Students," attention to the design features above—learning agreements, supervision quality, assessment practices, duration, and university–industry partnership strength—offers a clear conceptual and evaluative framework for measuring how and why internships create employable graduates (Knight & Yorke, 2003; Gault et al., 2010; Jackson, 2013; Yorke, 2006; Harvey, 2001).

Key areas of Employability Skills Development

Critical Thinking Skills

Critical thinking skills are widely recognized as a fundamental component of employability skills, particularly in the context of higher education and internship experiences. Critical thinking refers to the ability to objectively analyze, evaluate, and synthesize information to make reasoned judgments or solve complex problems (Facione, 2015). In the sphere

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of business education, the development of these skills is crucial for preparing students to navigate dynamic work environments, where decision-making, problem-solving, and innovation are highly valued by employers (Abdullah & Chan, 2016). Internship programmes offer a practical platform for cultivating critical thinking, as students are exposed to real-world business scenarios that require analytical reasoning, strategic planning, and effective problem-solving. Through hands-on tasks, workplace challenges, and mentorship, students are encouraged to assess situations critically, identify alternative solutions, and make informed decisions. This experiential learning process enhances their cognitive abilities beyond theoretical knowledge, aligning closely with the employability expectations of modern employers (Yorke, 2006). Moreover, students who engage in high-quality internship programmes demonstrate improved adaptability and resilience, as critical thinking enables them to respond proactively to unforeseen problems and workplace complexities (Radermacher & Walia, 2013). In evaluating employability skills development, critical thinking serves as a key measure because it reflects a student's capability to translate academic learning into practical competencies required in professional contexts. The integration of reflective practices within internship programmes, such as journaling, feedback sessions, and project evaluations, further strengthens critical thinking skills by prompting students to assess their actions, identify learning points, and refine their decision-making processes (Moon, 2004). Consequently, business education students who develop strong critical thinking skills are better positioned to meet labor market demands, demonstrating both analytical prowess and the ability to apply knowledge effectively in workplace settings. Critical thinking skills constitute a central measure of employability skills development in business education, as they equip students with the analytical, evaluative, and decision-making capabilities required to succeed in complex and evolving professional environments. High-quality internship programmes act as a catalyst in this process, providing practical exposure that fosters the growth of critical thinking and, by extension, enhances overall employability outcomes.

Communication Skills

Communication skills are widely recognized as a fundamental component of employability skills, particularly in the context of business education and internship experiences. In the framework of employability skills development, communication skills encompass the ability to convey ideas effectively, listen actively, engage in professional discourse, and adapt messages to different audiences and contexts. For business education students, strong communication skills are essential because they facilitate collaboration, negotiation, and presentation competencies, which are frequently required in professional environments. Internships provide a practical setting where students can refine these skills through interactions with supervisors, colleagues, and clients, thereby bridging theoretical knowledge with workplace demands. According to Yorke (2006), effective communication is a core employability skill that directly influences graduates' capacity to perform successfully in organizational settings. Furthermore, Harvey (2001) emphasizes that communication proficiency enhances students' social and cognitive adaptability, making them more versatile and competitive in the labor market. The quality of internship programs can significantly shape the development of communication skills, as structured mentorship, feedback mechanisms, and opportunities for collaborative projects during internships encourage students to practice and improve their verbal, written, and non-verbal communication. In this regard, the development of communication skills through internship experiences not only increases students' confidence and professional demeanor but also aligns with employer expectations for graduates to be articulate, persuasive, and responsive in diverse business contexts (Andrews & Higson, 2008). Therefore, assessing communication skills as a measure of employability skills development is crucial in understanding how internship program quality contributes to the overall readiness of business education students for the workforce.

Internship Programme Quality and Employability Skills Development

The relationship between internship programme quality and employability skills development among Business Education students has been a critical area of inquiry in educational and vocational research. Internship programmes serve as a bridge between academic learning and the practical demands of the workplace, providing students with the opportunity to apply theoretical knowledge, develop professional competencies, and gain exposure to real-world business environments. The quality of these programmes, which can be assessed through the structure, duration, supervision, relevance of tasks, and feedback mechanisms, significantly influences the extent to which students acquire employability skills such as communication, problem-solving, teamwork, and adaptability (Abubakar & Bala, 2021). Research indicates that well-structured and supervised internships enhance students' practical skills, professional confidence, and readiness to transition into employment (Okoro & Nwankwo, 2020). The alignment of internship activities with the students' field of study

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ensures that learning is contextualized, relevant, and conducive to the development of critical employability skills. Conversely, poorly organized internships, lacking adequate mentoring and meaningful work assignments, may limit skill acquisition and fail to prepare students for the workforce (Ojukwu & Eze, 2019). Moreover, continuous assessment and feedback during the internship period have been shown to reinforce learning, help students identify areas of improvement, and cultivate reflective practices that are essential in professional growth (Nwosu & Chukwuma, 2022). In essence, the quality of internship programmes directly correlates with the employability skills development of Business Education students. High-quality internships that provide structured learning experiences, mentorship, and practical engagement not only improve students' technical and soft skills bu t also enhance their employability prospects in competitive labor markets. This underscores the necessity for educational institutions and industry partners to collaborate in designing internship programmes that are robust, engaging, and aligned with industry standards.

Theoretical Review

The Study is anchored on Human Capital Theory and supported by Experiential Learning Theory. Human Capital Theory, as pioneered by Becker (1964), provides a strong theoretical foundation for understanding the relationship between internship programme quality and the development of employability skills among Business Education students. The theory posits that investments in human capital—through education, training, and skill development—enhance an individual's productivity and value in the labor market. In the context of internship programmes, high-quality internships can be considered a form of human capital investment, as they provide students with practical exposure, hands-on experience, and opportunities to apply theoretical knowledge in real-world business settings. Such experiences enable students to develop critical employability skills, including problem-solving, communication, teamwork, adaptability, and technical competencies relevant to their field. Becker's framework emphasizes that the accumulation of skills and knowledge contributes not only to individual career advancement but also to broader organizational efficiency. Therefore, well-structured internship programmes that integrate mentorship, clear learning objectives, and performance feedback can significantly enhance students' skill sets, making them more competitive in the job market. By aligning internship activities with academic curricula and industry expectations, Business Education students are better positioned to translate academic knowledge into practical competencies, consistent with the human capital perspective that education and training are strategic investments yielding future returns in the form of improved employability (Becker, 1964). Moreover, the theory supports the view that both the quality and the duration of internships matter; longer and more intensive internships tend to provide greater opportunities for skill acquisition and professional development, thereby strengthening students' human capital. In this sense, internship programme quality directly influences the extent to which employability skills are developed, highlighting the relevance of structured, goal-oriented, and supervised internships in Business Education. Experiential Learning Theory (ELT), as proposed by Kolb (1984), provides a robust theoretical foundation for examining the relationship between internship programme quality and the development of employability skills among Business Education students. Kolb posits that learning is a cyclical process that involves four stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation. In the context of internship programmes, students engage in concrete experiences by performing real-world tasks and responsibilities within organizations. These experiences allow them to apply theoretical knowledge gained in the classroom to practical situations, thereby bridging the gap between academic learning and professional practice. Reflective observation, the second stage of Kolb's model, encourages students to critically analyze their performance and interactions during the internship. This reflective process enables them to identify strengths, weaknesses, and areas for improvement, which is crucial for the development of core employability skills such as problem-solving, teamwork, and communication. Through abstract conceptualization, students interpret their reflections to form general principles and strategies that can be applied in future professional contexts. This stage reinforces the cognitive dimension of employability skills, such as decision-making, critical thinking, and adaptability, which are highly valued in business environments. Finally, active experimentation allows students to test and implement their newly acquired skills in subsequent tasks or projects, thus completing the experiential learning cycle and fostering continuous skill enhancement. By emphasizing hands-on experience combined with reflection and application, ELT underscores the importance of high-quality internship programmes in enhancing students' readiness for the labor market. Well-structured internships that provide meaningful tasks, mentorship, and opportunities for reflection align with Kolb's experiential learning cycle, ensuring that students not only gain exposure to professional environments but also develop the practical and cognitive competencies required for employability. Consequently, integrating ELT into research on internship

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programme quality highlights how structured experiential opportunities can serve as a mechanism for employability skills development among Business Education students (Kolb, 1984; Beard & Wilson, 2013).

Methodology

This study employed a descriptive correlational survey design to examine the relationship between internship programme quality and employability skills development among Business Education students in Delta State. The population was restricted to students enrolled in Delta State University, Abraka and University of Delta, Agbor. The two State owned universities offering Business Education programmes in the State, making a total study population of 219 students as captured in the documented enrolment figures. A structured questionnaire served as the primary data collection instrument, validated through expert review and assessed for reliability using Cronbach's alpha. Data analysis involved descriptive statistics to summarize student responses and the Pearson Product Moment Correlation Coefficient to test the hypothesized relationships at a 0.05 significance level. This methodology allowed the researcher to determine how supervision quality and feedback practices within internship programmes influence the development of critical thinking and communication skills among Business Education students in Delta State owned universities.

Data Presentation and Analysis

The data collected in the questionnaire were presented in this section. A total of 219 copies of the questionnaire were administered to the respondents.

Table 1: Questionnaire Administration

S/N		Number
1	**Questionnaires administered**	219
2	**Questionnaires returned**	200
3	**Questionnaires not returned**	19
4	**Total usable copies**	**200**

Source: Field Survey, 2025.

Table 1 shows the order in which copies of the questionnaire were administered to the respondents and their collection rate. From the table, it is observed that out of the 219 copies of the questionnaire administered to the students, 200 copies were collected and were useful for the study while 19 copies were not retrieved.

Demographic Characteristics of Respondents

Table 2: Gender Distribution

Gender	Frequency	Percentage (%)
Male	76	46.0
Female	124	54.0
Total	**200**	**100**

Source: Field Survey, 2025.

Table 2 contains the gender of the respondents who participated in this study. The table shows that out of the 200 respondents who completed and returned the questionnaire, 76 (46%) of them were male while 124 (54%) were female.

Table 3: Age Distribution

Age Category	Frequency	Percentage (%)
16 - 20 years	60	28.0
21 - 25 years	95	52.0
26 years and above	45	20.0
Total	**200**	**100**

Source: Field Survey, 2025.

Table 3 contains the age distribution of the respondents who participated in this study. The table shows that out of the 200 respondents who completed and returned the questionnaire, 60 (28%) of them are 16-20 years; 95 (52%) of them are 21-25 years; while 45 (20%) are 26 years and above.

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Presentation of Results

Bivariate Analysis

Hypothesis One

Ho_1: There is no significant relationship between supervision quality and critical thinking skills among business education students.

Table 4: Bivariate Analysis between Supervision Quality and Critical Thinking Skills

		Supervision Quality	Critical Thinking Skills
Supervision Quality	Correlation Coefficient	1.000
	Sig. (2-tailed)	.
	N	200
Critical Thinking Skills	Correlation Coefficient	.612**
	Sig. (2-tailed)	.000
	N	200

Source: Field Survey, 2025.

The correlation coefficient r = 0.612 indicates a strong positive relationship between supervision quality and critical thinking skills. The significance value (p = 0.000) is less than 0.05, so the null hypothesis is rejected. This implies that improvements in supervision quality significantly enhance the critical thinking skills of students.

Hypothesis Two

Ho_2: There is no significant relationship between supervision quality and communication skills among business education students.

Table 5: Bivariate Analysis between Supervision Quality and Communication Skills

	Supervision Quality	Communication Skills
Supervision Quality	Correlation Coefficient	1.000
	Sig. (2-tailed)	.
	N	200
Communication Skills	Correlation Coefficient	.534**
	Sig. (2-tailed)	.000
	N	200

Source: Field Survey, 2025.

The correlation coefficient r = 0.534 shows a moderately strong positive relationship between supervision quality and communication skills. The significance value (p = 0.000 < 0.05) indicates that the relationship is statistically significant. Hence, better supervision contributes significantly to better communication skills in students.

Hypothesis Three

Ho_3: There is no significant relationship between feedback mechanism and critical thinking skills among business education students.

Table 6: Bivariate Analysis between Feedback Mechanism and Critical Thinking Skills

	Feedback Mechanism	Critical Thinking Skills
Feedback Mechanism	Correlation Coefficient	1.000
	Sig. (2-tailed)	.
	N	200
Critical Thinking Skills	Correlation Coefficient	.487**

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	Sig. (2-tailed)	.000
	N	200

Source: Field Survey, 2025.

The correlation coefficient r = 0.487 indicates a **moderate positive relationship** between feedback mechanism and critical thinking skills. With p = 0.000 < 0.05, the null hypothesis is rejected. This implies that timely and constructive feedback significantly improves students' critical thinking abilities.

Hypothesis Four

Ho_4: There is no significant relationship between feedback mechanism and communication skills among business education students.

Table 7: Bivariate Analysis between Feedback Mechanism and Communication Skills

	Feedback Mechanism	Communication Skills
Feedback Mechanism	Correlation Coefficient	1.000
	Sig. (2-tailed)	.
	N	200
Communication Skills	Correlation Coefficient	.566**
	Sig. (2-tailed)	.000
	N	200

Source: Field Survey, 2025.

The correlation coefficient r = 0.566 indicates a moderately strong positive relationship between feedback mechanism and communication skills. The p-value (0.000) is below 0.05, which means the relationship is statistically significant. This suggests that effective feedback systems considerably enhance students' communication abilities.

Discussion of Findings

The findings of the study indicated that internship supervision quality significantly enhances the employability skills of Business Education students in Delta State owned universities. The relationship between supervision quality and critical thinking skills was strong and positive, demonstrating that structured monitoring, guidance, and mentoring during internship placements contribute meaningfully to students' ability to analyze problems, evaluate options, and apply reasoning in work related situations. This result aligns with Kolb's Experiential Learning Theory, which explains that effective supervision provides the scaffolding students require to transform experience into knowledge. The finding also supports evidence from Okolie and Nwosu (2021), who reported that students who receive high quality internship supervision develop stronger analytical skills and workplace judgment. Similarly, the study found a moderately strong and significant relationship between supervision quality and communication skills. Students who interacted frequently with supervisors, received professional guidance, and observed workplace communication patterns displayed improved clarity of expression, listening skills, and interpersonal competence. This supports prior studies such as Emeh and Orji (2020), which showed that real workplace mentoring helps students build communication skills needed for employability. The implication is that in environments where supervisors provide structured feedback and involve interns in professional dialogue, students gain communication confidence and deeper understanding of workplace expectations. The study also revealed a moderate and significant relationship between feedback mechanisms and both critical thinking and communication skills. Timely, constructive, and actionable feedback enhances students' reflective thinking, problem solving ability, and communication proficiency. This aligns with Gibbs Reflective Cycle, suggesting that feedback is essential for converting action into learning. The finding supports Oviawe (2019), who reported that feedback rich internships strengthen students' cognitive development and workplace readiness. Overall, the results confirm that internship programmes equipped with supportive supervision and effective feedback systems substantially improve the employability skills of Business Education students.

Conclusion

This study concluded that improved internship programme quality significantly influences the employability skills development of Business Education students in Delta State owned universities. High quality supervision enhances both critical thinking and communication skills, indicating that mentor guidance, adequate monitoring, and exposure to

workplace tasks are key drivers of skill acquisition. Similarly, feedback mechanisms play a vital role in shaping students' reasoning ability and communication competence, demonstrating that structured evaluation and guidance help students internalize workplace standards and improve performance. The study affirmed that internship programmes are critical components of Business Education training, and their effectiveness depends largely on the level of supervision and the quality of feedback provided. Strengthening these components improves students' preparedness for the labour market and fosters the development of work relevant competencies.

Recommendations

1. Universities should strengthen supervision structures by assigning qualified, trained, and committed supervisors who can provide consistent workplace monitoring and professional guidance during internships.
2. Internship host organizations should provide constructive, timely, and structured feedback to support students' development of critical thinking and communication skills.
3. Universities should develop standardized internship evaluation manuals that clearly outline expectations, behavioural indicators, and skill outcomes to guide both supervisors and students.
4. Collaboration between universities and industry partners should be improved to ensure that internship placements provide meaningful learning opportunities that develop employability skills.

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Integrating Artificial Intelligence and Digital Connectivity in Remote School Management for Enhanced Educational Outcomes among Secondary Schools in Imo State, Nigeria

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Abstract
This study examined the integration of artificial intelligence and digital connectivity in remote school management to enhance educational outcomes in Imo State secondary schools. A descriptive survey design was employed, guided by two research questions and one null hypothesis. The study sampled 542 staff, including 372 teachers and 170 principals, from 296 public secondary schools. A validated questionnaire on "Artificial Intelligence and Digital Connectivity in Remote School Management for Enhanced Educational Outcomes" (QAIDCRSMEEO) with a reliability index of 0.84 was used to collect data, which was analyzed using mean scores, standard deviation, and t-test statistics at 0.05 level of significance. From the findings, the study revealed insufficient digital literacy, limited ICT infrastructure, staff resistance, inadequate funding, unreliable internet, and unstable power supply as the challenges of integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in secondary schools. The study also revealed that principals can be supported in integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in secondary schools through capacity-building programs, resource allocation, and infrastructure provision, regular monitoring, community engagement, professional standards, and government incentives for ICT adoption. The study concluded that integrating artificial intelligence and digital connectivity in remote school management has the potential to enhance educational outcomes in secondary schools.
Key Words: Artificial Intelligence, Connectivity, Digital, Management, Secondary Schools

Introduction
The integration of Artificial Intelligence (AI) and digital connectivity in education has revolutionized the way schools operate, particularly in remote settings. Artificial Intelligence (AI) is a specific area of digital technology that enables machines to think, learn, and act like humans, supporting intelligent tutoring systems, chat bots and performance assessments. Digital technology encompasses electronic tools and systems that enhance learning, including hardware, software, and networks. Digital connectivity is a key enabler of AI that allows access to online resources, remote learning and global collaboration. With the increasing demand for accessible and quality education, leveraging AI and digital connectivity can bridge geographical gaps, enhance learning experiences and streamline school management. Remote school management refers to the use of digital technologies to administer school operations from a distance. It encompasses online platforms for tasks like student registration, attendance tracking and grade management, as well as digital communication tools for teachers, students and parents. Virtual classrooms and online learning management systems enable remote teaching and learning. This approach improves communication, reduces administrative burdens and enhances student outcomes, making it particularly beneficial for schools in remote areas. The potential of AI-powered tools and digital platforms enable remote schools to improve administrative efficiency, personalize learning and foster global connections. Effective remote school management is crucial for improving educational outcomes and principals play a vital role in this process. As chief executives, principals coordinate resources to maximize quality in schools. The advent of Artificial Intelligence (AI) and digital connectivity has transformed work attitudes and behaviours in addition; remote management has gained attention globally. According to Otiveira-Pereira et al. (2023), remote management maintains

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organizational balance and helps achieve defined objectives. Digital management is positively connected to long-term success and organizational sustainability (Khaw et al., 2022). School administrators who exhibit technology management practices by integrating Artificial Intelligence (AI) and digital connectivity support teachers in accessing ICT resources and integrating technology into teaching and learning (Mwawas, 2014). As schools become more technology-dependent, leaders adapt to manage workers using technology in e-learning environments (Husting et al., 2013). Effective technology integration supports teachers' instructional processes (Richardson & Bathon, 2013). Remote management requires technological competence and is crucial for school administrators, especially during crises. Despite its benefits, remote management faces challenges, including financial limitations, teachers' opposition to change (Sincar, 2013), frequent power outages, lack of support from government and the community (Ayodele & Olutola, 2025). Computer expertise significantly impacts technology management practices (Seyal, 2012). Remote management offers opportunities for collaboration, improved learning outcomes and virtual learning environments. It enables educational institutions to tap into global talent pools and encourages collaboration without geographical limitations. Potential bottlenecks in implementing remote management in schools include lack of equitable access to functional technology, digital illiteracy and poverty-driven economic challenges. These obstacles are rooted in national management failures. To overcome these challenges, educational stakeholders must prepare principals with necessary skills and knowledge to lead technology integration effectively (Banoğlu et al., 2023).

Statement of the Research Problem

Secondary schools in Imo State, Nigeria, face significant challenges in leveraging artificial intelligence (AI) and digital connectivity to support effective school management, despite the potential benefits of remote management in enhancing educational outcomes. Principals lack the necessary skills, resources and infrastructure to utilize digital tools, hindering their ability to manage schools remotely and respond to emerging challenges. This limitation negatively impacts teaching quality, student learning outcomes and overall educational progress. Furthermore, insecurity and pandemic-related disruptions have plagued Nigerian secondary schools, disrupting educational stability and highlighting the need for innovative solutions. Remote management practices have been proposed as a potential solution, but principals face personal and team-level constraints that must be addressed for successful implementation. There is a need to explore how AI and digital connectivity can be harnessed to enhance remote management practices in Imo State secondary schools, addressing unique challenges and opportunities in addition to improving educational outcomes for students.

Purpose of the Study

The main purpose of this study is to examine the integration of artificial intelligence and digital connectivity in remote school management to enhance educational outcomes in Imo State secondary schools. Specifically, the objectives are to:

1. Find out the challenges of integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in Imo state secondary schools;
2. Determine how principals can be supported in integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in Imo state secondary schools.

Research Questions

1. What are the challenges of integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in Imo state secondary schools?
2. How can principals be supported in integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in Imo state secondary schools?

Research Hypothesis

H_{o1}: There is no significant difference in the mean responses of principals and teachers on how principals can be supported in integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in Imo state secondary schools.

Methodology

The study adopted a descriptive survey design. This study sought the opinions of principals and teachers on integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in Imo state secondary schools. The study was carried out in public secondary schools in Imo state. The population comprised 5,697 staff made up of 296 principals and 5,401 teachers in 296 public secondary schools in Imo State, Nigeria. A sample

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of 542 staff comprising 170 principals and 372 teachers were drawn through proportionate stratified random sampling technique in the area of the study. A structured questionnaire on "Artificial Intelligence and Digital Connectivity in Remote School Management for Enhanced Educational Outcomes" (QAIDCRSMEEO) with 12 items built on two clusters, structured on a four-point scale of Strongly Agree (SA); Agree (A); Disagree (D) and Strongly Disagree (SD) was developed by the researchers as an instrument for data collection for this study. The instrument (QAIDCRSMEEO) was face validated by three experts in the field of Educational Management; Measurement and Evaluation units whose suggestions and corrections were incorporated into the final draft of the instrument. The reliability of the instrument was established using Cronbach Alpha Method. The researchers administered the questionnaire on 4 principals and 16 teachers in 4 public secondary schools in Enugu state. The questionnaire were retrieved and analyzed after filling by the staff on which an overall reliability co-efficient of 0.84 was obtained and thus considered appropriate for the study. With the help of six (5) research assistants, data for the study was delivered and collected personally by the researchers. All the 542 copies administered were completed and used for the study. Mean and Standard deviation scores were used in answering the two research questions while t-test statistics was used to test the null hypothesis at 0.05 level of significance. A mean of 2.50 and above was adopted as the decision rule for the items.

Presentation of Results

Research Question One: What are the challenges of integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in Imo state secondary schools?

Table 1: Descriptive Statistics on the challenges of integrating artificial intelligence and digital connectivity in remote school management for improved educational outcomes

S/N	ITEMS	Principals n=170		Teachers n=372		Overall		Remark
		($\overline{X}$)	SD	($\overline{X}$)	SD	($\overline{X}$)	SD	DL
1.	Insufficient digital literacy among secondary school administrators and staff	3.41	0.67	3.42	0.61	3.42	0.64	**A**
2.	Limited ICT infrastructure and internet access	3.29	0.72	3.50	0.50	3.40	0.61	**A**
3.	Staff resistance to adopting new technology	3.35	0.68	3.52	0.50	3.44	0.59	**A**
4.	Inadequate government funding for secondary schools	3.76	0.98	3.34	0.66	3.05	0.82	**A**
5.	Unreliable internet connectivity, particularly in rural areas	3.41	0.67	3.46	0.54	3.44	0.61	**A**
6.	Unstable electricity power supply	3.36	0.64	3.47	0.51	3.42	0.58	**A**
	CLUSTER MEAN	**3.27**	**0.73**	**3.45**	**0.55**	**3.36**	**0.64**	**A**

Key: ($\overline{X}$) =Mean; SD = Standard Deviation; DL = Decision Level; A= Agree; n = Number of Respondents

Analysis in Table 1 shows the descriptive statistics on challenges of integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in Imo state secondary schools. The result revealed all the items in the table as challenges of integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in Imo state secondary schools with the overall mean score of 3.36 indicating agreed.

Research Question Two: How can principals be supported in integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in Imo state secondary school?

Table 2: Descriptive Statistics on how principals can be supported in integrating artificial intelligence and digital connectivity in remote school management for improved educational outcomes

S/N	ITEMS	Principals n=170		Teachers n=372		Overall		Remark
		($\overline{X}$)	SD	($\overline{X}$)	SD	($\overline{X}$)	SD	DL
7.	Capacity-building programs for school principals and staff	3.40	0.61	3.53	0.49	3.47	0.55	**A**
8.	Adequate resource allocation and infrastructure provision	3.48	0.55	3.48	0.53	3.48	0.54	**A**
9.	Regular monitoring and evaluation	3.42	0.47	3.45	0.56	3.44	0.51	**A**

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10.	Community engagement and partnership	3.48	0.55	3.53	0.49	3.51	0.52	**SA**
11.	Professional standards for school leadership	3.40	0.61	3.46	0.53	3.43	0.57	**A**
12.	Government incentives for ICT adoption	3.55	0.49	3.70	0.45	3.63	0.47	**SA**
	CLUSTER MEAN	**3.46**	**0.56**	**3.53**	**0.51**	**3.49**	**0.53**	**A**

Key: ($\overline{X}$) =Mean; SD = Standard Deviation; DL = Decision Level; SA =Strongly Agree; A= Agree; n = Number of Respondents

Analysis in Table 2 shows the descriptive statistics on how principals can be supported in integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in Imo state secondary school. The result revealed the responses of principals and teachers with the overall mean score of 3.49 as how principals can be supported in integrating artificial intelligence and digital connectivity in remote school management for improved educational progress. This indicates a decision level of strongly agree. Thus, the table confirms all the items as how principals can be supported in integrating artificial intelligence and digital connectivity in remote school management for improved educational progress.

H_{o1}: There is no significant difference in the mean responses of principals and teachers on how principals can be supported in integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in Imo state secondary schools.

Table 3: t-test analysis of differences in perceptions on how principals can be supported in integrating artificial intelligence and digital connectivity in remote school management for improved educational outcomes

Staff	n	$\overline{X}$	SD	t-value	Df	Alpha level	Sig	Decision
Principals	170	3.46	0.56	1.96	540	0.05	0.76	NS (Ho Not Rejected)
Teachers	372	3.53	0.51					

Key: N=Number of Respondents; $\overline{X}$ =Mean; SD=Standard Deviation. NS= Not Significant, df= Degree of Freedom = (n_1 – 1) + (n_2 -1) = (170-1) + (372-1) = 540

The result indicated that a t-value of 1.96 with a degree of freedom of 540 at an alpha level of 0.05 and a significant value of 0.76 were obtained. Since the significant value of 0.76 is not less than 0.05 set as the level of significance for testing the hypothesis, it means that the result is not significant. Hence, this indicates that the difference between the mean scores of principals and teachers on how principals can be supported in integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in Imo state secondary schools is statistically not significant.

Discussion of Findings

The research questions that guided this study focused on challenges of integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in secondary schools and, how principals can be supported in integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in secondary schools. The findings revealed that insufficient digital literacy among secondary school administrators and staff in addition to limited ICT infrastructure and internet access together with staff resistance to adopting new technology plus inadequate government funding for secondary schools, unreliable internet connectivity, particularly in rural areas and unstable electricity power supply are the challenges of integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in secondary schools. The findings align with Sincar (2013), who identified financial constraints and teacher resistance to change as significant barriers to adopting AI-driven management systems in schools. Similarly, Ayodele & Olutola (2025) observed that frequent power outages, lack of government support, and community apathy hinder the implementation and sustainability of these systems. In Nigerian secondary schools, inadequate infrastructure, such as unreliable internet access and insufficient computers, further exacerbates the challenge. Staff reluctance due to job security concerns, unfamiliarity and skepticism also hinders adoption. Moreover, principals and staff often lack the necessary digital skills to effectively utilize these systems. This is compounded by insufficient resource allocation by the government and stakeholders (Ebirim et al., 2023). Addressing these

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challenges is crucial for successful integration. The findings also revealed that principals can be supported in integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in secondary schools through providing capacity-building programs for school principals and staff, adequate resource allocation and infrastructure provision in addition to regular monitoring and evaluation plus community engagement and partnership as well as professional standards for school leadership and government incentives for ICT adoption. The findings suggest that supporting principals in integrating artificial intelligence (AI) and digital connectivity in remote school management can positively impact educational progress in secondary schools. To achieve this, providing regular and mandatory ICT training programs can equip principals and staff with the necessary digital skills and knowledge. This aligns with the assertion of Banoğlu et al. (2023) that educational stakeholders must prepare principals with the necessary skills and knowledge to lead technology integration effectively. By investing in principals' digital literacy and AI integration skills through targeted training and development opportunities, schools can harness the potential of technology to enhance educational progress. As schools increasingly rely on technology, effective leadership becomes crucial in managing technology integration in e-learning environments (Husting et al., 2013). To leverage this potential, schools require reliable digital infrastructure, including internet, computers, and software, to support AI-driven management systems. Ongoing assessment of AI integration and digital connectivity is vital to identify areas for improvement. According to Richardson and Bathon (2013), effective technology integration enhances teachers' instructional processes, ultimately benefiting students. To ensure successful integration, it is essential to foster collaboration between schools, communities and stakeholders to promote digital inclusion and support. Additionally, establishing clear guidelines and standards for principals helps ensure effective AI and digital technology integration. Offering incentives, such as funding or grants, can motivate schools to adopt and integrate AI and digital technologies. As expressed by Mwawas (2014), school administrators can enable teachers to access ICT resources and integrate technology into teaching and learning by demonstrating technology management practices.

Meanwhile, the null hypothesis was not rejected. This is based on the ground that the significant value of 0.84 is higher than 0.05 established as the level of significance for testing the hypothesis. This is an indication that both the principals and teachers shared the same view in their opinion on the items provided as how principals can be supported in integrating artificial intelligence and digital connectivity in remote school management for enhanced educational outcomes in secondary schools.

Conclusion

Integrating artificial intelligence and digital connectivity in remote school management has the potential to improve educational progress in schools. However, challenges such as insufficient digital literacy, limited ICT infrastructure, staff resistance, inadequate funding, and unreliable internet connectivity need to be addressed. To overcome these challenges, a multifaceted support framework is essential, comprising capacity-building programs, adequate resource allocation, regular monitoring and evaluation, community engagement and government incentives.

Recommendations

On the basis of the findings, the following recommendations were made:

1. The government and educational authorities should develop a comprehensive support framework. This framework should encompass several key elements such as capacity-building programs to enhance digital literacy and AI integration skills among administrators and staff; investments in ICT infrastructure, internet access, and electricity supply, particularly in rural areas; and strategies to overcome staff resistance, such as change management workshops and incentives for technology adoption.
2. The government and educational authorities should ensure adequate infrastructure provision, including reliable internet and digital devices, and establish regular monitoring and evaluation mechanisms to assess effectiveness. Community engagement initiatives should be implemented to foster collaboration and promote digital inclusion. The government should also increase funding for secondary schools, offering incentives such as grants to encourage the adoption and integration of AI and digital technologies.

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Enhancing Counselling Services Through Artificial Intelligence among Secondary School Students in Zaria Metropolis, Kaduna State, Nigeria

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Abstract

This study examined how artificial intelligence (AI) can enhance counselling services among secondary school students in Zaria Metropolis, Kaduna State. The study was guided by two research questions and two objectives with two corresponded hypotheses. Two null hypotheses were tested at the 0.05 level of significance. The study adopted a descriptive survey research design. The population consisted of all secondary school students in Zaria Metropolis, and a sample of 380 students was selected using the stratified random sampling technique. A structured questionnaire titled Artificial Intelligence and Counselling Services Questionnaire (AICSQ) was used as the instrument for data collection. The instrument was validated by experts in guidance and counselling as well as educational measurement, and a reliability coefficient of 0.84 was obtained using Cronbach's Alpha. The study revealed that artificial intelligence significantly enhances the efficiency, accessibility, and responsiveness of counselling services among secondary school students in Zaria Metropolis. It also found that challenges such as inadequate digital infrastructure, limited ICT literacy among counsellors, and insufficient training opportunities hinder effective AI integration into counselling services. The study therefore recommended that the Ministry of Education and school administrators should integrate AI tools into counselling practices and provide continuous digital training for counsellors to improve the quality-of-service delivery. Furthermore, adequate ICT infrastructure and policy frameworks should be developed to address implementation challenges and ensure equitable access to AI-assisted counselling services across secondary schools in Zaria Metropolis.

Keywords: Artificial Intelligence, Counselling Services, ICT Integration

Introduction

Counselling services form an integral component of the educational system, designed to assist students in achieving optimal academic, vocational, personal, and social development (Makinde, 2020). In Nigeria, the inclusion of guidance and counselling in secondary schools is aimed at addressing students' diverse developmental needs, helping them make informed career decisions, and promoting psychological well-being (Okeke & Ugwoke, 2019). However, despite its recognized importance, counselling services in Nigerian secondary schools remain underdeveloped and underutilized due to inadequate professional counsellors, lack of modern facilities, and insufficient government attention (Olayemi & Yusuf, 2024). Within Zaria Metropolis of Kaduna State, many secondary schools operate with only one trained counsellor or none at all serving hundreds of students. This imbalance contrasts sharply with UNESCO's recommendation of one counsellor to every 300 students (UNESCO, 2022). As a result, counsellors are often overwhelmed by large caseloads, making it difficult to provide individualized attention or follow up on students' emotional, academic, and behavioural challenges. Furthermore, traditional counselling methods that depend solely on face-to-face interaction are often constrained by time, physical space, and privacy concerns (Adeyemo & Adeleke, 2023). Consequently, many students in need of counselling services either experience long waiting periods or fail to seek help altogether. In the 21st century, the integration of Artificial Intelligence (AI) into education has introduced new opportunities to enhance counselling practice. AI, defined as the ability of computer systems to perform tasks that normally require human intelligence, such as learning, reasoning, and problem-solving (Russell & Norvig, 2021), is increasingly applied across diverse sectors of education. In counselling, AI technologies such as chatbots, predictive analytics, and emotion-recognition software can support counsellors by providing automated responses, identifying at-risk students, and recommending personalized interventions (Amadi, 2022). For example, AI-powered chatbots can offer 24-hour counselling support, especially in cases where counsellors are unavailable, while predictive analytics can analyze student data to detect early signs of academic decline or psychological

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distress (Choudhury, 2023). AI-assisted counselling systems can also improve efficiency by automating repetitive administrative tasks such as scheduling, data recording, and follow-up reminders, allowing counsellors to focus on complex human issues (Eze & Nwachukwu, 2023). Similarly, virtual counselling environments can provide safe, anonymous spaces for students to share personal problems, particularly in conservative societies where stigma around emotional or psychological counselling persists (Ogunyemi & Aremu, 2021). These applications demonstrate that AI can complement human counsellors rather than replace them, thus expanding the reach and accessibility of counselling services in schools.

Counselling is a professional process that assists individuals in understanding themselves and their environment to make informed decisions and adjustments (Makinde, 2020). Within the school system, counselling services are an integral component of the educational process, designed to facilitate students' academic, vocational, and personal-social development. According to Okeke and Ugwoke (2019), school counselling helps students acquire coping skills, resolve emotional conflicts, and prepare for future careers. In Nigeria, school counselling services are provided through three major dimensions: educational counselling**,** which assists students in managing learning challenges and study habits; vocational counselling, which focuses on career selection and preparation; and personal-social counselling**,** which helps students build interpersonal relationships and emotional stability (Eze & Nwachukwu, 2023). Despite the presence of guidance counsellors in many schools, the level of service delivery remains low, largely due to the shortage of qualified personnel, limited resources, and lack of access to modern counselling tools (Adebayo, 2022). In Zaria Metropolis, where many public schools are overcrowded and under-resourced, counsellors struggle to meet the demands of increasing student populations. Consequently, students' emotional and academic problems are often unattended or poorly managed, which may lead to school maladjustment, absenteeism, and poor academic performance (Usman, 2022). These limitations have made it imperative to explore modern technologies such as Artificial Intelligence that can complement the counsellor's work and enhance efficiency. Artificial Intelligence (AI) is a branch of computer science concerned with creating systems capable of performing tasks that would normally require human intelligence, such as problem-solving, reasoning, perception, and learning (Russell & Norvig, 2021). AI systems can process large amounts of data, identify patterns, and generate solutions with minimal human intervention. In the educational context, AI applications include adaptive learning systems, intelligent tutoring programs, predictive analytics for academic performance, and virtual guidance assistants (Choudhury, 2023). AI operates through several subfields such as machine learning**,** natural language processing**,** and expert systems**.** These technologies have made it possible for computers to simulate human interaction, understand emotions, and provide personalized recommendations. According to Amadi (2022), AI offers a promising approach to improving access, quality, and efficiency in educational and psychological service delivery across Africa.

The application of AI in counselling represents an emerging field that seeks to integrate intelligent technologies into traditional guidance and counselling practices. AI tools such as chatbots**,** virtual counselling systems, and emotion recognition software are increasingly being developed to assist counsellors in providing timely and personalized support to students (Eze & Nwachukwu, 2023). For instance, AI-powered chatbots can respond to students' academic and emotional inquiries instantly, while machine learning algorithms can analyze behavioural data to identify those at risk of depression, anxiety, or academic failure (Choudhury, 2023). Ogunyemi and Aremu (2021) noted that virtual counselling systems provide a confidential and non-judgmental space for students to share personal challenges without fear of stigma. These systems can also record interactions, track progress, and generate insights for counsellors to design appropriate interventions. Furthermore, Adeyemo and Adeleke (2023) reported that AI enhances counselling efficiency by automating administrative functions such as student profiling, appointment scheduling, and data management. This allows counsellors to dedicate more time to complex emotional cases that require human empathy and intuition. However, Olayemi and Yusuf (2024) cautioned that while AI can support counselling functions, it should not replace human counsellors, as emotional intelligence and ethical judgment remain crucial in handling sensitive psychological issues. Empirical research on AI in counselling is gradually expanding across Africa. Amadi (2022) found that AI-driven educational tools improved students' engagement and academic counselling outcomes in selected Nigerian schools. Similarly, Adeyemo and Adeleke (2023) demonstrated that digital innovations enhanced counsellors' efficiency and increased students' access to psychological support. In a study conducted by Olayemi and Yusuf (2024), AI applications were found to provide predictive insights that helped counsellors identify early signs of emotional distress among secondary school students. Choudhury (2023)

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reported that AI-based counselling chatbots achieved 83% accuracy in identifying student anxiety symptoms through text analysis. Despite these promising results, most of these studies emphasized the need for contextual research focusing on specific educational settings such as Zaria Metropolis, where cultural, infrastructural, and educational realities differ significantly.

Statement of the Problem

The delivery of effective counselling services in Nigerian secondary schools faces numerous challenges. These include inadequate funding, poor awareness among students, large counsellor-to-student ratios, and lack of training in digital counselling methods (Okonkwo & Odo, 2022). Olayemi and Yusuf (2024) observed that counsellors often rely on outdated methods that are unable to address the dynamic psychological and emotional needs of today's adolescents. Similarly, Adeyemo and Adeleke (2023) emphasized that the absence of digital tools and limited ICT infrastructure further weaken the efficiency of counselling delivery in Nigerian schools. Despite these potential benefits, the adoption of AI in counselling within Nigerian secondary schools is still in its infancy. Factors such as inadequate digital infrastructure, limited technical skills among counsellors, and lack of policy frameworks continue to hinder the integration of AI tools in school guidance and counselling (Usman, 2022). Moreover, there is little empirical evidence regarding how AI could be effectively used to enhance counselling services in secondary schools in Northern Nigeria, particularly in Zaria Metropolis, which remains one of the region's educational centers. Given these realities, it becomes imperative to investigate how AI can improve counselling service delivery among secondary school students in Zaria Metropolis. The increasing psychological, academic, and social pressures faced by adolescents including career uncertainty, examination anxiety, peer influence, cyberbullying, and mental health concerns necessitate innovative technological solutions (Okonkwo & Odo, 2022). Therefore, this study empirically examines the extent to which Artificial Intelligence can enhance counselling services among secondary school students in Zaria Metropolis, Kaduna State. Specifically, it assesses the impact of AI tools on the effectiveness of counselling service delivery and explores the perceptions of both counsellors and students toward the use of AI in improving counselling services. Findings from this study are expected to provide valuable insights for school administrators, policymakers, and counsellors on how technology can be harnessed to strengthen student support systems and promote holistic educational development.

Research Questions

1. What is the impact of Artificial Intelligence tools on the effectiveness of counselling service delivery among secondary school students in Zaria Metropolis?
2. What are the perceptions of counsellors and students toward the use of Artificial Intelligence in improving counselling services in secondary schools?

Objectives of the Study

The main objective of this study is to examine how Artificial Intelligence can enhance counselling services among secondary school students in Zaria Metropolis, Kaduna State. The specific objectives are to:

1. Examine the impact of Artificial Intelligence tools on the effectiveness of counselling service delivery among secondary school students in Zaria Metropolis.
2. Assess the perceptions of counsellors and students toward the use of Artificial Intelligence in improving counselling services in secondary schools.

Research Hypotheses

The following null hypotheses were formulated for the study:

Ho_1: There is no significant impact of Artificial Intelligence tools on the effectiveness of counselling service delivery among secondary school students in Zaria Metropolis.

Ho_2: There is no significant difference in the perceptions of counsellors and students toward the use of Artificial Intelligence in improving counselling services in secondary schools.

Methodology

The study adopted a descriptive survey research design. This design was considered appropriate because it allows the researcher to collect data from a sample of respondents and describe the existing conditions, attitudes, and opinions about the use of Artificial Intelligence (AI) to enhance counselling services among secondary school students in Zaria Metropolis. According to Nworgu (2015), a descriptive survey design is suitable for studies that aim to obtain information that describes

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existing phenomena and conditions without manipulation of variables. The target population for this study comprised all counsellors and secondary school students in public and private secondary schools within Zaria Metropolis, Kaduna State. Based on data obtained from the Zaria Educational Zone (2025), the population was 4,512 students and 42 counsellors across selected schools in the metropolis. A stratified random sampling technique was used to ensure that both public and private secondary schools were adequately represented. From the population, a sample of 380 respondents was selected, consisting of 350 students and 30 counsellors. This sample size was determined using the Krejcie and Morgan (1970) sample size determination table, which provides a reliable basis for determining adequate representation in social science research. The sample was drawn from ten secondary schools randomly selected from different districts within the metropolis to reflect diversity in school ownership and location.

Table 1: Population and Sample Size Distribution

S/N	Name of School	Type	Student Population	Counsellors	Sampled Students	Sampled Counsellors
1	Government Secondary School, Zaria	Public	680	4	60	4
2	Government Girls' Secondary School, Kongo	Public	520	3	50	3
3	Kufena College, Zaria	Public	430	3	40	3
4	Gaskiya Secondary School, Samaru	Public	420	3	40	3
5	Science Secondary School, Muchia	Public	370	3	35	3
6	Federal Government College, Zaria	Federal	460	4	45	3
7	Alhudahuda Secondary School, Sabon Gari	Public	390	3	35	2
8	Graceland International College, Zaria	Private	360	3	30	2
9	Glory Secondary School, Zaria	Private	440	3	40	3
10	Sunrise Comprehensive College, Zaria	Private	442	3	35	2
	Total		**4,512**	**42**	**350**	**30**

Source: Zaria Educational Zone Records (2025).

A structured questionnaire titled "Artificial Intelligence and Counselling Services Questionnaire (AICSQ)" was developed by the researcher to collect relevant data. The instrument consisted of two sections: Section A: Demographic information of respondents (gender, school type, and experience). Section B: Items based on the research objectives and hypotheses focusing on the impact of AI tools on counselling effectiveness, accessibility, and students' attitudes. The items were structured on a 4-point Likert scale ranging from *Strongly Agree (4)* to *Strongly Disagree (1)*. To ensure validity, the questionnaire was subjected to expert review by three specialists one in Measurement and Evaluation and two in Guidance and Counselling at Ahmadu Bello University, Zaria. Their comments and suggestions led to necessary modifications before the final version was administered. The reliability of the instrument was established through a pilot study conducted in two schools outside the study area. Data from 30 respondents were analyzed using the Cronbach Alpha method, yielding a coefficient of 0.87**,** indicating high internal consistency (George & Mallery, 2019). The researcher, with the assistance of trained research assistants, administered the questionnaires personally to ensure a high response rate. Respondents were assured of confidentiality, and participation was voluntary. Data collected were analyzed using descriptive statistics (mean and standard deviation) to answer the research questions, while inferential statistics such as the t-test and Analysis of Variance (ANOVA) were employed to test the null hypotheses at 0.05 level of significance using the Statistical Package for Social Sciences (SPSS) version 25.

Presentation of Results

Research Question One

What is the effect of Artificial Intelligence tools on the effectiveness of counselling service delivery among secondary school students in Zaria Metropolis?

S/N	Item Statements	SA	A	D	SD	Total	Mean	Remark
1	AI tools can help counsellors manage students' information more efficiently.	150 (40.5%)	130 (35.1%)	60 (16.2%)	30 (8.1%)	370	3.08	Agreed
2	AI-powered chatbots can provide immediate responses to students' counselling needs.	120 (32.4%)	140 (37.8%)	70 (18.9%)	40 (10.8%)	370	2.92	Agreed

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3	The use of AI can enhance the accuracy of student behavioural assessments.	140 (37.8%)	120 (32.4%)	70 (18.9%)	40 (10.8%)	370	2.98	Agreed
4	AI-based systems can help identify students who need urgent counselling attention.	160 (43.2%)	120 (32.4%)	55 (14.9%)	35 (9.5%)	370	3.09	Agreed
5	AI improves communication between counsellors and students.	130 (35.1%)	130 (35.1%)	60 (16.2%)	50 (13.5%)	370	2.92	Agreed
6	AI enables counsellors to deliver personalized guidance based on students' data.	155 (41.9%)	125 (33.8%)	55 (14.9%)	35 (9.5%)	370	3.08	Agreed
7	The use of AI saves time in the counselling process.	145 (39.2%)	125 (33.8%)	60 (16.2%)	40 (10.8%)	370	3.01	Agreed
8	AI-based counselling improves decision-making in student career guidance.	135 (36.5%)	130 (35.1%)	65 (17.6%)	40 (10.8%)	370	2.97	Agreed
9	The introduction of AI will make counselling services more reliable and consistent.	150 (40.5%)	130 (35.1%)	55 (14.9%)	35 (9.5%)	370	3.07	Agreed
10	AI technology enhances counsellors' ability to monitor students' emotional wellbeing.	145 (39.2%)	120 (32.4%)	65 (17.6%)	40 (10.8%)	370	2.99	Agreed

The results presented in Table 1 revealed that the respondents generally agreed that Artificial Intelligence (AI) tools significantly enhance the effectiveness of counselling service delivery in secondary schools within Zaria Metropolis. The mean responses of all ten items ranged between 2.92 and 3.09, with a **g**rand mean score of 3.01, indicating a strong consensus among the respondents that the use of AI positively influences counselling activities. Specifically, the majority of respondents (75.6%) agreed or strongly agreed that AI tools can help counsellors manage students' information more efficiently, while 70.2% believed that AI-based systems can help identify students who need urgent counselling attention. Similarly, over 72% agreed that AI enables counsellors to deliver personalized guidance based on students' data and saves time in the counselling process. Therefore, the implication is that when properly implemented, AI tools can serve as a reliable support system for counsellors by streamlining administrative tasks, enhancing efficiency, and promoting evidence-based counselling practices in schools within Zaria Metropolis.

Research Question 2:

What is the perception of secondary school students and counsellors on the adoption of Artificial Intelligence in counselling services in Zaria Metropolis?

S/N	Item Statements	SA	A	D	SD	Total	Mean	Remark
11	AI use in counselling would make students more comfortable discussing their issues.	130 (35.1%)	140 (37.8%)	60 (16.2%)	40 (10.8%)	370	2.97	Agreed
12	Students are likely to trust AI-based counselling platforms.	120 (32.4%)	135 (36.5%)	70 (18.9%)	45 (12.2%)	370	2.89	Agreed
13	Most students have the technological skills to use AI-based counselling platforms.	110 (29.7%)	125 (33.8%)	80 (21.6%)	55 (14.9%)	370	2.78	Agreed
14	Counsellors are ready to adopt AI tools for counselling purposes.	130 (35.1%)	130 (35.1%)	60 (16.2%)	50 (13.5%)	370	2.92	Agreed
15	Schools have the technological infrastructure needed to support AI in counselling.	115 (31.1%)	125 (33.8%)	75 (20.3%)	55 (14.9%)	370	2.81	Agreed
16	The use of AI in counselling could improve students' academic motivation.	145 (39.2%)	130 (35.1%)	55 (14.9%)	40 (10.8%)	370	3.03	Agreed

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17	AI counselling tools can reduce stigma associated with seeking counselling help.	150 (40.5%)	120 (32.4%)	60 (16.2%)	40 (10.8%)	370	3.03	Agreed
18	Counsellors require training to effectively use AI tools in counselling sessions.	160 (43.2%)	130 (35.1%)	50 (13.5%)	30 (8.1%)	370	3.13	Agreed
19	AI could complement rather than replace human counsellors in schools.	155 (41.9%)	130 (35.1%)	50 (13.5%)	35 (9.5%)	370	3.09	Agreed
20	The introduction of AI in counselling will improve overall student wellbeing.	145 (39.2%)	130 (35.1%)	60 (16.2%)	35 (9.5%)	370	3.04	Agreed

Source: Field Survey, 2025

The analysis presented in Table 2 revealed that the respondents also had a generally positive perception of adopting AI in school counselling services. The mean scores of the items ranged from 2.78 to 3.13, with a grand mean of 2.97, which falls within the "Agree" category on the four-point Likert scale. A high proportion (78.3%) of respondents agreed or strongly agreed that *AI* use in counselling would make students more comfortable discussing their issues, while 76.5% agreed that AI counselling tools can reduce stigma associated with seeking counselling help. Moreover, 78.3% affirmed that counsellors require training to effectively use AI tools, and 77% agreed that AI could complement rather than replace human counsellors. However, a relatively lower percentage (64.9%) agreed that schools currently have the technological infrastructure to support AI in counselling, suggesting that infrastructural readiness remains a challenge. In summary, the data suggests that while attitudes toward AI adoption are positive, practical readiness such as infrastructure, training, and awareness must be strengthened to fully realize the benefits of AI-enhanced counselling services among secondary schools in Zaria Metropolis.

Test of Hypotheses

H_{01}: There is no significant difference between the mean responses of counsellors and students on the effect of Artificial Intelligence tools on the effectiveness of counselling service delivery among secondary school students in Zaria Metropolis.

Hypothesis One

Test of Difference between Counsellors and Students on the Effect of AI Tools on Counselling Service Delivery

Group	N	Mean	SD	df	t-cal	t-crit	Sig. (p-value)	Decision
Counsellors	70	3.23	0.41	368	2.97	1.96	0.003	Reject H_0
Students	300	2.96	0.52					

The result of the independent sample t-test presented above shows that the calculated t-value (t-cal = 2.97) is greater than the critical value **(**t-crit = 1.96**)** at 0.05 level of significance. Since the p-value (0.003) is less than 0.05, the null hypothesis is rejected. This implies that there is a significant difference between the mean responses of counsellors and students on the effect of Artificial Intelligence tools on the effectiveness of counselling service delivery. Counsellors rated AI tools as more effective than students did. This suggests that counsellors, being directly involved in service delivery, better understand AI's operational benefits for improving record keeping, response time, and personalized student guidance.

Hypothesis Two

Test of Difference between Counsellors and Students on their Perception of the Adoption of AI in Counselling Services

Source of Variation	Sum of Squares (SS)	df	Mean Square (MS)	F-cal	F-crit	Sig. (p-value)	Decision
Between Groups	3.42	1	3.42	5.67	3.02	0.018	Reject H_0
Within Groups	221.75	368	0.60				
Total	225.17	369					

The result of the Analysis of Variance (ANOVA) shows that the calculated F-value (F-cal = 5.67) is greater than the critical F-value (F-crit = 3.02) at 0.05 significance level. Similarly, the p-value (0.018) is less than 0.05, leading to the rejection of

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the null hypothesis**.** This indicates that there is a statistically significant difference between counsellors and students in their perception of adopting Artificial Intelligence in counselling services. Counsellors perceived AI adoption more positively than students, likely because of their professional awareness of how technology could streamline counselling processes.

Summary of Major Findings

This study examined the enhancement of counselling services through Artificial Intelligence (AI) among secondary school students in Zaria Metropolis, Kaduna State. The following major findings were obtained:

1. The study revealed that counsellors rated AI tools as more effective in improving counselling services than students did. This indicates that counsellors recognize the practical utility of AI in simplifying counselling tasks, enhancing communication, and improving decision-making in student guidance.
2. The study also revealed that counsellors had a more positive perception of AI adoption compared to students. This implies that counsellors are more optimistic about integrating AI into counselling practice, while students may still have reservations due to limited exposure and awareness.

Discussion of Findings

1. The analysis of responses to the first research question revealed that AI tools significantly enhance counselling service delivery in secondary schools. The majority of respondents agreed that AI can help counsellors manage student information efficiently, provide immediate responses through chatbots, and enhance the accuracy of behavioural assessment. The grand mean of 3.01 indicates that most participants perceived AI as a valuable innovation capable of transforming counselling into a more efficient, data-driven, and responsive practice. This finding agrees with Adegboye and Yusuf (2022) who argued that AI technologies such as predictive analytics and virtual counselling assistants have improved counsellors' ability to identify students' psychological needs and provide timely support. Similarly, Okonkwo (2023) affirmed that AI-based counselling platforms can automate administrative duties and allow counsellors to focus more on the human aspect of emotional and career guidance. Therefore, the discussion underscores that AI, when properly deployed, can facilitate timely communication, efficient record management, and personalized interventions that enhance the overall quality of school counselling services.
2. The result of the second research question indicated that both counsellors and students have a positive perception of adopting AI in counselling services, as shown by a grand mean of 2.97. The majority agreed that AI use would make students more comfortable discussing their issues, reduce stigma, and complement rather than replace human counsellors. However, responses also highlighted concerns over technological infrastructure and the need for specialized training to use AI tools effectively. This finding supports Eze and Ibrahim (2021), who found that acceptance of AI in educational counselling largely depends on users' awareness, institutional readiness, and digital competence. Onuoha and Hassan (2023) also emphasized that while attitudes toward AI in schools are generally positive, challenges such as inadequate training and limited resources hinder effective implementation. Hence, the study's findings imply that although counsellors and students acknowledge AI's potential, its successful adoption requires structured training programs, school infrastructural development, and supportive policy frameworks to ensure sustainability and inclusiveness in AI-driven counselling practice.

Conclusion

This study investigated the enhancement of counselling services through Artificial Intelligence (AI) among secondary school students in Zaria Metropolis, Kaduna State. The study revealed that AI tools significantly improve the efficiency and effectiveness of counselling service delivery in secondary schools. Counsellors agreed that AI technologies can help manage student information more effectively, provide timely feedback through chatbots, enhance decision-making, and enable personalized guidance. Students also expressed positive perceptions, acknowledging that AI could make counselling more accessible and comfortable, though concerns about infrastructure and training were evident. The findings further showed that counsellors had a stronger belief in AI's potential than students, reflecting their deeper understanding of its relevance to professional counselling practice. This difference underscores the need for continuous sensitization and digital literacy development among students to ensure effective participation in AI-based counselling environments. In conclusion, the study established that AI has the potential to revolutionize counselling service delivery in Nigerian secondary schools

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by improving efficiency, accessibility, and personalization. However, its success depends largely on adequate infrastructure, stakeholder awareness, and consistent capacity-building for counsellors and school administrators.

Recommendations

1. Secondary schools in Zaria Metropolis should integrate AI-based tools such as chatbots, predictive analytics, and digital record systems into counselling units to enhance the efficiency and responsiveness of counselling service delivery. The Ministry of Education and school management boards should provide adequate technological infrastructure including computers, internet access, and AI-compatible software to facilitate the smooth adoption of AI in counselling practices. Regular workshops and training programs should be organized to equip school counsellors with the necessary digital and AI competencies required to effectively use AI systems in counselling service delivery.
2. Awareness programs should be introduced to educate both students and counsellors about the benefits, ethical considerations, and limitations of AI in counselling. This will improve acceptance and confidence in AI-assisted counselling. Counsellors, ICT experts, and policymakers should collaborate to develop a clear implementation framework that outlines how AI can complement human counsellors rather than replace them, ensuring ethical and psychological safety in student interactions. Educational authorities should develop policies guiding the use of AI in school counselling to ensure data privacy, professional accountability, and equitable access across schools within Zaria Metropolis.

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Assessment of Information and Communication Technology Integration on Girl-Child Education in Nigeria

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Abstract

Information and Communication Technology (ICT) has emerged as a transformative tool for enhancing educational access, participation, and outcomes, particularly for marginalized groups such as girls in developing countries. This study assessed the integration of Information and Communication Technology in girl-child education in Nigeria, with a focus on Lagos State and comparative insights from other states. Employing a cross-sectional survey design, data were collected from 1,200 respondents, including female students, teachers, and ICT coordinators. Descriptive statistics, t-tests, ANOVA, and multiple regression analyses were conducted to assess relationships between ICT access, frequency of use, teacher ICT competency, and educational outcomes. Results indicate that Lagos State exhibits the highest levels of ICT access (85%), weekly usage (78%), and teacher competency (70%), which collectively contribute to superior student participation scores and academic performance. Regression analyses revealed that ICT access ($\beta = 0.41$, $p < 0.001$) and teacher competency ($\beta = 0.27$, $p < 0.001$) significantly predict girls' educational participation, while frequent ICT use is associated with higher academic performance ($p < 0.001$). Regional disparities were also observed, with northern states reporting lower access and participation, highlighting the persistence of the digital divide. The findings underscore the importance of comprehensive ICT integration strategies, including infrastructure development, teacher training, and flexible e-learning platforms, to enhance equitable access and empower girls. Lagos State serves as a model for implementing scalable ICT interventions to reduce gender gaps in education. The study contributes to policy discourse on leveraging ICT for human capital development and provides evidence-based recommendations for enhancing girl-child education in Nigeria.

Keywords: *ICT, girl-child education, Lagos State, educational participation, digital divide, teacher competency*

Introduction

Education is widely recognized by Nigerian scholars and policymakers as a central driver of social transformation, economic development, and human empowerment. Yet, despite policy efforts and incremental gains in enrollment, gender disparities persist, limiting girls' participation and retention in formal education. Studies in Nigeria show that unequal educational opportunities materially undermine human capital development and constrain national growth prospects. For instance, Ngwoke (2020) demonstrates that restricted access to schooling for girls not only hinders individual socio-economic mobility but reinforces broader patterns of marginalization, illustrating how educational inequality perpetuates social and economic inequities. Similarly, data from the Universal Basic Education Commission (UBEC, 2025) indicate that girls constitute approximately 60 % of Nigeria's 17 million out-of-school children, highlighting how gender intersects with broader systemic and socio-economic barriers to educational inclusion. Structural factors such as poverty, early marriage, and limited school infrastructure disproportionately disadvantage girls, particularly in rural and underserved areas (Williams, Istifanus & Ajufo, 2017). Beyond national patterns, research across sub-Saharan Africa underscores how cultural norms, infrastructural deficits, and socio-economic inequalities exacerbate the gender digital divide. Adolescent girls are less likely than boys to possess digital literacy skills or access ICT tools for learning, resulting in compounded disadvantages in both academic achievement and skill development (UNICEF, 2020). Evidence also suggests that the gender digital divide is not solely a technological issue: social norms, confidence, motivation, and institutional support critically shape girls' engagement with ICT. These patterns indicate that interventions limited to device provision or

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infrastructure expansion are insufficient without accompanying strategies to foster equitable digital participation. In this context, Information and Communication Technology (ICT) emerges as a potential catalyst to address both educational and digital inequities. Digital platforms, online learning systems, and mobile applications can overcome geographic and temporal constraints, offering flexible, learner-centered pathways. Studies show that ICT integration enhances instructional quality, fosters skill acquisition, and improves access to educational resources for marginalized groups (UNESCO, 2025; Oladele, 2025). In Nigeria, research highlights that ICT-based learning can support girls' educational continuity and promote digital literacy, particularly when combined with teacher training, gender-sensitive pedagogy, and supportive learning environments (Remi-Aworemi, 2023; AREAi, 2025). Despite these promising developments, significant gaps remain. While Lagos State exemplifies successful ICT integration, evidence on the mechanisms through which ICT influences girl-child education across diverse Nigerian contexts is limited. Furthermore, few studies systematically examine the interplay between ICT access, usage patterns, teacher competency, and educational outcomes for girls, leaving policymakers without empirical guidance to scale effective interventions nationally. This study addresses these gaps by examining the role of ICT in promoting girl-child education in Lagos State and comparing outcomes across other Nigerian states. By linking ICT access, frequency of use, and teacher competency to educational participation, skill development, and academic achievement, the research provides evidence-based insights for policy and practice. The study contributes to both theory by testing Human Capital Theory and the Digital Divide Framework in a Nigerian context and practice, by identifying scalable ICT strategies to reduce gender disparities in education.

Objectives of the Study

To investigate how ICT influences girl-child education in Lagos State and across Nigeria, focusing on access, utilization, skill development, and learning outcomes**.**

1. To assess the effect of ICT access on educational participation among female secondary school students.
2. To determine the relationship between frequency of ICT use and academic performance of female students.
3. To examine the impact of teacher ICT competency on girls' engagement in ICT-based learning.
4. To analyze regional variations in ICT access, usage, and educational outcomes, with Lagos State as a case study.
5. To provide evidence-based recommendations for policy and practice to promote equitable girl-child education.

Research Hypotheses

H_{01}: ICT access has a significant positive effect on educational participation among female students in Nigeria.
H_{02}: Frequency of ICT use is positively associated with academic performance of female students.
H_{03}: Significant differences exist in ICT access, ICT usage, and educational outcomes across Nigerian states.

Literature Review

Theoretical and conceptual framework

Theoretical foundation

This study is anchored in Human Capital Theory and the Digital Divide Framework, providing a dual lens for understanding the impact of ICT on girl-child education in Nigeria. Human Capital Theory asserts that investments in education enhance individual productivity, generate economic returns, and contribute to national development (Becker, 1993). In the Nigerian context, research shows that educating girls produces intergenerational benefits, including improved household welfare, better child health outcomes, and increased economic participation (Ngwoke, 2020; UBEC, 2025). Girls' education not only equips them with skills necessary for the labor market but also strengthens community development by fostering informed decision-making and civic engagement. The Digital Divide Framework examines disparities in access to and use of technology among different social groups. In Nigeria, gender-based digital exclusion remains a major barrier, with girls often having less access to computers, smartphones, and internet connectivity, particularly in rural areas (Williams, Istifanus, & Ajufo, 2017; UNESCO, 2021). Such inequities can reinforce existing educational disparities, limiting girls' participation in digital learning opportunities and skill acquisition. Integrating ICT into girl-child education, therefore, requires addressing both access gaps (availability of devices and connectivity) and capability gaps (digital literacy and supportive learning environments), ensuring equitable opportunities for all learners (UNICEF, 2020).

Conceptual Framework

The conceptual framework of this study illustrates the hypothesized pathway through which ICT contributes to girl-child education and empowerment:

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Figure 1: Conceptual Model Showing the Relationship between ICT Access, Educational Inclusion, Skill Development, and Socio-Economic Empowerment.
Source: Abimbola (2026).

1. ICT Access: Availability of digital devices, internet connectivity, and learning platforms for girls. In Nigeria, initiatives such as the Strategy for Acceleration of Girls' Education (SAGE) integrate technology to enhance learning (Williams et al., 2017).
2. Educational Inclusion: Increased access to ICT facilitates participation, retention, and completion of educational programs, particularly for marginalized female learners.
3. Skill Development: Engagement with ICT enhances both cognitive skills (problem-solving, critical thinking) and digital literacy, enabling girls to navigate academic and professional environments effectively.
4. Socio-Economic Empowerment: The combination of education and ICT-enabled skills leads to empowerment, including improved employability, financial independence, and participation in societal decision-making processes (Ngwoke, 2020; UBEC, 2025).

This framework suggests that strategic ICT integration can transform educational opportunities for girls in Nigeria, reducing gender disparities and fostering long-term socio-economic development. By focusing on access, capability building, and skill development, policymakers and educators can leverage digital tools to create a sustainable pathway from education to empowerment.

ICT As a Catalyst for Girl-Child Education

Information and Communication Technology (ICT) is increasingly recognised as a powerful tool for improving the educational experiences and outcomes of girls in Nigeria and across Africa. Studies show that integrating ICT into learning environments can help overcome traditional barriers to education by making learning more accessible, flexible, and engaging for female learners (Timothy, 2023).

Flexible Learning Platforms

Flexible learning platforms, such as e-learning systems and online course portals, allow girls to access instructional materials remotely, helping to reduce constraints related to distance, family responsibilities, and safety concerns. Research in Nigeria finds that where ICT tools are available, female students report improved attendance, deeper understanding of subjects, and increased motivation to learn (Umar et al., 2025). UNICEF also highlights Nigeria's digital learning initiatives, like the Nigeria Learning Passport, which have expanded access to educational content for millions of children, including girls who might otherwise be excluded from classroom settings.

Access to Information and Resources

Digital libraries, educational apps, and online research platforms expand students' access to up-to-date learning resources beyond traditional textbooks. These resources bridge gaps in content availability a factor that particularly benefits girls in under-resourced schools where books and materials are limited. UNESCO emphasizes that digital technologies can improve literacy and empower girls and women by providing alternative pathways for learning even when formal schooling is disrupted.

Communication and Collaboration

ICT enables communication tools such as discussion forums, messaging apps, and virtual classrooms that connect learners with teachers and peers more frequently and flexibly. Engagement in virtual communities supports peer-to-peer learning,

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increases academic motivation, and provides social support, which can help girls persist in education despite socio-economic pressures. Global initiatives promoting girls in technology also catalyze mentorship opportunities and peer networking aimed at boosting girls' confidence and involvement in digital spaces.

Skill Development and Digital Literacy

Integration of ICT in education promotes essential digital literacy and competencies that prepare girls for the modern workforce. Studies in Nigeria and Africa show that acquiring digital skills including computer use, internet navigation, and research proficiency enhances girls' academic performance and future employability (Remi-Aworemi, 2023). Further, UNESCO notes that developing digital skills among female learners not only increases inclusion in ICT-related fields but helps balance gender representation in emerging sectors like AI, coding, and data science.

Gender Inequality in Education: Empirical Evidence from Nigeria

Empirical evidence from Nigeria shows that gender inequality in education remains a significant barrier despite policy efforts to expand schooling for all. Regional and institutional data reveal persistent gender gaps in enrollment across primary, secondary, and tertiary levels, with disparities widening as learners progress through the educational system. For example, a recent analysis of basic education enrolment in Kwara State indicates that for every 100 boys enrolled in primary school, only about 85–92 girls are registered, and although this ratio improves slightly at junior secondary level, full gender parity has not been achieved over several academic sessions (Ajayi Rilwan, Shuaib & Ogunode, 2023). National statistics further show that a substantial proportion of Nigerian women lack formal education, with 38 % of women having no schooling compared to 25 % of men, and only a small fraction reaching higher education figures that illuminate the depth of gender gaps in educational attainment nationally. In Lagos State, Nigeria's most urbanized and economically diverse region gender inequality in education manifests in context-specific ways that reflect both achievements and ongoing challenges. While official records suggest that Lagos often reports relatively high school enrollment figures compared with some other states, socio-cultural factors such as early marriage and gender norms continue to affect girls' education, particularly in certain communities. Opesemowo and Odumosu (2023) investigated how child marriage influences educational participation among girls in Agege, Lagos State, showing that cultural values and religious beliefs significantly shape girls' access to schooling and heighten the risk of educational discontinuation. Their findings indicate that entrenched norms around marriage timing and gender roles continue to limit girls' school engagement, even in urban contexts. Furthermore, Lagos State has initiated targeted policy interventions to address gender imbalances in schooling. Gender-responsive education programs, such as gender-inclusive classroom practices and leadership opportunities for girls, have been promoted through initiatives like EKOEXCEL, which aims to strengthen equitable classroom participation and academic performance among female students. Despite these efforts, persistent disparities remain, particularly where socio-economic pressures and traditional expectations undermine girls' educational persistence. This underscores that while Lagos has advantages in resources and policy awareness relative to other states, gender inequality in education continues to be shaped by broader societal patterns that require sustained and multi-dimensional interventions.

One of the stark features of gender inequality in Nigerian education is the widening disparity between male and female learners as they move from one level to the next. Research in Ekiti State reports that although some girls enroll in primary school, lower completion and attainment rates are observed for female students compared with male peers, driven by socio-economic constraints such as household poverty, long distances to school, and parental attitudes toward gender roles in education. National admission data into tertiary institutions also underscores gender imbalance at higher levels; for many years, more males than females have been admitted into universities and colleges of education across Nigeria, signaling that barriers faced at early schooling stages persist into higher education (Data on tertiary admissions, 2010–2015). Rural communities tend to exhibit particularly low female participation rates, where socio-cultural norms, infrastructure limitations, and economic hardship further compound girls' challenges in accessing and staying in school (Nwodo, Nwodo & Umoh, 2025). These patterns highlight that gender gaps in education in Nigeria are deeply rooted and shaped by a combination of social, economic, and regional inequalities. They demonstrate a need for targeted interventions that not only strengthen school infrastructure and reduce cost barriers but also leverage innovative delivery models such as ICT-supported learning to make education more flexible, accessible, and supportive of girls' continued participation at all levels of schooling

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Methodology

This study adopted a quantitative research design to examine the impact of ICT on girl-child education in Lagos State, Nigeria. A cross-sectional survey was employed to capture data from female students, teachers, and ICT coordinators in selected secondary schools. This design allowed the researchers to assess relationships between ICT access, utilization, and educational outcomes such as enrollment, retention, and skill development at a single point in time. The population consisted of over 1.2 million female students across public and private secondary schools in Lagos State (Lagos State Ministry of Education, 2024). A stratified random sampling technique was applied to ensure proportional representation from different districts, school types, and socio-economic contexts, enhancing the generalizability of the findings. Data collection involved structured questionnaires and semi-structured interviews. Questionnaires measured ICT access (availability of devices, internet connectivity), frequency of use for learning, and perceived impact on educational outcomes using a five-point Likert scale. Interviews with teachers and ICT coordinators provided qualitative insights into challenges and effective practices for integrating ICT into learning. The instruments were pilot-tested in two schools outside the main sample, yielding a Cronbach's alpha of 0.87, which indicated high reliability. Ethical clearance was obtained from the Lagos State Ministry of Education, and participants' consent and confidentiality were strictly maintained throughout the study. Data were analyzed using descriptive and inferential statistics. Descriptive measures, including means, frequencies, and percentages, summarized demographic information and ICT access patterns. Inferential analyses, including Pearson correlation and multiple regression, were conducted to determine the relationships between ICT access, utilization, and educational outcomes. Statistical analyses were performed with SPSS version 28, and qualitative interview data were analyzed thematically to complement the quantitative findings. This mixed-methods approach ensured a comprehensive understanding of how ICT influences girl-child education, providing insights to guide policy and intervention strategies aimed at reducing gender disparities and promoting equitable digital learning in Lagos State.

Presentation of Results

Research Hypothesis 1

ICT access has a significant positive effect on educational participation among female students in Nigeria.

A total of 1,200 respondents participated in the study, comprising female students (n = 1,000), teachers (n = 150), and ICT coordinators (n = 50) across secondary schools in Nigeria. Descriptive statistics revealed significant regional variation in ICT access and usage. As shown in Table 1, southern states, particularly Lagos, Rivers, and Oyo, reported the highest ICT access (>75%) and weekly usage (>70%), while northern states such as Sokoto, Zamfara, and Yobe had the lowest levels (<40%). Lagos State recorded 85% ICT access, 78% weekly usage, a participation score of 82.3, and 70% teacher ICT competency, reflecting relatively strong digital infrastructure and educator readiness.

Table 1: ICT Access, Usage, Participation, and Teacher Competency Across Nigerian States

Geopolitical Zone	State (Example)	% Girls with ICT Access	% Using ICT Weekly	Avg. Educational Participation Score (0–100)	Teacher ICT Competency (%)
South-West	Lagos	85	78	82.3	70
South-West	Oyo	78	72	79.1	65
South-West	Ondo	74	68	77.5	62
South-East	Anambra	72	65	76.8	60
South-East	Enugu	70	63	75.5	58
North-Central	Kogi	55	48	68.3	42
North-Central	Niger	52	45	66.7	40
North-East	Yobe	38	30	62.4	35
North-East	Bauchi	40	32	63.2	36
North-West	Sokoto	35	28	61.5	33
North-West	Zamfara	37	30	61.8	34
South-South	Rivers	80	72	79.5	66
South-South	Akwa Ibom	76	70	78.2	63

Figure 1 illustrates Lagos State's ICT access, weekly usage, participation, and teacher competency, highlighting the relatively high level of ICT integration in classrooms.

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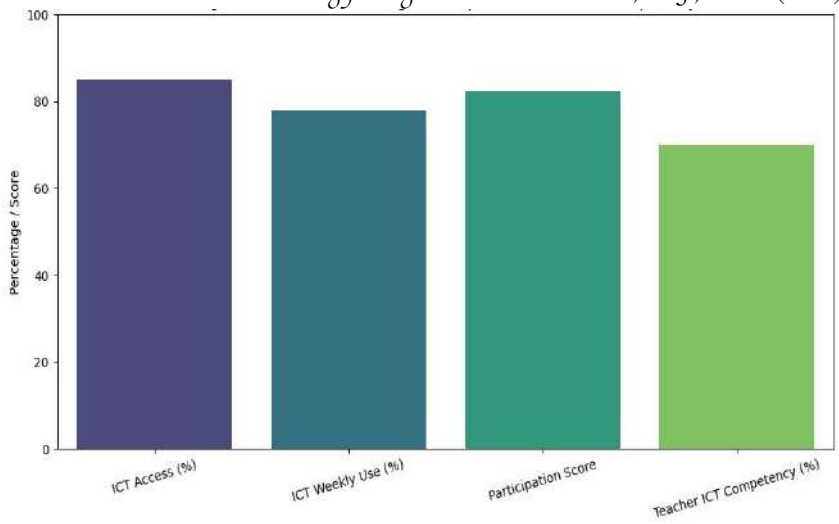

Figure 1: Bar Chart – Lagos State ICT Access, Usage, Participation, and Teacher Competency

Research Hypothesis 2

Frequency of ICT use is positively associated with academic performance of female students.

The study assessed differences in academic performance based on ICT engagement levels. Students with high ICT engagement (≥4 days/week) scored significantly higher in core subjects (English, Mathematics, Science) compared to those with low engagement (<4 days/week). Across all states, high engagement students had a mean score of 78.4, compared to 66.1 for low engagement students ($t(998) = 15.32$, $p < .001$). In Lagos State, high engagement students scored 80.2 versus 68.5 for low engagement peers ($t(199) = 8.75$, $p < .001$), demonstrating that consistent use of ICT tools is positively associated with improved academic performance.

Table 2: ICT Engagement and Academic Performance

ICT Engagement Level	Number of Students	Avg. Score	t-test / p-value
High Engagement	720	78.4	t(998)=15.32, p<0.001
Low Engagement	280	66.1	

Research Hypothesis 3

Significant differences exist in ICT access, ICT usage, and educational outcomes across Nigerian states.

Multiple regression analysis examined predictors of girls' educational participation. ICT access, teacher competency, and frequency of ICT use jointly explained 47% of the variance in participation ($R^2 = 0.47$, $F(3,1196) = 356.29$, $p < 0.001$). ICT access emerged as the strongest predictor ($\beta = 0.41$, $p < 0.001$), followed by teacher competency ($\beta = 0.27$, $p < 0.001$) and frequency of ICT use ($\beta = 0.18$, $p < 0.01$).

Table 3: Regression Analysis of ICT Variables on Educational Participation

Predictor Variable	Beta (β)	t-value	p-value
ICT Access	0.41	11.27	<0.001
Teacher ICT Competency	0.27	7.88	<0.001
Frequency of ICT Use	0.18	4.56	<0.01

Regional differences were also evident. ANOVA revealed significant variation in ICT access and participation among geopolitical zones ($F(5,1194) = 22.47$, $p<0.001$). Post-hoc analysis indicated that South-West and South-South states outperform North-West and North-East states, reflecting differences in infrastructure, socio-economic conditions, and teacher ICT readiness.

Figure 2 presents a heatmap of ICT access, usage, participation, and teacher competency across all sampled states, visually illustrating regional disparities and highlighting Lagos State as a leading example of effective ICT integration in girl-child education.

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Figure 2: Heatmap: ICT Access, Usage, Participation, and Teacher Competency Across Nigerian States

Discussion of Findings

The findings of this study confirm that ICT plays a critical role in enhancing girl-child education in Lagos State and Nigeria more broadly. The descriptive and inferential analyses indicate that higher levels of ICT access, frequent usage, and teacher competency are strongly associated with increased educational participation and improved academic performance among female students. Lagos State, in particular, emerged as a benchmark, with ICT access at 85%, frequent usage at 78%, and teacher ICT competency at 70%, contributing to superior participation scores and academic outcomes. These results are consistent with previous studies in Nigeria, which reported that digital learning platforms and e-resources improve student engagement, academic achievement, and continuity of learning (Okeke & Onwumere, 2023; Remi-Aworemi, 2023). The observed regional disparities, where southern and urban states such as Lagos, Oyo, and Rivers outperformed northern states like Sokoto, Yobe, and Zamfara, align with prior research highlighting the persistence of the digital divide in Nigeria (Umar et al., 2025; Oladele et al., 2022). These disparities can be explained by differences in socio-economic conditions, cultural norms, and infrastructure availability. Urban centers benefit from better school facilities, stable electricity, internet connectivity, and higher parental awareness of the value of education, enabling girls to utilize ICT effectively. In contrast, northern and rural regions face limited access to ICT tools, inconsistent power supply, and cultural barriers, which restrict girls' opportunities to benefit from technology-supported education. Theoretically, the findings reinforce Human Capital Theory (Becker, 1993), demonstrating that investment in ICT not only enhances educational participation but also develops skills that increase girls' future employability and socio-economic contributions. Simultaneously, the results support the Digital Divide Framework (van Dijk, 2020), highlighting that inequitable access to technology perpetuates educational disparities and that ICT alone cannot overcome systemic socio-economic and cultural constraints. From a policy perspective, the study underscores the need for comprehensive interventions that go beyond infrastructure. Effective policies should combine teacher ICT training, the provision of digital learning resources, flexible e-learning platforms, and community sensitization programs to address cultural and household barriers. Lagos State serves as a model for how coordinated investment in ICT and teacher development can yield positive outcomes, and similar approaches could be scaled to underperforming regions to reduce gender gaps in education. In summary, this study demonstrates that ICT acts as a catalyst for girl-child education by improving access, engagement, skill acquisition, and academic performance. The impact, however, is mediated by regional disparities, socio-economic conditions, and teacher readiness. By addressing these factors through integrated policy measures, Nigeria can leverage ICT to empower girls, promote equitable education, and enhance long-term national development.

Conclusion

This study demonstrates that ICT is a powerful catalyst for girl-child education in Lagos State and across Nigeria. Higher ICT access, frequent use, and teacher competency were shown to enhance educational participation, skill acquisition, and academic performance, with Lagos State serving as a model of effective ICT integration. The findings highlight persistent

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regional disparities, particularly in northern and rural areas, emphasizing the need for equitable ICT deployment. The results reinforce Human Capital Theory, showing that ICT investment enhances skills and long-term empowerment, and the Digital Divide Framework, illustrating that unequal access perpetuates educational inequalities. Overall, the study underscores that ICT's impact is maximized when combined with targeted policies addressing both infrastructure and capacity gaps.

Recommendations

1. Expand ICT Infrastructure: Lagos State should continue investing in computers, tablets, and reliable internet connectivity across public and private schools, prioritizing semi-urban and underserved communities to reduce intra-state disparities.
2. Equitable ICT Access Nationwide: Lessons from Lagos State should guide interventions in northern and rural areas. Policymakers should invest in infrastructure, provide subsidized digital devices, and implement mentorship programs to support girls in under-resourced regions.
3. Monitoring and Evaluation Frameworks: Establish state-level frameworks to track ICT integration, student engagement, learning outcomes, and teacher performance, using data to refine policies and ensure sustained impact.
4. Teacher Capacity Building: Institutionalize continuous professional development programs focused on digital pedagogy and instructional technology. Lagos State can collaborate with teacher training colleges and technology partners to equip educators with the skills needed for effective ICT integration.
5. E-Learning Platforms and Digital Libraries: Deploy state-supported digital learning platforms, including Lagos-specific curriculum content, to provide flexible learning pathways. Mobile-friendly platforms should be prioritized for students without personal computers.
6. Community Engagement and Awareness: Conduct campaigns targeting parents and local communities to emphasize the importance of girls' education and ICT utilization, highlighting how digital learning enhances academic performance and future employability.
7. Impact Evaluation Across States: Conduct longitudinal studies to evaluate the long-term effects of ICT integration on girl-child education in diverse Nigerian contexts.
8. Teacher Competency and ICT Use: Investigate the most effective training models for enhancing teacher ICT competency and its direct impact on student learning outcomes.
9. Socio-Cultural Barriers: Explore strategies to overcome socio-cultural constraints that limit girls' access to ICT, particularly in rural and northern regions.

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Lecturers' Perception and Efficacy of Experiential Pedagogy on Industrial-Relevant Skills Acquisition among Business Education Students in Delta State, Nigeria

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ABSTRACT
This study investigated lecturers' perspectives on the efficacy of experiential pedagogy, specifically internships, mentorships, and teaching strategies, in fostering industry-relevant skills among Business Education students in Delta State, Nigeria. A descriptive survey research design was adopted. The population comprised all 136 Business Education lecturers across five public tertiary institutions in the state. A census sampling technique was utilized, meaning the entire population was studied. Data were collected using a validated "Curriculum Design, Teaching Methods, and Employability Skills Questionnaire" with a reliability coefficient of 0.81. Data were analyzed using mean and standard deviation for research questions, while t-test and Analysis of Variance (ANOVA) were used to test hypotheses at a 0.05 level of significance. Results revealed that modern instructional technologies, collaborative projects, and role-playing are considered highly effective teaching methods. Furthermore, internships and mentorships are viewed as critical for career readiness, with these perceptions remaining consistent regardless of the lecturers' age, gender, or academic qualifications. The study concludes that while educators actively use student-centered strategies to bridge the theory-practice gap, systemic institutional backing is essential for maximum impact. Therefore, it is recommended that tertiary institutions formally institutionalize guest lectures and joint research with industry professionals to facilitate real-world knowledge transfer.

Keywords: Experiential Pedagogy, Industry-Relevant Skills, Teaching Strategies, Internships, Business Education.

Introduction
The contemporary global workforce is experiencing a significant paradigm shift, propelled by technological breakthroughs, globalization, and the fluid nature of industrial requirements. In this modern era, holding an academic certificate is no longer the sole indicator of employability; rather, professional readiness encompasses a wider array of traits, including technical proficiency, interpersonal abilities, and the agility to adjust to changing work settings. Consequently, higher education institutions worldwide face substantial pressure to move away from conventional, lecturer-dominated methods toward experiential pedagogy, an approach that prioritizes "learning by doing" to ensure academic programmes match labor market needs. As highlighted by Biggs and Tang (2022), successful instruction in this evolving environment requires that teaching strategies be tightly integrated with specific learning outcomes. This ensures that students gain not just theoretical understanding but also the functional competencies essential for career success, thereby preparing graduates to manage the intricacies of the 21st-century economy. Fundamentally, Business Education is a vocational and technical discipline intended to provide learners with the pedagogical and technical capabilities required for either entrepreneurship or effective participation in the workforce. Umo and Okon (2023) note that this field is a synthesis of diverse elements, such as accounting, secretarial administration, and entrepreneurship, each demanding distinct instructional methods to nurture skill acquisition. Unlike purely academic courses, Business Education acts as a conduit between the classroom and the corporate world; thus, its efficacy relies heavily on the delivery method of these components. Oguejiofor and Iyoha (2023) argue that fostering employability skills within this discipline is not merely a byproduct of the curriculum but a direct result of efficient knowledge transfer and global competitiveness. Therefore, for Business Education to maintain

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relevance within Delta State's tertiary institutions, a conscious transition is required from rote memorization to a functional, competency-driven instructional style that reflects the realities of modern business environments. The impact of Business Education is frequently gauged by how well academic lessons translate to practical settings, a notion deeply grounded in established theories regarding the acquisition of practical skills and their translation into economic worth. Central to this is the Experiential Learning Theory, championed by Kolb (1984), which suggests that knowledge is generated through the transformation of experience. This implies that for business students to become genuinely "employable," they must traverse a cycle involving concrete experience, reflective observation, and active experimentation. Expanding on this, the Constructivist Learning Theory, pioneered by Piaget (1952) and further advanced by Vygotsky (1978), asserts that learning is an active process where individuals build knowledge through social interaction, reflection, and experience, rather than through passive absorption. This theory is crucial for modern Business Education, dictating that for students to become "work-ready," they must participate in active experimentation, such as collaborative projects, simulations, and internships, that replicate the complexities of the real world. Mbise and Lekule (2023) contend that such constructivist methods establish active learning environments that are essential for developing workplace skills, placing a premium on real-world application and collaboration. Within the Nigerian landscape, Oluwadare (2016) argues for a transition from conventional instruction to interactive learning models that bolster employability, positing that students bridge the divide between abstract theory and practical application by actively "constructing" their professional identities through hands-on tasks. Complementing this pedagogical view is the Human Capital Theory, established by Becker (1964), which offers the economic rationale for these educational investments by viewing training and education as investments that increase an individual's economic value and productivity, similar to physical capital. Applying this to Delta State, effective teaching methods and robust curricula serve as vital investments in the human capital of students, nurturing competencies such as digital literacy and critical thinking that are directly linked to national development. This perspective is further supported by observations that Business Education programmes utilizing experiential learning significantly boost human capital by connecting theoretical knowledge with practical skill application. Ultimately, this duality creates a comprehensive framework: Constructivism outlines how skills are best acquired via experience, whereas Human Capital Theory defines why these competencies are essential for economic productivity.

While the foundational curriculum sets the academic stage, Ornstein and Hunkins (2022) define curriculum design as the structured planning of educational content, which must remain adaptable and dynamic to meet societal demands. However, the success of even a robust curriculum is highly contingent upon the delivery methods employed. Historically, Nigerian Business Education has faced criticism for utilizing teacher-centric methods prioritizing rote memorization, which Biggs and Tang (2022) warn results in only a "surface" understanding of material. When teaching methods fail to replicate industrial complexities, a "competency gap" inevitably emerges, resulting in graduates who hold theoretical credentials yet lack the functional ability to operate in contemporary business offices. Conversely, modern experiential pedagogy, incorporating digital simulations, case studies, and problem-based learning (PBL), converts the classroom into a simulated professional environment. Empirical evidence within the region underscores the value of this shift; Ito and Okpue (2025) found that PBL specifically fosters risk-taking and creativity, enhancing entrepreneurial mindsets among Business Education students at Delta State University, Abraka. Furthermore, to solidify these competencies, Connolly et al. (2023) highlight the importance of authentic assessment, where students are evaluated via tasks mirroring real-life challenges to provide tangible proof of employability. Stepping outside traditional lecture halls, internships and mentorship initiatives act as essential "clinical laboratories" for Business Education. These platforms offer environments where academic theories are rigorously tested against industrial realities, fostering soft skills and technical expertise that cannot be fully replicated within a classroom setting. Internships facilitate "situated learning," allowing students to transition smoothly from academic environments to the professional world. In the context of Delta State, Umeh and Iyoha (2024) observe that the development of global employability skills is vastly improved when students encounter real-world business activities through organized industrial attachments. Furthermore, mentorship accelerates the formation of a professional identity, enabling students to gain direct insights from experienced practitioners. Ofor-Douglas (2024) maintains that coordinating university education for employability in a competitive environment demands strong collaboration between academic institutions and industry stakeholders to enable these critical mentorship avenues. Without this synergy, the educational journey remains fragmented, producing students who understand the theoretical "know-what" of business concepts but lack

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the practical "know-how" essential for high-level corporate performance. However, the successful deployment of these experiential elements faces significant challenges. Ukwadinamor et al. (2024) identify major systemic hurdles, such as funding deficits and staffing shortages, which impede the effective integration of these programmes in Nigerian tertiary institutions. Consequently, without adequate industrial attachment durations and structured mentorship, the curriculum's potential to foster human capital is severely reduced. The ultimate objective of these experiential interventions is employability, a complex concept involving soft skills, digital literacy, and adaptability, beyond mere job acquisition. Erhivwiohwovie and Okoro (2023) note that digital tools and e-learning positively impact performance and employability in Delta State, preparing students for the digital economy. Despite this, empirical data shows a persistent gap. Agwazie and Eziechine (2025) discovered that while graduates in Delta State require generic and managerial skills, there is a critical need for increased hands-on training to fully bridge the learning-work divide. Ikenga and Okpuzor (2025) similarly report high employer demand for digital skills like digital marketing and data analysis, which many graduates lack due to theory-heavy curricula. Oguejiofor and Iyoha (2023) corroborate this misalignment, arguing that improving employability necessitates a deliberate "widening" of the curriculum to embrace practical knowledge transfer strategies for global competitiveness. Recent educational reforms in Nigeria, such as the shift from BMAS to CCMAS, attempt to address these issues by permitting 30% institutional flexibility. Emaziye (2025) views this as a chance for institutions like Delta State University to utilize innovative learning approaches despite resource limitations. However, Adamu et al. (2025) warn that funding and mentorship gaps can still stifle entrepreneurial success despite curricular reforms. Consequently, Umo and Okon (2023) conclude that while practical curriculum components aid skill development when delivered effectively, stakeholder involvement in reviews is absolutely essential. While the existing literature extensively affirms the positive link between employability and experiential pedagogy, it exposes a significant gap in research specific to the educator's perspective within Delta State. Most prior studies have concentrated on employer or student perceptions, or general curriculum assessments. Although the significance of practical pedagogy is widely acknowledged, there is a scarcity of empirical data regarding how lecturers in Delta State tertiary institutions specifically view and prioritize these experiential teaching methods over standard curriculum execution. Specifically, there is a lack of targeted inquiry into how lecturers employ pedagogical "bridging" strategies, such as mentorship coordination and simulations, to resolve the theory-practice dichotomy and translate theoretical lessons into professional skills. Consequently, this study aims to address this void by evaluating lecturers' perspectives on experiential pedagogy. By isolating these instructional variables, the research offers a novel viewpoint on resolving the theory-practice disconnect, aiming to reposition Business Education to produce competent professionals prepared for Delta State's competitive industrial environment.

Statement of the Research Problem

While the existing literature extensively affirms the positive link between employability and experiential pedagogy, it exposes a significant gap in research specific to the educator's perspective within Delta State. Most prior studies have concentrated on employer or student perceptions, or general curriculum assessments. While prior research, such as Oteri et al. (2025), has examined the general impact of curriculum design and teaching methods, there is a noticeable gap in empirical data regarding the operational effectiveness of experiential instructional strategies, specifically from the viewpoint of the educators. There is a lack of targeted inquiry into how lecturers employ pedagogical "bridging" strategies, such as mentorship coordination and simulations, to resolve the theory-practice dichotomy and translate theoretical lessons into professional skills. Consequently, this study aims to address this void by evaluating lecturers' perspectives on experiential pedagogy. By isolating these instructional variables, the research offers a novel viewpoint on resolving the theory-practice disconnect, aiming to reposition Business Education to produce competent professionals prepared for Delta State's competitive industrial environment.

Objectives of the study:

1. Identify the teaching methods considered most effective by Business Education lecturers for fostering practical and industry-relevant skills.
2. Evaluate the perceptions of Business Education lecturers regarding the integration of internships, mentorship programmes, and experiential learning opportunities in enhancing students' employability.
3. Examine the specific teaching strategies adopted by lecturers to bridge the gap between theoretical knowledge and practical skills application in Business Education.

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Research Questions

1. What teaching methods do Business Education lecturers consider most effective for fostering practical and industry-relevant skills?
2. What is the perception of Business Education lecturers on the integration of internships, mentorship programmes, and experiential learning opportunities in enhancing students' employability?
3. What specific teaching strategies do lecturers adopt to bridge the gap between theoretical knowledge and practical skills application in Business Education?

Research Hypotheses

1. There is no significant difference in the mean ratings of Business Education lecturers about teaching methods considered most effective for fostering practical and industry-relevant skills based on age.
2. There is no significant difference in the mean ratings of Business Education lecturers on the role of internships, mentorship programmes, and experiential learning in enhancing students' employability based on academic qualification.
3. There is no significant difference in the mean ratings of Business Education lecturers on the specific teaching strategies adopted by lecturers to bridge the gap between theoretical knowledge and practical skills application in Business Education based on gender.

Methodology

The study adopted a descriptive survey research design to examine the viewpoints of the targeted group. The population for the study comprised all 136 Business Education lecturers sourced from the five public tertiary institutions offering the programmes in Delta State, Nigeria (Delta State University, Abraka; the University of Delta, Agbor; the Colleges of Education in Warri and Mosogar; and the Federal College of Education (Technical), Asaba). Because the total population was of a manageable size, a census sampling technique was utilized, incorporating the entire population of 136 lecturers. Data were collected using a researcher-developed instrument titled the "Curriculum Design, Teaching Methods, and Employability Skills Questionnaire (CDTMESQ)". The instrument featured structured items evaluated on a 4-point Likert scale. The psychometric property of the instrument was established first through face and content validity by a panel of three experts from Delta State University, Abraka. The reliability of the instrument was determined through a pilot study utilizing the test-retest technique with 30 lecturers outside the main study area. The analysis of the pilot data yielded a Pearson Product-Moment Correlation (PPMC) coefficient of 0.81, signifying high internal stability. The administration of the instrument was facilitated by five research assistants, resulting in a 100% recovery rate of the 136 distributed questionnaires. The collected data were analyzed using the Statistical Package for Social Sciences (SPSS) version 23. Descriptive statistics, specifically mean and standard deviation, were used to answer the research questions, with a decision threshold mean score of 2.50 established as the point of agreement. Inferential statistics were utilized to test the formulated null hypotheses; specifically, an independent t-test was conducted for gender-based variables, while a One-Way Analysis of Variance (ANOVA) was applied to assess differences based on academic credentials and age at a 0.05 probability/confidence level of significance.

Presentation of Results

Research Question 1: What teaching methods do Business Education lecturers consider most effective for fostering practical and industry-relevant skills?

Table 1: Descriptive Statistics on Teaching Methods Considered Most Effective for Fostering Practical and Industry-Relevant Skills

S/N	Variable Name	Mean	Std. Deviation	Decision
1	Lecturers incorporate practical teaching methods that enhance students' employability.	3.12	0.73	Agreed
2	The use of real-life business case studies improves students' problem-solving skills.	3.04	0.71	Agreed

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3	Group projects and collaborative learning activities help students develop teamwork skills.	3.09	0.55	Agreed
4	Interactive teaching methods such as role-playing and simulations improve learning outcomes.	3.15	0.64	Agreed
5	Industry professionals are frequently invited for guest lectures and mentorship.	2.60	0.93	Agreed
6	The use of modern instructional technologies (e.g., multimedia, virtual labs) enhances skills acquisition.	3.18	0.68	Agreed
7	Hands-on training is prioritized over theoretical instruction in Business Education.	2.93	0.68	Agreed
8	Problem-based learning methods are effectively used to develop critical thinking skills.	3.05	0.66	Agreed
9	Continuous assessment methods (e.g., projects, and presentations) help students apply their knowledge.	3.12	0.63	Agreed
10	Experiential learning, such as field trips and industry visits, are effectively incorporated.	2.71	0.84	Agreed
11	Lecturers frequently use case studies to bridge the gap between theory and practice.	2.86	0.89	Agreed
12	Students are encouraged to engage in research-based learning to develop analytical skills.	3.15	0.73	Agreed
13	The use of business simulations in teaching improves students' decision-making abilities.	3.18	0.67	Agreed
14	Digital-based instructional methods, such as online tutorials, are effectively integrated.	2.78	0.96	Agreed
15	Teaching strategies in Business Education sufficiently prepare students for workplace challenges.	2.87	0.97	Agreed
Grand Mean		**2.99**	**0.75**	**Agreed**

Source: Field Survey, 2025

Table 1 presents the descriptive statistics utilized to answer research question 1. The data reveal that the mean responses regarding teaching methods considered most effective range from 2.60 to 3.18, with standard deviations ranging from 0.55 to 0.97. The grand mean of 2.99, which is well above the 2.50 decision threshold, indicates that Business Education lecturers collectively agreed that the listed methods are effective for fostering practical skills. Specifically, the highest-rated methods included the use of modern instructional technologies and business simulations (Mean = 3.18), followed closely by interactive role-playing (Mean = 3.15) and research-based learning (Mean = 3.15). Therefore, this analysis effectively answers the research question by identifying technology-enhanced and simulation-based pedagogy as the specific teaching methods lecturers consider most effective for developing industry-relevant competencies.

Research Question 2: What is the perception of Business Education lecturers on the integration of internships, mentorship programmes, and experiential learning opportunities in enhancing students' employability?

Table 2: Descriptive Statistics on the Perception of Lecturers Regarding Internships, Mentorship Programmes, and Experiential Learning

S/N	Variable Name	Mean	Std. Deviation	Decision
1	Internship opportunities are well integrated into the Business Education curriculum.	3.06	0.77	Agreed
2	Industrial training programmes provide students with relevant job-ready skills.	3.08	0.81	Agreed
3	Students have adequate access to structured mentorship programmes.	2.88	0.73	Agreed
4	Business Education programmes collaborate effectively with industry partners for internships.	2.94	0.73	Agreed
5	Internships help students transition smoothly from academic learning to workplace practices.	3.10	0.82	Agreed

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6	Experiential learning activities, such as simulations and fieldwork, are well implemented.	2.82	0.76	Agreed
7	Students benefit significantly from hands-on experiences during internships.	2.90	0.75	Agreed
8	Lecturers play an active role in guiding students through mentorship programmes.	3.24	0.63	Agreed
9	Business Education departments provide sufficient support for students to secure internships.	3.04	0.78	Agreed
10	Mentorship programmes contribute to students' professional growth and career readiness.	3.05	0.78	Agreed
11	The curriculum includes structured practical experiences that enhance students' employability.	2.96	0.69	Agreed
12	Employers actively participate in shaping internship and mentorship programmes.	2.95	0.60	Agreed
13	Experiential learning initiatives help bridge the gap between theoretical knowledge and practical application.	2.99	0.67	Agreed
14	The current internship duration is adequate for students to acquire practical experience.	2.84	0.79	Agreed
15	There is a need for stronger industry-academic partnerships to improve experiential learning.	3.16	0.78	Agreed
Grand Mean		**3.00**	**0.74**	**Agreed**

Source: Field Survey, 2025

Table 2 presents the descriptive statistics used to answer research question 2. The data indicate that the mean scores on the perception of experiential learning integration range from 2.82 to 3.24, with standard deviations between 0.60 and 0.82. The grand mean of 3.00 exceeds the 2.50 decision threshold, showing general agreement among lecturers that internships and mentorships are integral to enhancing employability. Notably, the item "Lecturers play an active role in guiding students through mentorship programmes" received the highest rating (Mean = 3.24), followed by "There is a need for stronger industry-academic partnerships to improve experiential learning" (Mean = 3.16). Therefore, this analysis effectively answers the research question by demonstrating a strong, positive perception among lecturers regarding the value of integrating these experiential opportunities, while also clearly highlighting their consensus on the need to reinforce industry linkages to maximize student benefit.

Research Question 3: What specific teaching strategies do lecturers adopt to bridge the gap between theoretical knowledge and practical skills application in Business Education?

Table 3: Descriptive Statistics on Teaching Strategies Adopted by Lecturers to Bridge the Theory-Practice Gap

S/N	Variable Name	Mean	Std. Deviation	Decision
1	I frequently use case studies to help students apply theoretical concepts to real-world business scenarios.	3.15	0.62	Agreed
2	Business simulations are an integral part of my teaching approach.	3.01	0.81	Agreed
3	I incorporate hands-on projects to enhance students' practical skills.	3.25	0.55	Agreed
4	Role-playing exercises are used to improve students' decision-making and problem-solving abilities.	3.09	0.70	Agreed
5	Guest lectures from industry professionals are regularly included in my teaching methods.	2.74	0.91	Agreed
6	I assign students real-life business challenges to develop their analytical and problem-solving skills.	3.00	0.60	Agreed
7	Collaborative learning techniques, such as group projects, are effective in bridging the gap between theory and practice.	3.07	0.73	Agreed
8	I use digital tools and software to enhance students' practical business skills.	3.18	0.65	Agreed
9	Practical assignments, such as business plan development, are part of my teaching strategy.	3.10	0.69	Agreed

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10	Students engage in workplace-based learning through industry partnerships.	3.15	0.67	Agreed
11	Internship placements are strongly encouraged and integrated into the learning process.	3.10	0.61	Agreed
12	I provide mentorship and career guidance to help students navigate business environments.	3.26	0.61	Agreed
13	Regular field visits and industry tours are organized to expose students to real business settings.	3.05	0.68	Agreed
14	The use of problem-based learning (PBL) enhances students' ability to apply theoretical knowledge.	3.07	0.80	Agreed
15	Continuous assessment methods (such as practical demonstrations) help evaluate students' ability to apply business concepts.	3.34	0.61	Agreed
Grand Mean		**3.10**	**0.68**	**Agreed**

Source: Field Survey, 2025

Table 3 displays the descriptive statistics utilized to answer research question 3. The data show that Business Education lecturers utilize a diverse range of bridging strategies, with item means ranging from 2.74 to 3.34. The grand mean of 3.10, which is above the 2.50 threshold, confirms that lecturers actively adopt specific strategies to narrow the gap between theory and practice. The most dominant strategies utilized include "Continuous assessment methods such as practical demonstrations" (Mean = 3.34), "Providing mentorship and career guidance" (Mean = 3.26), and "Incorporating hands-on projects" (Mean = 3.25). Therefore, this analysis clearly answers the research question by pinpointing the exact practical, assessment-driven, and project-based bridging strategies that educators deliberately adopt to transition students from theoretical understanding to practical competence.

Hypothesis 1

H_{o1}: There is no significant difference in the mean ratings of Business Education lecturers about teaching methods considered most effective for fostering practical and industry-relevant skills based on age.

Table 4: One-Way Analysis of Variance (ANOVA) Summary on Teaching Methods Considered Most Effective Based on Age

Sources of Variance	Sum of Squares	Df	Mean Square	F	Sig.	Remark
Between Groups	1.297	3	.432	2.140	.098	Not Significant
Within Groups	26.673	132	.202			
Total	**27.971**	**135**				

Source: Field Survey, 2025

The statistics in Table 4 present the One-Way Analysis of Variance (ANOVA) used to effectively test null hypothesis 1. The data indicate an F-value of 2.140 with a corresponding p-value (Sig.) of .098. Because the calculated p-value (.098) is greater than the established 0.05 level of significance decision threshold, the analysis confirms that the null hypothesis should be retained. This implies that the age of Business Education lecturers does not significantly influence their perception of the most effective teaching methods for fostering practical skills; lecturers across different age groups share a similar view on the efficacy of these instructional strategies.

Hypothesis 2

H_{o2}: There is no significant difference in the mean ratings of Business Education lecturers on the role of internships, mentorship programmes, and experiential learning in enhancing students' employability based on academic qualification.

Table 5: One-Way Analysis of Variance (ANOVA) Summary on the Role of Internships and Mentorship Based on Academic Qualification

Sources of Variance	Sum of Squares	Df	Mean Square	F	Sig.	Remark
Between Groups	.112	2	.056	.397	.673	Not Significant
Within Groups	18.821	133	.142			
Total	**18.934**	**135**				

Source: Field Survey, 2025

The statistics in Table 5 present the One-Way Analysis of Variance (ANOVA) used to effectively test null hypothesis 2. The results show an F-value of .397 with a corresponding p-value (Sig.) of .673. Because the calculated p-value (.673)

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exceeds the established 0.05 alpha level of significance decision threshold, the analysis confirms that the null hypothesis should be retained. This finding indicates that a lecturer's academic qualification (B.Sc., M.Sc., or Ph.D.) does not significantly affect their perception of the value of internships and mentorships. Therefore, lecturers across all qualification levels unanimously agree on the importance of experiential learning for employability.

Hypothesis 3

H_{O3}: There is no significant difference in the mean ratings of Business Education lecturers on the specific teaching strategies adopted to bridge the gap between theoretical knowledge and practical skills application based on gender.

Table 6: t-test Analysis of Lecturers' Perception on Bridging Strategies Based on Gender

Gender	N	Mean ($\bar{x}$)	SD	Df	t-value	p-value	Decision
Male	64	3.17	.579	134	1.641	.103	Retain H_0
Female	72	3.01	.544				

Source: Field Survey, 2025

The statistics in Table 6 present the independent t-test analysis used to effectively test null hypothesis 3. The results reveal a calculated t-value of 1.641 with a corresponding p-value (Sig.) of .103. Because the calculated p-value (.103) is greater than the established 0.05 level of significance decision threshold, the analysis confirms that the null hypothesis should be retained. This suggests that gender does not significantly influence the specific teaching strategies adopted by lecturers to bridge the theory-practice gap. Therefore, both male and female lecturers uniformly employ similar bridging strategies, such as case studies and simulations, to enhance practical application in Business Education.

Discussion of Findings

The first major finding of this study reveals a significant collective endorsement of modern, learner-centric instructional models by Business Education lecturers. Specifically, the data established that educators identify the integration of contemporary instructional technology (such as virtual laboratories), business-based simulations, and interactive role-playing as the most potent drivers of industry-relevant competencies. This robust agreement indicates a progressive pedagogical shift among Delta State lecturers, moving away from the traditional, teacher-centric memorization that Biggs and Tang (2022) warned only produces a "surface" understanding. This outcome directly supports the fundamental tenets of the Constructivist Learning Theory (Piaget, 1952; Vygotsky, 1978) established in the literature, which maintains that individuals acquire knowledge most effectively through active participation and the simulation of real-world complexities rather than passive reception. Furthermore, the finding is highly consistent with the empirical assertions of Erhivwiohwovie and Okoro (2023), who argued that technology-mediated instruction remarkably boosts graduate employability. It also reinforces the observations of Ito and Okpue (2025) regarding the efficacy of problem-based learning in fostering creativity and risk-taking. Crucially, the test of the first hypothesis revealed that the age of the lecturers did not significantly influence these perceptions. This lack of demographic variance is particularly revealing; it indicates a shared professional philosophy among both early-career and veteran educators regarding practical instruction. Ultimately, this unified pedagogical stance aligns perfectly with Oguejiofor and Iyoha's (2023) position on the absolute necessity of a practical instructional focus to maintain global competitiveness.

The second major finding addresses the integration of internships, mentorship programmes, and experiential learning. The data indicate a broad and robust consensus (Grand Mean = 3.00) among educators that these experiential elements are essential for preparing students for the modern workforce. Specifically, participants highly rated their direct, active involvement in guiding students through mentorship (Mean = 3.24), while simultaneously calling for much stronger academic-industry partnerships (Mean = 3.16) to refine these experiences. From a theoretical standpoint, this finding is deeply anchored in the Human Capital Theory (Becker, 1964) established earlier, as it views these structured industrial attachments as strategic educational investments that directly increase a student's economic utility and productivity in the labor market. The empirical results strongly corroborate the observations of Umeh and Iyoha (2024), who emphasized that global employability skills, such as problem-solving and teamwork, are most effectively refined when students transition from the classroom to real-world business operations. Furthermore, the lecturers' expressed need for stronger industry linkages validates the assertions of Ofor-Douglas (2024), who maintained that managing university education for employability demands powerful synergy between academic institutions and corporate stakeholders. It also mirrors the findings of Agwazie and Eziechine (2025), who posited that hands-on training is a critical requirement to fully bridge the

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learning-work divide in Delta State. Crucially, the test of the second hypothesis revealed that a lecturer's academic qualification (B.Sc., M.Sc., or Ph.D.) does not significantly affect their perception of the value of these programmes. This unanimity across all qualification levels is highly significant; it demonstrates that despite the systemic hurdles such as funding deficits identified by Ukwadinamor et al. (2024), the indispensable value of industrial exposure as a "clinical laboratory" remains a universally accepted pedagogical truth within the Business Education discipline. The third major finding addresses the specific pedagogical strategies lecturers adopt to bridge the gap between abstract theoretical knowledge and practical workplace application. The empirical evidence demonstrates that academics actively employ a deliberate variety of bridging tools, yielding a high grand mean of 3.10. Notably, the highest-rated strategies included the implementation of "continuous assessment methods such as practical demonstrations" (Mean = 3.34) and "incorporating hands-on projects" (Mean = 3.25). This deliberate shift toward competency-based evaluation perfectly corroborates the assertions of Connolly et al. (2023) established in the literature, who highlighted the absolute necessity of authentic assessment, evaluating students via tasks that mirror real-life challenges to provide tangible proof of employability. Furthermore, this trend directly aligns with the findings of Agwazie and Eziechine (2025), who strongly advocated for increased hands-on training to resolve the persistent disconnect between education and employment in Delta State. The high reliance on providing career guidance (Mean = 3.26) also reinforces Ofor-Douglas's (2024) position on the critical need for mentorship coordination. Crucially, the inferential analysis of the third hypothesis revealed no statistically significant difference between male and female lecturers regarding their chosen bridging techniques ($p = .103$). This lack of gender variance is highly instructive; it implies that institutional standards and a shared professional commitment to practical instruction take definitive precedence over demographic differences. Ultimately, both male and female educators in Delta State are uniformly dedicated to ensuring students can successfully apply theoretical concepts to solve authentic business dilemmas.

Conclusion

Drawing from the empirical evidence gathered in this research, it is concluded that Business Education faculty members within Delta State's higher education system possess a deep understanding of and a strong dedication to experiential pedagogy. A distinct evolution is evident, moving away from conventional, lecture-heavy instruction toward more pragmatic, technology-integrated, and project-centered teaching frameworks. The research clarifies that the persistent theory-practice divide does not stem from a deficiency in pedagogical knowledge among teachers. Instead, the findings suggest that the challenge lies in the need to formally institutionalize and provide systemic support for the instructional strategies already recognized as successful. Moreover, the remarkable consistency in perspectives across various age groups, gender identities, and academic backgrounds points to a robust professional consensus within the academic sector. This alignment offers a reliable basis for government and institutional policymakers to execute standardized educational reforms. Ultimately, to maintain the relevance of Business Education in a fluctuating global economy, there must be an ongoing reinforcement of the harmony between classroom-based bridging tactics and real-world industrial exposure through internships.

Recommendations

Based on the findings and the conclusion drawn from this study, the following recommendations are made:

1. Institutionalize Modern Pedagogy and Assessment Reforms: To support the effective teaching methods identified, tertiary institutions should move beyond individual lecturer efforts by providing "Smart Classrooms" and licensed business simulation software to standardize the use of modern instructional technologies. Additionally, institutional boards should encourage a shift toward more practice-based continuous assessments rather than an over-reliance on traditional examinations.
2. Strengthen Industry-Academic Linkages for Internships: To maximize the perceived value of experiential learning, the management of tertiary institutions in Delta State should establish formal, robust partnerships with corporate organizations. This will ensure that internship placements are not merely administrative requirements but high-quality, immersive learning experiences that successfully transition students to the workplace.
3. Enhance Structured Mentorship and Professional Development: To further support the bridging strategies adopted by educators, departments should create structured mentorship frameworks where students are directly matched with industry professionals and senior lecturers to foster professional identity and career readiness. Concurrently, regular

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workshops should be organized for lecturers to continuously update them on emerging global trends in experiential teaching and digital business tools.

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Revitalizing Teachers Education Through Welfare and Job Satisfaction in Nigeria: A Review

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Abstract
Teacher's reward is no more in heaven, they want their reward right here. For there is no nation that can grow beyond the level of education of the citizen, there is a need for more commitment on the path of the teachers to improve on teaching delivery in this new normal world. No matter how laudable any educational policy might be, it is the teachers that will transform such policies to action that will lead to increase productivity. Revitalizing teachers education, must start for revitalizing teachers welfare, and ensuring teacher satisfaction on the job. A dissatisfied teacher cannot be productive. An unproductive teachers will always exhibit negative behaviour towards their job. It was recommended that government at all levels should ensure that there is increase in budgetary allocation to education, to cater for infrastructure needs, and ensure effective satisfaction of teachers for increase productivity. E-learning will definitely require different learning style and this will require training and re-training of teachers.

Keywords: Revitilizing, Productivity, Job satisfaction, ICT, Teacher education.

Introduction
The common saying is that no educational system can rise above the quality of its teachers this is apart from the fact that the pre-training of prospective teachers and having pre-requisite teaching qualifications such as (NCE) and the likes is no longer satisfactory to fit them for the new ideas, innovations, policies and emerging technology, the teacher need retraining in order to keep them abreast of the new development in teaching profession. Today's teaching is moving from mere presentation and recycling of obsolete informations both in theory and practice to a more dynamic types, where new ideas are being passed to the learners. Cronbag, (2014) opines that education is an instrument used in shaping the behaviour and modification of individuals behaviour for adequate adjustment to their society. Teachers are the implementer of such adjustment therefore they need to be well trained to be able to accomplished this trust. The success of any educational system depend in the quality and capability of the teachers who are indispensable to the system and thus they are important forces to be reckon with in the development of the society, Sachs,(2003) sees teaching a socially responsible occupation highly accountable and bureaucratic, demanding, intellectual, emotional, physical, intensive and unrelenting effort. Teachers job satisfaction is the ability of the teaching Job to meet teachers' needs and improve their teaching performance. A satisfied teacher has a high degree of professional competence than an unsatisfied teacher. Education can be seen as a process of facilitating the acquisition of knowledge, skills, attitudes, values, beliefs and specific characteristic of a group of people and transfer such from one generation to another, through storytelling, discussion, teaching and learning. John (2012) describe education as the ability to bring about a positive change in behaviour and also equip individual with functional skills that would enable him or her to become useful not only to himself but also to the society where they belong. Cronbag, (2014) stressed that education is the shaping of behaviour or modification of individual behaviour for adequate adjustment in the society. For adequate delivery, education is divided into stages, these are: pre-school stages, primary school, secondary school, colleges of education/polytechnic and university. Each of these stages has a purpose for their establishment as enshrined in the National Policy of Education (2011). For example, the purpose of the pre-primary education among others, is to ensure a smooth and effective transition from home to school and to prepare the child for primary education. Education is regarded as the wheel and strong instrument which is key to anything good and desirable in society. It is the means to human awareness, human psychology, creativity, innovation, technological advancement, peaceful coexistence and generational continuity while the teacher possesses the key. Base on this, National Commission for Colleges of Education 2020 (2020), National Policy on Education (2014), Reedy and Anuradha (2015), Eziokwu and

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Amah (2019), Emunumu and Isuku (2021) and Ajiboye (2022) submitted that no educational system or nation can rise above the quality of its teacher.

Conceptual Definition of Terms

There is a general belief that no nation can develop beyond the educational level of its citizenry, in order words, we belief that education is synonymous to development. But no matter how good a policy is, it is the functions of teachers to transform all those policy into practice and bring about the desired change and development. Amatle and Amaele (2003), Adetayo (2016) Biyi (2021) describe teacher education as a deliberate, well-articulated, purposeful, organized and managed programme or process aimed at producing the desired qualities of the teacher who will actualize the education dreams of the society. Wikipedia (2022) describes teacher education as a professional education of teachers directed towards attainment of attitudes, skills and knowledge considered desirable so as to make teachers efficient in their work, and in accordance with the need of a given society at any point in time. Teacher's quality is widely thought of as an essential determinant of academic performance, yet there is little agreement as to what specific characteristics make a good teacher (Hanushek and Rivkin, 2006). This is an important issue, as the economic and productivity of teachers impact on pupil's achievement can be profound. Some of the qualities a good teacher should possess include, patience, modeling, high self-concepts, organized, enthusiastic, empathy and sympathetic, objective, adaptable, creativity, highly discipline and so on. Hanushek (2011) examined the economic value of teacher's qualities, which is assumed to be a function of the depreciation rate of pupil's learning. The total variation of teacher's quality (as measured by pupil achievement on standardize tests), and the labour market return to one standard deviation of higher achievement. Oyekan (2000) describe teacher education as the provision of professional education and specialized training for the would-be teacher in a formal setting, within a specified period for the preparation of individuals who intend to develop and nurture the young ones into responsible and productive citizen. A teacher could be conveniently describes as a multitasked individual who causes learning to take place through facilitation, stimulation, motivation and encouragement such that the learners becomes like the teacher in skills, values and attitudes. (Adewale (2022). Teachers training involves series of activities, training and skill acquisition which culminated into the production and development of qualified teachers from a recognized teachers training institution.

The importance of teachers' education cannot be over emphasized, because there is no profession that does not go through the tutelage of a teacher and that is why the National Policy on Education (2014) highlight the goals of teachers' education as follows:

i. produce highly motivated, conscientious and efficient classroom teachers for all levels of our educational system.
ii. further encourage the spirit of enquiry and creativity in teachers at all levels.
iii. encourage the teachers to fit into social life of the community and the society at large and enhance their commitment to national goals.
iv. provide the teachers with the intellectual and professional background adequate for their assignment and make them adaptable to the changing situation.
v. enhance teacher commitment to the teaching professional.

In order to ensure the attainment of these goals, Teachers Registration Council of Nigeria (TRCN), established with the mandate to regulate and control teaching profession at all levels in Nigeria educational system. TRCN had put machinery in place to ensure that only qualified teacher are registered and are allow to teach in our school through their various examination and monitoring of teachers.

Teachers Low Productivity in the New Normal World

Teacher's quality and productivity is an essential determining factor in academic performance of learners, but there is no measure to ascertain the characteristics that make up a good teacher that can improve their productivity (Hanushek & Rivkin 2006). Teachers have been shown to have an important influence on teaching effectiveness and productivity, they also play a pivotal role in educational attainment in terms of its productivity, because they are saddled with the responsibility of transforming policy into action and principles based on their practice during interactions with learners (Afe, 2001). In all the elements that makes learning effective, both the learning and teaching depends on teachers. A productive teacher has been conceptualized as one who produces desired result in the course of his duty as teachers. (Uchefuna, 2001) considering the amount of money injected into the educational sectors by successful government yet, its output in terms of quality of students performance is not commensurate with the huge investment by government.

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Consequent upon this, one will the deteriorating condition of teacher's job performance, and attitudes of learners in this new normal order, is a reflection of poor instructional delivery among teachers. The ineffective and poor delivery of teaching among teachers who are quite dissatisfied with the teaching job, is responsible for the observed poor performance of learners and its widely acclaimed fallen and low productivity in the standard of education in Nigeria. Some studies found that job satisfaction is associated with, increase in salary, occupational stress, empowerment, administration policy and overall working conditions can lead to improve productivity. But it has also been argued that job satisfaction increase workers productivity (Wright & Cropanzono, 2007; Shirkdar and Das, 2003). Job satisfaction is an emotional state in which a worker perceives various features of his/her work and its environment (Dunnette, Campbell & Hakel (2007) and Robbins (2001). Lock (2006) perceived that job satisfaction will commonly affects workers, physically, psychologically and mentally. Laine and Steiner (1991) opined that job satisfaction is connected to life satisfaction, whereby people who are satisfied with their jobs will tend to be happy with their lives as well. A satisfied teacher will be more organized and produce greater result than a dissatisfied teacher, who may have low productivity in terms of students academic achievement. According to Dawson (2005) an employee satisfaction is associated with positive employee behaviour while an unsatisfied employee will always exhibit negative behaviour and low productivity. The roles of teachers is very crucial in the attainment of the objectives of Nigeria education as stipulated in the National Policy of Education. A disgruntled teacher who is completely dissatisfied with their job could not be committed and productive. Such teacher will not be performing at the best of their ability for increase productivity. Teaching in the new normal world especially in this 21st century is a different phenomenon; learning could never happen the way it is happening it was before now, learning in the new normal world can take place anywhere and anytime with the aid of ICT. The 21st century teachers are expected to learn modern technologies, understanding various ICT techniques, they should be vast in other technology usage, go global and also build on digital footprint in this new normal world. A lot of factors may be identified as having a link with inadequate commitment and dissatisfaction among teachers. Some of these factors are – lack of professional recognition, serious indiscipline, heavy workload, lack of support, time pressure.

The following factors may be seen as increasing teachers dissatisfaction in their job:

1. increase strike actions: - incessant strike actions often embarked by teachers at various level also contributed to their dissatisfaction teachers are not well paid and not well motivated
2. there is need for the provision of internet facilities in all schools, this will facilitate technological advancement and also encourages the teacher to keep abreast of latest innovations globally
3. ICT information communication technology is the in-things now on area of passing information and teaching of learners. The teachers need training and retraining to be ICT compliance
4. Most teachers are so conservative to the extent that they find it difficult to adjust to the dynamic nature of teaching. Teaching has taken a new dimension, where in most teaching compliance, they may find it difficult to disseminate information
5. Students too spend too much time on the internet and most of them always visit site that are not relevant to their studies. Negative attitude and mal-adjusted behaviour often times are learnt form the internet in order to steam this tide, proper monitoring and supervision should be put in place to assist the learners in learning things that are relevant to them
6. Irregular power supply:- erratic power supply in most part of the nation does not allow the effective use of internet services. There is no how internet can be access without adequate supply of power. And the alternative power supply through generating set is too expensive for most schools to bear.
7. Conducive teaching environment: government and other school proprietor should create a conducive learning environment for effective teaching and learning. A captivating environment can bring satisfaction to some teachers.

If the aforementioned factors among others are critically looked into, it will lead increase in teacher productivity.

Teaching job in this new normal world is more arduous, than it is use to be in the past. Some research findings attest to the fact that there is teachers dissatisfaction and commitment in the educational sector (still, a single paragraph). Adeyoju, (1995); Adegoroye, 1999; Ajibade, (2005) have also shown that many public secondary school teachers in Nigeria are not committed to their jobs and their sense of satisfaction is very low, and in turn lead to low productivity. Absenteeism and unwillingness in the part of the teachers to carry out their duties. This could be as a result of frustration experienced by many of them in recent time. According to Ajibade (2005), teachers had at one time or the other been a victim of

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government policies and this can contribute low morale and low sense of efficacy highly noticeable among Nigeria teachers.

Teachers Job Satisfaction in a New Normal Order

It has been succinctly described that a satisfied teachers will always exhibit positive behaviour and increase their productivity in terms of students academic achievements while, a dissatisfied teachers will exhibit negative behaviour, such as absenteeism, truancy, lack of commitment, lack of interest and general low productivity. In the new normal order, when education delivery has taken a new dimension that are more capital intensive and expected extra commitment in the part of the teachers for effective teaching delivery. Worldwide, the educational system delivery has taken a new dimension as a result of the outbreak of Corona Virus (COVID-19) pandemic. This now result in the utilization of Information Communication Technology (ICT) becomes a new normal order for teaching and learning with a lot of inputs of educators on different e-learning platforms. Because of the spread of corona virus and other associated pandemic online teaching and learning becomes the order of the day to reduce the spread of the pandemic. This new order has thus seen online as the safest method for providing open access to education in order to ensure that learners academic pursuit are not completely disrupted. Online teaching and learning which is commonly referred to as e-learning is the method of teaching and learning that is characterized through any types of ICT medium such as various types of computers, ipods, tablets, phone, projectors, video conferences and radio. It can be deduced that, most schools in Nigeria does not have enough materials for this virtual learning programme, more so, most teachers are not properly trained, and thus did not have adequate knowledge of ICT training. Delivery of instruction in the new normal order will present a different learning style. Learning style according to Cassidy (2004) is a differential preference for processing certain types of information as observed among learners. The success or otherwise of the school system in achieving its goals and objectives as earlier stated depends on the efficiency and effectiveness of its teachers. Teachers productivity is typically measured as a ratio of output to input (Saari, 2005 and Saari, 2006). Teachers determine what the end result is in the educational process. They determine what happen to the curriculum, guidelines, the use to which teaching and learning materials are put etc. and infact the fate to which the huge investment in education is being directed. The National Policy on Education (FGN, 2004) stated that no education system can rise above the quality of its teachers, this thus implies the important of teachers as a facilitator of teaching and learning and in determining the productivity in the educational sector.

Challenges Facing Teachers in Teaching Delivery in the New Normal World

Despite all efforts to increase and revitalize teachers education for increase productivity, the following challenges serves as impediments in realising this objectives in the new normal order.

1. Low self-image and societal perception of teachers: The society place more values in the acquisition of wealth and living an affluent lifestyle in other words society respect and recognized wealthy individual within the society of which is absent in teachers. Unlike in those days when teachers and teaching profession was being recognized and accorded the much needed respect. But in this new normal world, nobody is interested in how you get your money, and this had led to increase in ritual and criminal activities just to make money. This low self-image has made teaching profession unfashionable in this new normal world, and teaching is being left in the hand of quack and mediocre.
2. Population Explosion and Overcrowding: The minimum requirement for enrolment into schools has not being adapted in Nigeria. The result of rural urban immigration had led to surge in admission into schools in cities while there is shortage of teachers in the rural areas. This overcrowding put much pressures on teachers as well as the school management. This invariably caused mismanagement of classroom on the part of teachers in the urban centres.
3. Inadequate Training on Information Communication Technology (ICT): The influence of ICT on teaching delivery in this new normal order cannot be overemphasized. Different form of ICT platforms such as, computers, video conferencing, use of projectors, internet, phones, laptops, palmtops and other forms of ICT is being deployed to teaching and learning. Teaching and learning processes are almost computerized and virtual learning is becoming the order of the day. But the level of understanding, possession and utilization of ICT facilities by teacher educators and would be teacher is very low. (Olagunju 2003) Olagunju & Ojo, (2006).
4. Lack of Infrastructures: Teaching and learning in this new normal order and in order to completely revitalizing teachers education, there is a need to improve infrastructure provision in all schools in order to be ICT compliant and increase productivity, Government and all stakeholders in education should ensure adequate ICT gadget provision.

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5. Training and Retraining of Teachers: In order to increase productivity in education delivery, there is need for constant training and re-training of teachers for adequate revitalizing and increase output, especially in the area of ICT.
6. Improve on Teachers Self-Image: This is very important such that maximum output can be derived from teaching and learning. No matter how a policy might be good, if teachers are not satisfied, they may not discharge their duty to the optimum level to maximise productivity.
7. Indolent Students: Most students nowadays, are very indolent and not ready to study hard again. The little training they have on ICT is to defraud people with emphasis on making money.

Conclusion

In order to achieve the much-desired revitalization and increase productivity in this new normal world, there is a need to ensure adequate and prompt satisfaction of teachers in all areas of our educational system. No matter how laudable any policy on education might be, it is the teachers that are going to implement and transform all these policies into actions. As we all belief that no nation can grow beyond the education attainment of its citizenry. Teacher education and education generally in Nigeria has been faced with different challenges before the rapacious COVID-19 pandemic. This pandemic now exposed our hitherto problems that has long been overlooked. The new normal allows us to embraced virtual and e-learning platform for educational delivery. It also allow our students to benefit from ICT as a means of learning in this new normal world. Both the teachers and the students need training and re-training for effective teaching and learning. The most important element which are the teachers' needs to be satisfied with their job for increase productivity.

Recommendations

Revitalizing teachers education for higher productivity in the new normal world, the following suggestions should be taken into consideration, especially as it affects teachers job satisfaction.

i. Government at all levels should be sincere in putting right policies and should stop playing ordinary leep services as 'regards the implementation of policies. The lackadaisical attitudes of government has encourage the private schools to boom. The issue of ASUU strike, presently going on is a case study.
ii. Teachers that are saddle with the responsibility of transforming all these policies should be properly motivated and satisfied. When teachers are dissatisfied, they will always engaged in other petty trading within the school, and as such, they will not focused on their job. Gone are those days when teachers reward is in heaven, for the teachers to be productive they must be satisfied with their job.
iii. Ministry of Education should for train and re-train of teachers to get them acquainted with the latest trends of teaching characterized by ICT in this new normal world. Most teachers are still not well versed with ICT and other visual gadget usage. And you cannot give what you do not have. As ICT is becoming the order of the day in transmitting knowledge and passing information across to our students, there is a need for proper training on the part of the teachers.
iv. Adequate funding of schools: Government should increase budgetary allocations to educational sectors. Most entrance examination into schools are now on Computer Basic Test (CBT) but most of these schools does not have enough computers. In this new normal world, government should endeavor to increase financial allocations to educational sectors to meet their demand in this new normal world.
v. Provision of enough infrastructures: In order to meet the surge in admission of students into various schools, there is a need for the provision of enough, structures, healthcare, recreations and other necessary facilities to improve services delivery in this new normal world.

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Impact of TextVision Application and Raised-Lines Paper on Learning Outcomes among Visually Impaired Learners in University of Ilorin, Nigeria

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Abstract

This study addresses the critical challenges faced by visually impaired students at the University of Ilorin in accessing printed texts and completing writing tasks independently. Guided by the Social Model of Disability and theories of technology acceptance, self-determination, and inclusive education, the research developed and evaluated two assistive tools: the TextVision App (utilising OCR and text-to-speech) and the Raised Lines Paper. Using a mixed-methods design, the population of the study consists of all visually impaired learners during the 2025/2026 academic session, totaling 62. Purposive sampling techniques were used to sample 21 students. The study implemented a tailored four-week training intervention, assessing usability and impact through surveys, standardised tests, and interviews. Findings revealed significant pre-existing barriers, including dependence on peers and high costs. Post-intervention results demonstrated high usability and effectiveness, with statistically significant improvements in academic performance, reading and writing skills, and self-reported confidence. The study concludes that these affordable, scalable tools empower learners by dismantling social barriers and fostering autonomy. It recommends institutionalizing these technologies, integrating inclusive policies, and establishing structured training programmes to embed sustainable, equitable support systems within the university's educational framework.

Keywords: Inclusive Education, Assistive Technology, Visual Impairment, Academic Empowerment, Accessible Learning

Introduction

Visually impaired students at the University of Ilorin face significant challenges in accessing printed texts and independently writing, both of which are fundamental to academic success. Writing is not just a means of communication but a critical tool for learning, self-expression, and assessment. The inability to write independently can lead to a cascade

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of difficulties, ranging from reduced academic performance to social isolation. Despite advances in inclusive education, there remains a gap in effective tools that can fully support these students' needs, affecting their overall educational experience and academic outcomes. At the University of Ilorin, visually impaired students often rely on assistive technologies such as screen readers and Braille, or depend on peers or support staff to transcribe their thoughts into written form. While these methods provide some level of support, they are not without limitations. Screen readers, for instance, may struggle with complex layouts and diagrams, while Braille displays can be expensive and cumbersome. Additionally, reliance on others for writing can diminish a student's sense of autonomy and academic integrity, as they must depend on someone else to accurately capture their ideas. This research addresses these critical issues by developing TextVision and introducing Raised Lines Paper as innovative solutions designed to empower visually impaired learners. TextVision aims to enhance access to printed text by utilising cutting-edge technologies such as Optical Character Recognition (OCR) and Text-to-Speech (TTS) systems to convert printed materials into more accessible formats. Meanwhile, Raised Lines Paper, featuring tactile markings, guides the writing process, allowing visually impaired students to write independently. These tools are tailored to the specific needs of visually impaired students, addressing both their challenges in accessing printed texts and their ability to engage in writing activities. The importance of writing extends beyond the academic sphere, influencing various aspects of university life, including taking notes during lectures, completing assignments, and participating in written examinations. The inability to perform these tasks independently can lead to a significant disadvantage, making it difficult for visually impaired students to keep up with their coursework and fully demonstrate their knowledge and capabilities. This, in turn, affects their grades, self-esteem, and overall university experience.

Moreover, writing is closely linked to cognitive processes such as critical thinking, problem-solving, and creativity. When visually impaired students are unable to write independently, they may miss out on the cognitive benefits that writing provides, further widening the academic gap between them and their sighted peers. The lack of adequate support for developing writing skills among visually impaired students at the University of Ilorin is a critical issue that needs to be addressed. The development of TextVision and the use of Raised Lines Paper will be guided by principles of universal design, which advocate for creating products that are accessible to all users, regardless of their abilities. By integrating feedback from visually impaired students and educators at the University of Ilorin, these tools will be optimised for usability and effectiveness. The study will evaluate the impact of these interventions on academic performance, cognitive skill development, and user satisfaction, providing insights into how well they meet the needs of visually impaired learners. This research contributes to the broader field of educational accessibility by demonstrating how specialised tools can improve learning outcomes for visually impaired learners. By focusing on the needs of students at the University of Ilorin, the study aligns with the university's mission to provide a world-class environment for learning, research, and community service, where all students can thrive. It also supports global educational objectives, such as the United Nations Sustainable Development Goals (SDG 4 and SDG 10), which emphasise inclusive and equitable quality education for all and reducing inequalities within and among countries. The success of these interventions could lead to broader implications for educational policy and practice, particularly in how universities and other educational institutions approach the teaching of visually impaired students. If TextVision and Raised Lines Paper prove effective, they could become standard tools in special education, offering practical and cost-effective ways to support visually impaired learners across various educational contexts. This would represent a significant step forward in making education truly inclusive and accessible to all students, regardless of their physical abilities.

Statement of the Research Problem

The necessity for this study is underscored by the increasing population of visually impaired students at the University of Ilorin. Currently, there are 59 visually impaired students across various faculties, a significant number that highlights the growing need for effective support systems within the university. These students face unique challenges, particularly in the area of reading and writing, which are essential for academic success. The difficulties they encounter are further complicated by the fact that many of them lost their sight later in life, some after completing primary education, others after secondary education, and even a few at the postgraduate level due to accidents occurring after their bachelor's degree. Only a small number of these students have been visually impaired from early childhood, meaning that for many, the use of assistive technologies like Braille was introduced too late to be fully effective.

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Compounding these challenges is the fact that many visually impaired students face additional barriers related to the accessibility of assistive tools and economic constraints. For instance, in recent times, issues such as unreliable electricity have hindered the use of laptop computers, which are essential for accessing screen readers for reading and other digital aids. Moreover, the economic status of some parents makes it difficult to provide necessary tools such as typewriters or specialised software, further limiting the students' ability to engage fully in their studies. Given these circumstances, the need for visually impaired students to write independently, like their sighted peers, has become increasingly critical. In response, the University of Ilorin has provided assistants who accompany these students to class, help them read text and take notes, and even assist with reading examination questions and writing during examinations. However, despite this support, many visually impaired students continue to struggle academically. Their results often do not reflect their potential, and a significant number attribute their poor academic performance to their inability to read writing text and write independently. This reliance on others for writing not only affects their academic outcomes but also undermines their confidence and autonomy.

This study is therefore justified in its aim to explore and implement solutions that can empower visually impaired students to read and write text independently. By investigating the use of the Textvision app and Raised lines Paper as an intervention, the research seeks to provide these students with a practical, accessible tool that can bridge the gap between them and their sighted peers. This approach aligns with the university's commitment to inclusivity and excellence, as well as with global educational goals that emphasise the importance of providing equal opportunities for all students. Addressing this gap is not just a matter of academic performance but also of ensuring that visually impaired students can fully participate in the educational experience, thereby enhancing their overall well-being and prospects.

Objectives of the Study

The study evaluated the effectiveness of Textvision and Raised Lines paper as an intervention tool for empowering visually impaired students at the University of Ilorin to read text and write independently, enhancing their academic performance and inclusivity within one academic year. Specifically, the study to:

1. Identify the reading text and writing challenges faced by visually impaired students at the University of Ilorin.
2. Implement the TextVision and Raise line paper intervention tailored to the needs of visually impaired students
3. evaluates the effectiveness of current assistive technologies for reading text and writing tasks by analysing student feedback and usage data over
4. assesses the TextVision App and Raised-line usability and effectiveness
5. Compare the academic performance and self-reported confidence of visually impaired students before and after the intervention of the TextVision and Raiselines paper intervention

Research Questions

The following research questions guided this study.

1. What are the reading and writing challenges faced by visually impaired students at the University of Ilorin?
2. How can the TextVision app and raised line paper be effectively implemented and tailored to meet the specific educational needs of visually impaired students?
3. How effective are current assistive technologies in supporting reading and writing tasks, based on the analysis of student feedback and usage data?
4. What is the usability and effectiveness of the TextVision App and Raised-line paper for visually impaired students?
5. Whether TextVision and Raised-line paper intervention impact the academic performance and self-reported confidence levels of visually impaired students?

Hypothesis

Ho_1: The TextVision app and Raised-line paper intervention have no significant impact on the academic performance and self-reported confidence levels of visually impaired students.

Theoretical framework

This study is grounded in the Universal Design for Learning (UDL) theory, an educational framework developed by David H. Rose in the 1990s that advocates for creating flexible learning environments to accommodate the diverse needs of all students from the outset. UDL is built on three core principles. The first is Multiple Means of Representation, which acknowledges that students perceive and comprehend information differently. To address this, UDL advocates present

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information in various formats. For visually impaired learners, this might include auditory descriptions, tactile graphics, and digital text compatible with screen readers. By offering multiple ways to access content, UDL ensures that all students can engage with the material in a way that suits their individual needs. The second principle, Multiple Means of Action and Expression, recognises that students differ in how they navigate a learning environment and express what they know. UDL encourages providing various options for students to demonstrate their understanding. For instance, visually impaired students might use speech-to-text software, Braille, or oral presentations to express their knowledge. This approach ensures that assessments are not biased towards a single mode of expression, allowing all students to showcase their abilities effectively. The third principle, Multiple Means of Engagement, emphasises the importance of motivation in learning. UDL promotes offering choices in how students engage with the material, such as interactive technology. For visually impaired learners, incorporating tools like the TextVision App and Raised Lines Paper can make learning more interactive and engaging, catering to their unique preferences and needs. The study "Enhancing Inclusivity Using TextVision App and Raised Lines Paper to Empower Visually Impaired Learners in Nigeria" closely aligns with the principles of UDL. The use of the TextVision App and Raised Lines Paper provides visually impaired students with different ways to access and interact with educational content. The TextVision App offers auditory feedback, while the Raised lines paper provides tactile input, ensuring that students can blend both methods, thereby enhancing their comprehension and retention of information. Furthermore, by integrating both technological and traditional tools, the study allows visually impaired students to express their understanding in various ways. They can use the TextVision App for digital assignments or the raised lines paper for handwritten tasks, accommodating different learning styles and abilities. This flexibility ensures that all students can effectively demonstrate their knowledge. Finally, the hybrid approach of combining the TextVision App with the Raised lines paper makes learning more engaging for visually impaired students. It provides them with options to interact with the material in ways that are most motivating and accessible to them. This increased engagement can lead to better learning outcomes and higher levels of student satisfaction, demonstrating the impact and relevance of UDL principles in enhancing inclusivity for visually impaired learners. The theoretical framework of Universal Design for Learning (UDL) provides the structural backbone for the conceptual model illustrated in Figure 1.

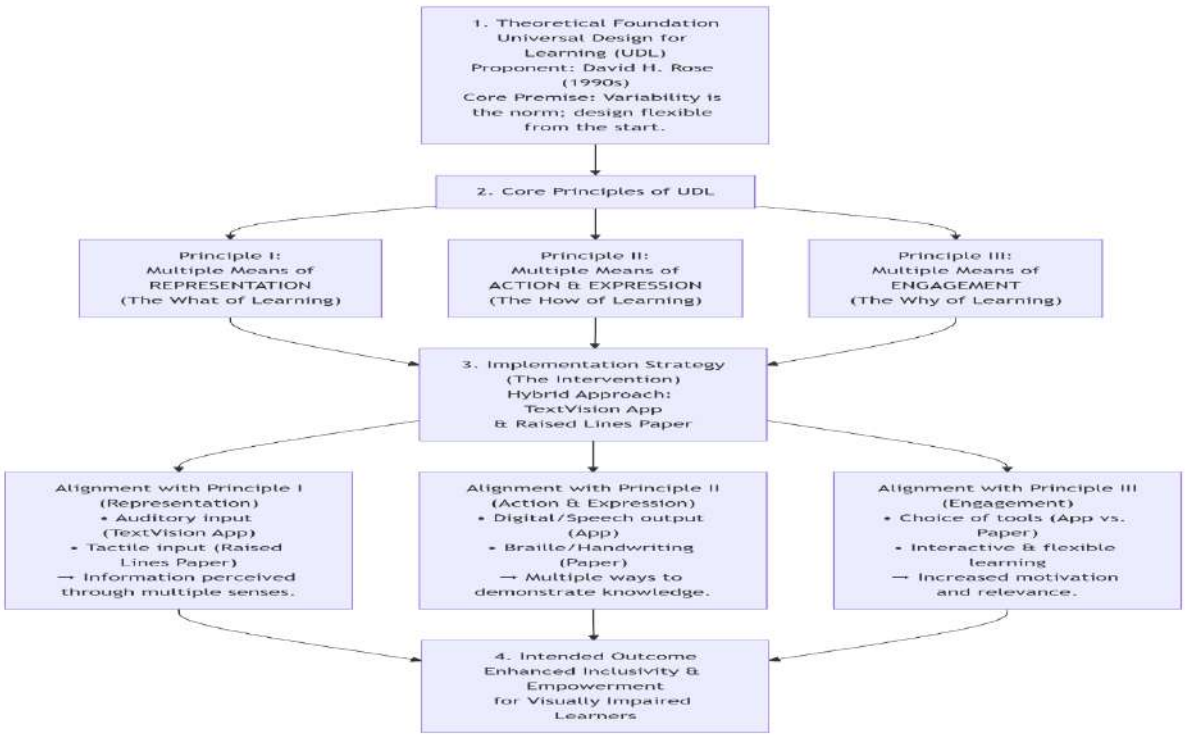

Fig.1: A UDL-Based Conceptual Framework for Enhancing Inclusivity Using TextVision and Raised Lines Paper.

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As articulated by David H. Rose, the core premise that "variability is the norm" serves as the Theoretical Foundation (Box 1) upon which the entire model is built. This foundation logically expands into the framework's three guiding pillars, Representation, Action & Expression, and Engagement, which are depicted in Box 2 (Core Principles of UDL). These principles do not exist in isolation; they directly inform the design of the Implementation Strategy shown in Box 3**.** The hybrid use of the TextVision App and Raised Lines Paper is the tangible manifestation of UDL's call for flexibility. The figure then visually demonstrates the alignment between theory and practice by mapping the specific affordances of these tools back to the UDL principles. The auditory and tactile inputs correspond to Principle I (Representation), the diverse output methods correspond to Principle II (Action & Expression)**,** and the element of student choice corresponds to Principle III (Engagement). Ultimately, the figure illustrates that by adhering to the UDL framework, the intervention converges toward the Intended Outcome (Box 4): enhanced inclusivity and empowerment for visually impaired learners.

Methodology

The study adopted a mixed-methods research design, combining quantitative and qualitative approaches to comprehensively examine the impact of the TextVision app and Raised Lines Paper on the writing skills, independence, and academic performance of visually impaired students. The quantitative component measured changes in participants' academic performance, writing proficiency, and independence using surveys and standardised tests, while the qualitative component explored students' lived experiences and perceptions through interviews. The study was conducted at the University of Ilorin, Nigeria, a federal university with a diverse student population, including visually impaired students across various faculties. The institution provides support services for students with special needs, making it an appropriate setting for evaluating assistive learning interventions. The study population comprised all visually impaired students enrolled at the University of Ilorin. According to institutional records, a total of 59 visually impaired students were registered across different faculties at the time of the study. Purposive oversampling was employed to select participants based on the nature of their visual impairment. Only students who lost their sight later in life and had prior experience using conventional writing tools (paper and biro) before vision loss were included. Twenty-one (21) students met these criteria and participated in the study. Data collection began with baseline quantitative assessments using standardised tests to evaluate participants' reading and writing skills, level of independence, and academic performance. In addition, a researcher-designed unstructured questionnaire hosted on Google Forms was administered to gather qualitative information on participants' challenges with reading and writing, use of assistive technologies, and perceived academic difficulties. The intervention involved the introduction of the TextVision app and the Raised Lines Paper. Participants received structured training sessions consisting of demonstrations and hands-on practical exercises to support effective integration of the tools into their academic activities. Continuous support was provided through regular follow-ups to address challenges and ensure proper usage of the assistive technologies. Following the intervention, post-test assessments were conducted using the same surveys and standardised tests administered at the baseline stage. Quantitative data obtained were used to compare pre- and post-intervention performance in writing skills, independence, and academic outcomes. Qualitative data were collected through follow-up interviews and focus group discussions to capture participants' experiences, perceptions, and challenges encountered while using the intervention tools. These narratives provided deeper insight into the usability, effectiveness, and impact of the TextVision app and Raised Lines Paper on students' academic autonomy and confidence. Ethical approval for the study was obtained from the University of Ilorin Ethical Review Committee on 11 September 2025 (UERC/ASN/2025/3322). Informed consent was obtained from all participants after explaining the purpose and procedures of the study, as well as their right to withdraw at any time without penalty. Confidentiality and anonymity were ensured, and all ethical standards governing research involving human participants were strictly observed.

Presentation of Results

The findings of this study were presented as follows:

Research Question One:

What are the reading and writing challenges faced by visually impaired students at the University of Ilorin?

Reading Challenges

This thematic analysis draws from responses of visually impaired students at the University of Ilorin. The findings reveal that the reading and writing challenges experienced by these students are deeply rooted in accessibility limitations, technological barriers, dependency on sighted assistance, inadequate examination accommodations, financial constraints,

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and institutional support gaps. The data cluster into major themes: inaccessibility of printed materials, overdependence on sighted peers, technological and format-related barriers, financial burden of accessibility, limited institutional provision of alternative formats, time constraints during examinations, inadequate assistive infrastructure, and concerns about academic independence. One dominant theme is the inaccessibility of printed academic materials. Many respondents emphasised that reading standard printed texts is either extremely difficult or completely impossible. Respondent 6 clearly stated, "I cannot read printed materials myself because of my visual impairment," while Respondents 17, 19, and 20 affirmed that they "can't see it at all." Others, such as Respondents 1, 18, and 21, reported experiencing strain and pain when attempting to read printed documents. Respondent 4 further explained that printed materials are not useful unless converted, stressing that there is "no way I can learn from them" without assistance. These responses indicate that conventional print-based instruction significantly restricts independent learning and academic participation.

Closely related is the theme of overdependence on sighted peers and assistants. Several participants disclosed that they rely heavily on friends to read printed materials aloud. Respondent 2 noted that the "lack of sighted guide makes it very difficult," while Respondent 12 explained that relying on friends is challenging because some are unwilling to help, especially when materials are voluminous. Respondent 6 described situations where friends are unavailable at night or busy with their own studies, making access to materials inconvenient. Although a few respondents (such as 3 and 17) emphasised their desire for independence through assistive applications, the overall pattern suggests that dependency remains a significant academic and emotional burden.

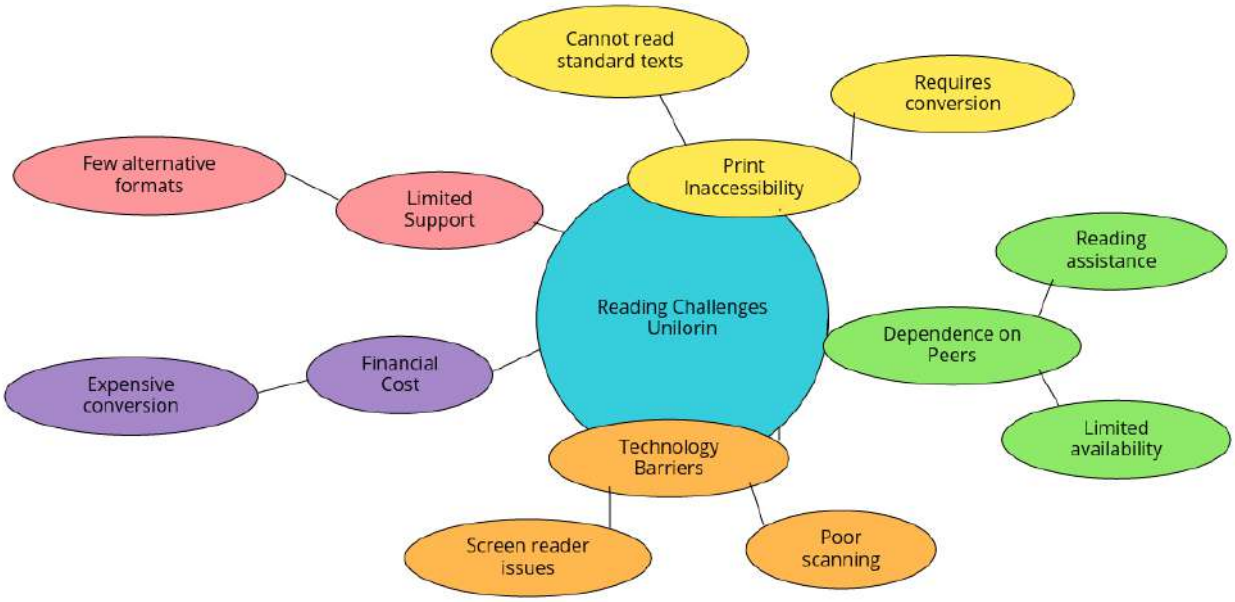

Figure 2: *A Mindmap Diagram showing the major reading challenges.*

Another major theme emerging from the data is technological and formatting barriers. Most students attempt to convert printed materials into soft copies using scanning applications and screen readers. However, accessibility is often hindered by poorly scanned or improperly formatted documents. Respondent 9 reported that "some academic materials are not accessible for screen readers, especially scanned ones," while Respondent 16 simply highlighted "inaccurate scanning" as a recurring issue. Respondent 11 also mentioned network failures affecting access to applications, and Respondent 13 pointed to the lack of appropriate devices. In terms of reliability, many students rated their reading methods as "not very reliable," though a minority (Respondents 17, 18, and 20) described their tools as fully reliable. This variation reflects unequal access to quality assistive technology and digital resources. Financial burden also emerged as a significant theme. Several respondents indicated that converting materials into accessible formats requires additional financial commitment. Respondent 7 stated that he spends "a whole lot of money" converting documents into readable PDFs, while Respondent 12 described taking materials to a café as a "last resort" because it is expensive. These findings suggest that visually

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impaired students incur additional educational costs to access the same materials readily available to their sighted counterparts. Limited institutional provision of alternative formats such as Braille, audio, or properly formatted digital texts was equally evident. While some students access materials through screen readers, Braille, and audio applications, many emphasized that these formats are not consistently available. Respondent 15 noted that reading printed materials is "practically impossible without screen readers or human assistance," underscoring the need for structured institutional support systems to ensure accessibility.

Writing Challenges

Regarding writing challenges, insufficient time during examinations stands out as the most dominant issue. Multiple respondents (3, 4, 6, 7, 12, and 18) emphasized that they are given the same time allocation as sighted students despite requiring additional steps in answering questions. Respondent 6 provided a detailed explanation, noting that blind students must first listen to the question, then comprehend it, and finally write their answer, whereas sighted students read and write simultaneously. Respondent 12 further explained that some supervisors do not understand their situation and expect immediate submission of printed scripts. These responses reveal structural inequities in examination accommodations. The theme of inadequate assistive equipment and institutional preparedness also emerged. Respondent 4 reported that there is "no equipment to write notes in the class," while Respondent 5 suggested the provision of a Braille embosser to make textbooks and examination questions accessible. Respondent 10 disclosed that some lecturers cannot read Braille and may discourage the use of computers or typewriters during examinations. Respondent 16 summarized this concern as "non-availability of accessible technology." These findings highlight institutional gaps in supporting inclusive education.

Figure 2: *Mindmap Diagram Highlighting the illustrating the major writing challenges.*

Despite these barriers, many respondents demonstrated resilience through reliance on assistive writing technologies such as typing with screen readers, Braille devices, and dictation software. A significant number described these methods as "very effective" in expressing their ideas clearly (Respondents 4, 5, 6, 7, 10, 16, 18, and 19). However, others reported challenges such as typographical errors, stress, and inefficiency. Respondents 1, 9, 12, and 21 described their methods as "not very effective" or "not really effective," particularly when technology fails or when dictation assistance is unavailable. Finally, the theme of academic independence and psychological strain emerged. While many students stated that they rarely rely on others to write for them, assistance is sometimes required for filling forms or handling excessive workload (Respondents 1, 7, 8, 15, and 21). Respondent 21 admitted feeling uncomfortable asking for help repeatedly, indicating that dependency can affect self-confidence. Nevertheless, a strong desire for independence was evident across responses, as many participants emphasized that they strive to maximize autonomy through assistive tools. Overall, the thematic analysis reveals that visually impaired students at the University of Ilorin face systemic barriers in reading and writing, particularly in accessing printed materials, securing reliable assistive technology, receiving adequate examination

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accommodations, and obtaining institutional support. Although technological tools offer partial solutions, structural and administrative reforms are necessary to ensure equitable academic experiences.

Research Question Two:

How can the Reader App and Raise line paper intervention be implemented in a way that is tailored to the needs of visually impaired students?

Table 1: Intervention Strategies, Tailoring, and Outcomes for Students with Visual Impairment

s/no	Intervention	Implementation Strategy	How it was tailored to students' Needs	Outcome of Tailoring
1	TextVision App	InitiA needs an assessment of students' level of visual impairment and digital competence.	App features were customised by adjusting font size, contrast, speech output, reading speed, and navigation commands based on individual learner profiles.	Improved independent reading of learning materials and examination questions
2	Reader App	Progressive training and guided practice	Training moved from basic app navigation to independent reading tasks, allowing students to learn at their own pace.	Increase confidence, autonomy, and effective use of assistive technology.
3	Raised-Line Paper	Orientation to tactile features of raised-line paper	Students were guided on line spacing, margins, and alignment to suit their tactile perception and writing abilities	Better organisation and alignment of written responses
4	Raised-Line Paper	Step-by-step writing practice with facilitator support	Writing tasks progressed from simple exercises to complex responses based on individual learning speeds.	Enhanced handwriting accuracy and structured writing
5	Both Interventions	Continuous monitoring and feedback	Implementation pace and support were adjusted based on students' progress and challenge	Sustained accessibility, learner independence, and inclusive learning

The table indicates that the implementation of the Reader App and raised-line paper interventions was systematic, learner-centred, and responsive to the diverse needs of visually impaired students. The use of an initial needs assessment ensured that individual differences in visual ability and digital competence were identified, allowing each intervention to be appropriately customised rather than uniformly applied.The findings further show that the Reader App was implemented through gradual and structured training, with its features adapted to suit learners' functional requirements. This approach enhanced students' confidence, autonomy, and ability to independently access learning material and examination questions. Similarly, the raised-line paper intervention provided tactile support that was carefully aligned with students' writing abilities, improving spatial organisation, handwriting accuracy, and structured written expression. The combined use of both interventions, supported by continuous monitoring and flexible pacing, promoted accessibility, independence, and inclusive learning. This suggests that tailoring assistive interventions to learners' specific needs is critical for improving academic participation among visually impaired students.

Research Question three: Usability and effectiveness of TextVision App

Table 2: Results Table of usability and effectiveness of TextVision App and Raised-line

Tool	Variable	Mean (x^{-}\bar{x}x^{-})	Decision (≥ 2.50)
Reader App	Ease of Use	3.44	High
	Navigation	3.44	High
	Reading Accuracy	3.11	High
	Independence	3.41	High
	Confidence	3.56	High

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	Grand Mean	3.40	High Usability & Effectiveness
Raised-line Paper	Line Alignment	3.50	High
	Writing Organisation	3.30	High
	Handwriting Accuracy	3.60	High
	Ease of Writing	3.40	High
	Writing Confidence	3.60	High
	Grand Mean	3.48	High Usability & Effectiveness

Both the Reader App and Raised-line Paper showed high usability and effectiveness for visually impaired students, with grand means of 3.40 and 3.48, respectively. The Reader App scored highest in confidence (3.56) and ease of use (3.44), supporting learner autonomy, while reading accuracy (3.11) indicated minor areas for improvement. Raised-line Paper excelled in handwriting accuracy and confidence (3.60) and line alignment (3.50), promoting organised, accurate writing. These tools align well with inclusive education goals (e.g., SDGs 4 on quality education), fostering independence and self-efficacy. The slightly higher mean for the raised-line paper reflects its tactile simplicity, complementing the app's digital strengths. Integrating both tools in blended training is recommended for optimal educational impact.

Hypothesis

H_{o1}: The TextVision Reader App and Raised-line Paper intervention does not significantly improve academic performance and self-reported confidence in visually impaired students, compared to pre-intervention baselines.

Table 3: Wilcoxon Signed-Rank Test Summary for Pre- and Post-Intervention

Variable	Median (Pre)	Median (Post – Week 4)	Z-value	r (Effect Size)	p-value	Decision
Academic Performance	2.01	3.00	−3.82	0.61	< .05	Reject H_{o1}
Self-Reported Confidence	2.30	3.04	−3.94	0.64	< .05	Reject H_{o1}
Composite Score	**2.04**	**3.01**	**−4.01**	**0.67**	**< .05**	**Reject H_{o1}**

Table 3 reveals a statistically significant improvement in both academic performance and self-reported confidence among visually impaired students following the TextVision Reader App and Raised-line Paper intervention. Median academic performance scores increased from 2.00 pre-intervention to 3.00 post-intervention ($Z = -3.82$, $p < 0.05$). Similarly, median confidence scores rose from 2.00 to 3.00 ($Z = -3.94$, $p < 0.05$). The composite score also showed significant improvement from 2.00 to 3.00 ($Z = -4.01$, $p < 0.05$), with a large effect size ($r = 0.67$). These effect sizes ($r > 0.50$) across all variables indicate a strong practical impact, confirming that the intervention was both statistically effective and educationally meaningful. Therefore, the null hypothesis was rejected.

H_{o2}: The Reader App and Raised-line Paper intervention do not significantly enhance reading (e.g., accuracy, independence) and writing skills (e.g., organisation, handwriting accuracy) of visually impaired students after two months, compared to pre-intervention baselines.

Table 4: **Summary of Pre-Post Intervention Results for Reading and Writing Skill**

Skill	Pre M (SD)	Post M (SD)	Mdiff	t(df)	p	Cohen's d	Interpretation
Reading	11.4 (0.52)	12.6 (1.43)	1.30	t(9)=3.07	0.013*	0.97	Large effect
Writing	1.38 (0.25)	2.56 (0.17)	1.18	t(9)=11.54	<0.001*	3.64	Very large

The analysis of pre- and post-intervention data reveals significant improvements in both reading and writing skills among visually impaired students following the two-month use of the Reader App and Raised-Line Paper. For reading skills, the mean score increased from 11.4 to 12.6, representing a statistically significant gain ($t(9) = 3.07$, $p = 0.013$) with a large effect size (Cohen's $d = 0.97$). This indicates that the Reader App contributed meaningfully to the development of reading fluency and comprehension. Even more pronounced improvements were observed in writing skills. The average writing score rose from 1.38 to 2.56 per item, reflecting a highly significant enhancement ($t(9) = 11.54$, $p < 0.001$) with a very

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large effect size (Cohen's d = 3.64). These results demonstrate that the Raised-Line Paper had a substantial and educationally meaningful impact on the students' writing ability, supporting tactile engagement and structural clarity. Thus, both interventions were effective, with writing showing greater relative gains. The findings affirm the value of integrating assistive technology and tactile tools in supporting literacy development for visually impaired learners.

Discussion of Findings

The findings of this study reveal a compelling narrative of challenge and resilience among visually impaired learners at the University of Ilorin. The central challenges identified dependence on others for reading, financial burdens in accessing materials, unreliable assistive technologies, inadequate examination accommodations, and institutional support gaps confirm that the barriers to education are not inherent to the students' impairment. Instead, they are socially constructed through an environment that lacks accessible tools and systemic support. This perspective aligns with the Social Model of Disability, which shifts the focus from individual limitations to the societal structures that create exclusion. The students' voiced frustrations, such as being unable to read independently or facing time constraints during exams, underscore the urgent need for interventions designed to dismantle these disabling barriers rather than accommodate them as inevitable. The inaccessibility of printed materials emerged as a dominant theme, with respondents reporting that standard texts are either impossible to read or physically demanding to read. This forces a heavy reliance on sighted peers, introducing unpredictability and inconvenience into their learning. Technological barriers compound these challenges, as poorly scanned documents and unreliable screen readers hinder access. Financial burden also featured prominently, with students incurring additional costs to convert materials into accessible formats, a cost their sighted counterparts do not bear. Examination practices revealed structural inequities, particularly insufficient time allocations that fail to account for the additional steps visually impaired students require. Inadequate assistive infrastructure and limited institutional preparedness further marginalise these learners. Despite these barriers, students demonstrated resilience through assistive technologies, though effectiveness varied considerably due to inconsistent support. Ultimately, these findings affirm that the barriers visually impaired students face are not inevitable consequences of impairment but products of an environment lacking accessible tools and systemic support. Transforming this environment requires a fundamental shift from viewing accessibility as an accommodation to embedding it as a foundational principle of educational equity.

In direct response to these identified challenges**,** the intervention introduced two complementary tools: the digital TextVision App and the tactile Raised Lines Paper. Their implementation was not a generic rollout but a carefully tailored process, beginning with a thorough assessment of each student's specific visual needs and digital literacy. This learner-centred approach is fundamental to the principles of Inclusive Education, which advocate for adapting resources and pedagogy to meet diverse needs rather than expecting conformity. For the TextVision App, this meant customising features like speech speed and contrast, while for the Raised Lines Paper, it involved aligning tactile spacing with individual motor skills. This initial customisation was critical, as it ensured the tools were perceived as useful and easy to use from the outset, factors that are central to user acceptance according to the Technology Acceptance Model.

The success of this tailored approach is reflected in the high usability ratings for both tools, which demonstrate their successful integration into the students' academic routines. Students reported that the TextVision App was intuitive to navigate and significantly boosted their confidence in accessing printed materials independently. This perceived ease of use and clear benefit directly fostered a positive attitude toward the technology, a key predictor of sustained adoption. Similarly, the Raised Lines Paper was praised for providing a reliable physical structure for writing, which enhanced handwriting accuracy and organisation. The tactile feedback from the raised lines gave students a sense of control and precision that they previously lacked, reducing the anxiety associated with writing tasks. Together, these tools addressed the core deficits in autonomy and competence that many visually impaired learners experience, as well as the essential psychological needs outlined in Self-Determination Theory.

By satisfying these needs for autonomy and competence**,** the interventions catalysed a profound shift in the students' academic engagement and self-perception. The quantitative results show statistically significant improvements not only in practical skills but, more importantly, in self-reported confidence. This indicates that the tools did more than facilitate tasks; they restored a sense of agency. Students transitioned from a state of reliance on peers and scribes to becoming

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active, independent agents in their own learning. This empowerment is the cornerstone of intrinsic motivation, where engagement is driven by personal interest and mastery rather than external necessity. The intervention thus moved beyond mere skill development to foster a deeper, more sustainable form of academic participation.

These subjective gains in confidence and agency were matched by substantial improvements in measured academic performance, providing concrete evidence of this transformative impact. The significant gains in both reading and writing skills confirm that the tools are effective pedagogical instruments, not just accessibility aids. The particularly strong effect on writing skills highlights the critical role of tactile guidance in literacy development for visually impaired learners, an area often overlooked in favour of digital solutions alone. These outcomes validate the study's mixed-methods approach, as the qualitative experiences of increased independence and reduced frustration directly correlate with the quantitative metrics of improved scores. This convergence of evidence strengthens the claim that the interventions address the root causes of academic disadvantage.

Importantly, the significance of these findings extends beyond individual achievement to align with broader institutional and global mandates. The University of Ilorin's commitment to an inclusive environment, as enshrined in its disability policy, finds practical expression in this scalable, affordable intervention. By providing a model that enhances autonomy, the study contributes directly to the university's mission of fostering a world-class, equitable learning environment. On a global scale, the intervention resonates with the United Nations Sustainable Development Goals, particularly the aims of ensuring inclusive education and reducing inequality. It demonstrates that with targeted, thoughtful design, educational equity is an attainable goal, even in resource-constrained settings.

Conclusion

This study shows that the barriers facing visually impaired students can be overcome. Using the TextVision App and Raised Lines Paper, the research moved students from dependency to empowerment, removing environmental obstacles, building skills, and restoring confidence. The findings offer a replicable model for other institutions. Future efforts should integrate these tools into standard support systems, provide ongoing training, and involve visually impaired learners in co-designing solutions. True inclusivity, the study concludes, comes from designing education that works for all, not by making exceptions for some.

Recommendations

Based on the findings of this study,

1. The University of Ilorin should institutionalise the provision and sustainable funding of assistive technologies to support visually impaired students.
2. The university should mandate inclusive digital and physical infrastructure to ensure accessibility across learning environments, while implementing structured training and support programmes for both students and staff on the effective use of assistive tools.
3. Inclusive assessment and examination policies should be integrated to promote fairness and independence, alongside the embedding of Universal Design for Learning (UDL) principles in academic practice.
4. In addition, a continuous feedback and review mechanism should be established to assess the effectiveness of support systems, promote awareness, and foster an inclusive campus culture.
5. Finally, the university should develop strategic partnerships with relevant stakeholders to ensure the sustainability and scalability of inclusive education initiatives.

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Effects of Mindfulness-Based Cognitive Therapy on Sexual Dissatisfaction and Relationship Intimacy among Nigerian Couples in Southwest, Nigeria

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Abstract
This study aimed to investigate the effect of Mindfulness-Based Cognitive Therapy (MBCT) on sexual satisfaction and relationship intimacy among couples in Southwest Nigeria. The study employed a randomized controlled trial (RCT) design, with participants randomly assigned to either the MBCT intervention group or a wait-list control group. The population of this study comprised married couples in Southwest Nigeria experiencing sexual dissatisfaction, defined as scoring below 50 on the Global Measure of Sexual Satisfaction (GMSEX). A sample of 100 couples (N=200 individuals) was recruited through purposive sampling from marital counselling clinics in Lagos and Ibadan, Nigeria. Couples were randomly assigned to either the intervention (n=50 couples) or control group (n=50 couples). The instruments used to collect data for this study include Global Measure of Sexual Satisfaction (GMSEX); Personal Assessment of Intimacy in Relationships (PAIR); and Mindfulness Attention Awareness Scale (MAAS). The validity and reliability of the instruments are GMSEX: Cronbach's α = 0.88; PAIR: Cronbach's α = 0.92; and MAAS: Cronbach's α = 0.85. Results from this study revealed that there is a significant difference in sexual satisfaction and relationship intimacy between Nigerian couples receiving MBCT and those in the wait-list control group, with MBCT showing improvements in both outcomes; there is a significant interaction effect between treatment group (MBCT vs. control) and time (baseline, post-intervention, follow-up) on both sexual satisfaction and relationship intimacy in Nigerian couples; and that there is no significant difference in the effectiveness of specific components of MBCT (mindfulness, cognitive restructuring) on sexual satisfaction and relationship intimacy in Southwest Nigerian couples. The study concluded that Mindfulness-Based Cognitive Therapy significantly improves sexual satisfaction and relationship intimacy among Nigerian couples in Southwest Nigeria. Hence, the study recommends the implementation of Mindfulness-Based Cognitive Therapy as a culturally sensitive intervention for Nigerian couples experiencing sexual dissatisfaction and intimacy issues.

Keywords: Mindfulness-Based Cognitive Therapy, sexual dissatisfaction, relationship intimacy.

Introduction
Sexual dissatisfaction is indeed a common challenge many couples face, impacting relationship quality and overall well-being. Research suggests around 30% of individuals in monogamous relationships experience sexual dissatisfaction at some point (Worldmetrics.Org Report, 2025). Studies highlight that factors like stress, anxiety, and depression can contribute to sexual dissatisfaction (Lu, Zong, Fan, & Zhang, 2020). Additionally, relationship dynamics, communication, and emotional connection play significant roles (Stephenson & Welch, 2020). In Nigeria, cultural and societal factors may further influence sexual satisfaction. A study on marital satisfaction in Nigeria found that factors like age, religiosity, and economic status were significant predictors (Onyishi, Soromani, & Ehwarieme, 2012). In Nigeria, cultural and societal factors can indeed play a significant role in exacerbating various issues, making research in this area crucial. For instance, cultural beliefs and practices have been shown to influence environmental attitudes and behaviors, with traditional ecological knowledge contributing to sustainable resource management (Afolayan, Chilaka, & Fawole, 2020; Ayanlade, Tunde, & Nwachukwu, 2019). However, societal factors like unemployment, high cost of living, and insufficient education funding have been linked to increased insecurity in Nigeria (Societies, 2024). Some key cultural factors to consider include Traditional Ecological Knowledge (TEK) which has been shown to promote sustainable environmental practices, but its erosion due to urbanization can hinder environmental management (Ayanlade et al., 2019). Cultural Values and Beliefs which significantly influence environmental attitudes, with some cultures attaching sacredness to natural resources, promoting conservation (Afolayan et al., 2020). Social Norms which shape behaviors, including waste disposal and water conservation practices (Egunjobi, Adedeji, & Oyebode, 2020; Igwe, Akinbile, & Aremu, 2021). To address these issues,

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researchers recommend incorporating cultural values and TEK into environmental policies and practices (Oluwatobi, Oladele, & Adebayo, 2019); and engaging local communities in decision-making processes to foster ownership and collaboration. Recent studies link mindfulness, and specifically sexual mindfulness, with better sexual functioning and satisfaction. For example, research using daily diary methods found that individuals with higher baseline sexual mindfulness reported better daily sexual function—an important component of overall sexual satisfaction—suggesting that moment-to-moment awareness may help individuals stay focused on positive sexual cues and reduce distracting thoughts during sexual activity (Jarvis, Huberman & Rosen, 2025). Further, research with postpartum couples found that trait mindfulness was associated with higher sexual satisfaction, although the mechanisms differed by gender: mindfulness related to better sexual function in men and lower sexual distress in women (Saavedra, & Tavares, 2025). These individual differences in mindfulness align with findings that sexually mindful individuals report increased sexual satisfaction and relational satisfaction, even after controlling for general mindfulness traits (Leavitt, Lefkowitz, & Waterma, 2019).

Mindfulness has also been studied as a modifiable intervention target for improving romantic relationships. Mindfulness training in specific populations—such as postmenopausal women—has been shown to increase marital intimacy alongside sexual self-esteem, suggesting benefits for both partner bonding and sexual self-perceptions (Khazaeian, Rahimi-Nezhad, & Fathnezhad- Kazemi, 2023). A systematic review and meta-analysis of mindfulness interventions across couples reported a medium positive effect on relationship satisfaction overall, indicating that structured mindfulness programs can improve core aspects of relationship quality (Voldstad, Zeas-Siguenz, Skolzkov, Walthaug, Montero-Marin, & Kuyken, 2025). Moreover, research has shown that sexual mindfulness moderates how conflict resolution relates to both sexual and relationship satisfaction, highlighting mindfulness as a potential mechanism that strengthens positive relational outcomes (Smedley, Leavitt, Allsop, Nance, James, & Holmes, 2021). Mindfulness is proposed to reduce cognitive distraction, performance-related anxiety, and emotional reactivity, thereby enhancing present-moment awareness during sexual and relational interactions (Javis, Huberman, & Rosen, 2025). Structured interventions (e.g., group-based Mindfulness for Sex and Intimacy in Relationships) demonstrate feasibility and preliminary efficacy, indicating that mindfulness training can be integrated into clinical sex therapy and couple counseling frameworks (Krieger, iraldi, Kristensen, Marquardesen, Offer, Mortensen et al., 2023). Mindfulness-Based Cognitive Therapy (MBCT) has indeed shown promise in reducing stress and improving emotional regulation. Recent studies support its effectiveness. MBCT has been effective in reducing stress in various populations, including healthcare workers (Asghar, Khan, & Mushtaq, 2022) and individuals with chronic illnesses (Shah, & Khan, 2021). MBCT enhances emotional regulation by increasing mindfulness and reducing rumination, which is beneficial for individuals with depression and anxiety (Kuyken, Hayes, Barrett, & Byford, 2016; Segal, Dimidjian, & Beck, 2019). In a qualitative study of polygynous marriages in Northern Nigeria, men typically assumed control over decision-making, and communication about sexual health was indirect or limited, reflecting norms of modesty and male dominance (Amzat, Almu, Amzat, & Kanmodi, 2025). Women's ability to negotiate safer sexual practices is constrained by patriarchy, cultural expectations of obedience, and fear of disrupting marital harmony. Men's dominance in sexual relationships reduces women's agency in sexual communication (Awoleye, Solanke, Kupoluyi, Adetutu, 2022). Cultural norms that restrict open dialogue about sex affect relationship satisfaction. Societal taboos around discussing sexual needs hinder healthy communication, contributing to misunderstandings, unmet desires, and relational strain. National survey data show that polygamous unions and male-dominated decision-making negatively influence women's attitudes toward negotiating safe sex with their husbands, limiting open sexual communication and potentially decreasing relationship satisfaction (Imo, Odimegwu, & Wet-Billings, 2022). Traditional expectations that wives should obey their husbands — even in sexual contexts — are significant determinants of intimate partner dynamics and can contribute to high levels of emotional and physical control, which impede emotional connection and satisfaction (Ikekwuibe, & Okoror, 2021).

Research among adolescents and young adults' points to deep-rooted gendered beliefs about sexuality, which reflect broader cultural norms that extend into adult intimate relationships. These norms shape expectations about who initiates sex, who controls its terms, and how freely partners discuss sexual issues. Studies in Nigeria show that prevailing socio-cultural beliefs about gender roles influence sexual attitudes. For instance, norms that place the burden of sexual responsibility or purity on females-limiting adolescents' comfort with open communication about sexuality (Agu, Mbachu, Ezenwaka, Eze, Ezumah, & Onwujekwe, 2022). Open sexual communication is a strong predictor of intimacy and

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satisfaction in couples globally. By contrast, limited sexual dialogue, especially where one partner lacks agency, is linked to lower emotional closeness, dissatisfaction, and unresolved conflict. In Nigeria, cultural and patriarchal constraints on communication can therefore shape how partners negotiate sexual and emotional needs, potentially undermining both intimacy and satisfaction. In a large cross-sectional survey of adults, non-judging facets of mindfulness predicted both sexual satisfaction and relationship satisfaction (Greer, 2025). A daily diary study found that higher baseline sexual mindfulness was associated with individuals' higher daily sexual function (a correlate of satisfaction), lending longitudinal, ecologically valid support for the link (Javis, Huberman, & Rosen, 2025). In postpartum couples, greater trait mindfulness was associated with higher sexual satisfaction via improved sexual function (men) and lower sexual distress (women) (Saavedra, & Travares, 2025). Sexual mindfulness also moderated the relationship between conflict resolution and sexual satisfaction, indicating mindfulness can buffer stressors that otherwise undermine sexual well-being (Smedley, Leavitt, Allsop, Nance, James, & Holmes, 2025). Empirical studies further show that general mindfulness predicts relational intimacy and satisfaction, a major component of healthy relationships. Trait mindfulness has been shown to be positively associated with partner acceptance and relationship satisfaction, mediated in part by greater acceptance and emotional attunement (Kappen, Karremans, Burk et al., 2018). In mindfulness-based interventions, training not only improved aspects of sexual self-esteem but also marital intimacy, demonstrating causal evidence that mindfulness practice can enhance intimacy (Khazaeian, Rahimi-Nezhad, & Fathnezhad-Kazemi, 2023). Overall, the emerging empirical literature supports the claim that mindfulness, especially sexual mindfulness, is positively associated with sexual satisfaction, often by enhancing present-moment awareness, reducing internal distraction, and lowering distress during sexual activity, which are all predictors of satisfaction (Greer, 2017). Mindful individuals tend to show higher relationship intimacy and acceptance, which are foundational to both sexual and relational satisfaction (Kappen, Karremans, Burk et al. 2018). Mindfulness interventions can improve sexual self-esteem and marital intimacy, suggesting potential causal effects beyond correlational findings (Khazaeian, Rahimi-Nezhad, & Fathnezhad-Kazemi, 2023).

A study on Iranian couples found MBCT improved sexual satisfaction and intimacy (Khodadadi, Kiani, & Pourabbasi, 2020). Research on Mindfulness-Based Cognitive Therapy (MBCT) has shown promise in improving relationship satisfaction and intimacy in various populations (e.g., Carson, & Baucom, 2020; Khodabakhsh, & Kiani, 2021). However, studies specifically examining MBCT's efficacy in Nigerian couples are scarce. A review of existing literature reveals a dearth of empirical studies on MBCT interventions in Nigerian populations, particularly among couples (Adewale, & Olatunji, 2020; Olatunji, & Adewale, 2021). Most studies on MBCT have been conducted in Western contexts, highlighting the need for culturally adapted interventions and research in Nigerian settings.

Statement of the Research Problem

Sexual dissatisfaction is a pervasive issue affecting couples globally, with significant implications for relationship quality, mental health, and overall well-being (McIntosh & McDonald, 2013). In Nigeria, cultural and societal factors such as patriarchal norms, limited sexual communication, and societal expectations around marriage and sexuality may exacerbate this issue (Adekunle & Ladapo, 2019; Oyekunle, 2018). Despite its prevalence, sexual dissatisfaction often remains unaddressed in Nigerian couples, leading to increased relationship distress, emotional disconnection, and decreased quality of life. Current interventions for sexual dissatisfaction in Nigeria are limited, often focusing on individual pathology rather than relational and contextual factors (Adekunle & Ladapo, 2019). Mindfulness-Based Cognitive Therapy (MBCT) has shown promise in improving sexual satisfaction and relationship intimacy in Western contexts (Brotto et al., 2016; Khodadadi et al., 2020), but its efficacy in Nigerian couples remains unexplored. This study addresses this gap by examining the efficacy of MBCT in improving sexual satisfaction and relationship intimacy among Nigerian couples experiencing sexual dissatisfaction.

Objectives of the study

To investigate the effects of Mindfulness-based Cognitive Therapy (MBCT) on sexual dissatisfaction and relationship intimacy among Nigerian couples in Southwest Nigeria. Specifically, the objectives of the study include:

1. To assess the impact of MBCT on sexual satisfaction;
2. To evaluate the effect of MBCT on relationship intimacy;
3. To compare outcomes between MBCT and wait-list control groups;
4. To examine the interaction effect between treatment group and time on outcomes; and

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5. To investigate the effectiveness of MBCT components (mindfulness, cognitive restructuring).

Research Questions

1. What is the effect of Mindfulness-based Cognitive Therapy (MBCT) on sexual satisfaction among Nigerian couples in Southwest Nigeria?
2. Does MBCT improve relationship intimacy in Nigerian couples compared to a wait-list control group?.
3. Is there a significant interaction effect between treatment group (MBCT vs. control) and time (baseline, post-intervention, follow-up) on sexual satisfaction and relationship intimacy?
4. Which component of MBCT (mindfulness or cognitive restructuring) is more effective in improving sexual satisfaction and relationship intimacy among Nigerian couples?
5. How do Nigerian couples perceive the cultural relevance and effectiveness of MBCT in addressing their sexual and relationship concerns?

Hypotheses

H_{o1}: There is no significant difference in sexual satisfaction and relationship intimacy between Nigerian couples receiving Mindfulness-Based Cognitive Therapy (MBCT) and those in the wait-list control group in Southwest, Nigeria.

H_{o2}: There is no significant interaction effect between treatment group (MBCT vs. control) and time (baseline, post intervention, follow-up) on sexual satisfaction and relationship intimacy in Nigerian among couples in Southwest, Nigeria.

H_{o3}: There is no significant difference in the effectiveness of specific components of MBCT (mindfulness, cognitive restructuring) on sexual satisfaction and relationship intimacy in Nigerian among couples in Southwest, Nigeria.

Methodology

The study employed a randomized controlled trial (RCT) design, with participants randomly assigned to either the Mindfulness-Based Cognitive Therapy (MBCT) intervention group or a wait-list control group. The population comprised married couples in Nigeria experiencing sexual dissatisfaction, defined as scoring below 50 on the Global Measure of Sexual Satisfaction (GMSEX). A sample of 100 couples (N=200 individuals) was recruited through purposive sampling from marital counselling clinics in Lagos and Ibadan, Nigeria. Couples were randomly assigned to either the intervention (n=50 couples) or control group (n=50 couples). Inclusion criteria include married couples aged 25-50 years; scoring below 50 on the GMSEX; and willingness to participate in the study. Exclusion criteria include couples with a history of domestic violence; current substance abuse or mental health issues; and pregnancy or planning to conceive within the study period. The instrument used to collect data for this study include Global Measure of Sexual Satisfaction (GMSEX): A 5-item scale assessing overall sexual satisfaction (Lawrence et al., 2011); Personal Assessment of Intimacy in Relationships (PAIR): A 36-item scale measuring emotional, social, intellectual, and recreational intimacy (Schaefer & Olson, 1981); and Mindfulness Attention Awareness Scale (MAAS): A 15-item scale assessing mindfulness (Brown & Ryan, 2003). Validity and Reliability of instruments include GMSEX: Cronbach's $\alpha = 0.88$ (Lawrence et al., 2011); PAIR: Cronbach's $\alpha = 0.92$ (Schaefer & Olson, 1981); and MAAS: Cronbach's $\alpha = 0.85$ (Brown & Ryan, 2003). Data were collected at baseline (T1), post-intervention (T2), and 3-month follow-up (T3) using self-report questionnaires. Participants completed questionnaires in a private setting. The MBCT intervention consisted of 8 weekly sessions, each lasting 2 hours. The program was adapted for Nigerian couples and covered topics such as mindfulness, cognitive restructuring, and communication skills. Data collected were analyzed using Multivariate ANCOVA (MANCOVA), Mixed ANOVA (MANOVA); and Multiple Regression Analysis.

Presentation of Results

Hypothesis 1

There is no significant difference in sexual satisfaction and relationship intimacy between Nigerian couples receiving Mindfulness-Based Cognitive Therapy (MBCT) and those in the wait-list control group in Southwest, Nigeria.

Table 1: MANCOVA Results of the Sexual Satisfaction and Relationship Intimacy Between Nigerian Couples Receiving Mindfulness-Based Cognitive Therapy (MBCT) and Those in the Wait-List Control Group.

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Outcome	Group	Mean (SD)	Adjusted Mean (SE)	F-value	p-value	η^2
Sexual Satisfaction (GMSEX)	MBCT (n=50)	35.2 (8.1)	42.1 (1.2)	10.21	0.002	0.09
	Control (n=50)	35.2 (7.5)	34.2 (1.2)			
Relationship Intimacy (PAIR)	MBCT (n=50)	120.5 (15.2)	130.2 ()	7.15	0.009	0.07
	Control (n=50)	115.1 (14.1)	118.5 (2.5)			

Source: Field Work 2026

Results in Table 1 indicate that there is a significant difference in sexual satisfaction and relationship intimacy between Nigerian couples receiving Mindfulness-Based Cognitive Therapy (MBCT) and those in the wait-list control group, with MBCT showing improvements in both outcomes. Hence, hypothesis 1 was rejected.

Hypothesis 2

There is no significant interaction effect between treatment group (MBCT vs. control) and time (baseline, post intervention, follow-up) on sexual satisfaction and relationship intimacy in Nigerian among couples in Southwest, Nigeria.

Outcome	Group	Baseline Mean (SD)	Post -intervention Mean (SE)	Follow-up Mean (SD)	F-value (Group X Time)	P-value	η^2
Sexual Satisfaction (GMSEX)	MBCT (n=50)	35.2 (8.1)	42.5 (7.2)	45.1 (6.5)	4.21	0.08	0.08
	Control (n=50)	35.5 (7.5)	34.1 (7.1)	35.2 (6.8)			
Relationship Intimacy (PAIR)	MBCT (n=50)	120.5 (15.2)	130.2 (13.5)	135.1 (12.1)	3.52	0.033	0.06
	Control (n=50)	115.1 (14.1)	118.5 (13.2)	120.1 (12.5)			

Source: Field Work 2026

There is no significant interaction effect between treatment group (MBCT vs. control) and time (baseline, post-intervention, follow-up) on sexual satisfaction and relationship intimacy in Nigerian among couples in Southwest, Nigeria. Table 2: Mixed ANOVA (MANOVA) Result of Interaction Effect Between Treatment Group (MBCT vs. control) and Time (baseline, post-intervention, follow-up) on Sexual Satisfaction and Relationship Intimacy. Results in Table 2 revealed that there is a significant interaction effect between treatment group (MBCT vs. control) and time (baseline, post-intervention, follow-up) on both sexual satisfaction and relationship intimacy in Nigerian couples. Hence, we reject the null hypothesis.

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Hypothesis 3

There is no significant difference in the effectiveness of specific components of MBCT (mindfulness, cognitive restructuring) on sexual satisfaction and relationship intimacy in Nigerian among couples in Southwest, Nigeria.

There is no significant difference in the effectiveness of specific components of MBCT (mindfulness, cognitive restructuring) on sexual satisfaction and relationship intimacy in Nigerian among couples in Southwest, Nigeria.

Table 3: Table of Multiple Regression Analysis of the Effectiveness of Specific Components of MBCT (e.g., mindfulness, cognitive restructuring) on Sexual Satisfaction and Relationship Intimacy.

Outcome	Predictor	β	t- value	p-value	R^2
Sexual Satisfaction (GMSEX)	Mindfulness	0.35	3.21	0.002	0.25
	Cognitive Restructuring	0.20	1.85	0.067	
Relationship Intimacy (PAIR)	Mindfulness	0.30	2.91	0.004	0.20
	Cognitive Restructuring	115.1 (14.1)	118.5 (2.5)		

Source: Field Work 2026

Note: β = standardized regression coefficient, R^2 = coefficient of determination.

Results in Table 3 indicate that mindfulness is a significant predictor of both sexual satisfaction and relationship intimacy in Nigerian couples, while cognitive restructuring is not a significant predictor. Mindfulness has a positive and significant effect on sexual satisfaction ($\beta = 0.35$, $p = 0.004$). Cognitive restructuring does not have a significant effect on either outcome ($p < 0.05$). Hence, we reject the null hypothesis for mindfulness, indicating that it has a significant effect. We fail to reject the null hypothesis for cognitive restructuring.

Discussion of Findings

The result highlights the importance of intimacy in marital satisfaction, with emotional, intellectual, and recreational intimacy emerging as core predictors for both men and women (Beaulieu, Bergeron, Brassard, Byers, & Péloquin, 2023); Bühler, Krauss, & Orth, 2021; Schaefer & Olson, 1981). Recent studies have also emphasized the role of mindfulness-based interventions in enhancing marital satisfaction and intimacy (Brotto, Zdaniuk, Chivers, et al., 2021; Leavitt, Maurer, Clyde, et al., 2021). The result indicates that Mindfulness-Based Cognitive Therapy (MBCT) has a positive impact on sexual satisfaction and relationship intimacy in couples. Recent studies support this finding, showing that MBCT enhances emotional intimacy, communication, and conflict management in relationships (Beaulieu et al., 2023; Bay Area CBT Center, 2024; Wider, Chua, Mutang, Tan, Jiang, Tanucan, …Udang, 2025). MBCT's effectiveness can be attributed to its focus on promoting mindfulness, self-awareness, and emotional regulation, leading to improved relationship dynamics (Peixoto, 2023). Specifically, MBCT has been shown to increase sexual satisfaction, reduce sexual distress, and improve sexual function in individuals (Rashedi et al., 2022; Larraz, Moya, & Actis, 2024). In terms of empirical references, a study by Beaulieu et al. (2023) found that intimacy, particularly emotional and intellectual intimacy, plays a crucial role in sustaining relationship satisfaction over time. Another study by Peixoto (2023) highlighted the importance of mindfulness, self-compassion, and acceptance in predicting sexual satisfaction in cisgender heterosexual men and women (Wider et al., 2025; Peixoto, 2023). These findings suggest that MBCT can be a valuable intervention for couples seeking to improve their relationship satisfaction and sexual intimacy. Mindfulness-based cognitive therapy (MBCT) has been shown to positively impact relationship satisfaction and sexual functioning in couples. Recent studies support the efficacy of MBCT in enhancing emotional intimacy, communication, and conflict resolution skills, leading to improved relationship quality (Falzia & Romeo, 2025; Leavitt et al., 2021). Specifically, MBCT has been linked to increased sexual satisfaction, desire, and arousal, as well as reduced sexual distress (Brotto, Zdaniuk, Chivers, Jabs, Grabovac, Lalumière, et al., 2021; Chivers,

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Zdaniuk, Brotto, Jabs, Grabovac, Lalumière et al., 2025). The therapy's focus on present-moment awareness and non-judgmental acceptance appears to foster a deeper emotional connection and intimacy between partners.

Conclusion

Mindfulness-based Cognitive Therapy (MBCT) significantly improves sexual satisfaction and relationship intimacy among Nigerian couples in Southwest Nigeria. Couples receiving MBCT showed improved outcomes compared to the control group, with sustained effects over time. Both mindfulness and cognitive restructuring components contributed to these improvements, with no significant difference in their effectiveness. In summary, MBCT enhances sexual satisfaction and relationship intimacy; effects are sustained over time (post-intervention and follow-up); and both mindfulness and cognitive restructuring are effective components**.**

Recommendations

This study recommends that counselors should implement Mindfulness-based Cognitive Therapy (MBCT) as a culturally sensitive intervention for Nigerian couples experiencing sexual dissatisfaction and intimacy issues. Specifically, the study recommends that MBCT should be integrated into existing couple therapy frameworks to address sexual satisfaction and relationship intimacy. Provide training for therapists on MBCT and its application in Nigerian cultural context. Utilize both components to enhance effectiveness. Regularly assess sexual satisfaction and relationship intimacy to inform treatment adjustments. Adapt MBCT to accommodate Nigerian cultural values and norms. Make MBCT accessible to diverse populations, including rural and underserved areas.

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Impact of Induction Programs on Early Career Teachers among Public Secondary Schools in Delta State, Nigeria

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Abstract

This study investigated impact of induction programs in on early career teachers in public secondary schools in Delta State, Nigeria. Three research questions and hypotheses guided the study. A descriptive research design was used for the study, with a population of 489 principals from the public secondary schools in Delta State. The sample size of the study was 49 principals representing 10% of the population selected using the simple random sampling technique. A self-structured questionnaire titled impact of induction programs in on early career teachers Questionnaire (IIPECTQ) was used for the study. The reliability index of the instrument was 0.85 using the test re-test method. Mean, standard deviation and rank order was used to answer the research questions, while z-test was used to test the hypotheses at the 0.05 level of significance. Findings showed, teachers' induction programs have impacts on early career teachers in public secondary schools in Delta State and there is a significant difference between the opinion of both male and female principals on the impact teachers' induction programs have on early career teachers in public secondary schools in Delta State. The study concluded that induction program is the umbrella that accommodates the early career teachers and initiates them into the teaching profession in Delta State. The study recommended, among others, that principals should provide inductions programs for early career teachers so as to welcome them into the teaching profession in Delta State.

Keywords: Teacher, Induction, Program, Early Career Teachers.

Introduction

Teachers are very important assets to the school hence inducting new teachers into the profession is imperative. This is so because induction improves the knowledge of both teachers and students as it is a support programme for teachers including the beginning teachers. Early career teachers (ECT) are those teachers that are newly employed into the teaching profession. Hence induction of such teachers is very important as it helps to produce teachers that stays on the job. Induction therefore can be referred to as the means of foreseeing the different challenges a new teacher will encounter in the early days of teaching and proffering solutions by providing the needed information that will help make the teacher cope in and out of class. Induction therefore is a well-organized event directed towards socializing the new teacher with other teachers and the work environment in general (yehe, 2010). It is also a way of welcoming the ECTs to the organization. Induction involves a different programme such as orientation, support and guidance for ECTs. The new teacher is encouraged to stay in the teaching profession if they start recording success on time. Fluckiger, McGlamery and Edick (2016) defined induction as a way of accepting and welcoming an employee when he initially joins an organization and he is given the orientation needed to adjust and start work happily. Induction is like a roof over the heads of the ECTs that helps them adjust to the new work place culture. Induction is a process that goes beyond classroom activities and curriculum because information about the organization builds in the teacher the confidence to discharge his duties and adapt to school norms. It is also a system that accommodates ECTs and initiate them to the objectives, practices and policies of the school. In other words, the welcoming, indoctrination, socializing of the new employee into the organization takes place through induction. The major aim of teacher induction processes is to provide support and professional learning experiences that will help ECTs to successfully transition to the profession, and importantly, prepare them for fulfilling teaching careers.

Statement of the Problem

It is obvious from observation that most secondary schools don't give orientation to the newly employed teachers by way of introducing them to the older teachers and students in the school during assembly or taking them round the classes. It is also observed that most secondary schools don't have induction programmes in place for their newly employed staff. Some school principals believe that introducing the new teacher to the older ones is enough for the teacher to settle down but it goes beyond that. For the new teacher to perform he needs to be inducted into the system by way of welcoming, introducing and given all the necessary information needed for him to integrate, adjust and adapt to the new environment. In situations where the new teachers are left alone to find their way around, they are most likely to leave the profession after some time because they find it difficult to adjust to the system without any concrete information. This can lead to job frustration,

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anxiety, stress, under performance, voluntary resignation or retirement, attrition, brain drain and so on. New teachers are most times not guided, assisted and given orientation concerning their task in the profession and sometimes where they are being inducted, it may not be thorough. It is based on the above assertion that this study wants to find out the impact induction program have on early career teachers, the challenges faced by early career teachers and the ways to improve induction programs for early career teachers in public secondary schools in Delta State.

Research Questions

The following research questions were formulated to guide the study

1. What impact does teachers' induction program have on early career teachers in public secondary schools in Delta State?
2. What are the challenges faced by early career teachers as a result of teachers' induction programs in public secondary schools in Delta State?
3. What are the ways to improve induction programs for early career teachers in public secondary schools in Delta State?

Hypotheses

Ho_1: There is no significant difference between the mean ratings of male and female principals on the impact teachers' induction program have on early career teachers in public secondary schools in Delta State.

Ho_2: There is no significant difference between the mean ratings of male and female principals on the challenges faced by early career teachers as a result of teachers' induction programs in public secondary schools in Delta State.

Ho_3: There is no significant difference between the mean ratings of male and female principals on the ways to improve induction programs for early career teachers in public secondary schools in Delta State.

Purpose of the Study

The study sought to:

1. Ascertain the impact teachers' induction programs have on early career teachers in public secondary schools in Delta State.
2. Examine the challenges faced by early career teachers as a result of teachers' induction programs in public secondary schools in Delta State.
3. Find out the ways to improve induction programs for early career teachers in public secondary schools in Delta State.

Theoretical Framework

This study was anchored on the self-efficacy theory propounded by Bandura (1989). The theory posited that individuals tend to engage in tasks or activities to an extent to which they perceive themselves to be capable. Self-efficacy is associated with the way one perceives success and failure, as well as influences motivation and ability to set goals (Swanson, 2012). This theory is important to this study because a teacher induction program can encourage self-efficacy within new teachers and as a result, a teacher who feels confident in his or her ability to teach has a lower level of stress, which can influence whether that teacher remains in the field of education. In a teacher induction program, the mentor teacher can help the new teacher by observing him or her as he or she instructs a class. Feedback from mentor teachers and superiors can validate experiences of beginning teachers and can enhance mastery experiences (Ross & Bruce, 2007).

Literature Review

Kelchtermans and Ballet (2012) posited that introducing induction programmes is to enable ECTs to contribute to the betterment of the learning culture in the school. The learning culture is geared towards supporting the learning of both the new and old teachers within the school. It is the responsibility of the mentor to play the role of ensuring that the new teachers settle in and are treated seriously to ensure the learning culture within the school is fostered. A well-planned induction process for new employees introduces them to all procedural details and gives employees hands-on experience in using them (Arnold, 2011). Induction programs prevents the employee from having to worry about how to submit a time card when he is trying to be productive at his new job and without orientation he will be overwhelmed and not have the understanding necessary to do his job. This happens because he is not properly trained, errors may show up that this employee may be blamed for and that can cause employee's turnover. Having a thorough employee orientation programme allows employees to have understanding of their jobs. It reduces the possibility that a new employee will leave the organization because he feels he cannot withstand the pressure of being an ECT. Asuquo (2015) asserted that the induction of beginning teachers in public secondary schools in Nigeria is very poor; as new teachers are rarely given any form of formal induction. He further added that new teachers in public schools are not sufficiently guided, assisted and educated

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about their job as often seen in other non-educational organizations. In the same vein, Lortie (2011) posited that the teaching profession has not had the kind of structured induction and initiation process common with many other white-collar jobs. Effiong and Olofu (2016) observed that the high rate of brain drain in the school system is as a result of the absent of planned induction process. Similarly, Effiong and Olofu (2016) stated that the teaching profession has long had alarmingly high rate of attrition among new comers and this is due to poor induction of ECTs. Teachers' induction programs have impacts on ECTs and these impacts are the fact that experiences from induction promotes ECTs competence; it increases the level of resilience, it brings about effectiveness, it brings about job satisfaction, induction programs influences teachers' classroom instruction, It also influences students' academic performance, increases the rate of retention for both teachers and students, It increases the level of teachers commitment, it provides support for the teachers and it brings about professional learning experiences (Kelley, 2016; Le Cornu, 2013; Schliecher, 2016 & Ronfeldt & McQueen, 2017). Early career teachers are also faced with the following challenges as a result of teachers' induction programs in secondary schools. They include inadequate support, cultural adjustment, insufficient training, resource constraint, overwhelming workload, lack of practical experience, poor program implementation and feedback mechanism (Ihekoronye, Opara & Olofu, 2020). For these challenges to be tackled, a well-structured induction program that entails more practical support and meets specific needs should be put in place so that the teachers can easily transit into the teaching profession. The ways to improve induction programs for ECTs in secondary schools are through providing tailored training, practical experiences, effective mentorship, ongoing support, resource allocation, collaborative learning and feedback mechanism (Ihekoronye, Opara & Olofu, 2020).

Methodology

The design for the study was the descriptive survey. The population comprised all the four hundred and eighty-nine (489) principals from 489 public secondary schools in Delta State (Ministry of Basic and Secondary Education Headquarters, Asaba, 2022). Using the stratified random sampling technique, a sample of 49 principals was drawn representing 10% of the population. A 4-point self-constructed instrument designed after a modified likert scale model, titled, "teachers' induction programs in supporting early career teachers Questionnaire (TIPSECTQ) was used for data collection. The reliability coefficient of 0.85 was established using test re-test. Mean, standard deviation and rank order were used to analyze the research questions while z-test statistics was used to test the hypotheses at 0.05 alpha level.

Presentation of Results

These consist of mean, standard deviation and rank order used to answer the research question, z-test used for testing the hypotheses.

Research Question One: What impact does teachers' induction program have on early career teachers in public secondary schools in Delta State?

Table 1: ***Mean scores of male and female principals on the impact teachers' induction programs have on early career teachers in public secondary schools in Delta State.***

S/N	Item	Male (n = 20) M	SD	Female (n = 29) M	SD	Grand Mean	Rank	Remark
1	Experiences from induction promote ECTs' competence	3.79	.06	3.30	.11	3.55	1st	Agreed
2	It increases the level of resilience	2.24	.18	3.80	.15	3.02	4th	Agreed
3	It brings about effectiveness	2.18	.14	2.21	.24	2.20	10th	Disagreed
4	It brings about job satisfaction	2.25	.16	2.20	.35	2.23	9th	Disagreed
5	Induction programs influence teachers'	3.00	.14	3.03	.13	3.02	5th	Agreed

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	classroom instruction							
6	It also influences students' academic performance	2.67	.25	3.22	.28	2.95	6th	Agreed
7	It increases the rate of retention for both teachers and students	3.05	.23	2.57	.13	2.80	7th	Agreed
8	It increases the level of teachers' commitment	3.26	.25	3.09	.28	3.18	2nd	Agreed
9	It provides support for teachers	3.19	.19	3.15	.18	3.17	3rd	Agreed
10	It brings about professional learning experiences	3.05	.19	2.00	.35	2.53	8th	Agreed

The result as revealed in Table 1 indicated that respondents agreed to the fact that the impact teachers' induction programs have on early career teachers in public secondary schools in Delta State are experiences from induction promotes ECTs' competence with mean score of 3.79 for male and 3.30 for female principals, it increases the level of resilience with mean score of 2.24 for male and 3.80 for female principals, induction programs influences teachers' classroom instruction with mean score of 3.00 for male and 3.02 for female principals, it also influences students' academic performance with mean score of 2.67 for male and 3.22 for female principals, it increases the rate of retention for both teachers and students with mean score of 3.05 for male and 2.57 for female principals, it increases the level of teachers commitment with mean score of 3.26 for male and 3.09 for female principals, it provides support for the teachers with mean score of 3.19 for male and 3.15 for female principals, it brings about professional learning experiences with mean score of 3.05 for male and 2.00 for female principals, and they also disagreed to the fact that it brings about effectiveness with mean score of 2.18 for male and 2.21 for female principals, it brings about job satisfaction with the mean score of 2.25 for male and 2.20 for female as the impact teachers' induction programs have on early career teachers in public secondary schools in Delta State. The aggregate mean of 2.86 for male principals and 2.87 for female principals showed that the female principals agreed more to the impact teachers' induction programs have on early career teachers in public secondary schools in Delta State.

Research Question Two: What are the challenges faced by early career teachers as a result of teachers' induction programs in public secondary schools in Delta State?

Table 2: ***Mean scores of male and female principals on the challenges faced by early career teachers as a result of teachers' induction programs in public secondary schools in Delta State.***

S/N	Item	Male (n = 20) M	SD	Female (n = 29) M	SD	Grand Mean	Rank	Remark
11	ECTs lack adequate support in the course of induction programs	2.80	.14	3.10	.12	2.95	4th	Agreed
12	It becomes difficult to adjust culturally	3.34	.11	2.25	.16	2.80	7th	Agreed

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13	ECTs are not well trained during induction programs	3.12	.12	3.17	.14	3.15	2nd	Agreed
14	Shortage of resources during induction programs	3.31	.13	3.20	.15	3.26	1st	Agreed
15	Workload can be overwhelming	2.88	.06	2.03	.23	2.46	8th	Disagreed
16	There are no practical experiences during induction programs	2.96	.15	3.00	.08	2.98	3rd	Agreed
17	Programs are usually poorly implemented	3.14	.06	2.65	.03	2.90	6th	Agreed
18	There are no feedback mechanisms	2.84	.15	2.99	.08	2.92	5th	Agreed

The result as revealed in Table 2 indicated that respondents agreed to the fact that the challenges faced by early career teachers as a result of teachers' induction programs in public secondary schools in Delta State are the fact that ECTs lack adequate support in the cause of induction programs with mean score of 2.80 for male and 3.10 for female principals, it becomes difficult to adjust culturally with mean score of 3.34 for male and 3.38 for female principals, ECTs are not well trained during induction programs with mean score of 3.12 for male and 3.17 for female principals, shortage of resources during induction programs with mean score of 3.31 for male and 3.20 for female principals, there are no practical experiences during induction programs with mean score of 2.96 for male and 3.00 for female principals, programs are usually poorly implemented with mean score of 3.14 for male and 2.65 for female principals, There are no feedback mechanism with mean score of 2.84 for male and 2.92 for female principals and they disagreed that workload can be overwhelming with mean score of 2.88 for male and 2.03. The aggregate mean of 3.05 for male principals and 2.80 for female principals showed that the male principals agreed more to challenges faced by early career teachers as a result of teachers' induction programs in public secondary schools.

Research Question Three: What are the ways to improve induction programs for early career teachers in public secondary schools in Delta State?

Table 3: Mean scores of male and female principals on the ways to improve induction programs for early career teachers in public secondary schools in Delta State.

S/N	Item	Male (n = 20) M	SD	Female (n = 29) M	SD	Grand Mean	Rank	Remark
19	A more tailored training should be provided	3.67	.16	3.62	.34	3.65	2nd	Agreed
20	There should be more practical experiences during induction programs	3.40	.11	3.79	.05	3.60	3rd	Agreed

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21	There should be effective mentorship	3.20	.03	3.67	.07	3.44	5th	Agreed
22	There should be ongoing support during induction programs	2.08	.02	3.00	.06	2.54	7th	Agreed
23	Resources should be adequately provided	3.24	2.11	3.67	.02	3.46	4th	Agreed
24	There should be collaborative learning	3.70	.20	3.66	.12	3.68	1st	Agreed
25	Feedback mechanisms should also be put in place	3.30	.11	3.32	.10	3.31	6th	Agreed

The result as revealed in Table 3 indicated that respondents agreed to the fact that the ways to improve induction programs for early career teachers in public secondary schools in Delta State are the fact that a more tailored training should be provided with mean score of 3.67 for male and 3.65 for female principals, there should be more practical experiences during induction programs with mean score of 3.40 for male and 3.79 for female principals, there should be effective mentorship with mean score of 3.20 for male and 3.67 for female principals, there should be ongoing support during induction programs with mean score of 2.08 for male and 3.00 for female principals, resources should be adequately provided with mean score of 3.24 for male and 3.67 for female principal, there should be collaborative learning with mean score of 3.70 for male and 3.66 for female and feedback mechanisms should also be put in place with mean score of 3.30 for male and 3.32 for female principals. The aggregate mean of 3.23 for male principals and 3.52 for female principals showed that the female principals agreed more to ways to improve induction programs for early career teachers in public secondary schools.

Hypothesis One: There is no significant difference between the mean ratings of male and female principals on the impact teachers' induction program have on early career teachers in public secondary schools in Delta State.

Table 4: z-test results on the difference between the mean scores of male and female principals on the impact teachers' induction program have on early career teachers in public secondary schools in Delta State.

S/N	Gender	N	M	SD	df	z-cal	z-tab	Remark
26	Male	20	2.87	0.72				
27	Female	29	2.86	1.02	48	0.70	1.96	Fail to reject H_0

Table 4 shows the result of the statistically significant test on the responses of male and female principals on the impact teachers' induction programs have on early career teachers in public secondary schools in Delta State. From the table, since the Z-cal value of 0.70 is less than the Z-crit. value of 1.96, there is a statistically significant difference between the opinion of both male and female principals on the impact teachers' induction programs have on early career teachers in public secondary schools in Delta State.

Hypothesis Two: There is no significant difference between the mean ratings of male and female principals on the challenges faced by early career teachers as a result of teachers' induction programs in public secondary schools in Delta State.

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Table 5: z-test results for principals on the challenges faced by early career teachers as a result of teachers' induction programs in public secondary schools in Delta State.

S/N	Gender	N	M	SD	df	z-cal	z-tab	Remark
28	Male	20	3.05	2.10	47	0.86	1.96	
29	Female	29	2.80	1.00				Fail to reject H_0

Table 5 shows the result of the statistically significant test on the responses of male and female principals on the challenges faced by early career teachers as a result of teachers' induction programs in public secondary schools in Delta State. From the table, since the Z-cal value of 0.86 is less than the Z-crit. value of 1.96, there is a statistically significant difference between the opinion of male and female principals on the challenges faced by early career teachers as a result of teachers' induction programs in public secondary schools in Delta State.

Hypothesis Three: There is no significant difference between the mean ratings of male and female principals on the ways to improve induction programs for early career teachers in public secondary schools in Delta State.

Table 6: z-test results on the ways to improve induction programs for early career teachers in public secondary schools in Delta State.

S/N	Gender	N	M	SD	df	z-cal	z-tab	Remark
30	Male	20	3.23	1.73	47	1.98	1.96	
31	Female	29	3.53	1.78				Fail to reject H_0

Table 6 shows the result of the statistically significant test on the responses of male and female principals on the ways to improve induction programs for early career teachers in public secondary schools in Delta State. From the table, since the Z-cal value of 1.98 is higher than the Z-crit. value of 1.96, there is no statistically significant difference between the opinion of male and female principals on the ways to improve induction programs for early career teachers in public secondary schools in Delta State.

Discussion of Findings

The study investigated the impact teachers' induction programs have on early career teachers in public secondary schools in Delta State. However, findings of the study showed that teachers' induction programs have impacts on early career teachers in public secondary schools in Delta State and there is a statistically significant difference between the opinion of both male and female principals on the impact teachers' induction programs have on early career teachers in public secondary schools in Delta State. The findings from this study are corroborated by Arnold (2011) who posited that a well-planned induction process for new employees introduces them to all procedural details and gives employees hands-on experience in using them. Findings from the study revealed that early career teachers are faced with challenges as a result of teachers' induction programs and there is a statistically significant difference between the opinion of male and female principals on the challenges faced by early career teachers as a result of teachers' induction programs in public secondary schools in Delta State. The findings from this study are in line with Lortie (2011) who agreed to the fact that the teaching profession has not had the kind of structured induction and initiation process common with many other white-collar jobs. Findings from the study revealed the ways to improve induction programs for early career teachers in public secondary schools in Delta State and that there is no statistically significant difference between the opinion of male and female principals on the ways to improve induction programs for early career teachers in public secondary schools in Delta State. In line with the findings, Ihekoronye et al., (2020) maintained that through providing tailored training, practical experiences, effective mentorship, ongoing support, resource allocation, collaborative learning and feedback mechanism, induction programs can be improved.

Conclusion

Based on the findings, the study concluded that the induction program is the umbrella that accommodates the early career teachers and initiates them into the teaching profession. The key aim of teacher induction processes is to provide support and professional learning experiences that will help ECTs to successfully transit to the profession and importantly prepare them for fulfilling the teaching career.

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Recommendations

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

1. Principals should provide inductions programs for early career teachers so as to welcome them into the teaching profession.
2. The government should also be involved in ensuring that early career teachers are provided adequate induction programs.

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Correlation Between Pre-Service Teachers' Perception and Academic Achievement in Geography among Colleges of Education in Northwest, Nigeria

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Abstract
This study investigates the Relationship between Pre-Service Teachers' Perception, Gender, and Academic Achievement in Geography at Colleges of Education in Northwest Nigeria. A correlational research design was adopted, with a population consisting of 1,057 NCE III pre-service Geography teachers from nine Colleges of Education. A multistage sampling technique was used, four colleges and 285 participants were selected for the study. Data were collected through two instruments: a researcher-developed perception questionnaire and an academic achievement proforma. Both instruments demonstrated acceptable face, content, and construct validity, with a Cronbach's alpha reliability coefficient of 0.86. Data were analyzed using Pearson's Product–Moment Correlation Coefficient and simple linear regression to test the stated hypotheses. The findings revealed a weak but positive relationship between perception and academic achievement among pre-service Geography teachers in the selected Colleges of Education. The study concluded that perception serves as a predictor of academic achievement among pre-service Geography teachers. It recommends that there is a need for Geography lecturers and curriculum planners to design learning experiences that enhance students' perception, relevance, and perceived value of Geography.
***Keywords**: Pre-service teachers, Perception, Gender, academic achievement.*

Introduction
Colleges of Education in Nigeria are tertiary institutions that offer three- to four-year programmes designed to train students as teachers for the country's nine-year basic education system (NCCE, 2020). These institutions award the Nigerian Certificate in Education (NCE), which is the minimum qualification for teaching at the basic education level in Nigeria. Colleges of Education play a vital role in preparing pre-service teachers across various subjects, including Geography (Olayiwola, Idowu, & Kudirat, 2015). Perception is the process of interpreting experiences based on prior knowledge, plays a crucial role in academic achievement (Mukesh & Sarita, 2015). Pre-service Geography teachers' perceptions of the subject can significantly influence their educational success. For instance, Pokhrel and Chhetri (2024) found that students held positive perceptions toward learning Geography, while Yentür (2023) reported a positive relationship between Geography teachers' perceptions and their teaching attitudes, with female teachers demonstrating more favorable attitudes than males. Similarly, Edward and Jim (2023) confirmed a link between students' perceptions and academic achievement. Gruman, Schneider, and Coutts (2016) demonstrated that positive perceptions enhance academic performance, whereas negative perceptions hinder it. However, Atkins (2018) found no significant correlation between perceptions and the performance of high and low achievers, while Rendhi (2021) observed a positive correlation between perceptions and academic success. Further studies have revealed mixed findings for instance Kwame et al. (2020) reported negative perceptions among Geography students, contrasting with earlier evidence of positive attitudes toward the subject. Okafor and Alex (2018) found that gender significantly influences students' perceptions of Geography in higher education. Ahmed, Taha, Al-Neel, and Gaffar (2018) observed that higher-achieving students held more positive perceptions of their education, while lower achievers exhibited negative views. Mukesh and Sarita (2015) also demonstrated that students' perceptions affect their academic outcomes. Likouri, Klonari, and Flouris (2017) found that high-performing Geography students held more favorable perceptions, with no gender differences observed. Muhammed (2010) similarly indicated positive perceptions of Geography among students. Collectively, these findings suggest that positive perceptions tend to enhance performance, while negative perceptions may impede it. Gender also plays a role in shaping students' perceptions of Geography. Ifegbesan and Azeez (2022) found a positive relationship between gender and perception, while Abdullahi and Ahmed (2019) reported no significant gender differences. Okafor and Alex (2018) indicated that gender influences

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students' views on Geography, whereas Fekumo and Omeka (2022) found no significant contribution of gender to students' perceptions. These mixed findings suggest that the influence of gender on perception may vary across contexts and populations. A review of the literature reveals divergent findings on the relationship between students' perceptions and academic achievement. Both positive and negative outcomes have been reported, underscoring the need for further investigation. Against this background, the present study seeks to examine the relationships among pre-service Geography teachers' perceptions, gender, and academic achievement in Colleges of Education across Northwest Nigeria.

Statement of the Problem

Geography education equips students with the knowledge and skills to understand the natural world and human environment interactions. Despite its significance, there is growing concern over the low academic achievement of pre-service teachers in Geography within Nigeria's Colleges of Education. Research suggests that perception and gender may significantly influence academic achievement (Mgbomo et al., 2024; Yousuf & Nur, 2023; Mukesh & Sarita, 2015). Pre-service Geography teachers in Northwest Nigerian colleges face challenges stemming from negative perceptions and gender disparities. Studies by Atanu et al. (2019) and Salisu (2018) have documented low academic performance among these students, attributing it to factors such as perceptions and attitudes. However, research findings remain inconsistent: some studies emphasize the influence of these factors, while others report no significant impact (Mamah et al., 2023; Rendhi, 2021). Globally, studies on students' perceptions of Geography indicate that perception and gender significantly influence academic achievement. Mgbomo, Joseph, and Agwu (2024) highlighted the impact of gender on academic performance, while Yousuf and Nur (2023) confirmed gender's influence. Conversely, Mamah et al. (2023) found no gender effect on achievement but reported that grit strongly predicts success in science subjects. This study aims to bridge the existing gap by examining the relationships among pre-service Geography teachers' perceptions, gender, and academic achievement in Colleges of Education in Northwest Nigeria, an area that has not been previously investigated. To the best of the researcher's knowledge, no similar study has been conducted in this context, which justifies the focus of the present research.

Objectives of the Study

The main objectives of this study are to:

1. Find out the relationship between Pre-service teachers' perceptions and academic achievement in Geography among colleges of education students in Northwest Nigeria
2. Ascertain the gender difference in the relationship between Pre-service teachers' perceptions and academic achievement in Geography among colleges of education students in Northwest Nigeria.

Research Questions

This study answers the following research questions:

1. What is the relationship between Pre-service teachers' perceptions and academic achievement in Geography among colleges of education in Northwest Nigeria?
2. What is the difference in the relationship between male and female Pre-service teachers' perceptions and academic achievement in Geography among colleges of education in Northwest Nigeria?

Research Hypotheses

Based on the stated research questions, the following null hypotheses were formulated.

H_{o1}: There is no significance relationship between Pre-service teachers' perceptions and academic achievement in Geography among Colleges of Education in North-West Nigeria.

H_{o2}: There is no significance difference in the relationship between male and female Pre-service teachers' perceptions and academic achievement among colleges of education in Northwest Nigeria.

Methodology

This study employed a correlational research design to examine relationships among pre-service Geography teachers' perceptions, gender, and academic achievement in Colleges of Education across Northwest Nigeria. This design was appropriate for exploring associations among naturally occurring variables without manipulation. The population comprised 1,057 NCE III pre-service Geography teachers from nine Colleges of Education. Using Cohen, Manion, and Morrison's sample size determination criteria, 285 participants were selected at a 95% confidence level and a 5% margin of error through multistage sampling technique. First, four colleges were randomly selected and Proportionate sampling

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was then used to allocate participants according to institutional size and gender distribution, followed by simple random sampling to select individual respondents. Data were collected using two instruments: a researcher-developed perception questionnaire assessing perceived difficulty, relevance, and usefulness of Geography, rated on a five-point Likert scale; and a proforma for academic achievement, summarizing cumulative examination scores from NCE Levels I and II. The instruments demonstrated acceptable face, content, and construct validity, with a Cronbach's alpha reliability coefficient of 0.86. Data were analysed using Pearson's Product–Moment Correlation Coefficient and simple linear regression to test hypotheses, including gender-based analyses. Assumptions of linearity, normality, independence, and homoscedasticity were confirmed prior to analysis.

Presentation of Results

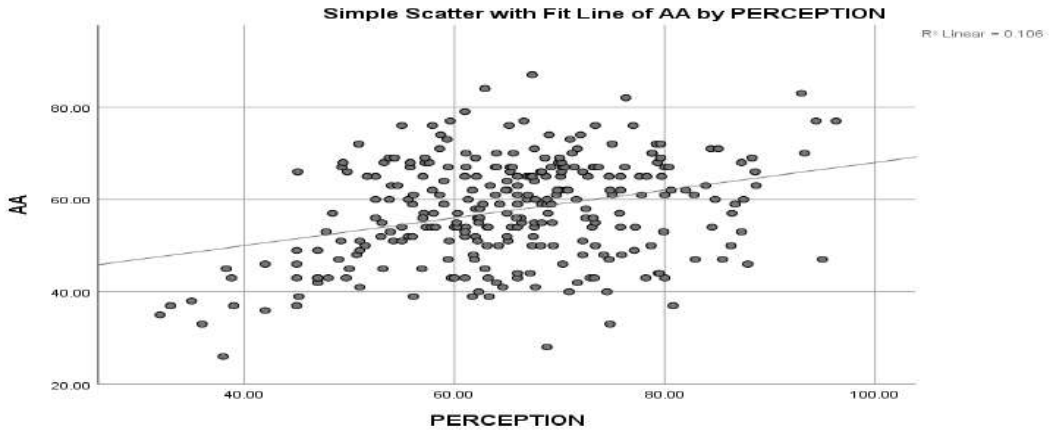
Research Question One:

What is the relationship between Pre-service teachers' perceptions and academic achievement in Geography among Colleges of education in Northwest Nigeria?

Table 1: Pearson's (r), Mean and SD showing the relationship between Pre-service teachers' Perceptions and Academic Achievement in Geography

Variables	N	Mean	SD	R	Remark
Perception	285	65.40	11.96		
				0.325	Weak positive relationship
Academic Achievement	285	57.64	11.05		

Table 1 presents the mean, standard deviation, and Pearson Product–Moment Correlation Coefficient (r) showing the relationship between pre-service teachers' perceptions and academic achievement in Geography. The results indicate that pre-service teachers recorded a mean perception score of 65.40 with a standard deviation of 11.96, while a mean academic achievement score of 57.64 with a standard deviation of 11.05 was obtained. The Pearson correlation analysis revealed a weak positive relationship between pre-service teachers' perceptions and academic achievement in Geography at Colleges of Education in Northwest Nigeria (r = 0.325). This weak relationship suggests that academic achievement is influenced by several factors beyond perception alone. This finding is further supported with a scatter plot, which illustrates the nature of the relationship between the perception and academic achievement. The scatter plot is presented in Figure 1.



Key: AA Academic Achievement

Figure 1: ***Scatter plot showing the relationship between pre-service Geography teachers' perceptions and academic achievement in Colleges of Education across Northwest Nigeria***

Figure 1 present the simple scatter plot illustrates the relationship between pre-service Geography teachers' perceptions and their academic achievement at Colleges of Education in Northwest Nigeria. The graph reveals a positive linear relationship, indicating that perception serves as a predictor of academic achievement. The coefficient of determination (R^2=0.106) shows that approximately 10.6% of the variation in academic achievement can be explained by pre-service teachers' perceptions of Geography.

Research Hypothesis One:

There is no significant relationship between perceptions of Pre-service teachers and academic achievement in Geography among Colleges of Education in Northwest Nigeria.

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Table 2: Model summary of the simple linear regression analysis between pre-service teachers' perceptions and academic achievement in Geography

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.325[a]	.106	.100	10.44836

a. Predictors: (Constant), PERCEPTION

Table 2 presents the model summary of the simple linear regression analysis examining the relationship between pre-service geography teachers' perceptions and academic achievement in Northwest Nigeria. The correlation coefficient (R = 0.325) suggests that perception has a weak positive linear relationship with academic achievement. The coefficient of determination ($R^2 = 0.106$) shows that perception accounts for 10.6% of the variance in academic achievement among pre-service geography teachers. The regression coefficient is presented in Table 3.

Table 3: Regression coefficients showing the predictive relationship between pre-service teachers' perceptions and academic achievement in Geography

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	38.249	3.449		11.091	0.000
	PERCEPTION	.296	.052	0.325	5.698	0.000

a. Dependent Variable: Academic achievement

table 3 presents the regression coefficients showing the relationship between pre-service teachers' perceptions and academic achievement in Geography at Colleges of Education in Northwest Nigeria. The results reveal that the p-value is less than the level of significance ($p < 0.05$); therefore, the null hypothesis is rejected. This indicates that there is a statistically significant relationship between pre-service teachers' perceptions and their academic achievement in Geography at Colleges of Education in Northwest Nigeria. The analysis further shows that pre-service geography teachers' perception is a significant predictor of academic achievement. The unstandardized regression coefficient (B = 0.296) indicates that a one-unit increase in perception score results in an increase of 0.296 units in academic achievement. The positive standardized beta coefficient suggests that higher levels of perception are associated with higher academic achievement among pre-service geography teachers. Based on the regression analysis, the model is expressed as follows: AA = 38.249 + 0.296 (Perception).

Research question two:

What is the relationship between male and female Pre-service teachers' Perceptions and academic achievement in Geography among Colleges of Education in Northwest Nigeria?

Table 4: Pearson correlation showing the relationship between perception and academic achievement among male and female pre-service Geography teachers

Gender	Variables	N	Mean	SD	r	Remark
Male	Perception	238	65.80	11.76	0.296	Weak Positive Relationship
	AA	238	57.67	11.02		
Female	Perception	47	63.15	12.86	0.459	Moderate Positive Relationship
	AA	47	57.10	11.08		

Table 4 presents the mean, standard deviation, and Pearson Product–Moment Correlation Coefficient (r) showing the relationship between Male and Female pre-service teachers' perceptions and academic achievement in Geography. The results indicate that male pre-service teachers recorded a mean perception score of 65.80 with a standard deviation of 11.76, while a mean academic achievement score of 57.67 with a standard deviation of 11.02 was obtained. The Pearson correlation analysis revealed a weak positive relationship between male pre-service teachers' perceptions and academic achievement in Geography at Colleges of Education in Northwest Nigeria (r = 0.296). This weak relationship suggests that academic achievement is influenced by several factors beyond perception alone. The results also indicate that female pre-service teachers recorded a mean perception score of 63.15 with a standard deviation of 12.86, while a mean academic achievement score of 57.10 with a standard deviation of 11.08 was obtained. The Pearson correlation analysis revealed a moderate positive relationship between female pre-service teachers' perceptions and academic achievement in Geography at Colleges of Education in Northwest Nigeria (r = 0.459). The difference in the relationship between pre-service teacher'

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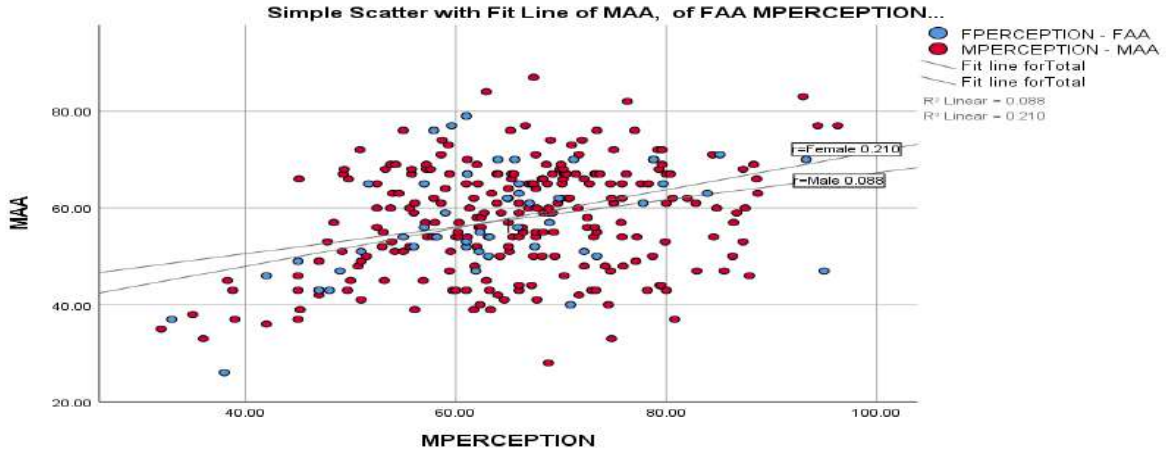
perception and academic achievement is 0.016 in favour of the female. This finding is further supported by the scatter plot, which illustrates the nature of the relationship between Male and Female pre-service teachers' perceptions and academic achievement. The scatter plot is presented in Figure 2.



Key: MAA Male Academic Achievement, FAA female Academic Achievement

Figure 2: *Scatter plots showing the relationship between perception and academic achievement among male and female pre-service Geography teachers.*

Figure 2 illustrate the scatter plots showing the relationship between male and female pre-service Geography teachers' perception and academic achievement. For males, the plots indicate a positive linear relationship, with the coefficient of determination (R^2=0.088) showing that perception accounts for approximately 8.8% of the variance in academic achievement. Similarly, the scatter plots for females reveal a positive linear pattern, with an R^2 value of 0.210, indicating that perception explains about 21.0% of the variance in academic achievement. These findings suggest that perception is a stronger predictor of achievement among female students than males.

Research Hypothesis two:

There is no significance difference in the relationship between male and female Pre-service Geography teachers' Perceptions and academic achievement among Colleges of Education in Northwest Nigeria.

Table 5: Model Summary of Gender, Perception, and Academic Achievement

Gender	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Male	1	.296[a]	0.088	0.084	10.58773
Female	1	.459[a]	0.210	0.193	9.96345

Table 5 presents the model summary of the simple linear regression analysis examine the relationship between male and female pre-service geography teachers' perceptions and academic achievement in Northwest Nigeria. The correlation coefficient of male (R = 0.296) suggests that perception has a weak positive linear relationship with academic achievement among male. The coefficient of determination (R^2 = 0.88) shows that perception accounts for 8.8% of the variance in academic achievement among male pre-service geography teachers. The correlation coefficient of female (R = 0.459) suggests that perception has a moderate positive linear relationship with academic achievement among female. The coefficient of determination (R^2 = 0.210) shows that perception accounts for 21.0% of the variance in academic achievement among female pre-service geography teachers. The difference in the variation of male and female pre-service geography teachers' academic achievement as predicted by perception is 12.2% in favour of female pre-service geography teachers'. Therefore, gender moderated 12.2% of the variation in pre-service geography teachers' academic achievement in favour of the female than their male counterparts. The regression coefficient is presented in Table 6.

Table 6: Regression Coefficients of Gender, Perception, and Academic Achievement

Model	Unstandardized Coefficients	Standardized Coefficients	T	Sig.

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Gender			B	Std. Error	Beta		
Male	1	(Constant)	39.417	3.912		10.075	0.000
		PERCEPTION	0.278	0.058	0.296	4.759	0.000
Female	1	(Constant)	32.141	7.358		4.368	0.000
		FPERCEPTION	0.395	0.114	0.459	3.461	0.001

Table 6 presents the regression coefficients showing the relationship between male and female pre-service teachers' perceptions and academic achievement in Geography at Colleges of Education in Northwest Nigeria. The results reveal that the p-value for male is less than the level of significance ($p < 0.05$); therefore, the null hypothesis is rejected. This indicates that there is a statistically significant relationship between male pre-service teachers' perceptions and their academic achievement. The unstandardized regression coefficient (B = 0.278) indicates that a one-unit increase in perception score results in an increase of 0.278 units in academic achievement. The positive standardized beta coefficient suggests that higher levels of perception are associated with higher academic achievement among male pre-service geography teachers. Based on the regression analysis, the model is expressed as follows: AA = 39.417 + 0.273 (Perception). The results also reveal that the p-value for female is less than the level of significance ($p < 0.05$); therefore, the null hypothesis is rejected. This indicates that there is a statistically significant relationship between female pre-service teachers' perceptions and their academic achievement. The unstandardized regression coefficient (B = 0.395) indicates that a one-unit increase in perception score results in an increase of 0.395 units in academic achievement. The positive standardized beta coefficient suggests that higher levels of perception are associated with higher academic achievement among female pre-service geography teachers. Based on the regression analysis, the model is expressed as follows: AA= 32.141 + 0.395 (Perception). The regression coefficients reveal meaningful gender differences in how perception predicts academic achievement; perception significantly predicts performance for both groups, but it predictive strength is moderate for females and only weak for males.

Discussion of the findings

The finding from research question one shows a weak positive relationship between pre-service Geography teachers' perceptions and their academic achievement, indicating that students with more favorable attitudes toward Geography tend to perform better academically. This agrees with previous research (Edward & Jim, 2023; Rendhi, 2021; Ahmed et al., 2018; Yasar et al., 2018; Supreet & Meenu, 2018), which consistently emphasizes that learners' positive perceptions enhance motivation and lead to improved outcomes. These findings also align with Bandura's (1997) social cognitive theory, which suggests that learners' beliefs and attitudes influence their effort, engagement, and academic success. However, they differ from Atkins' (2018) report of no significant relationship between students' perceptions and performance. The finding from research question two revealed a weak positive relationship between perception and achievement among males and a moderate positive relationship among females. Regression analysis showed that perception significantly predicted achievement for both genders, with stronger effects for females. This result corroborates earlier findings (Okafor & Alex, 2018; Al-Balushi et al., 2022; Wrigley-Asante et al., 2023; Ifegbesan & Azeez, 2022), which highlight gender as a factor shaping perceptions and academic outcomes. Conversely, studies by Abdullahi and Ahmed (2019) and Fekumo and Omeka (2022) found no significant gender influence, suggesting that contextual factors such as institutional environment and learning culture may moderate gender effects.

Conclusions

This study investigated how perception and gender predict academic achievement among pre-service Geography teachers, focusing on gender-based differences in these relationships. The findings revealed a weak but positive relationship between perception and academic achievement among pre-service Geography teachers in Colleges of Education across Northwest Nigeria. Additionally, perception significantly predicted achievement for both male and female students, with a stronger effect observed among females. The study concludes that perceptions predict academic achievement among pre-service Geography teachers in Colleges of Education across Northwest Nigeria.

Recommendations

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

1. There is a need for Geography lecturers and curriculum planners to design learning experiences that enhance students' interest, relevance, and perceived value of Geography.

2. There is a need for Geography lecturers to promote interactive and gender-inclusive instructional strategies may strengthen students' engagement and academic performance.

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Impact of Artificial Intelligence Tools on Sentiment, Language Use and Cultural Interpretation among Secondary School Science Students in Makurdi, Benue State, Nigeria

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Abstract
This research investigated the impact of AI-mediated online science education discourse on students' sentiment, language use, and cultural interpretation in Makurdi Local Government Area of Benue State using a descriptive survey design. Three research questions and three hypotheses guided the study. The population of the study consisted of 1,840 senior secondary science students in the study area. The sample comprised of 134 male students and 116 female students totaling 250 students drawn through stratified random sampling technique. A structured five-point scale questionnaire titled AI-Mediated Discourse Impact Questionnaire (AMDIQ) which yielded a reliability coefficient of 0.88 through Cronbach's alpha, was used to collect data from respondents. Data obtained were analyzed using mean and standard deviation to answer the research questions while chi-square test was used to test the hypotheses at 0.05 level of significance. The findings revealed that AI-mediated online science education discourse significantly impacted students' sentiment, significantly influenced students' language use patterns in science education, and significantly affected students' cultural interpretation of scientific concepts. It was recommended among others that science educators should integrate AI-mediated discourse platforms that are culturally sensitive and promote positive sentiment in online learning environments. Educational technology developers should design AI systems that recognize and accommodate diverse linguistic patterns and cultural contexts in science education. The Ministry of Education should establish guidelines for implementing AI-mediated discourse tools that enhance rather than compromise students' cultural identity and scientific understanding.
Keywords: AI-Mediated, Students' Sentiment, Language Use, Cultural Interpretation and Online Science Education

Introduction
AI-mediated online science education discourse refers to the interaction, communication, and exchange of scientific ideas facilitated by artificial intelligence technologies in virtual learning environments (Okonkwo & Eze, 2023). This encompasses the use of AI-powered chatbots, intelligent tutoring systems, automated feedback mechanisms, natural language processing tools, and machine learning algorithms that mediate discussions, explanations, and collaborative learning activities in online science education. According to Adebayo (2022), AI-mediated discourse represents a paradigm shift from traditional teacher-student interaction to a technologically enhanced communicative ecosystem where artificial intelligence serves as facilitator, moderator, and sometimes instructor in the learning process. However, what Adebayo's characterization as a "paradigm shift" fails to adequately address is the fundamental power asymmetry inherent in this transformation unlike traditional teacher-student dynamics where cultural negotiation and contextual adaptation occur organically through human empathy and shared social understanding, AI systems operate through predetermined algorithms that often embed Western epistemological frameworks as universal standards. This suggests that the shift is not merely technological but fundamentally epistemological, raising critical questions about whose knowledge systems are privileged in these AI-mediated spaces and what forms of scientific understanding are systematically marginalized or rendered invisible. The integration of AI in online science education has become increasingly prevalent, particularly following the global shift toward digital learning prompted by the COVID-19 pandemic. Igwe and Nnamani (2021) posited that AI-mediated platforms offer unprecedented opportunities for personalized learning, immediate feedback, round-the-clock availability, and scalable educational interventions that can reach students across geographical boundaries. While these technological affordances appear promising on the surface, it is essential to interrogate the assumption that "personalization" and "scalability" are inherently beneficial when divorced from cultural context. The very notion of personalization in AI systems often means algorithmic adaptation to individual learning patterns based on data-driven models that were developed and validated in predominantly Western educational settings. This raises a critical paradox:

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how can a system claim to personalize learning when its foundational architecture is built upon culturally specific assumptions about what constitutes effective pedagogy, appropriate assessment, and valid knowledge? Furthermore, Igwe and Nnamani's emphasis on "scalability" reflects a techno-solutionist ideology that privileges efficiency and reach over depth of cultural responsiveness—a concerning trend when considering that Nigerian students bring diverse linguistic repertoires, indigenous epistemologies, and culturally-embedded ways of knowing that require nuanced, context-sensitive mediation rather than standardized algorithmic responses. Thus, these technological affordances come with complex, and often contradictory, implications for how students experience, interpret, and engage with scientific knowledge in culturally diverse contexts like Nigeria. Student sentiment in the context of AI-mediated learning refers to the emotional dispositions, attitudes, and affective responses that learners develop toward science content, the learning process, and the AI systems themselves (Chukwu, 2020). Sentiment encompasses feelings of confidence, anxiety, engagement, frustration, curiosity, or alienation that emerge during interactions with AI-mediated educational platforms. Research suggests that student sentiment significantly influences learning outcomes, with positive sentiment correlating with higher engagement, persistence, and achievement, while negative sentiment can lead to disengagement and poor performance (Okoli & Mbah, 2019). What remains underexplored in both Chukwu's and Okoli and Mbah's frameworks, however, is the cultural specificity of sentiment formation itself. The assumption that sentiment can be measured and interpreted using universal affective categories overlooks the reality that emotional responses to learning are culturally constructed and contextually situated. For Nigerian students, negative sentiment toward AI-mediated learning may not merely reflect individual psychological states but could signify a deeper cultural dissonance a sense that the AI system neither recognizes nor values their ways of knowing, communicating, or being. This cultural dimension of sentiment formation is particularly salient when considering that AI systems often lack the cultural competence to interpret non-verbal cues, context-dependent communication, and culturally specific expressions of confusion, interest, or disagreement. The nature of AI-mediated discourse, including its responsiveness, cultural appropriateness, and perceived authenticity, plays a critical role in shaping these emotional dimensions of learning, yet current measurement frameworks tend to reduce these complex sociocultural phenomena to decontextualized affective states.

Language use in AI-mediated science education encompasses both the linguistic patterns students employ when interacting with AI systems and the language characteristics of AI-generated responses (Ejiofor, 2021). This includes vocabulary choices, sentence complexity, use of scientific terminology, code-switching between English and indigenous languages, formality levels, and communication strategies. According to Ugwu and Okeke (2020), AI systems trained predominantly on Western English-language datasets may not adequately recognize or respond to the linguistic diversity characteristic of Nigerian students, who often engage in multilingual practices, employ local idioms, and construct scientific explanations through culturally-grounded linguistic frameworks. While Ugwu and Okeke identify this linguistic mismatch as creating "barriers to effective communication and knowledge construction," their analysis stops short of interrogating the deeper ideological implications of this phenomenon. The issue extends beyond technical recognition problems to encompass a form of linguistic imperialism embedded in AI architecture. When Nigerian students code-switch between English, Tiv, Idoma, Igede or other indigenous languages a natural multilingual practice that reflects their cognitive flexibility and cultural identity AI systems trained on monolingual English datasets effectively punish this linguistic richness through non-recognition, misinterpretation, or demands for linguistic conformity. This creates a coercive linguistic environment where students must choose between authentic self-expression and system intelligibility, between their cultural-linguistic identity and algorithmic validation. Moreover, Ejiofor's focus on "linguistic patterns" risks reducing language to mere technical features while ignoring that language carries worldviews, epistemologies, and ways of reasoning about natural phenomena. When students are forced to suppress code-switching or abandon indigenous metaphors for scientific explanation, they are not simply adapting their communication style they are being systematically alienated from culturally-embedded modes of scientific thinking. This linguistic mismatch thus represents not merely a communication barrier but a mechanism of epistemological violence that marginalizes indigenous knowledge systems and validates only those forms of expression deemed "correct" by Western-trained algorithms. Cultural interpretation of scientific concepts refers to the process by which students make sense of scientific knowledge through the lens of their cultural backgrounds, indigenous knowledge systems, worldviews, and lived experiences (Musa & Ibrahim, 2022). Science, despite its claims to universality, is often taught and mediated through cultural frameworks that may align with or contradict students' existing

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understandings. In the Nigerian context, students bring rich indigenous knowledge about natural phenomena, health practices, agricultural systems, and environmental relationships that may complement, challenge, or be dismissed by formal scientific education. When AI systems mediate this knowledge construction process, questions arise about whose cultural perspectives are embedded in the algorithms, what forms of knowledge are validated or marginalized, and how students negotiate between scientific explanations and their cultural worldviews (Adekunle, 2019). Musa and Ibrahim's framing of cultural interpretation as a neutral "process" obscures the inherently political nature of knowledge validation in AI-mediated environments. The critical issue is not simply whether students' indigenous knowledge "complements, challenges, or is dismissed" by formal science, but rather how AI systems function as gatekeepers that determine which forms of knowledge count as legitimate scientific understanding. For instance, when a Nigerian student explains plant growth by integrating Western biochemical concepts with indigenous ecological wisdom about seasonal patterns and ancestral agricultural practices, an AI system trained exclusively on Western scientific discourse may flag this hybrid explanation as incorrect, confused, or irrelevant. This algorithmic adjudication of knowledge validity represents a form of epistemic injustice that systematically devalues non-Western knowledge systems. Furthermore, Adekunle's questions about "whose cultural perspectives are embedded in algorithms" point to a more troubling reality: AI systems do not merely reflect neutral scientific facts but encode specific cultural assumptions about what science is, how it should be communicated, and what counts as valid evidence. The algorithms embody Western Enlightenment values of objectivity, reductionism, and mechanistic explanation while marginalizing holistic, relational, and spiritually-informed ways of understanding natural phenomena that characterize many African epistemologies. This creates a coercive epistemic environment where Nigerian students must either assimilate to Western scientific frameworks or face systematic invalidation of their cultural ways of knowing, a choice that amounts to intellectual colonization rather than genuine education.

Research evidence suggests that AI-mediated educational technologies are not culturally neutral but carry implicit biases, assumptions, and perspectives from their developers and training data (Oladele & Akinyemi, 2021). When students from diverse cultural backgrounds interact with AI systems designed primarily for Western educational contexts, several issues emerge including cultural insensitivity in examples and explanations, failure to recognize indigenous knowledge contributions, communication styles that feel impersonal or inappropriate, and pedagogical approaches that conflict with local educational values. While Oladele and Akinyemi correctly identify that AI systems "are not culturally neutral," their enumeration of "issues" risks normalizing these problems as mere implementation challenges rather than recognizing them as symptoms of a fundamentally flawed paradigm. The deeper problem is not that AI systems occasionally exhibit "cultural insensitivity" or "fail to recognize indigenous knowledge"—these failures are not bugs but features of systems designed within and for Western epistemological frameworks. The training data that shapes AI behavior overwhelmingly represents Western cultural contexts, predominantly features English language interactions, and encodes assumptions about learner psychology, pedagogical effectiveness, and knowledge structure derived from Euro-American educational research. Consequently, when Nigerian students encounter these systems, they are not experiencing a culturally-neutral technology with minor localization issues but rather a fundamentally Western artifact that was never designed to recognize, validate, or respond appropriately to their cultural reality. The "impersonal or inappropriate" communication styles that Oladele and Akinyemi mention reflect deeper cultural disconnects around concepts of respect, authority, communal learning, and the social nature of knowledge construction all of which are embedded in how AI systems structure interactions. These cultural disconnects do not merely "affect students' sentiment toward learning, constrain their natural language use, and complicate their interpretation of scientific concepts"; rather, they constitute a form of technological colonialism that systematically privileges Western ways of knowing while erasing African epistemological traditions. The result is an educational environment where Nigerian students must continuously negotiate between their authentic cultural identities and the demands of algorithmic systems that were designed with little regard for their existence, let alone their flourishing. In Makurdi Local Government Area of Benue State, the adoption of online science education platforms, many incorporating AI-mediated discourse features, has accelerated in recent years. However, little empirical research has examined how these AI-mediated interactions affect students' emotional engagement with science, shape their linguistic practices in scientific discourse, or influence their cultural interpretation of scientific knowledge. This research gap is particularly troubling given that the uncritical adoption of AI-mediated learning technologies in African contexts risks replicating colonial patterns of

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knowledge imposition, where externally-developed educational tools are deployed without adequate consideration of local epistemologies, linguistic practices, or cultural values. The assumption that technologies developed for Western educational markets can be seamlessly transplanted to Nigerian contexts reflects a form of technological determinism that positions AI as a neutral, universal tool rather than recognizing it as a culturally-embedded artifact that mediates knowledge in culturally-specific ways. Understanding these impacts is thus not merely an academic exercise but a matter of educational justice it is crucial for developing culturally responsive AI-mediated learning environments that enhance rather than hinder science education outcomes for Nigerian students, and more fundamentally, for ensuring that the integration of AI in African education serves to empower rather than further marginalize local knowledge systems, linguistic practices, and cultural identities. This study therefore investigates the impact of AI-mediated online science education discourse on students' sentiment, language use, and cultural interpretation in Makurdi Local Government Area of Benue State, with the explicit aim of foregrounding Nigerian students' experiences and perspectives in conversations about educational technology that have too often centered Western contexts and concerns.

Statement of the Problem

The rapid integration of AI-mediated platforms in online science education has transformed how students engage with scientific knowledge, yet the sociocultural and affective implications of this transformation remain inadequately understood, particularly in Nigerian educational contexts. Observations in Makurdi Local Government Area reveal that while many schools have adopted online learning platforms with AI-enabled features such as automated tutoring, chatbots, and intelligent feedback systems, there is limited awareness of how these technologies shape students' emotional experiences, linguistic behaviors, and cultural meaning-making processes. Preliminary reports suggest that some student's express feelings of disconnection and frustration when interacting with AI systems that fail to understand their communication styles or cultural references, while others appear to modify their natural language use to conform to what they perceive as AI-acceptable discourse patterns. Furthermore, there are concerns that AI-mediated science education, often developed in Western contexts, may inadvertently promote cultural perspectives that conflict with or devalue students' indigenous knowledge systems and local ways of understanding natural phenomena. The extent to which AI-mediated online science education discourse impacts students' sentiment, influences their language use patterns, and affects their cultural interpretation of scientific concepts remains largely unexplored in this context. Against this backdrop, this study investigates the impact of AI-mediated online science education discourse on students' sentiment, language use, and cultural interpretation in Makurdi Local Government Area of Benue State.

Research Questions

The following research questions were put forward to guide this study:

1. What is the impact of AI-mediated online science education discourse on students' mean sentiment scores?
2. What impact does AI-mediated online science education discourse have on students' mean language use pattern ratings?
3. How does AI-mediated online science education discourse affect students' mean cultural interpretation scores?

Hypotheses

These hypotheses were raised and tested at 0.05 level of significance in this study:

1. AI-mediated online science education discourse has no significant impact on students' mean sentiment scores.
2. AI-mediated online science education discourse has no significant impact on students' mean language use pattern scores.
3. AI-mediated online science education discourse has no significant impact on students' mean cultural interpretation scores.

Methodology

This research employed the descriptive survey research design. The population for the study consisted of all senior secondary science students in Makurdi Local Government Area who had experienced AI-mediated online science education, which comprised 1,840 students in the study area. The sample comprised 134 male students and 116 female students totaling 250 students drawn through stratified random sampling technique from ten selected schools. The instrument used for data collection in this study was a structured AI-Mediated Discourse Impact Questionnaire (AMDIQ) for senior secondary science students. The instrument was validated with the help of three lecturers in the Department of Curriculum and Teaching and one expert in Educational Technology, who examined the content and structure of the questionnaire. The validated instrument gave a reliability coefficient of 0.88 through Cronbach's alpha. The instrument was

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divided into two sections (A and B). Section A contained the demographic data, and section B contained 18 items on AI-mediated discourse impact covering sentiment (6 items), language use (6 items), and cultural interpretation (6 items). The researchers used five research assistants in the administration of the questionnaire to the subjects. Mean scores and standard deviation were used to answer the research questions. The chi-square statistic was used to test the hypotheses at 0.05 level of significance. A cut-off mean of 3.00 was established, so that any mean from 3.00 and above is regarded as having significant impact while mean below 3.00 is regarded as having no significant impact. As regards hypotheses testing, if the chi-square statistic value is high at $p<0.05$ which is the significant level for the study, the hypothesis is rejected implying significant impact; otherwise, it is not rejected.

Presentation of Results

Research Question 1

What is the impact of AI-mediated online science education discourse on students' sentiment?

Table 1: Mean scores and standard deviation of AI-mediated discourse impact on students' sentiment

Item	Mean	SD
AI-mediated interactions make me feel more confident in science	3.42	0.96
I feel engaged when learning science through AI platforms	3.58	0.89
AI discourse makes science learning less intimidating	3.31	1.02
I feel frustrated when AI does not understand my questions	3.67	0.94
AI-mediated learning makes me feel isolated from classmates	3.24	1.08
I enjoy the immediate feedback from AI systems in science	3.71	0.87
Grand Mean	**3.49**	**0.96**

Table 1 presents the impact of AI-mediated online science education discourse on students' sentiment. From the table, the grand mean is 3.49. This mean score is more than the cut-off mean which is 3.00 following the decision rule suggested to be adopted earlier, this indicates that AI-mediated online science education discourse has high impact on students' sentiment.

Research Question 2

What impact does AI-mediated online science education discourse have on students' language use patterns?

Table 2: Mean scores and standard deviation on AI-mediated discourse impact on students' language use

Item	Mean	SD
I modify my language to make AI systems understand me better	3.76	0.91
AI discourse encourages me to use more formal scientific terms	3.64	0.88
I avoid using local language expressions when interacting with AI	3.82	0.85
AI platforms help me improve my scientific vocabulary	3.55	0.93
I simplify my questions to get better AI responses	3.68	0.89
AI interaction limits my natural way of expressing ideas	3.38	1.01
Grand Mean	**3.64**	**0.91**

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Table 2 presents the impact of AI-mediated online science education discourse on students' language use patterns. From the table, the grand mean is 3.64. This mean score is higher than the cut-off mean which is 3.00, following the decision rule, this indicates that AI-mediated online science education discourse has high impact on students' language use patterns.

Research Question 3

How does AI-mediated online science education discourse affect students' cultural interpretation of scientific concepts?

Table 3: Mean scores and standard deviation on AI-mediated discourse impact on students' cultural interpretation

Item	Mean	SD
AI systems recognize my cultural perspective in science	2.87	1.12
I struggle to connect AI explanations with my cultural knowledge	3.51	0.97
AI discourse uses examples that are unfamiliar to my culture	3.72	0.89
AI learning makes me question my traditional understanding	3.46	1.04
I feel my indigenous knowledge is devalued by AI systems	3.29	1.08
AI platforms help me see science from different perspectives	3.58	0.94
Grand Mean	**3.41**	**1.01**

Table 3 presents the impact of AI-mediated online science education discourse on students' cultural interpretation of scientific concepts. From the table, the grand mean is 3.41. This mean score is higher than the cut-off mean which is 3.00, following the decision rule, this indicates that AI-mediated online science education discourse has high impact on students' cultural interpretation of scientific concepts.

Testing the Hypotheses

Hypothesis 1:

AI-mediated online science education discourse has no significant impact on students' sentiment.

Table 4: Chi-Square Test Results for Hypothesis 1

Test Statistic (χ^2)	df	p-value	Decision
527.891	20	0.000	Rejected

Table 4 presents chi-square test results for the impact of AI-mediated online science education discourse on students' sentiment. The table reveals that the chi-square (X^2) value is 527.891 with P = 0.000. Since P = 0.000 < 0.05, AI-mediated online science education discourse significantly impacts students' sentiment. The hypothesis that says AI-mediated online science education discourse has no significant impact on students' sentiment was therefore rejected.

Hypothesis 2:

AI-mediated online science education discourse has no significant impact on students' language use patterns.

Table 5: Chi-Square Test Results for Hypothesis 2

Test Statistic (χ^2)	df	p-value	Decision
614.732	20	< .001	Rejected

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Table 5 presents chi-square test results for the impact of AI-mediated online science education discourse on students' language use patterns. The table reveals that the chi-square (X^2) value is 614.732 with P = 0.000; since P = 0.000 < 0.05; where 0.05 is the level of significance for the study, this means that AI-mediated online science education discourse significantly influences students' language use patterns. The hypothesis which states that AI-mediated online science education discourse has no significant impact on students' language use patterns was rejected.

Hypothesis 3:

AI-mediated online science education discourse has no significant impact on students' cultural interpretation of scientific concepts.

Table 6: Chi-Square Test Results for Hypothesis 3

Test Statistic (χ^2)	df	p-value	Decision
468.256	20	< .001	Rejected

Table 6 presents chi-square test results for the impact of AI-mediated online science education discourse on students' cultural interpretation of scientific concepts. The table reveals that the chi-square (X^2) value is 468.256 with P = 0.000. Since P = 0.000 < 0.05, where 0.05 is the level of significance for the study, AI-mediated online science education discourse significantly affects students' cultural interpretation of scientific concepts. The hypothesis which states that AI-mediated online science education discourse has no significant impact on students' cultural interpretation of scientific concepts was rejected.

Discussion of Findings

The result that AI-mediated online science education discourse significantly impacts students' sentiment aligns with the findings of Okoli and Mbah (2019), who found that students' emotional responses to AI-mediated learning environments significantly influenced their engagement and persistence in science education. This finding is also consistent with Chukwu (2020), who established that the nature of AI interactions shapes students' affective dispositions toward science learning, with both positive sentiments such as confidence and engagement, and negative sentiments such as frustration and alienation being evident in AI-mediated contexts. The result that AI-mediated online science education discourse significantly influences students' language use patterns corroborates the study by Ejiofor (2021), who found that students adapt their linguistic practices when interacting with AI systems, often modifying vocabulary, sentence structure, and communication strategies to achieve better system responses. This finding is in agreement with Ugwu and Okeke (2020), who discovered that Nigerian students frequently suppress indigenous language expressions and code-switching behaviors when engaging with AI platforms, potentially constraining their natural modes of scientific reasoning and explanation.

The finding that AI-mediated online science education discourse significantly affects students' cultural interpretation of scientific concepts is in line with Musa and Ibrahim (2022), who found that AI systems often fail to recognize or validate indigenous knowledge perspectives, creating tensions between students' cultural worldviews and formal scientific explanations. This finding supports Oladele and Akinyemi (2021), who demonstrated that culturally embedded biases in AI educational technologies can marginalize local knowledge systems and complicate students' meaning-making processes in science education.

Conclusion

The study has found that AI-mediated online science education discourse has significant impact on students' sentiment, language use, and cultural interpretation in Makurdi Local Government Area of Benue State.

Recommendations

Based on these results, the researchers put forward the following recommendations:

1. Science educators should integrate AI-mediated discourse platforms that are culturally sensitive and promote positive sentiment in online learning environments, ensuring that these systems recognize and respond appropriately to diverse student backgrounds and emotional needs.

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2. Educational technology developers should design AI systems that recognize and accommodate diverse linguistic patterns including code-switching, indigenous language expressions, and culturally-grounded communication styles to avoid constraining students' natural language use in science discourse.
3. The Ministry of Education should establish guidelines and standards for implementing AI-mediated discourse tools in science education that enhance rather than compromise students' cultural identity, validate indigenous knowledge contributions, and support culturally responsive scientific understanding.

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Analysis of Item Parameters of the 2022 National Business Certificate Examination of Geography Multiple Choice Test Items in Katsina State, Nigeria

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Abstract
The study analyse Item Parameters of the 2022 National Business Certificate Examinations of Geography Multiple Choice Test items in Katsina State Nigeria. Five research questions guided the study. The researcher adopted survey research design for the study. The population of the study consists of one thousand, nine hundred and seventy-one students selected from six schools in Katsina state who offers Geography as a subject that will leads to the award of National Business Certificate (NBC). The sample size used for the study comprised of four hundred and Nineteen SSS III students drawn from the population using simple random sampling techniques. The instrument for the study was National Business Certificate (NBC) examination Geography multiple choice test items conducted in 2022. The instrument was re-validated by two experts, in Educational Measurement and Evaluation in the Department of Educational Psychology and Counseling, Federal University Dutsin-Ma. The reliability of NBCE Geography multiple choice test items was carried out using Kuder Richardson Formula-20 with reliability co-efficient of 0.796. Data obtained were subjected to statistical analysis using Scheuneman statistic. The findings revealed that the 2022 National Business Certificate (NBC) Examinations multiple choice Geography test items has high psychometric properties in terms of validity. The fit statistic of the multiple-choice Geography test items apart from item 18, 33, 46, 48 and 49 indicate that all the items are perfectly valid. Also, the 2022 National Business Certificate (NBC) Examinations multiple choice Geography test items has high reliability index estimated to be 0.796. Based on the findings, it was recommended that developed multiple choice Geography test items should be used by Geography teachers in assessment of students as the items are perfectly valid and reliable.
Keywords: Item Parameters, National Business Certificate Examination, Geography, Multiple Choice Test, Items

Introduction
Geography is one of the school subjects offered in secondary schools that require assessment. As a discipline, it was derived from two Greek words (GEO & GRAPHO). Geo means earth, while "grapho" means description. Thus, Geography is a description of the earth. Geography as a school subject is vital in providing a solid knowledge-base about the environment, while developing positive attitudes and hands-on skills in preserving the beauty of it. Akintade (2022) described Geography as a subject that endows students with vast knowledge for increased functionality and relevance in a fast-changing world, being a versatile, expressive and intellectually stimulating subject. The career opportunities from studying Geography are not limited to teaching and research alone. In recent times, Geography graduates have taken up job roles related to Town Planning, Meteorology, Journalism, Climate Change, Surveying, Consultancy, Environmental Advocacy and Engineering. The contents of the Geography curriculum at the senior secondary level provide foundational exposure to environmental concepts in these fields. In other words, the study of Geography at secondary schools exposes the students to environmental courses such as Urban and Regional Planning, Geology, Environmental Education and Environmental Sciences. According to Greiner, Cornea, et al (2022), the study of Geography avails students with opportunities to make career choices among Environmental science course in the higher education. Geography gives us important clues about the people and places that came before us. Much emphasis is placed on the teaching of Geography at the secondary school level because of its classification as a vocational subject in the National Policy on Education (FRN, 2013). So many strategies are used in the teaching and learning of Geography, some of these strategies as put by (Akut, 2023). Since geomorphology study landforms like valleys, mountains, weathering, mass wasting and things like that, fieldwork and demonstration technique as well as presentation or seminar would be beneficial techniques, demonstration and practical Geography teaching and provision of adequate text books to students. In addition to these strategies, seminar and workshops have been organizes by several bodies such as science Teachers' Association of Nigeria in the use of modern teaching Geography science at secondary school level of education (Yakubu, (2023). The geography is construct with number of options which consist of multiple

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choice to assess the academic performance of students'. Multiple choice tests are becoming more and more popular particularly in public examinations. Multiple choice tests are not only popular in external examinations; they also play a crucial role in assessment processes in the school system (Olutola, 2016). Multiple choice items consist of a stem and several alternative answers. In a test that has items formatted as multiple-choice questions, a candidate would be given a number of set answers for each question and the candidate must choose which answer or group of answers is correct (Kolawole, 2015). The *stem* is the opening a problem to be solved, a question asked, or an incomplete statement to be completed. The options are the possible answers that the examinee can choose from, with the correct answer called the *key* and the incorrect answers called *distractors*. Only one answer may be keyed as correct. This contrasts with multiple response items in which more than one answer may be keyed as correct. The multiple-choice test type is regarded as the most applicable, flexible and useful type of objective test items. It can be used to measure the level of achievement of all the kinds of objectives that are measured by paper and pencil test (Olutola, 2016). In a multiple choice the numbers of options help the students or testees to select a choice on the options given as the other incorrect options serve as distracters. The options are the possible answers that the examinee can choose from, with the correct answer called the key and the incorrect answers called distractors. Only one answer may be keyed as correct. On the desirable number of options for a multiple-choice test item reveal that options may be suitable for most ability and achievement tests. The options are the possible answers that the examinee can choose from, with the correct answer called the key and the incorrect answers called distractors. Only one answer may be keyed as correct. This contrasts with multiple response items in which more than one answer may be keyed as correct. The usefulness of multiple-choice tests (MCT) for achieving objectives of testing depends on its quality and properties (Olutola, 2011 & Olutola, 2015)

Multiple choice items consist of a stem and several alternative answers. The *stem* is the opening a problem to be solved, a question asked, or an incomplete statement to be completed. The options are the possible answers that the examinee can choose from, with the correct answer called the *key* and the incorrect answers called *distractors*. Only one answer may be keyed as correct. End of the term and end of semester examination or test constructed with multiple choice can involve examinations Examination is designed to meet the requirements of assessing intelligent quotient of an individual learner and was administered to determine whether students could advance from one class to another. Examination is also test of knowledge acquired, or generally a means of assessing Intellectual capacity or ability of an individual (Dunlosky, 2013). (NABTEB) is the one of the major examination bodies in Nigeria that have mandate to award Technical Certificate. NABTEB as examination bodies conducting NABTEB in various subjects, such as Geography, Mathematics, English Language, Biology, Economics. Psychometric properties of examination refers to certain attributes in a tests upon which an assessment of candidates is based. In this study, these properties or parameters include the difficulty index, the discrimination index, validity and reliability indices of test items. Test items used for examination should be fair to the examinees irrespective of the groups, management supervision, and class size. The concept of item parameters is central to Item Response Theory (IRT), a framework used in psychometrics and educational measurement to assess and model the relationship between latent traits (like ability or proficiency) and responses to test items. In IRT, each test item is characterized by a set of parameters that describe its difficulty, discrimination, and sometimes its guessing behavior. These parameters allow for more precise and individualized measurement of a respondent's abilities. The item difficulty parameter, often denoted as b, represents the level of ability required for a respondent to have a 50% chance of answering the item correctly (Embretson & Reise, 2020). Items with higher b-values are more difficult, while those with lower b-values are easier. The b-parameter is crucial because it allows Difficulty index tells us how easy the item was for the students in that particular group (Olutola, 2015). Item difficulty tries to estimate how easy or difficult is the item, the higher the value, the easier the item or lower the difficulty. These include, finding the difference in the proportion of high and low achieving students who score the item correctly. Therefore, it is necessary to know the psychometric properties of examination items constructed by these examination bodies to ascertain its effectiveness. Oshkosh (2022) stated that Item Analysis is probably the most important tool to increase test effectiveness, it is a scientific way of improving the quality of tests, and test items in an item bank. An item analysis provides three kinds of important information about the quality of test items. Item difficulty is a measure of whether an item was too easy or too difficult. In addition, Item discrimination is a measure of whether an item discriminated between candidates who knew the test well and candidates who did not. The item discrimination parameter, denoted as **a**, reflects how well an item differentiates between respondents who have low

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versus high ability levels. A higher value of **a** indicates that the item is better at distinguishing between individuals with different levels of the latent trait (Baker, 2020). Items with low discrimination are less effective in differentiating abilities. The ability of an item to discriminate between higher ability examinees and lower ability examinees is known as item discrimination.

Statement of the Problem

Geography is fundamental in exposing the students to nature and its beauty, and it is also indispensable for national economic development and growth. In a developing country such as Nigeria, performance of student in Geography which is bedrock of nation's sustainable development and growth should be given complete attention. The quality of test constructed to evaluate students' performance in NBC conducted by NABTEB determines the public acceptability and confidence of such examinations. In both the 2020 and 2021 NABTEB NBC examinations, the performance of students in technical subjects, including geography, show signs of decline. This was primarily attributed to the disruption caused by the COVID-19 pandemic, which affected school operations, teaching, and student preparation for examination (NABTEB, 2021). Again, the 2020 NABTEB NBC results indicated that only around 40% of students who sat for Geography examinations passed at credit level or above (NABTEB, 2020). Geography was one of the subjects where performance was considered below expectations, with many students struggling to meet the minimum pass mark (NABTEB, 2021). Furthermore, the NABTEB Chief Examiner's Report (2022) noted that students' performance in Geography generally was slightly poorer than those of previous years and the candidates did not perform as well in certain topics as in previous years. Students' trend of poor performance in Geography in NBC has also led to public lack of confidence in the examination body thereby decreasing the number of students' enrolment in NABTEB examinations, especially in Geography (Abanobi, 2023). It is probable that some technical weaknesses exist in the tests developed and administered by the NABTEB. Thus, it is necessary to examine the quality of the test items constructed by NABTEB.

However, many people have attributed the poor performance to teachers' laxity, poor parental guidance. Students' poor studying habit. The psychometric properties of the test items have not been investigated to determine whether it contributes to student's failure. Thus, this study intends to investigate whether the test items have the desired psychometric properties of the NABTEB Geography multiple choice test examination 2022 as regards students' poor performance. Therefore, the study sought to analysis the item parameters of multiples choice Geography test item of National Business Certificate Examination in Katsina States.

Objectives of the Study

The main objective of this study is to analyse the Item Parameters of the 2022 National Business Certificate Examinations of Geography Multiple Choice Test items in Katsina State*, Nigeria.* Specifically, the study sought to:

1. find out the validity of Multiple-Choice Geography test items of the 2022 National Business Certificate Examination in Katsina State in Nigeria,
2. determine the reliability of Multiple-Choice Geography items of the 2022 National Business Certificate (NBC) examinations in Katsina State.
3. Find out item difficulty index of Multiple-Choice Geography items of the 2022Business Certificate (NBC) examinations in Katsina State.
4. Examine the Discrimination power of Multiple-Choice Geography items of the 2022 National Business Certificate (NBC) examinations in Katsina State Nigeria.

Research Questions

In order to achieve the objectives of the study, the following research questions were answered to guide the study:

1. How valid is the 2022 National Business Certificate (NBC) Examinations multiple choice Geography test items in Katsina State Nigeria?
2. How reliable is the 2022 National Business Certificate (NBC) Examinations multiple choice Geography test items in Katsina State, Nigeria?
3. What is the item difficulty index of 2022 National Business Certificate (NBC) Examinations multiple choice Geography test items in Katsina State, Nigeria?
4. What is the discrimination power of the 2022 National Business Certificate (NBC) Examinations multiple choice Geography test items in Katsina State, Nigeria?

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Methodology

The study adopted survey research design. This is because survey research design deals with systematic setting of worthwhile goals for passing value judgment based on the set goal to ascertain whether the objective should be maintained, modified, or improved on. The population of the study is one thousand, nine hundred and seventy-one (1971). The sample size for the study is four hundred and nineteen (419) and was selected from the population using proportional sampling technique, based on Krejere and Morgan's (1971) formula for determining sample size from a known population of one thousand, nine hundred and seventy-one (1971). It was drawn from the six (6) selected senior secondary school that constituted the population of the study. This consisted of six public secondary school that offer Geography Science in Katsina State. The instrument used for data collection was NABTEB 2022. The instrument was re-validated by two experts from Measurement and Evaluation in Department of Educational psychology and counseling, Faculty of Education, Federal University Dutsin-Ma. The instrument was administered once in the area that was part of the sample. The data obtained was analyzed using Kuder Richardson Formular 20 with reliability co-efficient of 0.796. Data obtained for the study were also subjected to statistical analysis. Wink Statistical Data Analysis (WSDA) Scheuneman statistic was used to answer all the research questions.

Answering of Research Questions

Research Question One: How valid is the 2022 National Business Certificate (NBC) Examinations multiple choice Geography test items in Katsina State Nigeria?

Table 1: ***Validity of 2022 National Business Certificate (NBC) Examinations multiple choice Geography test items Based on IRT Model***

Items	Infit	Outfit	Items	Infit	Outfit
1	0.67	1.06	**26**	0.71	0.75
2	0.83	1.09	**27**	0.83	0.84
3	0.55	1.71	**28**	0.86	0.93
4	0.78	1.23	**29**	0.83	0.81
5	0.76	0.96	**30**	0.91	0.95
6	0.83	0.87	**31**	0.92	1.97
7	1.01	1.43	**32**	0.52	0.54
8	1.22	1.28	**33**	1.89	2.48
9	0.53	0.65	**34**	1.31	1.33
10	0.98	1.07	**35**	1.44	1.67
11	1.05	0.87	**36**	1.06	1.56
12	0.92	1.32	**37**	0.91	1.03
13	1.08	1.86	**38**	0.82	1.61
14	1.07	1.35	**39**	0.51	0.91
15	0.85	2.04	**40**	1.38	2.21
16	1.01	1.08	**41**	0.65	0.87
17	1.32	1.43	**42**	0.62	0.66
18	1.61	1.68	**43**	1.09	1.21
19	0.71	0.92	**44**	0.75	1.22
20	1.04	1.09	**45**	0.71	0.84
21	0.61	1.03	**46**	1.86	2.44
22	1.04	1.05	**47**	0.78	0.96
23	0.79	0.93	**48**	1.71	1.98
24	0.87	0.91	**49**	1.61	1.71
25	0.82	0.93	**50**	1.03	1.35
Mean	**0.96**	**1.21**			
SD	**0.49**	**0.74**			

Table 1 shows the result of the fit statistic of the Geography multiple choice test items for the years under study. The result showed that the multiple-choice test items had the infit statistic ranging from 0.51 to 1.86; and outfit statistic range from 0.54 to 2.48 respectively. In the items of Geography, it is only item numbers 18 (that has infit of 1.61 and outfit of 1.68), 33(that has infit of 1.89 and outfit of 2.48), 46 (that has infit of 1.86 and outfit of 2.44), 48 (that has in fit of 1.71 and outfit of 1.98) and 49 (that has infit of 1.61 and outfit of 1.71), beyond the accepted range of 0.7 – 1.5. The fit statistic of the

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Geography multiple choice test items apart from item 18, 33, 46, 48 and 49 indicate that all the items are perfectly valid. The mean of the in fit and outfit are 0.96 and 1.21 respectively. The spread of the in fit and outfit and their mean indicate highly valid items (since their mean are sufficiently close to one). This is also an expression of uni-dimensionality- a situation where all the items asses one latent ability, that is, cognitive ability achievement in Geography. Therefore, apart from items 18, 33, 46, 48 and 49, all other items of Geography multiple choice test are valid and showed uni-dimensionality.

Research Question Two: How reliable is the 2022 National Business Certificate (NBC) Examinations multiple choice Geography test items in Katsina State, Nigeria?

Table 2: ***Reliability of 2022 National Business Certificate Examinations (NBCE)multiple choice Geography test items in Katsina State, Nigeria***

Method of Establishing the Reliability	N	Reliability Co-efficient of 2022 NBCE MC Geography Test Items
Kuder-Richardson Formula – 20	50	0.796

The reliability index of the multiple-choice Geography test items was estimated to be 0.796 using Kuder-Richardson Formula- 20 (KR-20). This shows that the multiple-choice Geography test items developed is highly reliable.

Research Question Three: What is the item difficulty index of 2022 National Business Certificate (NBC) Examinations multiple choice Geography test items in Katsina State, Nigeria?

Table 3: ***Item threshold values (difficulty estimates) of the items of the multiple-choice test in Geography based on IRT model.***

Items	**Threshold**	**Items**	**Threshold**	**Items**	**Threshold**
1	1.62	**21**	0.76	**41**	-1.68
2	0.51	**22**	0.05	**42**	0.44
3	-0.31	**23**	-0.22	**43**	1.51
4	-0.57	**24**	1.56	**44**	0.09
5	0.32	**25**	-0.45	**45**	-0.41
6	1.61	**26**	-0.34	**46**	-1.22
7	-1.21	**27**	0.93	**47**	1.86
8	0.52	**28**	1.06	**48**	-1.04
9	1.22	**29**	-0.71	**49**	0.35
10	-1.44	**30**	1.07	**50**	0.84
11	0.88	**31**	-0.52		
12	1.76	**32**	-1.91		
13	-0.43	**33**	1.24		
14	-1.86	**34**	-1.31		
15	0.77	**35**	0.71		
16	1.36	**36**	-1.33		
17	0.24	**37**	1.71		
18	-0.85	**38**	-0.25		
19	0.36	**39**	0.63		
20	1.38	**40**	-1.31		
Mean			**0.98**		
SD			**0.49**		

Table 3 showed the item difficulty estimates or difficulty measures of Geography Multiple Choice test items. The results revealed that twenty one (21) items (42%), that is items 3, 4, 7, 10, 13, 14, 18, 23, 25, 26, 29, 31, 32, 34, 36, 38, 40, 41, 45, 46 and 48 within the b-value range of -3 to +3 had negative difficult estimates while twenty eight (28) items (56%), that is items, 1, 2, 5, 6, 8, 9, 11, 12, 15, 16, 17, 19, 20, 21, 22, 24, 27, 28, 30, 33, 35, 37, 39, 42, 43, 44, 47 and 49 within the b-value range of -3 to +3 had positive difficulty estimates. The negative estimates imply that 21 items are easy while 28 items are difficult. Based on this information, none of the items were rejected in terms of difficulty levels.

Research Questions Four: What is the discrimination power of the 2022 National Business Certificate (NBC) Examinations multiple choice Geography test items in Katsina State, Nigeria?

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Table 4: ***Item parameters (discrimination power) of the items of the multiple choice test in Geography based on IRT model.***

Items	Slope	Items	Slope	Items	Slope
1	0.25	**21**	1.11	**41**	0.32
2	0.11	**22**	0.54	**42**	0.21
3	0.23	**23**	0.22	**43**	0.17
4	0.33	**24**	1.31	**44**	0.85
5	0.45	**25**	1.52	**45**	1.31
6	0.21	**26**	1.33	**46**	0.11
7	0.42	**27**	0.71	**47**	2.04
8	0.53	**28**	0.62	**48**	1.22
9	0.62	**29**	2.21	**49**	0.73
10	0.25	**30**	1.82	**50**	0.69
11	0.11	**31**	1.43		
12	0.91	**32**	1.21		
13	0.45	**33**	0.12		
14	0.21	**34**	0.95		
15	0.12	**35**	1.05		
16	0.11	**36**	1.13		
17	0.50	**37**	0.22		
18	0.82	**38**	0.15		
19	0.72	**39**	3.29		
20	0.21	**40**	0.91		
Mean			**0.72**		
SD			**0.42**		

Table 4 revealed that nineteen (19) items (38%), that is items 1, 2, 3, 4, 6, 10, 11, 14, 15, 16, 20, 23, 33, 37, 38, 41, 42, 43 and 46 within the value range of .01 - .34 indicated very low discriminating values, while eight (8) items (16%), that is items 5, 7, 8, 9, 13, 17, 22 and 28 within the value range of .35 - .64 indicated low discriminating values. Also, seventeen (17) items (34%), that is item 12, 18, 19, 21, 24, 26, 27, 32, 34, 35, 36, 40, 44, 45, 48, 49 and 50 within the value range of .65 - 1.34 indicated moderate discriminating values and (25, 29, 30, 31, 39, & 47) items (12%) had values of 1.52, 2.21, 1.82, 1.43, 3.29, and 2.04 respectively, meaning that the six items had a very high discriminating attributes.

Discussion of Findings

The discussion of findings was done according to the research questions and objectives that guided the study as follows:
The study showed that the multiple-choice test items had the infit statistic ranging from 0.51 to 1.86; and outfit statistic range from 0.54 to 2.48 respectively. In the items of Geography, It is only item numbers 18 (that has in fit of 1.61 and outfit of 1.68), 33(that has in fit of 1.89 and outfit of 2.48), 46 (that has in fit of 1.86 and outfit of 2.44), 48 (that has in fit of 1.71 and outfit of 1.98) and 49 (that has in fit of 1.61 and outfit of 1.71), beyond the accepted range of 0.7 – 1.5. The fit statistic of the Geography multiple choice test items apart from item 18, 33, 46, 48 and 49 indicate that all the items are perfectly valid. The mean of the infit and outfit are 0.96 and 1.21 respectively. The spread of the infit and outfit and their mean, indicate highly valid items (since their mean are sufficiently close to one). This is also an expression of uni-dimensionality- a situation where all the items asses one latent ability, that is cognitive ability achievement in Geography. Therefore, apart from items 18, 33, 46, 48 and 49, all other items of Geography multiple choice test are valid and showed uni-dimensionality. The finding is similar with the finding of Ajeigbe (2022) who revealed that the NECO Biology Paper III was consistently stable in terms of validity, reliability and parameter estimates.

The study showed that the 2022 National Business Certificate (NBC) Examinations multiple choice Geography test items has high reliability index estimated to be 0.796. The finding is in agreement with the finding of Ajeigbe, (2022) who showed high coefficients of reliability using Split-Half yielded 0.94 (94%), 0.91 (91%), 0.95 (95%) and Cronbach's Alpha yielded 0.92 (92%), 0.91 (91%) and 0.93 (93%) for the three years respectively. The test was found to be of good quality, valid and highly reliable. The study revealed the item difficulty estimates or difficulty measures of Geography Multiple Choice test items. The results revealed that twenty one (21) items (42%), that is items 3, 4, 7, 10, 13, 14, 18, 23, 25, 26, 29, 31, 32, 34, 36, 38, 40, 41, 45, 46 and 48 within the b-value range of -3 to +3 had negative difficult estimates while

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twenty eight (28) items (56%), that is items, 1, 2, 5, 6, 8, 9, 11, 12, 15, 16, 17, 19, 20, 21, 22, 24, 27, 28, 30, 33, 35, 37, 39, 42, 43, 44, 47 and 49 within the b-value range of -3 to +3 had positive difficulty estimates. The negative estimates imply that 21 items are easy while 28 items are difficult. Based on this information, none of the items were rejected in terms of difficulty levels. The findings is in agreement with the findings of Aborisade and Fajobi (2020) who showed that the difficulty and guessing indices of the mathematics items constructed by the two examination bodies are comparable while the discriminating powers not comparable. The study revealed that nineteen (19) items (38%), that is items 1, 2, 3, 4, 6, 10, 11, 14, 15, 16, 20, 23, 33, 37, 38, 41, 42, 43 and 46 within the value range of .01 - .34 indicated very low discriminating values, while eight (8) items (16%), that is items 5, 7, 8, 9, 13, 17, 22 and 28 within the value range of .35 - .64 indicated low discriminating values. Also, seventeen (17) items (34%), that is item 12, 18, 19, 21, 24, 26, 27, 32, 34, 35, 36, 40, 44, 45, 48, 49 and 50 within the value range of .65 - 1.34 indicated moderate discriminating values and (25, 29, 30, 31, 39, & 47) items (12%) had values of 1.52, 2.21, 1.82, 1.43, 3.29, and 2.04 respectively, meaning that the six items had a very high discriminating attributes. The finding is in agreement with the finding of Galle, Alaku and Samuel, (2020) who revealed that the examination has low content validity but has reliability coefficient of 0.73, which was moderate. The finding is similar with the finding of Ogunbamowo, Adediwura and Diyan (2019) who showed that the difference in difficulty indices of NECO and WAEC Economics test items was not significant with the use of CTT (U=0.138, P > 0.05), the difference was significant when IRT was used (U=2.095, P > 0.05).

Recommendations

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

1. Developed multiple choice Geography test items should be used by Geography teachers in assessment of students as the items are perfectly valid.
2. Psychometric and measurement expert should organize workshops to educate teachers on the implications of quality tests so as to ensure the reliability of the developed items.
3. Examination bodies and teachers should be encouraged to adopt (IRT) in developing test items used, as it is effective in estimates item difficulties.
4. Education ministry and universities should try and assist students who are interested to study a research on Item Response Theory to get software and necessary computer packages that are effective in estimating item discrimination power.

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Enhancing 21st Century Skill Through Cross-Curriculum activities in Business Studies among Junior Secondary School Students in Delta State, Nigeria

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Abstract

The demands of the 21st-century knowledge require education systems to equip learners with essential skills such as critical thinking, creativity, communication, collaboration, and digital literacy. However, instruction in Nigerian junior secondary schools remains largely subject-based, with limited cross-curriculum integration. This study examined the effect of cross-curriculum learning activities integrating Business Studies and Basic Technology in the development of 21st-century skills among Junior Secondary School (JSS II) students in Delta State. A quasi-experimental mixed-methods research design was adopted, using a non-equivalent control group pre-test/post-test design and qualitative methods to explore perceptions and implementation challenges. The population comprised public junior secondary school Business Studies students and teachers in Delta State. Using stratified random sampling, 100 students were selected and assigned to treatment (n = 50) and control (n = 50) groups, while 10 Business Studies and Basic Technology teachers were purposively selected. The treatment group participated in integrated cross-curriculum learning activities for eight weeks, whereas the control group received instruction using the conventional curriculum. Quantitative data were collected using a 21st-century skills assessment administered before and after the intervention and analysed using mean, standard deviation, paired t-tests, and independent t-tests. Qualitative data were obtained through interviews, focus group discussions, classroom observations, and document analysis, and analysed thematically. Findings revealed that students exposed to cross-curriculum instruction demonstrated significantly higher gains in 21st-century skills than those taught using conventional methods. The study concludes that cross-curriculum integration is an effective approach for enhancing 21st-century skills among secondary school students.

Keywords: 21st-century skills, Cross-curricular learning, Business Studies, Basic Technology

Introduction

The 21st century has ushered in rapid technological, economic, and social changes that demand new competencies from learners. Skills such as creativity, innovation, problem-solving, and collaboration are increasingly recognized as essential for personal and national development (Partnership for 21st Century Skills, 2019). Consequently, education systems worldwide are rethinking curriculum and instruction to ensure that learners can apply knowledge across disciplines and solve real-world problems. In Nigeria, the Basic Education Curriculum aims to promote functional literacy, entrepreneurship, and technological awareness among junior secondary school students. However, classroom instruction remains largely fragmented and examination-oriented (Okebukola, 2020). Students often study Business Studies and Basic Technology as isolated subjects without understanding their interconnections or real-world applications. Cross-curriculum learning, which links knowledge and skills from different disciplines around a common theme or project, has been identified as a promising approach to fostering 21st-century skills (Beane, 1997; Drake & Reid, 2020). When students engage in integrated projects such as designing a product (technology) and developing a marketing plan (business) they actively apply critical thinking, collaboration, and creativity in authentic contexts. Cross-curriculum activities, also referred to as interdisciplinary learning, involve integrating concepts, skills, and learning experiences across multiple subject areas to promote holistic student development (Harris, Harrison, & McFahn, 2012). This approach moves beyond isolated subject teaching, encouraging learners to connect knowledge, think critically, and apply skills meaningfully. Cross-curriculum learning fosters deep understanding, motivation, and skill transfer (Drake & Reid, 2020). Theoretical frameworks underpinning cross-curriculum approaches include Constructivism, which emphasizes active, contextualized learning; Experiential Learning Theory (Kolb, 1984), which highlights learning through experience; and Integrated Curriculum Theory, which guides curriculum design to align multiple disciplines for meaningful outcomes (Zhang, 2024). Empirical evidence supports the benefits of such integration. For instance, Bekomson et al. (2022) investigated the influence of students' interest in extra curriculum activities on self-efficacy in Cross River State, Nigeria. Using an ex-post facto design

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with 1,586 senior secondary students, the study found that participation significantly enhanced social, academic, moral, and language self-efficacy. This suggests that cross-curriculum integration can positively affect students' holistic development. Similarly, Shagaya (2025) explored the integration of art and craft into early childhood education in Nigeria and found improvements in literacy, numeracy, and environmental awareness highlighting the value of cross-curriculum strategies. However, Olajide (2023) found no significant relationship between co-curriculum participation and academic performance at the undergraduate level, indicating that mere participation without structured alignment to learning objectives may not yield academic gains. Other studies, such as Adeyemi (2021), showed that project-based and interdisciplinary learning improved creativity among Lagos secondary school students, while Nwosu and Eze (2023) reported that Nigerian teachers have limited exposure to cross-curriculum instruction despite recognizing its potential. Twenty-first-century skills (21CS) refer to a broad set of knowledge, skills, habits, and character traits essential for success in modern society (Trilling & Fadel, 2019). These skills emphasize not only what students know but also what they can do with, what they know, how they apply, adapt, communicate, and create knowledge in new situations (Kholili, Dewantoro, & Surur, 2023). Core competencies are often summarized as the "4Cs" critical thinking, communication, collaboration, and creativity. Traditional education has emphasized rote learning and memorization, but scholars now argue that education must prioritize knowledge application, transfer, and adaptability. In the Nigerian context, secondary education plays a critical role in shaping students' knowledge, skills, and attitudes. Junior secondary school students, typically aged 12–15, are at a formative stage for developing higher-order thinking and collaboration skills (Federal Ministry of Education, 2013). According to Sahin, Yoon, and Kim (2019), 21CS encompass cognitive, social, and technical competencies such as critical thinking, creativity, communication, collaboration, digital literacy, and self-directed learning. These skills enable students to navigate complex problems, communicate effectively, and engage in lifelong learning. Care and Kim (2018) classify 21CS into three broad domains: Learning and Innovation Skills: Creativity, critical thinking, and problem-solving; Information, Media, and Technology Skills: Digital literacy and information evaluation; Life and Career Skills: Collaboration, adaptability, self-direction, and leadership.

Effective development of 21CS requires instructional strategies that go beyond rote methods. Cross-curriculum, project-based, and inquiry-based approaches are particularly effective because they engage students in authentic problem-solving, peer collaboration, and meaningful application of knowledge (Chu et al., 2017). In Nigeria, linking Business Studies and Basic Technology provides a powerful platform for developing entrepreneurial thinking, technical problem-solving, and digital literacy. For instance, a project requiring students to design a simple product (Basic Technology) and create a marketing plan (Business Studies) simultaneously develops creativity, collaboration, and real-world problem-solving. This shift reflects a paradigm change in education from knowledge acquisition to knowledge application. Students are now expected not only to learn content but also to demonstrate what they can do with that knowledge in dynamic environments (Care & Kim, 2018). Junior secondary students are at a crucial stage for cultivating these skills due to their cognitive and social development (Adebayo, 2020). Exposure to 21CS during this period enhances readiness for further education, vocational training, and workforce participation. However, research suggests that 21CS are still inadequately integrated into Nigerian classrooms, with many teachers relying heavily on traditional lecture methods (Adebayo, 2020). While Business Studies emphasizes entrepreneurship and innovation, Basic Technology focuses on design, production, and practical application. Integrating both can help students translate technological ideas into entrepreneurial solutions. This study focuses itself at the intersection of 21st-century skills development and cross-curriculum learning activities. Specifically, it explores how cross-curriculum activities linking Business Studies and Basic Technology can foster critical thinking, creativity, collaboration, and problem-solving skills among junior secondary school students. Cross-curriculum integration between these subjects offers a promising strategy for nurturing 21CS in authentic contexts (Chu, Reynolds, Tavares, & Notari, 2017). Accordingly, this review critically examines the conceptualization, measurement, classroom implementation, and challenges of 21CS, with particular attention to junior secondary schools in Nigeria.

Statement of the Problem

Despite the policy emphasis on skill-based learning, classroom practices in many Nigerian schools remain dominated by memorization and subject-specific instruction. Consequently, students often struggle to transfer knowledge and skills from one subject area to another, which hinders their ability to solve problems creatively and apply learning in real-world contexts. Teachers also encounter significant challenges in implementing interdisciplinary approaches due to curriculum

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rigidity, inadequate instructional resources, and limited professional training in integrated pedagogy. These constraints contribute to a persistent gap between curriculum intentions and classroom realities. As a result, students' 21st-century competencies particularly creativity, communication, collaboration, and digital literacy remains underdeveloped (Nwosu & Eze, 2023). This study, therefore, seeks to address this gap by exploring how co-curriculum learning activities in Business Studies and Basic Technology can enhance the development of 21st-century skills among junior secondary school students in Nigeria.

Purpose of the Study

The main purpose of this study is to investigate 21st-century skills through cross-curriculum activities in Business Studies among junior secondary school students in Nigeria. Specifically, the study will

1. Assess students' existing levels of 21st-century skills before the intervention.
2. Design and implement cross-curriculum learning activities linking Business Studies and Basic Technology.
3. Examine the effects of these activities on students' creativity, collaboration, communication, and problem-solving skills.
4. Explore teachers' and students' perceptions of cross-curriculum learning in promoting 21st-century skills.

Research Questions

1. What is the current level of 21st-century skills among junior secondary school Business studies students?
2. How do cross-curriculum learning activities in Business Studies and Basic Technology affect the development of 21st-century skills?
3. What are the perceptions of Business studies teachers and students toward the use of cross-curriculum activities?
4. What challenges do Business studies teachers face in implementing cross-curriculum learning approaches?

Research Hypotheses

H_{01}: There is no significant difference in the 21st-century skill levels of students taught through cross-curriculum activities and those taught through traditional methods.

H_{o2}: There is a significant difference in the 21st-century skill levels of Business studies students taught through cross-curriculum activities and those taught through traditional methods.

Research methodology

This study adopts a quasi-experimental mixed-methods design. The quantitative component uses a non-equivalent control group pre-test/post-test design to examine the effect of cross-curriculum learning activities on 21st-century skills among junior secondary school students. The qualitative component explores teacher and student perceptions and identifies challenges in implementing cross-curriculum learning. The population comprises all public junior secondary school Business Studies students and teachers in Delta State. Stratified random sampling was used to select 100 students (50 treatment and 50 control), while 10 Business Studies and Basic Technology teachers were purposively selected. A pre-test 21st-century skills assessment was administered to both groups before the intervention. The treatment group participated in integrated cross-curriculum learning activities, whereas the control group followed the standard curriculum without explicit integration. After an intervention period of 6–8 weeks, the same assessment was administered as a post-test. Mean and standard deviation were used to analyse skill levels, and paired t-tests were employed for within-group pre/post comparisons. Independent t-tests or ANCOVA were used for between-group comparisons while controlling for pre-test scores. Qualitative data were collected through semi-structured interviews with teachers, focus group discussions with students, classroom observations, and relevant documents to allow for triangulation. Thematic analysis was then used to interpret qualitative data and explore perceptions and implementation challenges.

Presentation of Results

Research Question 1:

What is the current level of 21st-century skills among junior secondary school Business studies students before the intervention*?*

Table 1: Descriptive Statistics of Pre-Test Scores

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Group	N	Mean	Std. Deviation	Minimum	Maximum
Experimental	50	46.20	6.84	34	59
Control	50	45.78	7.12	31	58
Total	100	**45.99**	**6.96**	31	59

Interpretation:

Before the intervention, both groups performed at approximately the same level on the 21st-century skills assessment (M = 46.20 vs. 45.78). This indicates that the two groups were comparable prior to the introduction of cross-curricular activities.

Research Question 2:

How do cross-curriculum learning activities in Business Studies and Basic Technology affect the development of 21st-century skills?

Table 2: Descriptive Statistics of Post-Test Scores

Group	N	Mean	Std. Deviation
Experimental	50	74.18	8.25
Control	50	59.72	7.91
Total	100	66.95	10.23

Interpretation:

After the intervention, students exposed to cross-curriculum activities (experimental group) had a substantially higher mean score (M = 74.18) compared to the control group (M = 59.72). This suggests that the cross-curriculum learning experience enhanced students' acquisition of 21st-century skills.

Hypothesis Testing

H_{o1}: There is no significant difference in the 21st-century skill levels of Business studies students taught through cross-curriculum activities and those taught through traditional methods.

A t-test for independent samples was conducted to compare the post-test scores of both groups.

Table 3: Independent Samples t-Test for Post-Test Scores

Group	Mean	Std. Dev.	T	Df	Sig. (2-tailed)	Decision
Experimental	74.18	8.25	**8.71**	98	**0.000**	Reject H_o
Control	59.72	7.91				

Interpretation:

There was a statistically significant difference between the experimental and control groups, $t(98) = 8.71$, $p < .001$. Students exposed to cross-curricular activities demonstrated significantly higher 21st-century skills than those taught traditionally. Thus, H_{o1} is rejected, and H_{o2} is accepted.

Research Question 3:

What are the perceptions of Business studies teachers and students toward cross-curriculum activities?

Qualitative Summary (from interviews and observations)

1. Teachers described the activities as "engaging, real-world relevant, and promoting creativity and collaboration.
2. Students reported enjoying the hands-on projects, saying it helped them "see how technology and business are connected.
3. Both groups agreed that teamwork and problem-solving improved noticeably.
4. Challenges mentioned included limited time for project completion and difficulty aligning lesson plans across subjects.

Interpretation:

Qualitative findings corroborate the quantitative data, indicating positive perceptions and observable improvements in student engagement and 21st-century skill application.

Research Question 4

What challenges do Business studies teachers face in implementing cross-curriculum learning approaches?

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Table 4

Mean ratings of Business studies teachers' perceptions on the challenges in Implementing Cross-curriculum learning approaches

Challenge Item	Mean	SD	Interpretation
1. Limited time for planning integrated lessons	4.10	0.57	High Challenge
2. Lack of instructional resources and materials	3.90	0.74	High Challenge
3. Inadequate training or professional development	3.80	0.63	Moderate to High Challenge
4. Difficulty coordinating with other subject teachers	3.50	0.71	Moderate Challenge
5. Difficulty in assessing learning across subjects	3.20	0.63	Moderate Challenge
6. Lack of administrative support	3.40	0.70	Moderate Challenge
7. Students' limited background knowledge	3.30	0.67	Moderate Challenge
8. Lack of student interest or motivation	3.10	0.88	Moderate Challenge
Overall Mean	**3.42**	—	**Moderate Challenge**

Interpretation of Results

Table 4 presents the mean ratings of Business studies teachers' perceptions regarding the challenges they face in implementing cross-curriculum learning approaches. The overall mean rating of 3.42 indicates that teachers moderately agree that they experience several challenges in this area. The most notable difficulties reported include time constraints in planning integrated lessons (M = 4.10, *SD = 0.57*) and lack of instructional resources and materials (M = 3.90, SD = 0.74). Teachers also expressed concern about inadequate training or professional development opportunities (*M* = 3.80, SD = 0.63). Meanwhile, lower mean ratings were observed for lack of student interest (M = 3.10, SD = *0.88*) and difficulty in assessment across subjects (*M = 3.20, SD = 0.63*), suggesting these are less severe but still relevant issues. Qualitative data from teacher interviews further supported these findings, highlighting the need for better administrative support, collaboration time, and clearer guidelines for integrating subjects effectively.

Summary of Hypotheses Testing

Hypothesis	Statement	Result	Decision
H_{01}	No significant difference in 21st-century skills between students exposed to cross-curricular and traditional methods	$t(98) = 8.71$, $p < 0.001$	Rejected

Discussion of Findings

The results show that integrating Business Studies and Basic Technology through cross-curricular activities significantly improved students' 21st-century skills. This aligns with Drake and Reid (2020), who found that interdisciplinary instruction enhances problem-solving and creativity. The findings also corroborate Adeyemi (2021), who reported that project-based learning fosters collaboration and communication in Nigerian classrooms. Teachers' positive perceptions indicate readiness to embrace integrated teaching if provided with adequate training and resources. However, the identified challenges echo Nwosu and Eze (2023), emphasizing systemic barriers such as rigid curriculum and limited infrastructure—that must be addressed for cross-curricular teaching to thrive in Nigerian schools.

Key Statistical Highlights (Summary)

Variable	Mean Difference	t-value	p-value	Interpretation
Experimental vs. Control (Post-test)	14.46	8.71	0.000	Significant improvement in 21st-century skills

Implications for the Current Study

The literature reviewed underscores the relevance of investigating cross-curriculum learning in developing 21CS among Business studies students in junior secondary school. Key implications include:

1. Choice of Intervention: Using Business Studies and Basic Technology for cross-curriculum activities aligns with global best practices in integrating skills development with subject learning (Chu et al., 2017).
2. Research Design: A quasi-experimental design with pre- and post-tests is appropriate for assessing skill development while controlling for initial differences (Sahin et al., 2019).

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3. Measurement Strategy: Employing validated instruments alongside qualitative data collection allows for comprehensive assessment of both skill acquisition and contextual influences on learning outcomes (Care & Kim, 2018).
4. Teacher Engagement: Including teacher perspectives will provide insights into implementation challenges and support strategies for scaling cross-curriculum approaches effectively.

Conclusion

21st-century skills are essential competencies that enable students to navigate complex and dynamic environments. These skills extend beyond traditional academic knowledge to include critical thinking, creativity, collaboration, communication, digital literacy, and self-direction (Sahin et al., 2019; Care & Kim, 2018). Research indicates that cross-curricular learning offers a promising strategy for fostering 21CS, particularly when integrated with authentic, project-based tasks (Chu et al., 2017). However, challenges such as teacher preparedness, resource limitations, and assessment difficulties remain significant barriers, particularly in the Nigerian junior secondary context. This literature review highlights the theoretical and practical foundations for investigating the effect of cross-curriculum learning on 21CS among Business studies junior secondary school students in Delta State, providing justification for the study's design, instrumentation, and mixed-methods approach.

Recommendations

1. The Ministry of Education and curriculum developers should incorporate cross-curricular strategies that connect Business Studies with other subjects.
2. Teachers should be regularly trained on modern pedagogical approaches that foster 21st-century skills, such as project-based learning, problem-solving, digital literacy, and teamwork. Workshops and seminars can help teachers effectively integrate cross-curricular activities into Business Studies lessons.
3. Schools should be adequately equipped with modern teaching aids such as computers, internet access, business simulation software, and multimedia tools. These resources enhance students' engagement and promote practical application of business concepts across subjects.
4. Teachers should encourage interdisciplinary projects where students apply knowledge from different subjects to solve real-world business problems. For example, integrating ICT for business plan presentations or Mathematics for financial analysis.
5. Educational supervisors should periodically monitor and evaluate how effectively cross-curricular activities are being implemented in Business Studies classrooms, ensuring that the objectives of enhancing 21st-century skills are achieved.
6. Schools should partner with local businesses, entrepreneurs, and community organizations to expose students to real-life business practices. Such collaborations can provide mentorship opportunities and practical experience aligned with 21st-century competencies.
7. Teachers should design Business Studies activities that allow students to innovate such as developing small-scale business ideas or digital marketing projects to foster entrepreneurship and problem-solving skills.
8. Assessment methods should go beyond traditional exams to include performance-based evaluations such as presentations, portfolios, teamwork, and reflective journals that measure communication, critical thinking, and digital competence.
9. The Delta State Ministry of Basic and Secondary Education should develop policies that emphasize cross-curriculum learning and 21st-century skill development as key outcomes of secondary education.
10. Future researchers should explore the long-term impact of cross-curriculum Business Studies activities on students' entrepreneurial intentions, academic performance, and adaptability in real-life economic environments.

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Comparative Relationships Between Perceived Stress and Sleep Quality on Psychological Well-being of Students in Rufus Giwa Polytechnic, Owo Ondo State, Nigeria

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Abstract

The transition to higher education poses significant challenges for students, which can adversely affect their psychological well-being. This study examines the influence of perceived stress and sleep quality on psychological well-being among students Rufus Giwa Polytechnic, Owo, Ondo State. The study adopted a cross-sectional survey design. A purposive and convenience random sampling techniques were used to select 379 students (169 males, 210 females) aged 18 to 28 years (Mean = 22.68; SD = 1.84). The Psychological Well-being Scale (PWS), Sleep Quality Scale (SQS), and Perceived Stress Scale (PSS) were used to elicit information from the respondents, which reported a good internal consistency Cronbach Alpa 0.93 -PWB, 0.95-SQS and 0.91- PSS. A two-step hierarchical multiple regression analysis was used to test the three hypotheses in the study. The results indicated that sleep quality significantly predicts psychological well-being ($\beta = .14$, $t = 2.68$, $p < .01$), while perceived stress does not ($\beta = .03$, $t = .6$, $p > .05$) predict the psychological well-being of students in the study area. The joint prediction of sleep quality and perceived stress was also significant [$F(1,376) = 3.78$; $p < .01$]. the study concluded that sleep quality and perceived stress combined, will significantly predict psychological wellbeing of polytechnic students in the study area. The study recommends targeted interventions among Rufus Giwa polytechnic students to improve their sleep quality and stress management to enhance their psychological well-being.
***Keywords**: sleep quality, perceived stress, psychological well-being, undergraduate students.*

Introduction

Over the years, the transition to higher education presents significant challenges for undergraduate students, affecting their psychological well-being, sleep quality, and stress levels (Adebayo, 2020). Psychological well-being, which encompasses emotional stability, life satisfaction, and positive functioning (Ryff, 1989), plays a critical role in students' academic success and overall mental well-being. Nigerian students, like their global counterparts, experience immense academic pressures, financial constraints, and social expectations, contributing to high risks of anxiety, depression, and reduced psychological well-being (Ogunyemi & Oluwaseun, 2018). All of these challenges could impair the students' sleep quality and in turn affect their psychological well-being and academic achievement. Sleep quality has been identified as a crucial determinant of students' mental health, with significant implications on cognitive functioning and emotional regulation and resilience (Mok et al., 2016). Research reported that Nigerian students frequently experience sleep disturbances due to irregular study patterns, late-night academic engagements, and environmental factors (Eniola & Adeyemi, 2019). Poor sleep quality not only affects concentration and learning efficiency but also exacerbates stress levels, creating a cycle that negatively impacts students psychological health. A study by Ajayi (2019) found that students who consistently experience poor sleep often

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face difficulties in concentration, problem-solving, and retaining information, further affecting their academic performance and well-being. Recent empirical studies have emphasized the growing concern over sleep quality among university students. Kolawole (2017) examined the relationship between sleep quality and academic performance among Nigerian undergraduates and found that 49.5% of students had poor sleep quality, significantly impacting their ability to focus and process information effectively. Similarly, Jibril et al. (2023) investigated sleep patterns among nursing students at the University of Ilorin and discovered that 97.2% of students affirmed that inadequate sleep negatively affected their academic performance, with 91.4% agreeing that a minimum of six hours of sleep is necessary for healthy living. Furthermore, a study by Anthony et al. (2023) validated the Sleep Quality Questionnaire among senior students in Benin City, reinforcing the prevalence of poor sleep among Nigerian students and highlighting the need for interventions addressing sleep-related problems. Globally, studies have shown that inadequate sleep is associated with heightened stress levels and compromised psychological well-being. Lund et al. (2010) reported that university students with poor sleep habits exhibited increased symptoms of anxiety and depression, while Becker et al. (2013) found a direct link between sleep disturbances and decreased self-regulation, affecting students' mental resilience. Thun et al. (2020) synthesized findings from over 3,000 participants, demonstrating that sleep deprivation is strongly correlated with heightened emotional distress. These findings underscore the pressing need for universities and polytechnics to prioritize sleep quality and stress management as essential components of student welfare.

Stress, another crucial factor affecting students' psychological well-being, often stems from academic workload, financial difficulties, and social pressures (Ogunbode & Ogunbode, 2019). Oyetunde, Akinyemi, and Afolabi, (2020) conducted a study on perceived stress and mental health among University students. Two hundred and fifty (250) undergraduate students from a Nigerian university, aged 18-25 were assessed using a cross-sectional survey design, where participants completed questionnaires assessing their perceived stress and mental health status. The Perceived Stress Scale (PSS) was employed to measure stress levels, while the General Health Questionnaire (GHQ-12) assessed mental health. The findings revealed that high levels of perceived stress were significantly associated with poorer mental health outcomes, including increased anxiety and depressive symptoms. The study highlighted the need for stress management interventions targeted at students to enhance their psychological well-being. Nwankwo, Akinpelu, and Eze conducted a research on coping strategies and their influence on perceived stress in adolescents in 2019. A total number of two hundred (200) adolescents aged 13-18 from secondary schools in Nigeria were assessed using a correlational design, where participants completed self-report questionnaires on coping strategies, perceived stress, and psychological well-being. The Coping Strategies Inventory (CSI) measured coping styles, while the Perceived Stress Scale (PSS) assessed stress levels and the Rosenberg Self-Esteem Scale (RSES) evaluated psychological well-being. Results indicated that adolescents employing adaptive coping strategies reported lower levels of perceived stress and higher self-esteem compared to those using maladaptive strategies. Smith and Chao, (2022) investigated online interventions for stress management. An experimental study design was used to evaluate the efficacy of an online stress management platform for students. Two hundred (200) undergraduate students utilized the online program, which included various stress management techniques. The study revealed that participants using the online platform experienced significant reductions in stress levels and increased resilience compared to a control group that did not have access to the intervention. The flexibility and accessibility of the program were noted as key benefits.

High levels of stress have been linked to anxiety, depression, and lower academic engagement, further exacerbating sleep disturbances and mental health challenges (Olayemi & Olayemi, 2021). The interconnections between sleep quality, stress, and psychological well-being have been well-documented in literature. Studies indicate that students with high stress levels tend to report poor sleep quality, which subsequently impacts their emotional resilience and psychological health (Becker et al., 2016). Despite the increasing awareness of these issues, there remains a gap in research focusing specifically on Nigerian polytechnic students and how the interaction between sleep quality and stress influences their psychological well-being. While studies on university students provide valuable insights, polytechnic students often experience distinct challenges, including different academic structures and socioeconomic realities. Understanding these dynamics is essential for developing targeted interventions aimed at improving student welfare. This study aims to examine the relationship between sleep quality, perceived stress, and psychological well-being among polytechnic students at Rufus Giwa Polytechnic, Owo, Nigeria. By exploring how these factors interact, the study seeks to contribute valuable insights that can

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inform the development of evidence-based interventions, policies, and support systems designed to enhance students' overall well-being and academic success.

Research Objectives

The objectives of the study were to:

1. examine the influence of perceived stress on the psychological well-being of Polytechnic students;
2. determine the extent to which sleep quality predicts the level of psychological well-being among Polytechnic students; and
3. assess the joint contribution of perceived stress and sleep quality in predicting psychological well-being among the targeted population in the study area.

Research Hypotheses

In order to achieve the stated objectives the following Hypothesis were formulated and tested:

1. Sleep quality will not significantly predict psychological well-being among Polytechnic students
2. Perceived stress will not significantly predict psychological well-being among Polytechnic students
3. Sleep quality and perceived stress will not jointly predict psychological well-being among Polytechnic students

Conceptual Framework

This study is grounded in the assumption that sleep quality and perceived stress are key predictors of polytechnic students' psychological well-being. The framework integrates prior evidence on the role of sleep in cognitive and emotional regulation, and the impact of stress on resilience and mental well-being. It also hypothesizes that better sleep quality will positively predict students psychological well-being, while higher perceived stress will negatively predict their psychological wellbeing.

Figure 1: Conceptual Model

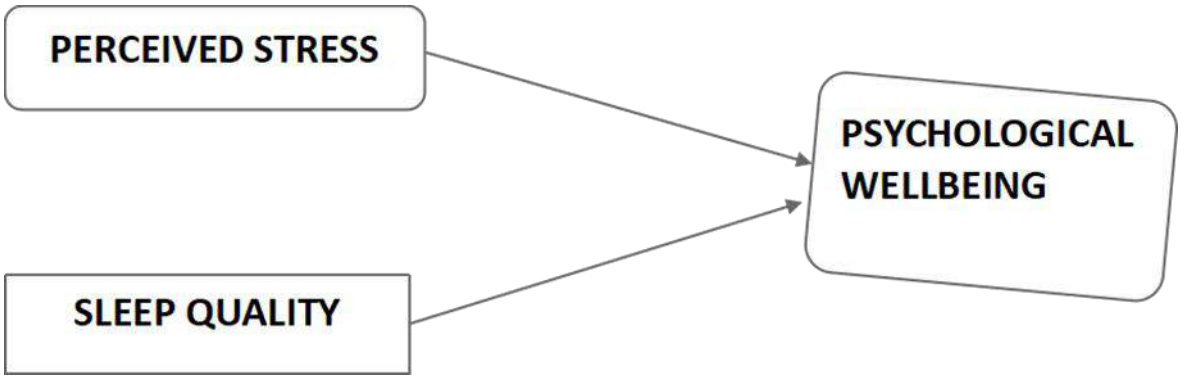

Figure 1: Hypothesised Prediction of Psychological Well-being by Sleep Quality and Perceived Stress among students of Rufus Giwa Polytechnic, Owo.

Note: The arrow indicates direct paths of the predictor variables (sleep quality and perceived stress on psychological well-being) to the outcome variable (psychological well-being)

Methodology

This study adopted a cross-sectional survey design. The population comprised all the students of Rufus Giwa Polytechnic Owo. Ondo state, Nigeria during the 2023/2024 academic session. A sample of 379 students were selected using purposive and accidental techniques to ensure representation across academic levels (ND I & II, HND I &II) and faculties. Four hundred (400) questionnaires were administered, three hundred and eighty-two (382) were collected, but three hundred and seventy-nine (379) were found useful for the analysis which indicates a good response rate of 94.75% selected from the population.

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Table 1: *Demographic Characteristics of Respondents (N = 379)*

Variables	Frequency	Percentage (%)
Gender		
Male	169	44.6
Female	210	55.4
Religious Affiliation		
Christianity	247	65.2
Islam	131	34.6
other religion	1	0.2
Family Type		
Monogamy	322	85
Polygamy	57	15
Academic Level		
ND I	52	13.7
ND II	132	34.8
HND I	109	28.8
HNDII	86	22.7
Faculty		
Applied Sciences	214	56.5
Social and Management Sciences	87	23
Agricultural Technology	34	9
Business Studies	32	8.4
Environmental Studies	10	2.6
Environmental Technology	2	0.5
Total	397	100

Data in table 1 was gathered via the use of validated questionnaires which comprised of four sections, section A captured the socio-demographic data of the respondents such as age, gender, department and others, section B, consisted of Psychological Wellbeing Scale (PWS) adopted from Ryff, (1989). It comprised 18 items such as "I like most parts of my personality", "Maintaining close relationships has been difficult and frustrating for me", which were scored on a 7-point scale using "(1) strongly agree", "(2) somewhat agree", "(3) a little agree", "(4) neither agree nor disagree", "(5) a little disagree", "(6) somewhat disagree", "(7) strongly disagree". The reliability index was re-established and yielded a good Cronbach's Alpha of 0.93. Section C comprised Sleep Quality Scale (SQS) adopted from Chol Shin (2016). The scale consists of 28 items that typically assess factors such as sleep duration, disturbances, and overall satisfaction with sleep; and was scored on a 4 point Likert scale ranging from "rarely (none or 1-3 times a month)", "sometimes (1-2 times a week)", "often (3-5 times a week)", "almost always (6-7 times a week)". The scale reported a Cronbach's Alpha of 0.95 in the present study. Section D also comprised Perceived Stress Scale (PSS) adopted from Cohen, (1983), The scale consists of 10 validated items and was scored on points which are: "(0) never", "(1) almost never", "(2) sometimes" "(3) fairly often" "(4) very often". Sample items include, "In the last month, how often have you been upset because of something that happened unexpectedly?", "In the last month, how often have you felt that things were going your way. The scale also yielded reported a good internal consistency of 0.91 Cronbach Alpha.

Ethical Consideration

The participation of the respondents for the study was voluntary, and informed consent was secured from all the respondents before the data were collected. In addition, confidentiality and anonymity were assured, with data to be used solely for research purposes.

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Presentation of Results

Test of Hypotheses

The test for the three (3) formulated hypotheses were carried out using the 2-step hierarchical multiple regression analysis, which was used to test for both the independent and joint prediction of the independent variables (Sleep Quality and Perceived Stress) on the dependent variable (psychological well-being).

Hypotheses:

Ho_1: Sleep quality will not significantly predict psychological well-being among students.
Ho_2: Perceived stress will not significantly predict psychological well-being among students.
Ho_3: Sleep quality and perceived stress will not jointly predict psychological well-being.
The results are presented in Table 2.

Table 2: Two *Step Hierarchical Multiple Regression Analysis Showing the Prediction of Sleep Quality and Perceived Stress on Psychological well-being among undergraduate students of Rufus Giwa polytechnic, Owo, Ondo State*

Predictors	**$_{US}\beta$**	**Stand. Error**	**$_{S}\beta$**	**T**	**Sig**	**R**	**R^2**	**ΔR^2**	**df**	**F**	**ΔF**
Step 1						.14	.02	-	1,377	7.19**	-
Sleep Quality	.15	.06	.14	2.68**	.008						
Step 2						.14	.02	.00	1,376	3.78**	0.37
Sleep Quality	.13	.06	.12	2.17*	.030						
Perceived Stress	.08	.13	.03	.61	.543						

Note: * * p < 0.01, * p < 0.05, N= 379; $_{US}\beta$= Unstandardized Beta; $_{S}\beta$= Standardized Beta

In step 1, the result revealed that sleep quality significantly predicts psychological well-being (β= .14, t= 2.68, p < .01), this shows that Rufus Giwa Polytechnic students' level of sleep makes them mentally healthy and predicts their positivity to life. Hence, the formulated hypothesis 1 was rejected. In step 2, perceived stress was entered into the model. The result showed that Perceived stress, did not significantly predict psychological well-being (β= .03, t= .6, *p>.05)*, which means that the polytechnic students' level of stress does not significantly affect their psychological wellbeing explaining the 2% variance. Therefore, Hypothesis 2 which states that perceived stress will not significantly predict psychological wellbeing among the students was accepted. The result further revealed that sleep quality and perceived stress significantly jointly predict psychological well-being [F (1,376) =3.78; p <.01] and both tested factors had yielded 2% (R^2=.02), variance in the measure of psychological well-being. This means that there are other variables which contribute to polytechnic students' feeling of being mentally healthy and positivity to life that this study did not capture. Therefore the formulated null hypothesis 3, that sleep quality and perceived stress will not jointly predict psychological wellbeing among Polytechnic students, was therefore rejected.

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Discussions of Findings

The results revealed that sleep quality significantly predicts psychological well-being among polytechnic students. This finding aligns with Hirshkowitz et al., (2015) and Lo et al., (2016) Studies that associated poor sleep quality is with increased levels of anxiety, depression, and overall psychological distress. Walker, (2017) highlighted that sleep is essential for various cognitive functions, emotional regulation, and the overall restoration of mental health. For students, adequate sleep is particularly vital due to the demanding nature of academic life, which often leads to sleep deprivation (Becker et al., 2018). The result aligns with Nigerian-based evidence showing widespread sleep disturbances among tertiary students. Eniola and Adeyemi (2019) reported that irregular study schedules and environmental factors frequently compromise students' sleep patterns. Ajayi (2019) similarly found that poor sleep impairs concentration and information retention, which may indirectly reduce students' sense of competence and environmental mastery, core dimensions of psychological well-being. Empirical findings from Kolawole (2017) and Jibril et al. (2023) further demonstrated the prevalence of inadequate sleep among Nigerian undergraduates and its negative impact on academic functioning. Internationally, Lund et al. (2010) and Thun et al. (2020) documented strong associations between sleep deprivation and emotional distress. Becker et al. (2013) also linked sleep disturbances to decreased self-regulation, suggesting that insufficient sleep undermines students' psychological resilience. The present finding therefore reinforces the argument advanced in the background that sleep quality is a crucial determinant of students' mental health. In contrast to sleep quality, the analysis indicated that perceived stress did not significantly predict psychological well-being. This finding is noteworthy, as one might expect that effective stress management would inherently lead to better mental health outcomes. Prior research has consistently linked high stress levels to anxiety, depression, and poor mental health outcomes (Oyetunde et al., 2020; Olayemi & Olayemi, 2021). Stress in tertiary institutions is often attributed to academic workload, financial strain, and social pressures (Ogunbode & Ogunbode, 2019), all of which are prevalent in the nigerian institution. However, the result in this study suggests that stress reduction alone may not be sufficient to improve psychological well-being among polytechnic students. This confirms Lazarus and Folkman, (1984) and Folkman, (2010) notion that the relationship between stress and well-being is complex and may be moderated by individual differences and contextual factors. The acceptance of Hypothesis 2 implies that other factors, such as resilience, social support, and coping strategies, may play more significant roles in mediating the relationship between stress and psychological well-being. For instance, individuals who possess strong coping mechanisms may effectively manage stress without experiencing detrimental effects on their mental health (Folkman & Moskowitz, 2004). Also, Nwankwo et al. (2019) demonstrated that individuals employing adaptive coping strategies reported lower stress and higher self-esteem. It is possible that students in this study have developed coping strategies that buffer the negative impact of perceived stress. The findings that sleep quality and perceived stress jointly predict psychological well-being, highlights the multifaceted nature of mental health according to Ryff, 1989. Also, Becker et al. (2016) noted that high stress often disrupts sleep, while poor sleep can heighten stress responses, creating a cyclical pattern that affects emotional health. Additionally, the combined effects of sleep quality and perceived stress demonstrated a modest joint predictive capability for psychological well-being. While the joint effect was statistically significant, it also points to the reality that many other factors contribute to psychological well-being that was not captured in this study. These may include social relationships, lifestyle choices, academic pressures, and environmental influences (Keyes, 2002). This is line with Ryff's (1989) affirmation that well-being is a complex construct shaped by multiple domains of functioning. The study concluded that perceived stress and sleep quality are jointly significant predictors of psychological well-being among Rufus Giwa Polytechnic students.

Recommendations

The findings of this study have important implications for educational institutions, especially the polytechnics.

1. Students should be encouraged to establish regular sleep schedules, aiming for 7-9 hours of sleep per night and promote practices such as reducing screen time before bed, creating a comfortable sleep environment, and engaging in relaxation techniques like deep breathing or meditation.
2. Stress management workshops on campus that teaches students coping strategies such as mindfulness, time management, and effective study techniques should be implemented.
3. Peer support groups where students can share experiences and strategies for managing stress should be created.
4. Educational institutions and administrations should initiate awareness campaigns that inform students about the importance of sleep and stress management for academic success and overall well-being.

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Impact of Public-Private Partnership Models on Entrepreneurial Skills Acquisition among Technical and Vocational Education and Training Students in South-South, Nigeria

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Abstract
Persistent graduate unemployment and skill mismatches remain critical challenges in Nigeria despite substantial investment in Technical and Vocational Education and Training (TVET). In response, Public-Private Partnership (PPP) models have been promoted as mechanisms for bridging gaps between education and industry. However, empirical evidence on their effectiveness remains limited, particularly in South-South Nigeria, a region central to the nation's economy but plagued by unemployment and underemployment. This study was motivated by the need to evaluate whether PPP frameworks enhance employability and entrepreneurial outcomes while integrating innovation as a potential mediating factor. A descriptive survey design with correlational analysis was employed, drawing on 421 respondents (338 TVET graduates and 83 private-sector partners) sampled from a population of 1,372 using multi-stage sampling techniques. Data were collected through validated and pilot-tested scales measuring employability, entrepreneurial success, PPP models, and innovative capability. Findings revealed that PPP models significantly enhanced entrepreneurial success through incubation hubs, mentorship, and entrepreneurship initiatives, but exerted a negative influence on employability outcomes, indicating a misalignment with labor market needs. Innovative capability did not significantly mediate outcomes, highlighting gaps in embedding creativity and problem-solving within PPP interventions. The study concludes that PPP frameworks must prioritize innovation-oriented and holistic skills training to effectively address unemployment, foster entrepreneurship, and drive inclusive economic transformation in Nigeria.

Keywords: Employability Outcome, Entrepreneurial Success, Public-Private Partnership (PPP) Models, TVET Graduates.

Introduction
Technical and Vocational Education and Training (TVET) has gained growing global recognition as a powerful instrument for skills acquisition, workforce preparedness, and socio-economic advancement. Internationally, TVET has evolved from being perceived as an alternative or secondary educational route to becoming a strategic pillar for competitiveness and employment creation. Its significance rests on its capacity to provide learners with both technical expertise and entrepreneurial competencies, thereby enabling them to obtain meaningful employment or establish sustainable enterprises (Mabutha, 2024). As economies increasingly shift toward technology-driven sectors, the need for adaptable and multi-skilled workers has intensified, positioning TVET at the forefront of workforce development and innovation (Selane & Odeku, 2024). Notwithstanding its promise, TVET systems frequently encounter criticism regarding their limited alignment with labour market requirements. Although many graduates possess technical knowledge, they often lack broader competencies demanded by employers, such as business acumen, problem-solving ability, communication skills, and adaptability (Adewolu, 2024; Ujevbe et al., 2020; Malekshahian et al., 2025). Such shortcomings undermine employability, understood as the capacity to obtain, maintain, and effectively perform in employment, and constrain entrepreneurial performance (Ujevbe et al., 2020). In this study, TVET graduates refer to individuals who complete structured programmes in universities, polytechnics, or technical colleges. Employability outcomes denote their successful transition into meaningful employment, while entrepreneurial success involves the creation and sustainability of ventures that promote innovation and community development (Bhatti & Zakariya, 2024; Somewethee et al., 2023). Both outcomes are vital to fostering an inclusive and resilient Nigerian economy (Bank of Industry Limited, 2025). To address these concerns, enhanced collaboration among multiple stakeholders has been proposed as a viable solution. Governments, private sector organizations, and academic institutions are increasingly engaging in joint efforts to design training programmes that reflect market realities (Semali, 2024). Public–Private Partnerships (PPPs) are particularly important in

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this regard, as they combine resources, expertise, and networks to improve graduate outcomes. Within the TVET context, PPPs take the form of curriculum co-design, industry-sponsored training, apprenticeship schemes, incubation centres, and entrepreneurship initiatives. These collaborative efforts provide learners with exposure to contemporary technologies, internships, and industry networks, thereby strengthening employability and entrepreneurial preparedness (Niwamanya et al., 2025; Taofeek et al., 2025). Empirical evidence highlights the positive role of PPPs. Research conducted in India, Ghana, and Kenya indicates that PPP-driven training and incubation programmes yield superior employability and entrepreneurial outcomes compared to initiatives solely managed by government (Srivastava et al., 2025; Anand & Kumar, 2021). In Nigeria, PPP arrangements within the ICT and construction sectors have contributed to improved technical proficiency, entrepreneurial orientation, and employment placement rates (Niwamanya et al., 2025). South-South Nigeria, characterized by its economic significance in oil, gas, and manufacturing alongside persistent graduate unemployment, presents an important context for assessing PPP effectiveness. Despite existing opportunities, empirical evidence regarding the impact of PPPs on employability and entrepreneurship in this region remains scarce and fragmented. Contemporary scholarship expands the concept of employability beyond technical competence to include soft skills, entrepreneurial orientation, and adaptability (Adewolu, 2024; Gordon, 2024). Industry partnerships facilitate the integration of these dimensions, ensuring that graduate competencies align with labour market expectations while nurturing entrepreneurial ecosystems. In addition to addressing skills mismatches, PPPs provide platforms for fostering creativity, innovation, and entrepreneurial thinking. Central to this discussion is the notion of innovative capability, which has become increasingly pivotal to both employability and entrepreneurial success. While earlier research primarily emphasized technical proficiency, contemporary studies underscore the importance of generating, adapting, and applying new ideas in dynamic labour markets and entrepreneurial contexts (Bhatti & Zakariya, 2024; Li et al., 2022). Innovative capability empowers graduates to navigate change, develop creative solutions, and sustain ventures amidst uncertainty. According to Tikas (2023), it is a multidimensional construct encompassing creativity, adaptability, teamwork, and knowledge application, thereby serving as a crucial bridge between training inputs and performance outcomes. Public–Private Partnerships have the potential to strengthen innovation-oriented competencies by immersing learners in environments that encourage creativity, problem-solving, and adaptability (João & Silva, 2017). Industry-sponsored training exposes students to practical challenges, curriculum co-design enhances relevance, and incubation hubs cultivate entrepreneurial agility. Nonetheless, the effectiveness of PPPs is not automatic. Institutional weaknesses, resource constraints, and conflicting incentives may limit their impact (Somewethee et al., 2023). Consequently, the relationship between PPPs and graduate success is multifaceted, with innovative capability emerging as a possible mediating factor.

Statement of the Research Problem

Although TVET is widely acknowledged as a strategic pathway for workforce development and entrepreneurial growth, persistent concerns remain regarding the employability and entrepreneurial performance of its graduates, particularly in Nigeria. Despite receiving technical training, many graduates continue to face unemployment or underemployment, largely due to gaps in holistic competencies such as business literacy, adaptability, communication, and problem-solving skills. These deficiencies suggest a disconnect between training provision and labour market expectations. Public–Private Partnerships (PPPs) have been proposed as a mechanism for bridging this gap by aligning curricula with industry needs, providing industry-funded training, and supporting incubation and entrepreneurship initiatives. While evidence from other countries and selected sectors in Nigeria indicates positive outcomes associated with PPP-driven models, empirical findings specific to South-South Nigeria remain limited and fragmented. Given the region's economic relevance and persistent graduate unemployment, there is insufficient clarity regarding the extent to which PPP initiatives meaningfully influence employability and entrepreneurial success among TVET graduates. Furthermore, although recent literature emphasizes innovative capability as critical to graduate performance in dynamic labour markets, its mediating role in the relationship between PPP initiatives and employability or entrepreneurial outcomes has not been adequately examined within the Nigerian context. Without understanding this mechanism, efforts to strengthen PPP models may lack strategic focus. Therefore, the core problem of this study lies in the limited empirical evidence on how Public–Private Partnerships influence employability and entrepreneurial success among TVET graduates in South-South Nigeria, and whether innovative capability serves as a mediating pathway linking PPP initiatives to these critical outcomes.

Objectives of the Study

1. To investigate the influence of PPP Models on TVET graduate employability outcomes.

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2. To determine the influence of PPP Models on TVET graduate entrepreneurial success.
3. To check for any mediating effect of innovative capacity on the relationship between PPP Models and TVTE graduate employability.
4. To observe the mediating effect of innovative capacity on the relationship between PPP models and entrepreneurial success.

Research Questions

1. What is the influence of PPP Models on TVET graduate employability outcomes?
2. What is the influence of PPP Models on TVET graduate entrepreneurial success?
3. What is the mediating effect of innovative capacity on the relationship between PPP Models and TVTE graduate employability?
4. What is the mediating effect of innovative capacity on the relationship between PPP models and entrepreneurial success?

The study is underpinned by Human Capital Theory (Becker, 1993), which posits that investments in education and training enhance productivity, employability, and income potential. Within this framework, PPPs serve as mechanisms that expand human capital investments by combining public resources with private expertise. Incorporating innovative capability as a mediator enriches this theoretical perspective by illustrating how training inputs translate into employability and entrepreneurial success. Accordingly, this study examined the direct effects of PPP models on employability and entrepreneurial outcomes among TVET graduates in South-South Nigeria and tested the mediating influence of innovative capability.

Methodology

This study adopted a descriptive survey design with correlational analysis to examine the impact of Public-Private Partnership (PPP) models on the employability and entrepreneurial success of TVET graduates in South-South Nigeria. This design was considered appropriate as it enabled the collection of quantitative data and the exploration of relationships among the study variables. The population comprised 1,372 respondents, including 1,232 TVET graduates (2018–2023) from two publicly owned universities and technical colleges, and 147 private sector partners from industries and companies in Delta and Edo States. South-South Nigeria was purposively selected for its economic significance in oil, gas, manufacturing, and services, as well as the persistent challenge of unemployment and skills mismatch in the region. The inclusion of both graduates and industry actors allowed the study to capture perspectives from both the supply and demand sides of TVET. A sample size of 421 respondents (338 graduates and 83 industry partners) was determined using Yamane's (1967) formula at a 5% margin of error, ensuring representativeness. Sampling involved a proportionate stratified random technique to achieve balance between states and categories, purposive sampling for targeted participants, and accidental sampling for accessible respondents. This multi-stage approach provided robust data for assessing PPP effectiveness in enhancing TVET graduates' employability and entrepreneurial outcomes. In a bid to ensure the reliability and validity of the measurements, this study adopted and adapted scales that are widely used to measure related variables in reputable journals. Scales adapted were done to the degree to which they measured contextual concerns. The instruments were subjected to face validity by experts in TVET, education research, and industry collaboration. A pilot study was conducted using 20 TVET graduates outside the study sample to test the reliability of the questionnaire. Unless otherwise specified, all scale items were measured using the Likert 5-point scale approach, where 1 means "strongly disagree" and 5, "strongly agree." The variable was measured using the employability skill scale developed by Sharma and Bhattarai (2022), containing 30 items divided into six domains, namely, communication skills (16 items, e.g., *"Speaking skill: can organize ideas and communicate orally", "Reporting skill: can prepare documents such as letters and reports."*), thinking skills (5 items, e.g., *"Creative Thinking: usually come up with creative &innovative ideas"*), interpersonal skills/teamwork (5 items, e.g., *"Work with diversity: can work well with colleagues from diverse backgrounds."*), and technology and information technology skills (5 items, e.g., *"Email: can send, receive, and manage emails."*), planning and resource management skills (4 items, e.g., *"Finance: can prepare plans and budgets, make forecasts, keep records, and manage efficiently to meet objectives."*), and personal qualities (5 items, e.g., *"Honesty: demonstrate honesty."*). Public–Private Partnership (PPP) models were measured using a 16-item questionnaire assessing curriculum co-design, industry-funded training, entrepreneurship schemes, and incubation hubs (e.g., collaboration with industries for funded training and curriculum review). Entrepreneurial success was measured with an adapted 9-item scale by Rahman et al. (2015), which demonstrated

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good reliability (Cronbach's α = 0.80). Innovative capability was assessed using a 12-item scale adapted from existing literature (Tikas, 2023; Calik et al., 2017), covering idea generation, application, adaptation, organizational learning, collaboration, and experimentation. Questionnaires were administered physically to TVET graduates and private sector partners to enhance response rates. Demographic information was also collected. Data were analyzed using descriptive statistics (means, frequencies, percentages) and regression analysis. PROCESS Macro was used to test the mediating role of innovative capability.

Presentation of Results

Table 1: Demographic Characteristics of the 421 Respondents

Variable	Category	TVET Graduates (n = 338)	Companies/Industry Respondents (n = 83)	Total (N = 421)
Gender	Male	309 (91.4%)	74 (89.2%)	383 (91.0%)
	Female	29 (8.6%)	9 (10.8%)	38 (9.0%)
Type of Institution	University	118 (34.9%)	–	118 (28.0%)
	Technical College	220 (65.1%)	–	220 (52.3%)
	Industries/Companies	–	83 (100%)	83 (19.7%)
Employment/Busi-ness Status	Self-employed	158 (46.7%)	13 (15.7%)	171 (40.6%)
	Employed (Public)	95 (28.1%)	–	95 (22.6%)
	Employed (Private)	85 (25.1%)	70 (84.3%)	155 (36.8%)
State of Residence	Delta	230 (68.0%)	50 (60.2%)	280 (66.5%)
	Edo	108 (32.0%)	33 (39.8%)	141 (33.5%)

Source: Fieldwork carried out by the researchers (2025).

The data show that both TVET graduates and industry respondents are predominantly male (91%). Most graduates (65.1%) were trained in technical colleges, while all industry respondents represent companies. Employment patterns differ: 46.7% of graduates are self-employed, while 84.3% of companies employ workers privately, highlighting strong private-sector engagement. Only 28.1% of graduates work in public service. Residence is concentrated in Delta State (66.5%), with Edo State accounting for 33.5%. Overall, results emphasize the technical training's role in private employment and entrepreneurship.

Research Question 1

What is the influence of PPP Models on TVET graduate employability outcomes?

Table 2: Regression Coefficients of PPP Models Predicting TVET Graduate Employability Outcomes

Predictor	B	SE	β	T	p
Constant	1.937	.062	—	31.012	.000
PPP models	-.080	.039	-.101	-2.075	.039

Source: Fieldwork carried out by the researchers (2025).

Note: *B* = Unstandardized Regression Coefficient; *SE B* = Standard Error of the Coefficient; β = Standardized Regression Coefficient; *t* = *t*-test Statistic; *p* = Significance Level; VIF = Variance Inflation Factor; Dependent Variable: TVET Employability Outcomes

PPP models significantly but negatively predicted employability outcomes (β = -0.101, p = .039). This indicates that greater reliance on PPP models is associated with a slight decline in employability outcomes. Although the effect size is small, the finding suggests that the inability of TVET graduates to meet industry expectations may be linked to the poor quality or ineffective implementation of PPP models to which they were exposed during training. Such deficiencies in the models may have limited their capacity to acquire the requisite competencies for securing employment after graduation.

Research Question 2

What is the influence of PPP Models on TVET graduate entrepreneurial success?

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Table 3: Regression Coefficients of PPP Models Predicting Entrepreneurial Success among TVET Graduates

Predictor	B	SE	β	T	p
Constant	1.501	.110	—	13.590	.000
PPP models	.168	.068	.120	2.469	.014

Source: Fieldwork carried out by the researchers (2025).

Note: *B* = Unstandardized Regression Coefficient; *SE B* = Standard Error of the Coefficient; β = Standardized Regression Coefficient; *t* = *t*-test Statistic; *p* = Significance Level; VIF = Variance Inflation Factor; Dependent Variable: Entrepreneurial Success

PPP models positively and significantly predicted entrepreneurial success (β = .120, p = .014). This indicates that TVET graduates exposed to PPP-based initiatives are more likely to report higher entrepreneurial success. Although the effect size is modest, the relationship aligns with theoretical expectations. Additionally, the relationship could suggest that other factors may be responsible for this prediction.

Based on the two SPSS Process Macro output tables below, develop their reporting tables and their corresponding interpretations in APA 7th edition.

Research Question 3

What is the mediating effect of innovative capacity on the relationship between PPP Models and TVTE graduate employability?

Table 4: Mediation Analyses Predicting TVET Graduate Employability Outcomes through Innovative Capability

Effect Type	B	SE	t	p	95% CI (LL, UL)
Total effect	-0.08	0.04	-2.07	.039	[-0.16, -0.00]
Direct effect	-0.06	0.05	-1.32	.187	[-0.15, 0.03]
Indirect effect	-0.02	0.03	—	—	[-0.07, 0.03]

Source: Fieldwork carried out by the researchers (2025).

Note: B = unstandardized regression coefficient; SE = standard error; *t* = *t*-test statistic; *p* = significance level; CI = confidence interval (95%, bootstrap 5000 samples); Mediator = Innovative Capability

Table 4 above reveals that PPP models had a significant total negative effect on employability outcomes among TVET graduates (B = -0.08, p = .039), indicating that PPP models were associated with slightly lower employability among the graduates. However, it was not significant once the mediator (innovative capability) was introduced into the path, showing that the indirect effect via the mediator was not significant (B = -0.02, CI [-0.07, 0.03], suggesting no mediation (95% CI includes zero).

Research Question 4

What is the mediating effect of innovative capacity on the relationship between PPP models and entrepreneurial success?

Table 5: Mediation Analyses Predicting Entrepreneurial Success among TVET Graduates through Innovative Capability

Effect Type	B	SE	t	p	95% CI (LL, UL)
Total effect	0.17	0.07	2.47	.014	[0.03, 0.30]
Direct effect	0.09	0.08	1.05	.295	[-0.07, 0.25]
Indirect effect	0.08	0.04	—	—	[0.00, 0.17]

Source: Fieldwork carried out by the researchers (2025).

Note: B = unstandardized regression coefficient; SE = standard error; *t* = *t*-test statistic; *p* = significance level; CI = confidence interval (95%, bootstrap 5000 samples); Mediator = Innovative Capability

The PPP models, as depicted in Table 5 above, show a significant total positive effect on entrepreneurial success (B = 0.17, p = .014). That is to say, the PPP models positively influenced entrepreneurial success among TVET graduates in the study. However, the direct effect was not significant when innovative capability was added, and the indirect effect via innovative capability was significant (B = 0.08, CI [0.00, 0.17]), indicating partial mediation (95% CI did not include zero).

Discussion and Findings

Influence of PPP Models on TVET Graduate Employability Outcomes

The present study found that PPP models exerted a statistically significant but negative influence on TVET graduate employability outcomes. This suggests that while partnerships between public institutions and private industry are intended to bridge skill gaps, their current form may be inadequate or misaligned with labour market demands. Similar concerns

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have been raised in prior research, which highlights persistent employability deficits in Nigeria despite policy-level efforts to integrate TVET with industry (Agundu, 2020; Ujevbe et al., 2020; Hassan & Anees, 2024). One possible explanation is that many PPP initiatives remain poorly institutionalized or focus heavily on technical aspects without embedding soft skills, adaptability, and workplace readiness. Adewolu (2024) and Gordon (2024) argue that employability in the 21st century requires a balanced emphasis on technical, cognitive, and socio-emotional skills. Where PPP frameworks neglect this balance, graduates may emerge technically competent yet ill-prepared for the complex realities of modern workplaces. This aligns with the findings of Sharma and Bhattarai (2022), whose employability scale places communication, problem-solving, and teamwork at the core of employability alongside technical knowledge. Thus, while PPP models hold promise, their effectiveness for employability outcomes depends on structural quality, inclusiveness, and sustained alignment with labour market needs.

Influence of PPP Models on Entrepreneurial Success

In contrast, PPP models demonstrated a significant positive effect on entrepreneurial success. This outcome aligns with evidence that industry–education partnerships provide access to incubation hubs, mentorship, and market linkages, which directly support entrepreneurial ventures (Mabutha, 2024; Semali, 2024). The results resonate with Niwamanya et al. (2025), who emphasize the role of enterprise–TVET collaborations in supporting digital entrepreneurship in developing nations, and with Taofeek et al. (2025), who highlight sustained industry collaboration as key to fostering business readiness. Furthermore, Ogunsola (2023) and Selane and Odeku (2024) demonstrate that entrepreneurial success is enhanced where TVET institutions integrate soft skills and business literacy into curricula, an outcome more achievable through strategic PPP engagement. The positive coefficient in the current study, therefore, reflects PPP models' potential in facilitating entrepreneurial ecosystems, particularly when focused on innovation-driven and market-relevant training.

Mediating Effect of Innovative Capacity on the Relationship between PPP Models and TVTE Graduate Employability

This outcome is not entirely unexpected, as previous studies have highlighted that PPP interventions may not automatically translate into employability gains without strong alignment between training content, labour market needs, and institutional delivery capacity (Mgaiwa, 2021; Matere, 2022; Ngesi et al., 2021). Weak institutional coordination, inadequate supervision of workplace training, and misaligned incentives between industries and training institutions often limit the employability benefits of PPP-based initiatives (Ahmad et al., 2021; Almeile et al., 2024). Moreover, the finding resonates with Agezew (2024), who demonstrated that higher education research and innovation practices did not always lead to improved employability unless they were embedded in labour market–responsive structures. Thus, while PPPs create opportunities for technical and entrepreneurial training, their capacity to enhance employability among graduates may be constrained in contexts where systemic weaknesses overshadow potential gains. This highlights the need for PPP frameworks that integrate not only skills transfer but also structured career support systems, mentorship, and alignment with local industry demands.

Mediating Effect of Innovative Capacity on the Relationship between PPP Models and Entrepreneurial Success

This aligns with prior studies emphasizing that innovation capacity, encompassing creativity, problem-solving, and the application of new knowledge, is a central determinant of entrepreneurial performance (Taleb et al., 2023; Çakır et al., 2022). Mutumba et al. (2020) similarly observed that PPPs in Uganda's entrepreneurial ecosystem improved franchise sustainability largely through their support for innovative practices, while Yunus and Susanti (2021) found that PPPs promoted tourism development by stimulating service innovation. By embedding graduates in incubation hubs, co-designed curricula, and industry-driven projects, PPP models expose learners to real-world challenges that require adaptive, innovative solutions (Olando et al., 2024; Cheng et al., 2021). These findings demonstrate that innovative capability is not merely an added value but a key mechanism through which PPP models foster entrepreneurial outcomes. Thus, while PPPs alone may not guarantee employability improvements, their real strength lies in fostering innovation-oriented competencies that enable graduates to create, adapt, and sustain entrepreneurial ventures in dynamic market environments. This reinforces the argument that innovative capability should be viewed as a critical lever in PPP design and policy frameworks, especially in developing contexts such as Nigeria's South-South region, where entrepreneurship is a vital engine of employment creation and economic resilience.

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Conclusion

This study examined the influence of Public-Private Partnership (PPP) models on the employability and entrepreneurial outcomes of TVET graduates in South-South Nigeria. Findings revealed that while PPP interventions significantly enhanced entrepreneurial success through incubation hubs, mentorship, and entrepreneurship initiatives, they negatively influenced employability, indicating a misalignment between PPP strategies and labor market demands. Graduates often lacked workplace readiness and transferable skills required by employers. Furthermore, innovative capability, tested as a mediating variable, did not significantly shape the relationship between PPP models and outcomes, highlighting gaps in current frameworks. Strengthening innovation, creativity, and problem-solving within PPP initiatives is essential to reducing graduate unemployment, closing skills gaps, and fostering inclusive economic transformation in Nigeria.

Recommendations

Based on the findings, it is recommended that:

1. Curriculum Reorientation: TVET institutions should redesign curricula to emphasize dual outcomes, employability, and entrepreneurship, through demand-driven training.
2. Industry Collaboration: Institutions should expand collaboration with private sector partners to provide internship placements, hands-on learning, and co-developed training modules.
3. Innovation Capacity Building: Training programs should include modules on creativity, problem-solving, and innovation management to build resilience among graduates.

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Correlation between Mathematical Literacy and Students' Understanding of Population Growth and Genetics Concepts among Secondary School Biology students in Delta State, Nigeria

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Abstract

This study explored the relationship between mathematical literacy and students' understanding of population growth and genetics in biology. A correlational research design was adopted, involving 240 Senior Secondary II students selected using stratified random sampling. Data were collected using a Mathematical Literacy Test (MLT) and a Biology Quantitative Concepts Achievement Test (BQC-AT). Pearson Product-Moment Correlation and simple linear regression were used to analyze the data at a 0.05 significance level. Findings revealed a significant positive relationship between mathematical literacy and students' understanding of population growth ($r = 0.62$, $p < .001$) and genetics ($r = 0.58$, $p < .001$). Regression analyses showed that mathematical literacy significantly predicted achievement in population growth ($R^2 = 0.384$) and genetics ($R^2 = 0.336$), indicating that students with higher mathematical literacy performed better in quantitative Biology tasks. The study concludes that mathematical literacy is a key determinant of conceptual understanding in biology. Based on the findings, it is recommended that biology and mathematics curricula be integrated to emphasize quantitative reasoning and that teachers receive professional development on incorporating mathematical concepts into biology instruction. Strengthening students' mathematical literacy will enhance their ability to interpret biological data, solve quantitative problems, and improve overall performance in biology.

Keywords: Mathematical literacy, population growth, genetics, quantitative biology, secondary education.

Introduction

The rapid expansion of scientific knowledge in the twenty-first century has intensified the demand for interdisciplinary competencies among learners, particularly in mathematics and science. For instance, modern biology is no longer purely descriptive; it increasingly relies on quantitative reasoning to explain complex natural phenomena (Mayes et al., 2022; American Biology Teacher Staff, 2025). Key biological domains such as population ecology and genetics require learners to interpret mathematical models, analyze data, and apply probabilistic reasoning (BioLibreTexts, 2023, 2024; Meta & Amin, 2024). Concepts including exponential and logistic population growth, allele frequency dynamics, Mendelian inheritance, and Hardy–Weinberg equilibrium are fundamentally mathematical in nature (Kunwar, 2018; Fisher, 1918; Hill, 2010). Consequently, students' ability to engage meaningfully with these topics is closely tied to their level of mathematical literacy (Steen, 2001; OECD, 2019). Mathematical literacy refers to the capacity to formulate, employ, and interpret mathematics in diverse real-life contexts, encompassing proportional reasoning, algebraic thinking, probability, and data interpretation (OECD, 2019; Eurasia Journal of Mathematics, Science and Technology Education, 2025). These competencies enable students to connect abstract mathematical ideas with scientific applications (Mayes et al., 2022; International Journal of STEM Education, 2022). In population ecology, students must interpret growth curves, calculate rates of change, and understand exponential relationships (BioLibreTexts, 2024; BioSystems, 2024a). Genetics requires probabilistic reasoning, ratio interpretation, and algebraic manipulation to predict genotypic and phenotypic distributions (BioLibreTexts, 2023; Maghfiroh, 2025). When students lack adequate mathematical literacy, they often develop fragmented or superficial understandings of these biological concepts (Hester et al., 2014; Hsu, Gartland, Prate, & Hohensee, 2025). A growing body of empirical research demonstrates that mathematical literacy significantly predicts science achievement. Large-scale studies show that mathematics proficiency is a strong predictor of science performance among secondary students (Maerten-Rivera et al., 2010). Research in STEM education further indicates that quantitative

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reasoning enhances conceptual understanding and academic achievement (Fong et al., 2021; Fong et al., 2021). Integrated instruction in mathematics and science promotes transferable STEM competencies (International Journal of STEM Education, 2022; Kaur, McLoughlin, & Grimes, 2022). In biology specifically, students with stronger quantitative reasoning skills are better able to interpret experimental data and biological models (Hsu, 2025; Hsu, Johnson, & Kim, 2025). Systematic reviews confirm that embedding quantitative literacy into ecological and genetics instruction improves student reasoning and achievement (Meta & Amin, 2024; Maghfiroh, 2025). Advanced mathematical frameworks are increasingly used to model biological growth and population dynamics, underscoring the centrality of quantitative reasoning in biological sciences (BioSystems, 2024a, 2024b). Despite this interdisciplinary reality, secondary school instruction often treats mathematics and biology as separate domains. Studies on classroom practice report that insufficient integration of quantitative reasoning contributes to student difficulties in interpreting graphs, solving probability problems, and applying mathematical models in biology (Hester et al., 2014; American Biology Teacher Staff, 2025). Students frequently struggle with population growth modeling and genetics calculations, indicating a persistent gap between mathematical literacy and biological understanding (Meta & Amin, 2024; Maghfiroh, 2025). If unaddressed, this gap may limit students' ability to engage in scientific reasoning and data-driven decision-making (National Research Council, 2012; Steen, 2001). This study, therefore, examines whether students' mathematical literacy is significantly related to their understanding of population growth and genetics in biology. By investigating these relationships, the study seeks to provide empirical evidence for strengthening interdisciplinary teaching approaches that integrate mathematics and biology in secondary education.

Objective of the Study

The study aimed to examine the relationship between mathematical literacy and students' understanding of:

1. Population growth in biology
2. Genetics in biology

Research Questions

1. What is the relationship between mathematical literacy and students' understanding of population growth in biology?
2. What is the relationship between mathematical literacy and students' understanding of genetics in biology?

Research Hypotheses

H_{o1}: There is no significant relationship between mathematical literacy and students' understanding of population growth in biology.

H_{o2}: There is no significant relationship between mathematical literacy and students' understanding of genetics in biology.

This study is anchored in Constructivist Learning Theory, which posits that learners actively construct knowledge by integrating new information with existing cognitive structures. Mathematical literacy functions as prior knowledge that enables students to assimilate and interpret quantitative biological concepts. The study is further supported by Quantitative Reasoning (QR) Frameworks in Biology, which identify essential competencies such as variable definition, data interpretation, model application, and evidence-based inference (Mayes et al., 2022). These frameworks emphasize that quantitative reasoning is central to biological understanding. Additionally, Student Noticing Theory suggests that learners' attention to quantitative features of scientific phenomena influences conceptual development. Students with higher mathematical literacy are more likely to notice patterns, relationships, and numerical structures embedded in biological systems, thereby enhancing understanding. Together, these frameworks explain how mathematical literacy supports conceptual learning in quantitative biology.

Methodology

This study employed a correlational research design to examine the strength and direction of relationships between mathematical literacy and students' understanding of quantitative biology concepts. The target population consisted of 1,200 Senior Secondary II students in public secondary schools in Delta State. A sample of 240 students was selected using stratified random sampling to ensure proportional representation across gender and school type (urban and rural). Two researcher-developed instruments were used: Mathematical Literacy Test (MLT):A 30-item multiple-choice test measuring proportional reasoning, graph interpretation, probability, and exponential functions. Content validity was established through expert review by mathematics educators. Reliability analysis using KR-20 yielded a coefficient of 0.84, indicating high internal consistency and Biology Quantitative Concepts Achievement Test (BQC-AT): A 25-item test assessing

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understanding of population growth (12 items) and genetics (13 items). Expert validation ensured alignment with curriculum objectives. The KR-20 reliability coefficient was 0.81. A pilot study involving 40 students outside the main sample confirmed instrument clarity and reliability. Data collection followed ethical procedures, including informed consent, confidentiality assurance, and voluntary participation. Data were analyzed using Pearson Product–Moment Correlation to determine relationships and simple linear regression to assess predictive power. All tests were conducted at a 0.05 significance level.

Presentation of Results

Research Question 1

Table 1: Relationship between Mathematical Literacy and Population Growth

Variable	N	Mean	SD	r	p-value
Mathematical Literacy	240	21.45	4.32		
Population Growth Achievement	240	18.10	3.95	0.62	0.000

Table 1 presents the Pearson Product–Moment Correlation analysis examining the relationship between students' mathematical literacy and their achievement in population growth concepts. The results show that the 240 participating students obtained a mean score of 21.45 (SD = 4.32) in mathematical literacy and a mean score of 18.10 (SD = 3.95) in population growth achievement. The computed correlation coefficient (r = 0.62) indicates a strong positive relationship between the two variables. The associated p-value (0.000) is less than the 0.05 significance level, demonstrating that the relationship is statistically significant. This finding implies that students with higher mathematical literacy tend to perform better in understanding population growth concepts such as exponential and logistic growth, carrying capacity, and interpretation of growth graphs. The strength of the correlation suggests that mathematical reasoning skills play an important role in enabling students to analyze quantitative ecological information and apply mathematical models to biological situations. The relatively moderate standard deviations indicate reasonable variability in students' scores, suggesting that differences in mathematical literacy meaningfully correspond to differences in achievement in population growth. Overall, the results highlight the importance of strengthening students' mathematical competencies to enhance their conceptual understanding of quantitative topics in biology.

Research Question 2

Table 2: Relationship between Mathematical Literacy and Genetics

Variable	N	Mean	SD	r	p-value
Mathematical Literacy	240	21.45	4.32		
Genetics Achievement	240	17.65	4.10	0.58	0.000

Table 2 shows the correlation analysis between students' mathematical literacy and their achievement in genetics. The sample of 240 students recorded a mean score of 21.45 (SD = 4.32) in mathematical literacy and a mean score of 17.65 (SD = 4.10) in genetics achievement. The Pearson correlation coefficient of r = 0.58 reveals a moderate to strong positive relationship between mathematical literacy and students' understanding of genetics concepts. The p-value of 0.000 is below the 0.05 level of significance, indicating that the observed relationship is statistically significant. This result suggests that students who demonstrate stronger mathematical literacy are more likely to excel in genetics topics that require probability reasoning, ratio interpretation, and algebraic thinking, such as Mendelian inheritance patterns and allele frequency calculations. The positive association indicates that mathematical skills support students' ability to solve quantitative genetics problems and interpret genetic data accurately. The standard deviations show moderate variation in performance, reflecting meaningful differences in students' competencies. Collectively, the findings emphasize that mathematical literacy is an important factor in promoting a deeper understanding of genetics and reinforces the need for instructional approaches that integrate mathematical reasoning into biology teaching.

Table 3; Summary of Regression and ANOVA Results for the Effect of Mathematical Literacy on Students' Understanding of Population Growth and Genetics

Hypothesis	Dependent Variable	R	R^2	Adjusted R^2	Std. Error of Estimate	F(1,238)	p-value
H_1	Population Growth Achievement	0.62	0.384	0.381	3.11	150.20	< .001

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H_2	Genetics Achievement	0.58	0.336	0.333	3.35	115.60	< .001

Note: R = Multiple correlation coefficient; R^2 = Coefficient of determination; F(1,238) = F-value for regression model with 1 predictor and 238 degrees of freedom; p < .05 indicates statistical significance

Hypothesis One

H_{01}: There is no significant relationship between mathematical literacy and students' understanding of population growth in biology.

The analysis from the table above revealed that r = 0.62 between mathematical literacy and students' understanding of population growth. The p-value (0.001) is less than the alpha level of 0.05. This indicates a strong positive and statistically significant relationship between the two variables. Therefore, the null hypothesis (H_{01}) is rejected**.** This implies that students with higher mathematical literacy tend to demonstrate better understanding of population growth concepts such as exponential growth, logistic growth curves, carrying capacity, and graphical interpretation of population data. Mathematical literacy explains 33.6% of the variance in students' understanding of population growth.

Hypothesis Two

H_{02}: There is no significant relationship between mathematical literacy and students' understanding of genetics in biology. Also, the analysis from the table above revealed that r = 0.58, with a p-value of 0.001, which is less than 0.05. This indicates a moderate to strong positive and statistically significant relationship between mathematical literacy and students' understanding of genetics. Thus, the null hypothesis (H_{02}) is rejected. This finding suggests that students with stronger mathematical literacy skills perform better in genetics concepts involving probability (Punnett squares), Mendelian ratios, Hardy–Weinberg equilibrium, and allele frequency calculations. Mathematical literacy accounts for 33.6% of the variance in students' understanding of genetics.

Summary of Results

1. Hypothesis One: Rejected. Mathematical literacy has a significant positive relationship with students' understanding of population growth (r = 0.62).
2. Hypothesis Two: Rejected. Mathematical literacy has a significant positive relationship with students' understanding of genetics (r = 0.58).

Discussion of Findings

Hypothesis One: Relationship Between Mathematical Literacy and Population Growth

Hypothesis One was rejected, indicating that mathematical literacy has a significant positive relationship with students' understanding of population growth in biology (r = 0.62). The Pearson correlation analysis showed that students with higher mathematical literacy performed significantly better in interpreting population growth concepts, such as exponential and logistic growth curves, rates of change, and carrying capacity. This finding is consistent with prior research emphasizing the quantitative nature of population dynamics. Hsu, (2025) reported that students with stronger quantitative reasoning skills are better able to interpret ecological data and understand dynamic biological systems. Similarly, a systematic review of quantitative literacy in ecological instruction revealed that embedding numerical and graphical reasoning tasks within biology learning improves conceptual understanding of population processes (Meta & Amin, 2024). These findings reinforce the view that mathematical literacy serves as a cognitive tool for interpreting and applying biological concepts rather than merely supporting rote learning.

Hypothesis Two: Relationship between Mathematical Literacy and Genetics

Hypothesis Two was also rejected, showing that mathematical literacy has a significant positive relationship with students' understanding of genetics in biology (r = 0.58). This finding aligns with recent empirical studies highlighting the centrality of quantitative reasoning in genetics education. Maghfiroh (2025) found that students' ability to reason probabilistically and manipulate ratios directly influences their understanding of genetic inheritance patterns. Similarly, American Biology Teacher Staff (2025) emphasized that integrating quantitative reasoning into genetics instruction enables students to make sense of probabilistic and data-driven scientific phenomena. These studies corroborate the current finding that students' mathematical literacy is a significant determinant of achievement in genetics.

Conclusion

This study demonstrates that mathematical literacy plays a vital role in students' understanding of quantitative biology concepts, especially population growth and genetics. The strong positive correlations indicate that students with higher

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mathematical reasoning skills are better able to interpret biological models, analyze data, and solve quantitative problems in biological contexts. Regression results further confirm that mathematical literacy significantly predicts students' achievement in these areas. The findings highlight the interdisciplinary nature of modern science education, where biology increasingly depends on mathematical representations such as graphs, equations, and probability models. When students lack adequate mathematical literacy, their understanding of biological concepts becomes fragmented and limits scientific reasoning. In contrast, strengthening mathematical skills enhances students' ability to interpret biological phenomena meaningfully. The study underscores the instructional importance of integrating mathematics and biology teaching. Improving mathematical literacy is, therefore a strategic pathway for enhancing overall science achievement and promoting coherent interdisciplinary learning.

Recommendations

1. Curriculum planners should integrate biology and mathematics curricula to emphasize quantitative reasoning, modeling, and data interpretation.
2. Schools should organize interdisciplinary professional development programs for teachers on integrating mathematical reasoning into biology instruction.
3. Instructional materials should include real-world biological problems that require mathematical modeling and analysis.
4. Teachers should adopt inquiry-based and problem-solving pedagogies that promote active engagement with quantitative concepts.
5. Educational policymakers should support collaborative teaching approaches between mathematics and biology educators to strengthen interdisciplinary learning.

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Qualitative Study on Comparative Analysis of Syntactic Features of Verbs and Nouns Used in English and Ika Languages among Learners in Delta State, Nigeria

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Abstract
The aim of the study is to investigate through comparative analysis, areas of difficulties which Ika native speakers who learn English as a second language would face in learning the English nouns and verbs. It is discovered that Ika learners of English language as a second language face challenges because of difficulties from the evidence of differences between the structures of the English and Ika nouns and verbs. These challenges have prompted the researcher into investigating the differences between the structures using the theory of comparative analysis. This paper adopted methodological content analysis using secondary sources. Comparative analysis has led to the discovery of areas of difficulties such as differences in the position of nouns and modifiers, formation of plurals, various ways of representing gender in English and changing active to passive sentences for nouns. For verbs,there are problems in the presentation of the perfective marker in both languages, tenses and also passivation. It is, therefore, recommended that the curriculum planners take cognizanceof these challenges so as to proffer solution on how the difficulties can be tackled for effective teaching and learning, Ika language should be studied independently of English looking at the vast differences between the two. The teacher should concentrate on these difficulties, while students become serious with learning ability.
Keywords: English, Ika, Nouns, Verbs, Comparative Analysis

Introduction
In the structure of language, syntax means the way words and phrases are put together to form sentences in a language. It involves the organization of words into phrases and sentences. It studiesthe level of language that lies between words and the meaning of utterances. The theoretical framework for this study is based on comparative analysis theory propounded by Robert Lado in 1957. In his *Linguistics Across Culture,* which is concerned with the comparison of two or more languages in order to determine both the differences andsimilarities between them (Fisiak, 2019). It is based on the idea that no two languages are the same. Comparing the learners' first language with the Englishlanguage requires the isolation of features of English language which cause problems for the learners. Studies within one language could involve contrasting phonemes, morphemes; and those involving across two languages could involve acomparative analysis of lexical, grammatical, discourse systems including interference and translation equivalent (Opara, 2016). This is done by comparing native languages withthe foreign language being learnt. Linguistsbelieve that pointing out the similarities anddifferences of the languages will make the learning of the foreign language easier for the learner. Lado was the first to provide a comprehensive theoretical treatment and tosuggest a systematic set of technical procedures for the comparative study of languages. This procedure includes:describing the languages (using structural linguistics), comparing them, and predictinglearning difficulties. It was expected that once the areas of potential difficulties had been mapped out through comparative analysis, it would be possible to design language courses more efficiently.

The basic assumption for CA hypothesis is the interference of the first language systemwith the second language system and the second language learning basically involved the overcoming of the differences between the two linguistic systems, that is, the nativeand the target languages (Brown, 2019).Fries in support of Brown states, 'the most effective teaching materials are those that are based upon a scientific description of thelanguage to be learned carefully compared with parallel description of the nativelanguage of the learner' (Powell, 2018). This paper looks at the syntactic features of nouns and verbs. The writer selected literatures on the syntactic features of nounsand verbs. From the relationships and variables observed, differences and similarities of the syntactic features of English and Ika nouns and verbs will be established. The idea is to trace the relationship between the two languages in the two areas: nouns and verbs. From the relationships, it will be pertinent to conclude whether the knowledge of English language can be enhanced by the knowledge of Ika language and whether the study of Ika language

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will be based on the established norms of the English language.

Description of the Syntactic Features of English and Ika Languages

Based on Lado's procedure for comparative analysis, which include description of languages, comparing them, and prescribing learning difficulties, our main preoccupation in this section is with presenting the syntactic features of English,presenting and analyzing the syntacticfeatures of English and Ika languages using comparative perspectives. This approach involves the description of English nouns and verbs and Ika nouns and verbs, the comparison of the items of the two and then making some pedagogic projections about them.

Syntactic Features of the Structures of English Nouns

The syntactic features of nouns can be described in terms of the typical positions they occupy and the grammatical functions they perform in larger units like phrases andclauses (Yadugiri, 2020). Thus, Yadugiri lists some of these features as below:

1) A noun occurs following words like determiners such as a, the, an, there, that, these e.g. that house, an orange, these books.
2) A noun functions as the most important item or the head in a nounphrase as in these difficult questions, an honest worker, some fresh oranges from the garden.
3) A noun occurs after a preposition e.g.I gave the book to Emeka. He gave the book to the man.
4) Nouns function as subject, object,and complement e.g. subject:English is an international language,object: we sell cars, complement:Ada is a girl. Nouns form their plurals by adding –s, -es, -en or irregularly by changing the inner vowels. For instance: tap- taps, pass—passes, tooth- teeth, foot- feet,knife- knives, ox- oxen Syntactic Features of English Verbs.

Yadugiri (2020) also points out some of the syntactic features of verbs:

5) The verbal function in a clause is performed by either a single verb as in:

They went to school.

Or, by two or more verbs occurring together as in:

They have been going to school.

6) A verb can be described in terms of two important grammatical features:Finiteness and tense.

A) Finiteness: verbs are of two types: finite and non-finite. A finite verb is one that is limited in terms of number, person, and tense while non-finite verb is not limited in terms of number, person, and tense. Of the three types of verbs that constitute verbphrase: lexical verbs, primary auxiliaries and modal auxiliaries;lexical verbs and primaryauxiliaries have finite and non- finite forms, whereas modals are always finite. Examples:

The children ate their dinner.

He died *bitten* by a poisonous snake.

She spent her vacation *writing* a book.

The underlined verbs are finite verbs while the italicized ones arenon-finite verbs.

B) Tense: Tense is a grammaticalfeature that characterises finite verbs. Non-finite verbs do not have tense. English has two tenses – present and past. Thepresent tense is marked by the suffix "- s/-es" only in the case of third person singular, whereas in all other cases, the base form of the verb is used. Examples:

He lives in America.

They live at Nsukka.

In the above examples, the past tense is marked by the suffix "-ed" in most cases and by a different form of the verb in the case of irregular verbs, for instance:

(a) He lived in America

(b) I lived in America.

He bought a new car.I bought a new car.

They bought a new car.

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7) Movement transformation: Transformation takes place becausespeakers of language are familiarwith their languages and thereforemay presume many things and deleteany lexical items from their speech (Anagbogu, Mbah, &Eme, 2020). TransformationalGenerative Grammar answered several questions that the structural grammarians had left unanswered. To TGG, a sentence has been structured and a surface structure. It is as a result of several transformationsthat have applied to deep structure (akernel sentence) that one arrives at the surface structure of a sentence. Movement transformation is part of such transformation in the English language. Two types of movement transformation very important in thisanalysis are passivisation and dativemovement deletion. Passivation involves the movement of the direct object to the grammatical subject position and the movement of thesubject to the grammatical object position. In the process of interchange between the subject andthe object, some grammatical elements are added to the elements ofthe deep structure (Anagbogu, Mbah, & Eme, 2020). Consider, for instance, 'Obi killed a snake.' and 'a snake waskilled by Obi.' As a condition for passivation, there is an insertion ofthe verb 'be', '-en', and 'by'. Dativemovement is the interchange ofposition between the direct and indirect object. It entails the movement of an indirect object to thedirect object position and the direct object to the indirect object position (Anagbogu, Mbah, &Eme, 2020), examples:

a) i. Give the book to me.
ii. Give me the book.

b) i. She gave the book to John.
ii. She gave John the book.

Dative movement can only apply to ditransitive verbs (Yadugiri, 2020).

Comparing Syntactic Features of English and Ika Nouns and Verbs

Differences:

1) Nouns, Pronouns, and Nounphrases

In English language, a noun occursfollowing determiners (words like a, the, these) while determiners follow nouns in Ika constructs. Anagbogu, Mbah and Eme (2020) in support of this assert that "The phrase structure of languages differs from one another. For instance, the English NP is headfinal while Ika is head initial." Let us observe the following:

English	Ika
That house	Ụlo hụ
Those cars	Orente ndi hụ
Some students	Umunaehuhuo ndi hụ

In the above expressions, the English determiners (that, these, and some) come before the nouns (house, fruits, and students) while the Ika determiners (hụ, hu, and ndi hụ) come after the nouns.

2) In English, the noun phrase appears at the end of a group or in the middle but in Ikalanguage the head of the NP is seen at the beginning of such NP as in:

English	Ika
These difficult questions	Ajuju ndi ni ezekẹ
Some fresh oranges from the garden	Nkpụrụ osisi ndi hụ gha ime ugbo
New office	Ofisi nkẹ ohụn

What these translations show is that no matter the length of noun phrase in English,the Ika counterpart must start with the head word.

3) In English language, nouns form their plurals by adding "-s", "-en", "-es" or in the case ofirregular by changing the inner vowels. The plural marker is affixed to the nouns. InIka, the NP is unique in the sense that it does not express its morphological

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agreement features overtly. In other words, it does not show its inflectional forms atthe surface structure (Mbah, 2010). In Ika, an independent morpheme is used to express meaning of more than one. This means that an Ika noun takes complementas in:

English	**Ika**
Houses	Ụlo by ọda
Persons	Ihia bu ọda
Books	Ẹhụhụọ bu ọda

4) English distinguishes male and female sexes in the use of pronouns (Yudugiri, 2020)but this is not applicable to Ika language. A particular pronoun is used to representboth sexes. Examples:

English	**Ika**
She gave me a car	O yem orente
He gave me a book	O yem ẹhụhụọ
It ran to the bush	Ọ gba ban ime ọfia

5) In English language, nouns form their plurals both regularly by adding
"-s", "-es", "-en", or irregularly by changing the inner vowels. Ika language does not change its plurals irregularly. For instance: the two nouns – knives and teeth – remain ebeke bu ọda and eze bu ọda in Ika language.
6) Movement of nouns (subject and object). In English language, the two movement transformations discussed earlier - passivation and dative movement apply in English. Passivation involves the movement of both the subject and the object but such operations are not possible in Ika language thus:
Passivation:

English	**Ika**
They bought food stuffs.	We ṅo ihien we gi eshi ihien oriri
Food stuffs were bought by them	We ṅo ihien we gi eshi ihien oriri

The expression, "Obi gbu ewọrọ" cannot be changed to passive voice and therefore an active sentence in Ika cannot be changed to passive unlike in English where passivation occurs. The same thing applies to dative movement for instance:

English	**Ika**
She gave the book to John	O ye ẹhụhụọ hu Joni
She gave John the book	O ye Joni ẹhụhụọ hu

The Ika expression, "O ye ẹhụhụọ hụ" does not make sense. In Ika language, ditransitive verbs exist even though dative movement cannot apply.

Similarities

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1) Both English and Ika nouns function as the most important items or the head in a noun phrase
2) Both English and Ika nouns occur after prepositions e.g. in the morning

– 'ama'ụtụtụ.There are two ways of writingprepositions in Ika language as shown above. The two ways are as aresult of the letter that follows the preposition. If the letter is a vowel, the preposition is contrasted but if consonant, the preposition is writtenin full. This is not so in the English language. Sometimes, a preposition is used as a case maker. This is when a preposition is translated into a casemaker or a verb in another language.Examples:

O gba*so me* - He ran *after* her
O re ye azu - He sold fish *to* her. Mbah (2020) terms this kind of preposition 'bound prepositions.'

3) Both English and nouns function as subject, object, and complement in clauses. Examples:

Subject: **Ben** is my brother
Ben wụ nwene m
Object: We sold **cars**
enyi re **orente**
Complement: Ada is a **girl**
Ada wu nwa ta igbagba

Verbs and Verb Phrases

1) In English, the perfective marker is a full word while it is an affix in the Ika language, for instance:

English	**Ika**
Mary went to the market	Meri jẹn afia
Mary has been going to the market	Meri e'jẹn afia.

In the above examples, 'has' is a perfective marker and a full word but in Ika 'e'' showsa perfective marker but embedded in the verb, although both of them belong to the same node- inflection.

2) Another area where the two languages have remarkable difference in verb is in the useof tenses. In English language, the present tense is marked by the suffix "-s/-es" only in the case of the third person. In Ika language, the third personal pronoun does not show any singular marker in verbs, for example:

English	**Ika**
He lives in America	Obi ime America
They live in America	We bi ime America

3) There is problem of passivation as we have explained earlier. Passivation is a verbal product in English language. It cannot occur in Ika language.

Similarities

4) Both languages can be described in terms of finiteness and tense. Ika language hasfinite and non-finite verbs just like English language, example:

English	**Ika**
She ate rice	Ori osikapa

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Eating rice is good	Iri osikapa ri nma

5) Both languages have present and past tenses

Present tense	**Past tense**
She is eating rice	She ate rice
O ri eri osikapa	O ri osikapa

Discussion of Findings

This study has shown that, to a great extent, the knowledge of the acquired language influences negatively the mastery of the target language especially where the L1 and L2 are from different languagegroups. This is the case with an Ika learner battling with English language which has different syntactic structures with what is already existing in the speech behaviour of the learner. The comparative analysis goes a long way in comparing the system of one language with the system of a second language in order to predict those difficulties which a speakerof L1 will have in learning the L2 and to construct teaching materials to help him learn that language effectively. From my own analysis:

1. An Ika learner of English may have problems with the position of modifiers and nouns in phrases.
2. Learnerswould find it difficult in identifying modifiers and nouns because of the differences in their positions in the two languages.
3. Learners will also have problems of the formation of plurals. In the English language, there are so many ways of forming plurals and past tense.

It becomes difficult for an Ika learner of the English language to face problem of how to form plurals of words in the English language. For instance, because there are variations in the way plurals andtenses are formed, there is a problem of what form to use for a particular word. Isit 'persons or persones, is it boys or boyes,is it found or finded, is it bought or buyed,is it went or goed'. Learners are bound tomake these kinds of problems becausethere are no specified methods to know their plurals and past tense and also because the acquired language has a different way of realising these. Ika language for example has just a word to represent plurality – 'bu ọda'. In the same vein there are problems in the use of pronouns in sexes, formation of passives in English, etc. These problems abound because the realisation of the items are not identical with the acquired language –Ika. With the knowledge of comparative analysis, Bonathy, Trager and Waddle (2016) recommend that the task of the curriculum planners of a foreign language teaching g program is to develop materials which will be based on these differences. The foreign language teacher is to be aware of these differences and to be prepared to teach them and the task of thestudent is to learn them. Therefore, all hands should be on the deck to make the mastery of the English language easier for non-native speakers of the language like Ika learners. These challenges should beconsidered by the curriculum planners while planning and writing the syllabus, and the learner on his own part should dispose himself to overcoming those challenges.

Conclusion

The researcher has outlined and analysed some of the differences and similarities observed in the syntactic features of English and Ika nouns and verbs. Thesevariables observed have proved thatlanguage is a system of systems i.e. everylanguage has a structure of its own. In other words, no language should be modelled with reference to another language. If Ika language is described using English, no accurate data would begathered. The two languages should be studied independent of the other by close observation and interrelation. Theapproach of the study of any language with respect to the structure would make the study of any language to be precise, empirical, logical, and scientific. This is good of the structuralism as against the unscientific, illogical, and prescriptive approach of the traditional grammarians who in their analysis of the study of the English language have used other Indo- European languages to describe English. Such has resulted in so many irregularities in their description of the language. One canconclude also that the knowledge of Ikalanguage for instance may not enhance the learning of English language.

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Recommendations

Based on the analysis of this paper, it is recommended that:

1. the curriculum planners take cognizanceof these challenges so as to proffer solution on how the difficulties can be tackled for effective teaching and learning.
2. Ika language should be studied independently of English looking at the vast differences between the two.
3. The teacher should concentrate on these difficulties, while students become serious with learning ability.

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Assessment of Online Mobile Technologies on Entrepreneurial Growth among Small Scale Business Owners in North Central, Nigeria

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Abstract
The rapid advancement and penetration of online mobile technologies have transformed the entrepreneurial activities among small businesses in Nigeria. This study investigates ways of leveraging online mobile technologies in enhancing entrepreneurial growth among small businesses in North Central, Nigeria. The study adopted survey research. The population of the study was 7,245 registered small businesses in Niger, Kwara, and Nasarawa States. The Krejcie and Morgan table was used in determining the sample size of the study, which was 364. *The study utilized a structured questionnaire in data collection. The instrument was validated by three experts and pilot tested using 100 small businesses in Kaduna State. Cronbach's alpha was used to determine the reliability of the instrument, which yielded an index of 0.83. The statistical tools used in data analysis were percentage, frequency table, mean, and standard deviation, while the t-test was used in testing null hypotheses at an alpha level of 0.05 significance. The study revealed that small business owners frequently make use of online mobile technologies for basic business activities, such as communicating with customers, suppliers, and distributors, as well as for advertising through social media platforms. The study also reveals low online mobile technologies usage for tracking sales, managing expenses, and learning new business skills. Based on the findings, the study concludes that small business owners in North Central Nigeria frequently use mobile technologies for basic business activities, such as communication with customers, suppliers, and distributors, as well as informal advertising through social media platforms such as WhatsApp and Facebook. Government, NGOs, and entrepreneurship support institutions should organize training programs to improve digital literacy among small business owners.*
Keywords: Online Mobile Technologies, Entrepreneurial Growth, Small Businesses, North Central Nigeria

Introduction
The integration of online mobile technologies has emerged as a critical driver for entrepreneurial development globally, particularly in developing economies like Nigeria. The widespread use of smartphones, mobile applications, and digital platforms has opened up unprecedented opportunities for small business owners to innovate, reach wider markets, and enhance productivity (Okonkwo et al., 2024). These technological advancements are reshaping traditional business models and enabling entrepreneurs to adapt swiftly to market changes. The proliferation of mobile banking, payment gateways, e-commerce platforms, and digital marketing tools has especially empowered small businesses in Nigeria to overcome infrastructural and financial barriers (Iwu & Igbudu, 2023). A recent report, discovered that over 81% of Nigerian small businesses now use at least one form of mobile technology to manage daily operations or engage customers (NBS, 2024). This evolution signifies a shift towards a digitally inclusive entrepreneurial ecosystem. Mobile technologies provide small business owners with real-time access to market trends, customer feedback, and networking opportunities that were previously unattainable (Chukwuemeka & Yusuf, 2023). Entrepreneurs can now employ data analytics tools and cloud-based applications to optimize inventory, track sales, and customize products and services according to consumer preferences (Obi & Uche, 2024). The digital shift is not without challenges, however. Many small business owners face issues such as inadequate digital literacy, poor internet infrastructure in rural areas, and cybersecurity threats (Adeoye et al., 2023). Yet, the potential of online mobile technologies to transform entrepreneurial growth far outweighs these limitations, especially with targeted capacity-building initiatives. Mobile applications have facilitated new models of customer engagement and operations management. Likewise, mobile-based financial literacy and digital banking platforms have enabled rural traders to access financial knowledge and tools that promote savings and reinvestment. Social media, on the other hand, has emerged as a powerful tool for marketing and customer relationship management (Siano, Raimi, Palazzo & Panait, 2020). This study seeks to examine the ways of leveraging on online mobile technologies in enhancing entrepreneurial growth among small businesses in North Central, Nigeria.

Statement of the Research Problem
Online mobile technologies including mobile applications, social media platforms, mobile payment systems, and cloud-based tools play a transformative role in modern entrepreneurship by improving business visibility, operational efficiency,

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and customer engagement. For small businesses, these tools are especially important as they help overcome traditional barriers such as limited capital, restricted market access, and infrastructural gaps (Ajao & Bello, 2023). But despite the widespread usage/availability and relevance of mobile and digital tools, many small businesses in Nigeria still operate at subsistence levels. While some entrepreneurs successfully leverage mobile banking, digital advertising, and mobile inventory systems to boost growth, many others still struggle due to poor digital literacy, high internet costs, limited awareness of available tools, and unreliable network infrastructure (Uzochukwu & Nwankwo, 2023). For instance, a survey by Adeoye et al., (2023) found that only about 42% of small businesses in the region regularly use digital payment solutions, and fewer than 30% track sales or manage inventory through mobile apps. This limited use hinders entrepreneurial growth and competitiveness of small businesses in Nigeria. Based on aforementioned challenges, this study seeks to determine ways of leveraging on online mobile technologies in enhancing entrepreneurial growth among small businesses in North Central, Nigeria.

Objectives of the study

1. To examine the extent of usage of mobile technologies among small businesses owners in North Central, Nigeria.
2. To assess the effectiveness of digital financial literacy on savings, reinvestment, and small business growth in North Central, Nigeria.
3. To determine ways of improving mobile technologies usage among small businesses owners in North Central, Nigeria.

Research Questions

1. What is the extent of usage of mobile technologies among small businesses owners in North Central, Nigeria?
2. How effective is digital financial literacy on savings, reinvestment, and small business growth in North Central, Nigeria?
3. What are the ways of improving mobile technologies usage among small businesses owners in North Central, Nigeria?

Hypotheses

H_{o1}: There is no significant difference between the mean rating of male and female business owners on the extent of usage of mobile technologies among small businesses owners in North Central, Nigeria.

H_{o2}: There is no significant difference between the mean rating of male and female business owners on the effectiveness of digital financial literacy on savings, reinvestment, and small business growth in North Central, Nigeria.

H_{o3}: There is no significant difference between the mean rating of male and female business owners on the ways of improving mobile technologies usage among small businesses owners in North Central, Nigeria.

Literature Review

Concept of Online Mobile Technologies

Online mobile technologies encompass a broad range of digital tools accessible via mobile devices, including mobile applications, cloud computing, social media, and mobile payment systems (Okoro & Agboola, 2024). These technologies facilitate communication, financial transactions, inventory management, and customer relationship management for entrepreneurs (Ajao & Bello, 2023). Notably, mobile applications such as WhatsApp Business and Instagram Shops enable small business owners to interact with customers directly, showcase products, and receive orders in real-time (Chinedu et al., 2023). This direct engagement bridges gaps between entrepreneurs and consumers, especially in informal sectors. In addition, mobile payment systems like Flutterwave and Paystack have revolutionized how small businesses receive payments, improving speed, security, and convenience (Eze & Umeh, 2024). Entrepreneurs now access larger markets beyond their localities, boosting profitability. Mobile-based data analytics tools help entrepreneurs to analyze sales trends, monitor customer preferences, and make informed decisions (Olawale & Afolabi, 2023). These tools reduce reliance on manual records, minimizing errors and inefficiencies. Online mobile technologies support networking through virtual business communities, webinars, and digital training platforms, fostering peer learning and exposure to new market opportunities (Uzochukwu & Nwankwo, 2023). Overall, they serve as vital catalysts for small business growth and competitiveness.

Entrepreneurial Growth

Entrepreneurial growth refers to measurable improvements in business performance, including increased sales, customer base, market share, and innovation capacity (Nwachukwu & Eze, 2023). It often reflects an entrepreneur's ability to adapt

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to market demands and leverage new opportunities. Growth is not only about financial success but also includes organizational development, operational efficiency, and brand reputation (Agbaje et al., 2024). In Nigeria, entrepreneurial growth contributes directly to employment creation and economic resilience. Research shows that businesses that adopt digital tools are more likely to experience rapid growth than those that do not (Oluwafemi & Hassan, 2023). Thus, technology-driven entrepreneurial growth is increasingly emphasized in policy frameworks.

Concept of Small Business

Small businesses in Nigeria typically employ fewer than 50 people and have limited capital bases, yet they play a crucial role in the economy (SMEDAN, 2023). They operate across various sectors, including retail, agriculture, manufacturing, and services. A small business refers to an independently owned and operated enterprise that operates on a relatively small scale in terms of workforce, assets, and market share. Such businesses are typically managed by the owner or a small management team and are not dominant players in their industry. They provide a wide range of goods and services, often catering to local or community needs rather than large national or international markets (Chukwu & Nduka, 2024). Strengthening small businesses through digital tools is seen as an effective way to enhance economic diversification and reduce unemployment (Onwuegbuzie et al., 2024).

Online Mobile Technologies and Entrepreneurial Growth among Small Businesses in Nigeria

Online mobile technologies help small businesses access larger markets, manage operations efficiently, and improve customer service (Adeola & Adebiyi, 2023). Mobile apps enable affordable marketing through social media, reducing reliance on traditional advertising (Okeke & Ibe, 2024). They also streamline financial transactions, improving cash flow and record-keeping accuracy (Adeniyi & Omotosho, 2023). For instance, mobile payment platforms help entrepreneurs reach customers who prefer digital payments. These technologies promote innovation by providing access to industry trends, consumer feedback, and competitor analysis (Ogundele & Obiora, 2024). Entrepreneurs can quickly test and refine products based on data insights. Digital tools also help in supply chain coordination, inventory tracking, and employee communication (Oyetunde et al., 2023). As a result, businesses reduce costs, enhance service delivery, and sustain growth. Online mobile technologies play a significant role in enhancing entrepreneurial growth among small businesses in Nigeria. These technologies include mobile phones, mobile internet, social media platforms, mobile applications, and mobile payment systems that support business operations. In recent years, the widespread availability of smartphones and affordable internet services has enabled Nigerian entrepreneurs to conduct business activities such as marketing, customer communication, and sales online. Studies have shown that mobile technologies reduce operational costs and expand market reach for small businesses, thereby supporting business growth and sustainability (Olayinka & Olawale, 2021; Yusuf & Adebayo, 2023). One major contribution of online mobile technologies to entrepreneurial growth is improved marketing and customer engagement. Small business owners in Nigeria increasingly use platforms such as WhatsApp, Facebook, and Instagram to advertise products, interact with customers, and receive feedback in real time. This form of digital marketing is cost-effective and allows entrepreneurs to reach a wider audience beyond their immediate geographical location. According to Ekundayo and Ayodele (2021), social media-based mobile technologies enhance brand visibility and customer loyalty, which are essential drivers of business growth among small enterprises. Mobile financial technologies also significantly influence entrepreneurial growth among small businesses in Nigeria. The adoption of mobile banking, online transfers, and fintech applications has improved financial inclusion and eased transaction processes for entrepreneurs. These technologies enable faster payments, better record-keeping, and improved cash flow management. Empirical studies have shown that small business owners who utilize mobile financial services are more likely to save, reinvest profits, and access formal financial services, thereby enhancing business performance (Ibrahim & Musa, 2022; Afolabi & Mohammed, 2023). Online mobile technologies support innovation and operational efficiency in small businesses. Entrepreneurs use mobile applications to manage inventory, coordinate suppliers, track sales, and learn new business skills through online platforms. The integration of mobile technologies into daily business operations improves decision-making and productivity. Yusuf and Adebayo (2023) noted that digital and mobile technology adoption enables Nigerian small businesses to respond more quickly to market changes and customer demands, which contributes positively to entrepreneurial growth. Ultimately, online mobile technologies foster entrepreneurial resilience, helping small businesses survive economic shocks and remain competitive in a rapidly changing marketplace.

Methodology

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The study adopted descriptive survey research design. Population of the Study was 7,245 registered small businesses in three States in North Central, Nigeria. Krejcie and Morgan table was used in determining the sample size of the study which was 364. Simple random techniques was also used in the selection of three States in North Central, Nigeria namely: Niger, Kwara and Nasarawa States. The instrument used in data collection was a structured questionnaire titled: Online Mobile Technologies for Enhancing Entrepreneurial Growth Questionnaire (OMTEEGQ) The instrument was validated using face and content validity approach by three experts: One from Department of Business Education, Federal College of Education Kontagora, one from Department of Entrepreneurship Education, Federal University of Technology, Minna and one from Department of Business Education, Federal College of Education, Zuba. The instrument was pilot tested with 100 small scale businesses in Kaduna State. To ensure reliability of the instrument, Cronbach's alpha statistics was used to assess its internal consistency which yielded an index of 0.83. The statistical tools used in data analysis was simple percentage, frequency table, mean and standard deviation, while t-test with the aid of SPSS20 was used in testing null hypotheses at alpha level of 0.05 significance.

Presentation of Results

Research Question 1: What is the extent of usage of mobile technologies among small businesses owners in North Central, Nigeria?

Table 2: Descriptive Statistics on the Extent of Usage of Mobile Technologies among Small Business Owners in North Central Nigeria

S/N	Item Statement	Mean	Std. Dev.	Decision
1	I use a mobile phone daily for business communication with customers.	3.42	0.68	Accepted
2	I use mobile technologies to advertise my products or services.	2.91	0.84	Accepted
3	I use mobile banking or mobile money platforms for business transactions.	2.73	0.96	Accepted
4	I use social media platforms (WhatsApp, Facebook, Instagram) for business purposes.	3.18	0.77	Accepted
5	I use mobile applications to track sales and expenses.	2.14	1.02	Rejected
6	I use mobile technologies to source information on market prices.	2.66	0.89	Accepted
7	I use mobile phones to communicate with suppliers and distributors.	3.07	0.74	Accepted
8	I use mobile technologies to receive customer feedback.	2.48	0.93	Rejected
9	I use mobile internet to learn new business skills.	2.35	1.01	Rejected
10	I rely on mobile technologies for decision-making in my business.	2.59	0.88	Accepted
	Grand Mean	**2.75**	**0.87**	**Accepted**

Field Survey, 20225

Table 2 which dealt the extent of usage of mobile technologies among small business owners in North Central Nigeria indicates that small business owners in Nigeria make moderate use of mobile technologies**,** particularly for basic business operations. Respondents highly accepted the use of mobile phones for daily communication with customers, suppliers, and distributors, as reflected in high mean scores for items 1, 4, and 7. This suggests that mobile phones are widely relied upon for communication and social media marketing due to their affordability and accessibility. However, the use of mobile applications for advanced business functions such as tracking sales and expenses, receiving structured customer feedback, and learning new business skills was rejected, with mean scores below 2.50. This implies that although mobile technologies are commonly used for communication and promotion, many small business owners lack the skills, awareness, or resources

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to adopt more sophisticated digital tools for business management. Overall, the grand mean shows that mobile technology usage exists but is largely limited to basic functions.

Research Question 2: How effective is digital financial literacy on savings, reinvestment, and small business growth in North Central, Nigeria?

Table 3: Descriptive Statistics on Effectiveness of Digital Financial Literacy on Savings, Reinvestment, and Business Growth in North Central, Nigeria

S/No	Statement	Mean	Std. Dev.	Decision
1	Digital financial literacy has improved my ability to save money.	2.88	0.82	Accepted
2	I use digital tools to monitor my business income and expenses.	2.46	0.95	Rejected
3	My knowledge of digital finance has helped me reinvest profits wisely.	2.67	0.86	Accepted
4	Digital financial skills have increased my access to financial services.	2.79	0.91	Accepted
5	I use mobile banking to plan and manage my business finances.	2.71	0.88	Accepted
6	Digital financial literacy has reduced financial losses in my business.	2.33	0.97	Rejected
7	I can make better financial decisions due to digital financial knowledge.	2.85	0.80	Accepted
8	My business has grown due to effective use of digital financial tools.	2.41	0.92	Rejected
9	Digital financial literacy has improved my record-keeping practices.	2.54	0.89	Accepted
10	Understanding digital finance has enhanced the sustainability of my business.	2.62	0.83	Accepted
	Grand Mean	**2.63**	**0.88**	**Accepted**

Field Survey, 2025

Table 3 which focuses on effectiveness of digital financial literacy on savings, reinvestment, and business growth in North Central, Nigeria reveals that digital financial literacy has a positive but uneven effect on small business performance. Respondents accepted that digital financial knowledge has improved their ability to save, reinvest profits wisely, access financial services, and make better financial decisions. These findings suggest that exposure to digital financial tools such as mobile banking and electronic payment systems enhances financial awareness among business owners. However, respondents rejected statements relating to consistent use of digital tools for monitoring income and expenses, reduction of financial losses, and direct contribution to business growth. This indicates that while digital financial literacy improves financial understanding, many small business owners in Nigeria are yet to fully translate this knowledge into effective financial control and measurable business expansion. The grand mean implies that digital financial literacy is beneficial but its full potential remains underutilized.

Research Question 3: What are the ways of improving mobile technologies usage among small businesses owners in North Central, Nigeria?

Table 3: Descriptive Statistics on Ways of Improving Mobile Technologies Usage among Small Business Owners in North Central, Nigeria

S/No	Statement	Mean	Std. Dev.	Decision
1	Training programs can improve mobile technology usage among small business owners.	3.36	0.64	Accepted
2	Affordable internet access will enhance the use of mobile technologies.	3.48	0.59	Accepted
3	Government support can encourage mobile technology adoption in small businesses.	3.12	0.72	Accepted

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S/No	Statement	Mean	Std. Dev.	Decision
4	Improved network connectivity will increase mobile technology usage.	3.41	0.61	Accepted
5	Access to smartphones will improve mobile technology utilization.	3.27	0.66	Accepted
6	Financial incentives can promote the use of mobile technologies in business.	2.94	0.81	Accepted
7	Digital literacy education will improve effective mobile technology use.	3.22	0.69	Accepted
8	User-friendly mobile applications can enhance business operations.	3.05	0.74	Accepted
9	Awareness campaigns can encourage mobile technology adoption.	2.87	0.83	Accepted
10	Technical support services can improve sustained mobile technology usage.	2.61	0.90	Accepted
	Grand Mean	**3.13**	**0.72**	**Accepted**

Source: Field Survey, 2026

Table 3 which focuses on ways of improving mobile technologies usage among Small Business Owners in North Central, Nigeria shows strong consensus among respondents on the strategies required to improve mobile technology usage among small business owners. All the items recorded mean scores above the acceptance threshold, indicating widespread agreement that training programs, affordable internet access, improved network connectivity, access to smartphones, and digital literacy education would enhance mobile technology utilization. Respondents also strongly agreed that government support, financial incentives, awareness campaigns, and technical support services are essential for sustained adoption. These findings reflect the realities in Nigeria, where high data costs, poor network infrastructure, limited technical knowledge, and inadequate institutional support hinder effective mobile technology usage. The high grand mean underscores that addressing these structural and capacity-related challenges would significantly improve the adoption and effective use of mobile technologies in small businesses.

Hypotheses Testing

H_{O1}: There is no significant difference between the mean rating of male and female business owners on the extent of usage of mobile technologies among small business owners in North Central Nigeria.

Table 4: Summary of t-test Analysis on Extent of Usage of Mobile Technologies

Variables	No	Mean	SD	Df	T-Cal	T-Tab	L. Sig	Remarks
Male Business Owners	204	3.62	0.68	362	0.56	1.96	0.05	Not Sig.
Female Business Owners	160	3.58	0.71					

Source: Field Survey, 2026

Table 4 shows that the calculated t-value of 0.56 at 362 degrees of freedom and 0.05 level of significance is lower than the critical value of 1.96. This implies that there is no significant difference in the mean responses of male and female business owners on the extent of usage of mobile technologies. Therefore, the null hypothesis (H_{O1}) was accepted.

H_{O2}: There is no significant difference between the mean rating of male and female business owners on the effectiveness of digital financial literacy on savings, reinvestment, and small business growth in North Central Nigeria.

Table 5: Summary of t-test Analysis on Digital Financial Literacy

Variables	No	Mean	SD	Df	T-Cal	T-Tab	L. Sig	Remarks
Male Business Owners	204	3.74	0.65	362	0.48	1.96	0.05	Not Sig.
Female Business Owners	160	3.70	0.69					

Source: Field Survey, 2026

Table 5 indicates that the calculated t-value of 0.48 at 362 degrees of freedom and 0.05 level of significance is less than the critical value of 1.96. This result shows that there is no significant difference in the mean ratings of male and female business owners on the effectiveness of digital financial literacy on savings, reinvestment, and business growth. Hence, the null hypothesis (H_{O2}) was accepted.

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H_{O3}: There is no significant difference between the mean rating of male and female business owners on the ways of improving mobile technologies usage among small business owners in North Central Nigeria.

Table 6: Summary of t-test Analysis on Ways of Improving Mobile Technology Usage

Variables	No	Mean	SD	Df	T-Cal	T-Tab	L. Sig	Remarks
Male Business Owners	204	3.69	0.67	362	0.42	1.96	0.05	Not Sig.
Female Business Owners	160	3.72	0.64					

Source: Field Survey, 2026

Table 6 reveals that the calculated t-value of 0.42 at 362 degrees of freedom and 0.05 level of significance is lower than the critical value of 1.96. This indicates that there is no significant difference in the mean responses of male and female business owners on the ways of improving mobile technology usage. Therefore, the null hypothesis (H_{O3}) was accepted.

Discussion of Findings

The results of research question 1, which examined the extent of usage of mobile technologies among small business owners in North Central Nigeria, show that small business owners make frequent use of mobile technologies for basic business activities, such as communicating with customers, suppliers, and distributors, as well as advertising through social media platforms. This finding agrees with earlier studies which reported that mobile phones are the most accessible digital tools for small businesses in developing economies due to their affordability and ease of use (Aker & Mbiti, 2019). Previous research has shown that platforms such as WhatsApp and Facebook are commonly used by Nigerian entrepreneurs for customer engagement and informal marketing (Afolayan & Adegoke, 2022), supporting the acceptance of these items in this study. However, the low usage of mobile applications for tracking sales, managing expenses, and learning new business skills contradicts findings from studies conducted in more digitally advanced settings, where mobile applications are widely adopted for business analytics and skill development (Brynjolfsson & McElheran, 2019). The results of research question 2 indicate that digital financial literacy positively influences savings behavior, reinvestment decisions, access to financial services, and financial decision-making. These results support previous studies which found that digital financial literacy enhances entrepreneurs' ability to manage finances and engage with formal financial systems (Klapper et al., 2020). Research conducted among micro and small enterprises in sub-Saharan Africa similarly reported that business owners with digital financial knowledge are more likely to save, reinvest profits, and use mobile banking services (Ozili, 2021). However, this study found that digital financial literacy had a limited impact on reducing financial losses and directly stimulating business growth. The results of research question 3 demonstrate a strong consensus among respondents on the strategies required to improve mobile technology usage. The acceptance of all items in this cluster supports existing research that emphasizes the importance of training, affordable internet access, improved network infrastructure, and government support in promoting digital adoption among small businesses (OECD, 2021; World Bank, 2021). These findings reinforce the argument that improving mobile technology usage in Nigeria requires not only individual effort but also systemic and institutional support

Conclusion

Based on the findings, this study concludes that small business owners in North Central, Nigeria frequently use online mobile technologies for basic business activities, including communication with customers, suppliers, and distributors, as well as informal advertising through social media platforms such as WhatsApp, Facebook among others. This indicates that mobile phones remain the most accessible and practical digital tools for entrepreneurs or small business owners in North Central, Nigeria. But, there is low adoption of online mobile applications for tracking sales, managing expenses, and acquiring new business skills among business owners in North Central, Nigeria, this highlights limitations in digital literacy, awareness, and internet connectivity**,** which restrict more advanced technological usage. The study also concludes that digital financial literacy positively influences savings, reinvestment decisions, access to financial services, and financial decision-making**.** The study further concludes that training programmes, affordable internet access, improved network infrastructure, government support, and financial incentives will enhance mobile technologies usage among small business owners in North Central Nigeria.

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Recommendations

1. Government agencies, NGOs, and entrepreneurship support institutions should organize training programs to improve digital literacy among small business owners. Such programs should focus on mobile applications for financial management, sales tracking, marketing, and skill development to bridge the digital skills gap.
2. Policymakers and private sector players should prioritize the expansion of reliable, affordable internet services, particularly in semi-urban and rural areas. Affordable and stable connectivity will facilitate the adoption of advanced mobile technologies and enhance business operations.
3. Government and development agencies should introduce financial incentives, subsidized data plans, and technology grants to encourage small business owners to adopt mobile technologies. The regulatory reforms should simplify business registration and access to formal financial services.
4. Creating entrepreneurial networks and mentorship platforms can help small business owners share best practices, access new technologies, and gain guidance on effective financial and operational strategies. This will foster collaboration and innovation among small enterprises,

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Comparative Analysis Between Attitudes and Academic Performance in Mathematics and Physics among Senior Secondary School Students in Zamfara State, Nigeria

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Abstract

This study investigated Comparative Analysis between Attitudes and Academic Performance in Mathematics and Physics among Senior Secondary School Students in Zamfara State, Nigeria. Four research objectives, research questions with corresponding null hypotheses were formulated. Correlational research design was employed, with a sample of 364 students drawn from four public senior secondary schools in the state, Using convenient and cluster sampling techniques. Data was collected using Secondary School II Physics Performance Test (SSII PPT), Secondary School II mathematics Performance Test (SSII PPT), and questionnaires on students' attitudes toward mathematics and physics. Descriptive statistics of mean and standard deviation were used for answering research questions, Spearman's correlation and Pearson product moment correlation PPMC were used for testing the null hypotheses at significance level of 0.05. Findings of the study revealed that, there is statistically significant positive correlation between students' attitudes and their academic performance in mathematics and physics among senior secondary schools in Zamfara State. Results suggested the need for targeted strategies to improve performance among students in Mathematics to foster positive attitudes in Physics, ultimately enhancing students' engagement and academic success in Zamfara State's senior secondary schools. The finding also recommended among others that. Researchers should conduct further research to identify specific factors affecting performance disparities and develop targeted interventions, such as curriculum review or teacher training, to balance student outcomes across both subjects.

Keywords: Students' Attitudes, Mathematics, Physics, Academic performance

Introduction

Physics is one of the core science subjects taught at the senior secondary level in the Nigerian education system. As a fundamental science, its significance in advancing knowledge, technology, and innovation cannot be overstated. The discipline is closely linked with other sciences such as astronomy, geology, chemistry and biology, and it is generally perceived as both mathematical and experimental in nature. Physics plays an essential role in understanding the principles underlying life and the physical world, with applications ranging from engineering to medicine. Importantly, it is a prerequisite subject for many fields of study in tertiary institutions, including engineering, technology, medicine, and applied sciences. As such, physics has been described as the bedrock of technological development, since its principles, laws, and theories provide the foundation for innovations that drive national progress (Awodun & Ojo, 2014). In educational research, student's attitude has been recognized as a critical factor influencing learning outcomes. Attitude is a psychological construct that reflects emotional, cognitive and behavioral components, even though it cannot be observed directly; it is inferred through behavior (Newbill, 2015). For instance, a child's refusal to follow instructions may be taken as evidence of a negative attitude. In the context of learning, positive attitudes often translate into higher motivation, better confidence and greater achievement. Although much attention has focused on students' attitudes toward mathematics, the relationship between these attitudes and performance in physics is of particular interest. Students who display positive attitudes toward mathematics are more likely to enjoy the subject, recognize its value and prioritize its study factors that can also enhance their performance in physics (Lipnevich, Preckel, & Krumm, 2016). Mathematics itself occupies a central

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role at the senior secondary level in Nigeria. It is taught in two forms: General Mathematics, which is compulsory for all students regardless of specialization and Further Mathematics, an elective subject for those interested in advanced studies (Dehipawala, Shekoyan, & Yao, 2014; Baskan, Alev, & Karal, 2010). General Mathematics is not only a requirement for university admission but also provides the intellectual foundation for the growth of science and technology (Ahmed, Mohamed, & Fahar, 2015). Without mathematics, scientific knowledge, technological advancement and innovation are severely limited, underscoring its role as the gateway to modern development (Awodun & Ojo, 2014). Academic performance in mathematics, therefore, becomes a critical index of students' future prospects in today's competitive world. It encompasses ability, performance and growth across cognitive, emotional, social and physical domains (Mohamed & Aron, 2017). At the senior secondary school level in Nigeria, mathematics is taught in two forms: General Mathematics and Further Mathematics. General Mathematics is compulsory for all students regardless of their field of specialization, while Further Mathematics is elective and often chosen by students pursuing science- related disciplines (Dehipawala, Shekoyan, & Yao, 2014; Baskan, Alev, &Karal, 2010). General Mathematics also serves as a prerequisite for university admission across most disciplines, underscoring its central role in education (Ahmed, Mohamed, & Fahar, 2015). Academic performance in mathematics has become a key index of students' future potential in an increasingly competitive world. According to Mohamed and Aron (2017), performance is a multidimensional construct that reflects students' abilities, performances, and growth in cognitive, emotional, social and physical domains. It is not limited to a single outcome but represents a cumulative process occurring across different stages of a student's life. Mathematics education, therefore, requires more than theoretical knowledge; it must be applied in practice to produce meaningful learning outcomes. True learning occurs when mathematical knowledge influences behavior and equips students with the ability to apply concepts in practical and real-life contexts. Despite the importance of physics as a foundation for science and technology, students' academic performance in physics has remained persistently low one of the major reasons is the widespread perception among students that physics is a difficult and abstract subject, particularly when it involves mathematical applications, several factors contribute to this poor performance, including lack of student interest, limited teacher motivation, inadequate incentives for instructors, insufficient instructional materials, shortage of qualified teachers, reliance on teacher-centered methods, and students' inability to effectively use learning resources. Additionally, the use of abstract, standardized instructional materials further hinders understanding (Ugwuanyi, Eze, Magbo, &Ugwoke, 2017). In education, performance is generally defined as the extent to which learners achieve set objectives and demonstrate mastery of learning outcomes at a given level (Butts, Clery, Abeywardana, & Phillips, 2017). Ideally, students' performance in physics should be high, given the subject's significance to national development. However, research indicates otherwise. Abah, Ada, and Taangahar (2016) reported that students' performance in physics at the school certificate level has consistently remained low. Veloo, Nor, and Khalid (2015) found that optimistic attitudes toward mathematics are linked with improved physics outcomes, while negative perceptions reduce performance in both subjects.Guo, Marsh, Parker, Morin, & Yeung, 2015; Naki, (2018),found that optimistic attitudes toward mathematics are linked with improved physics outcomes, while negative perceptions reduce performance in both subjects. Gender differences have also been identified in attitudes toward mathematics. Research shows that female students generally hold less positive attitudes, experience greater anxiety, and perceive mathematics as a male-dominated subject, which often diminishes their confidence and performance. This study therefore attempted to correlate attitudes of students and their academic performance toward mathematics and physics among senior secondary school students in Zamfara State, Nigeria.

Statement of the Problem

The academic performance of senior secondary school students in physics in Zamfara State has remained consistently poor in recent years. Reports from the West African Examinations Council (WAEC) Chief Examiners between 2021 and 2023 highlighted persistent challenges, including students' inability to apply mathematical knowledge in solving physics problems, difficulties in interpreting graphs, and lack of precision in measurements and frequent misinterpretation of mathematics- related physics questions, which often lead to incorrect solutions. Preliminary investigation showed that Parents and communities have also expressed dissatisfaction with the low performance of their students in both internal and external examinations, while a government effort has yielded limited improvement. Furthermore, many students recognize physics as a difficult and male-dominated subject, which discourages enrollment and reinforces gender disparities in physics. A significant factor contributing to these challenges is students' negative attitude toward mathematics, which extends to physics due to the subject's heavy reliance on mathematical concepts. Consequently, poor

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mathematical competence not only affects students' performance in physics but also fuels fear and disinterest in the subject. Against this background, the study seeks to examine Comparative Analysis between Attitudes and Academic Performance in Mathematics and Physics among Senior Secondary School Students in Zamfara State, Nigeria.

Objectives of the Study

The aim of this study is to investigate Comparative Analysis between Attitudes and Academic Performance in Mathematics and Physics among Senior Secondary School Students in Zamfara State, Nigeria. Specifically, the objectives are:

1. Examine the relationship between student's attitudes in mathematics and their attitudes in physics among senior secondary schools in Zamfara State, Nigeria
2. Determine the relationship between students' academic performance in mathematics and physics among senior secondary schools in Zamfara State, Nigeria.
3. Find out the relationship between student's attitudes and their academic performance in mathematics among senior secondary schools in Zamfara State, Nigeria.
4. Find out if there is relationship between student's attitudes and their academic performance in physics among senior secondary schools in Zamfara State, Nigeria.

Research Questions

The following research questions were raised to guide the study:

1. What is the relationship between student's attitudes in mathematics and their attitudes in physics among senior secondary schools in Zamfara State, Nigeria?
2. What is the relationship between students' academic performance in mathematics and physics among senior secondary schools in Zamfara State, Nigeria?
3. What is the relationship between student's attitudes and their academic performance in mathematics among senior secondary schools in Zamfara State, Nigeria?
4. What is the relationship between student's attitudes and their academic performance in physics among senior secondary schools in Zamfara State, Nigeria?

Null Hypotheses

Null Hypotheses were formulated and tested at 0.05 levels of significance.

H_{O1}: There is no significance correlation between student's attitudes in mathematics and their attitudes in physics among senior secondary schools in Zamfara State, Nigeria.

H_{O2}: There is no significance correlation between students' academic performance in mathematics and physics among senior secondary schools in Zamfara State,

Ho_3: There is no significance correlation between student's attitudes and their academic performance in mathematics among senior secondary schools in Zamfara State, Nigeria.

H_{O4}: There is no significance correlation between student's attitudes and their academic performance in physics among senior secondary schools in Zamfara State, Nigeria.

Methodology

The study employed correlational research design. Correlational research has to do with the measurement of two or more factors to determine the extent to which the values of the factors are related. Co-relational research design was used to investigate students' attitudes and their academic performances in mathematics and physics. The population of this study consists of all public senior secondary school students offering mathematics and physics in Zamfara State. Convenience and cluster sampling techniques were used for select four schools, comprised one school from each of the four education Zones of the State with the sample 364 students purposely selected from, Government Day Secondary School, Maradun, Government Day Senior Secondary School Sabon Gari, Gusau, Government Day Science Secondary School, Bukkuyum and Government Day Secondary School, Kaura Namoda, based on the classes offering physics and mathematics. Four instruments were used in this study, these are: Secondary School II Physics Performance Test (SSII PPT): The instrument was adopted by the researcher from West African Examination Council WAEC and National Examination Council NECO. The performance test comprised (30) multiple-choice questions in physics, with letter A-D with only one correct answer while others are used as distractors. While Secondary School II Mathematics Performance Test (SSII MPT) were also adopted from West African Examination Council WAEC and National Examination Council NECO. with (30) multiple-

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choice questions in mathematics, with letter A-D with only one correct answer while others are used as distractors. in addition Secondary School II Questionnaire on Students Attitudes toward Physics (QSATP) were also adopted from ABC model of attitudes it was divided into two parts, part one consist of bio-data of student, while part two consist of twenty items on the attitude of students toward physics, students are required to respond with one options out of the followings: Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD), The items were scored on the basis of the mark allocated to each point. That is, 4, 3, 2, 1 for SA, A, D, SD. With the purpose of the research been explained to the students.

Presentation of Results

RQ1. What is the relationship between student's attitudes in mathematics and their attitudes in physics among senior secondary schools in Zamfara State, Nigeria?

Table 1: Summary of Mean and standard deviation on relationship between student's attitudes in mathematics and their attitudes in physics among senior secondary schools in Zamfara State, Nigeria

Variable	N	Mean	Std. Deviation
Attitude toward Physics	364	3.41	0.63
Attitude toward Mathematics	364	3.35	0.52

Table 1: revealed relationship between students' attitude towards Mathematics and Physics among senior secondary school students in Zamfara State is characterized by nearly identical descriptive means attitude towards Mathematics 3.35 (SD = 0.52) and attitude towards Physics 3.41 (SD = 0.63) indicating similar average attitude across the two subjects, suggested a possible positive relationship student's attitudes in mathematics and physics.

RQ2. What is the relationship between students' academic performance in mathematics and physics among senior secondary schools in Zamfara State, Nigeria?

Table 2: Summary of Mena and Standard Deviation on Relationship between students' academic performance in mathematics and physics among senior secondary schools in Zamfara State, Nigeria

Test	N	Mean	Std. Deviation
Maths Academic Performance	364	29.98	2.09
Physics Academic Performance	364	29.95	2.33

Source: Field work (2025)

Table 2 Showed relationship between Mathematics and Physics performance among senior secondary school students in Zamfara State is characterized by identical descriptive means Mathematics 29.98 (SD = 2.09) and Physics 29.95 (SD = 2.33) indicating similar average performance across the two subjects.

RQ3. What is the relationship between student's attitudes and their academic performance in mathematics among senior secondary schools in Zamfara State, Nigeria?

Table 3: Summary of Mean and Standard Deviation on Relationship Between Student's Attitudes and their Academic Performance in Mathematics Among Senior Secondary Schools Students in Zamfara State.

Variable	N	Mean	Std. Deviation
Maths Academic Performance	364	29.98	2.09
Attitude toward Mathematics	364	3.35	0.52

Source: Field work (2025)

Based on the findings in Table 3 there is an observable but limited relationship between students' attitudes toward mathematics and their academic performance mathematic. Specifically, the mean of mathematics performance is 29.98 (SD 2.09) while the average attitude toward Mathematics is 3.35 (SD 0.52). The mean scores suggest that both the variables are at moderate to high level, implying that students who hold relatively favorable attitudes toward Mathematics tend to perform better in mathematics.

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RQ4. What is the relationship between student's attitudes and their academic performance in physics among senior secondary schools in Zamfara State, Nigeria?

Table 4: Summary of Mean and Standard Deviation on Relationship Between Student's Attitudes and their Academic Performance in Physics Among Senior Secondary Schools in Zamfara State

Variable	N	Mean	Std. Deviation
Attitude toward Physics	364	3.41	0.63
Physics Academic Performance	364	29.95	2.33

Source: Field work (2025)

Based on the findings in Table 4, there is an observable relationship between students' attitudes toward Physics and their Physics performance among senior secondary school students in Zamfara State. Particularly, the average attitude toward Physics is 3.41 (SD = 0.63) while the average Physics performance is 29.95 (SD = 2.33). The means indicate that, descriptively, students who hold more favorable attitudes toward Physics showed higher average in physics performance. The mean for attitude suggested a possible positive relationship; students with more positive attitudes tend to have higher performance.

Null Hypotheses

H_{O1}: There is no significance correlation between student's attitudes in mathematics and their attitudes in physics among senior secondary schools in Zamfara State, Nigeria.

Table 5: Summary of Spearman's correlation between student's attitudes in mathematics and their attitudes in physics among senior secondary schools in Zamfara State, Nigeria

Variable	N	Mean	Standard Deviation	df	Rho	P-value	Decision
Attitude to Physics	364	3.41	0.63	363	0.69	0.01	H_{O1} Rejected
Attitude to Mathematics	364	3.35	0.52				

Source: Field Work (2025) Level of significance (α=0.05)

Table 5 presented the observed Spearman's correlation between student's attitudes in Mathematics and Physics among senior secondary students in Zamfara State. The sample comprised N = 364 participants, with Physics attitude reported a mean of 3.41 (SD = 0.63) and Mathematics attitude with a mean of 3.35 (SD = 0.52). The computed Spearman's correlation coefficient is rho = 0.69, with an associated p-value of 0.01. Based on α = 0.05, the null hypothesis of no significant correlation between student's attitude in Mathematics and Physics is rejected, indicating a statistically significant positive correlation between the two domains.

H_{O2}: There is no significance correlation between students' academic performance in mathematics and physics among senior secondary schools in Zamfara State.

Table 6: Summary of PPMC Result on Correlation between Students' Academic Performance in Mathematics and Physics among Senior Secondary Schools Students in Zamfara State

Variable	N	Mean	Standard Deviation	df	r-cal.	P-value	Decision
Physics performance	364	29.98	2.09	363	0. 54	0.032	H_{O2} Rejected
Mathematics performance	364	29.95	2.33				

Source: Field Work (2025) *Level of significance (α=0.05)*

Table 6 presented the observed correlation between Mathematics and Physics performance among senior secondary students in Zamfara State. The sample comprises N = 364 participants, with Physics Academic Performance reported a mean of 29.98 (SD = 2.09) and Mathematics Academic Performance reported a mean of 29.95 (SD = 2.33). The computed Pearson correlation coefficient is r = 0.54, with an associated p-value of 0.032. Based on α = 0.05, the null hypothesis of no significant correlation between Mathematics and Physics performance is rejected, indicating a statistically significant positive correlation between the two subjects.

H_{O3}: There is no significance correlation between student's attitudes and their academic performance in mathematics among senior secondary schools in Zamfara State, Nigeria.

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Table 7: Summary of PPMC Result on Correlation Between Student's Attitudes and their Academic Performance in Mathematics Among Senior Secondary Schools in Zamfara State

Variable	N	Mean	Standard Deviation	df	r-cal.	P-value	Decision
Maths Academic Performance	364	29.98	2.09				H_{O3}
				363	0. 732	0.047	Rejected
Attitude toward Mathematics	364	3.35	0.52				

Source: Field Work (2025) Level of significance (α=0.05)

Table 7 presented the correlation between students' attitudes toward mathematics and their academic performance in mathematics among senior secondary school students in Zamfara State. The sample consisted of N = 364 participants. Mathematics performance has a mean of 29.98 (SD = 2.09), while attitude toward mathematics has a mean of 3.35 (SD = 0.52). The Pearson product moment correlation r= is 0.732, with a p-value of 0.047. And α = 0.05, the null hypothesis of no significant correlation between students' attitudes and mathematics performance is rejected, indicating a statistically significant positive correlation between these variables.

H_{O4}: There is no significance correlation between student's attitudes and their academic performance in physics among senior secondary schools in Zamfara State, Nigeria.

Table 8: Summary of PPMC Result on Correlation Between Student's Attitudes and their Academic Performance in Physics Among Senior Secondary Schools Students in Zamfara State.

Variable	N	Mean	Standard Deviation	df	r-cal.	P-value	Decision
Attitude toward Physics	364	3.41	0.63				H_{O4}
				363	0. 845	0.039	Rejected
Physics Academic Performance	364	29.95	2.33				

Source: Field Work (2025) Level of significance (α=0.05)

Table 8 showed the correlation between students' attitudes toward physics and their physics performance among senior secondary school students in Zamfara State. The sample consists of N = 364 participants. Attitude toward physics yields a mean of 3.41 (SD = 0.63), whereas physics performance has a mean of 29.95 (SD = 2.33). The Pearson product moment correlation coefficient is r = 0.845, with an associated p-value of 0.039. At 0.05 significance level, the null hypothesis that state of no significant correlation between students' attitudes and physics performance is rejected, indicating a statistically significant positive correlation between these subjects.

Discussions of Findings

Findings of the study revealed that, there is statistically significant positive correlation between students' attitude towards mathematics and their attitudes toward physics among senior secondary schools in Zamfara State. Furthermore, the findings of the study showed that, there is significant positive correlation between students' performance in mathematics and physics among senior secondary school students in Zamfara State. The findings of the study revealed that Mathematics students' performance has significant moderate positive correlation with their Physics academic performance in senior secondary schools. However, the finding also showed that there is a strong positive and significant correlation between attitudes toward mathematics and mathematics academic performance among senior secondary school students the State. The result indicated that students who hold more favourable attitudes toward mathematics tend to perform higher scores in the subject. The positive correlation indicated that attitude rather than competency, the convergence of findings underscores that fostering a positive attitude toward mathematics can be as impactful as strengthening mathematical skills. Furthermore, findings of the study indicate a strong, positive and statistically significant correlation between attitudes toward physics and physics academic performance among senior secondary school students in Zamfara State. Students who express more favourable attitudes toward physics tend to perform higher scores in the subject. The studies reinforce the notion that students' academic performance in mathematic are influenced by complex socio-cultural and economic factors. Addressing these barriers through targeted policies, teaching approaches and community awareness is essential to promoting equal

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educational opportunities and improving students' performance in mathematics and physics among senior secondary school students in Zamfara State.

Conclusion

The findings of this study provided valuable insights in to the Comparative Analysis between Attitudes and Academic Performance in Mathematics and Physics among Senior Secondary School Students in Zamfara State, Nigeria. The findings revealed a statistically significant positive correlation between students' academic performance in mathematics and physics and a significant correlation between students' attitudes and their scores in both subjects, confirming that more favourable affective, behavioural, and cognitive are connected with higher academic outcomes. These results suggested a need for targeted strategies to improve performance among students in Mathematics and to foster positive attitudes in Physics, ultimately enhancing students' engagement and academic success in Zamfara State senior secondary schools.

Recommendations

1. Researchers should conduct further research to identify specific factors affecting performance disparities and develop targeted interventions, such as curriculum review or teacher training, to balance student outcomes across both subjects.
2. Teachers should Design engaging and practical Physics lessons that align with students' interests. Organize extracurricular activities, science clubs and demonstrations to stimulate curiosity and positive attitudes toward Physics.
3. Teachers Maintain balanced instructional approaches for both subjects and reinforce positive perceptions through student-centered teaching to sustain overall favorable attitudes.
4. Researchers should identify factors contributing to attitude differences and develop targeted motivational strategies, such as integrating real-world applications or interactive learning methods to foster positive attitudes in both subjects.

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Integration of Mobile Learning on Academic Achievement among University Undergraduate Students in South-South Geographical Zone of Nigeria

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Abstract

The study investigated Integration of Mobile Learning on Academic achievement among university first year undergraduate students in SouthSouth Geographical Zone of Nigeria. The study adopted a descriptive survey design using questionnaire for data collection. The population of the study consists of 156 first year students in the university libraries under study which were randomly picked. A total of the 156 questionnaires were distributed, only 132 were retrieved, which represent 84.6% return rate. Data collected were analyzed using descriptive statistics mean and percentage mean score of 2.5 and above and percentage score of 50% were considered. The study revealed the benefits of mobile learning on academic achievement of first year students in government owned university in South South, Nigeria as flexibility and accessibility, increased engagement, personalized learning, continuous learning and real-world application. The study also shows the challenges affecting mobile learning of first year students in government owned university in South South, Nigeria as technical issues like poor internet connectivity, device limitations, privacy concerns ,digital literacy gaps, and software and hardware heterogeneity. The study recommends that digital literacy training should be crucial for both students and educators as well as improving the infrastructure and access to mobile learning devices are essential.

Keywords: Mobile Learning, academic achievement, first year undergraduates, university

Introduction

Undergraduates in their first year of college are referred to as first-year students, or freshmen. This year is frequently marked by a big change and the need for new abilities. They will need to embrace mobile learning in order to succeed academically. According to Alrasheedi et al. (2015), mobile learning is the use of portable technologies for education, such as smartphones and tablets that enable flexible learning at any time and from any location. In contrast to traditional e-learning, it offers access to learning resources via apps, social media, and online hubs. It is frequently distinguished by interactive, bite-sized information made for mobile devices and tiny displays. Mobile learning is the use of one's own mobile device to access educational resources and communicate with others in various settings (Zhang & He, 2022). This offers an alternative to location-based learning and enables students to access material wherever they are. For example, mobile learning platforms promote interactive and collaborative learning environments where students can interact with peers and teachers in real time, creating deeper learning connections, in addition to facilitating the distribution of educational content (Kumar et al., 2022). Extensive research examining the relationship between mobile learning and academic achievement has yielded valuable insights, though findings are not universally consistent. An extensive meta-analysis conducted by Zhang & He, (2022) concluded that mobile learning positively impacts academic achievement. Academic achievement is the extent to which a student, teacher, or institution meets its educational goals, and is often measured by things like grades, test scores, and degrees. It includes a student's performance and the knowledge they pick up in a certain amount of time, which may be impacted by things like teaching strategies, emotions, and self-management abilities. Concurrently, research by Kumar et al. (2022) indicates that although mobile learning can result in gains in some topics, the effectiveness of these devices largely depends on the pedagogical strategies employed. Academic performance results have been found to be influenced by a number of factors, including the degree of student involvement, the quality of learning resources, and the degree of teacher assistance. For example, a comparative research found that students' academic achievement improved more significantly when they were assisted by teachers who had received training in

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mobile learning approaches (Wang et al., 2022). The usage of digital mobile devices, including smartphones, PDAs, and cell phones, for educational purposes is growing (Pimmer et al., 2016). But despite these developments, there are still a lot of challenges. Many students still encounter significant obstacles to mobile learning, such as poor internet access, expensive data prices, and a digital literacy gap, as noted by Sachs (2009). Furthermore, the scalability of mobile learning initiatives in Sub-Saharan Africa is continuously hampered by worries about the dependability of mobile technology in areas that routinely experience power outages or infrastructure issues (Crowe, 2007). In order to maximize the impact of mobile learning throughout the area, it is still crucial to solve these structural concerns. It is in light of the above that prompted the researcher to embark on the title Integration of mobile learning on academic achievement among University First year Undergraduate students in South South Geographical Zone of Nigeria.

Statement of the problem

Nigeria is not an exception to the global trend of mobile learning (m-learning) adoption in several educational areas. First-year undergraduates' students may benefit from every learning opportunity because to mobile technology's enormous ability to assist learning at any time and from any location. The improved access to educational resources that mobile learning offers is one of its main benefits. First-year undergraduates' students have access to a vast array of educational resources via mobile devices, such as research papers, e-books, instructional videos, and interactive content. With this access, first-year undergraduates' students may interact with a variety of educational materials and augment their classroom learning to improve their academic performance. Numerous research demonstrate how mobile learning improves students' academic achievement, but no study has been done on the integration of mobile learning on academic achievement among University First year Undergraduate students in South South Geographical Zone of Nigeria hence the need for the study.

Objectives of the study

The following objectives guided the study

1. To find out the integration of mobile learning on academic achievement among university first year undergraduate students in South South geographical zone of Nigeria
2. To find out the challenges affecting the integration of mobile learning on academic achievement among university first year undergraduate students in South South geographical zone of Nigeria

Research questions

The following research question were formulated to guide the study

1. What are the benefits of integration of mobile learning on academic achievement among university first year undergraduate students in South South geographical zone of Nigeria?
2. What are the challenges affecting the integration of mobile learning on academic achievement among university first year undergraduate students in South South geographical zone of Nigeria?

Literature review

According to research by Mohammadi et al. (2020), students who utilized mobile devices for studying did better on assignments and tests because they could access and use these extra resources. Academic attainment has been demonstrated to be positively impacted by the greater availability of learning tools outside of the typical classroom setting. Additionally, it has been discovered that mobile learning greatly increases student enthusiasm and engagement, both of which are critical components of academic achievement. Mobile platforms' interactive elements, such forums, quizzes, and multimedia resources, encourage more engagement and participation in the educational process. Students who used mobile learning platforms were more involved in their studies, exhibiting better levels of desire and academic dedication, according to Iqbal & Qureshi (2012). Higher academic achievement and better information retention were the results of this involvement. Academic achievement is also significantly influenced by the caliber and applicability of the learning materials offered by mobile learning platforms. Software programs created for mobile devices like smartphones and tablets that support learning and educational activities are known as mobile learning applications, or m-learning apps. They make learning easier and more accessible by giving users the freedom to access educational materials and information at any time and from any location. According to McQuiggan, McQuiggan, Sabourin, and Kosturko (2015), mobile learning is instantaneous, optionally available, anywhere, and anytime learning that enables us to expand our knowledge, satiate our curiosity, work with others, and enhance our experiences. Al-Tarawneh (2014) discovered that students utilize internet search engines and electronic information technologies to find general information about the subject of their interest. Students from many

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academic disciplines utilize smartphones in diverse ways. According to research by Abdelraheem and Ahmed (2018), students' brain function is negatively impacted by excessive mobile phone use. This is because our brains are not capable of effectively processing numerous incoming information sources at once, making multitasking impossible. Baiden (2020) highlighted how students utilize portable devices for work-related, social, educational, and recreational objectives. The survey's main conclusions highlighted the benefits of students using mobile devices for informal learning, producing and recording, exploring and accessing information, and documenting ideas and experiences. Additionally, various drawbacks of mobile device use were emphasized, such as being invasive, distracting, growing reliant on the gadget, and losing the sense of "physical togetherness." In a study conducted in Pakistan, Iqbal and Bhatti (2020) found that over half of university students believed Facebook had a negative impact on their academic performance. According to Masiu and Chukwuere's (2018) study, South African university students use their phones for socializing, security, and privacy, respectively. College students utilize their cell phones to text during class, according to Ifeanyi and Chukwuere (2018). In addition to having a detrimental effect on their ability to study in class, their covert multitasking during lectures distracted both them and the people seated next to them. Higher completion rates and other measures of academic success are also associated with the frequency of use of mobile learning apps. Students who regularly utilize programs like Google Classroom and Khan Academy for daily or weekly learning tasks typically exhibit higher levels of study interest and perseverance. Continuous learning and instant feedback are made possible by this consistent use, both of which are essential for academic achievement. Additionally, these applications' tailored learning experiences assist meet each student's unique needs, improving academic results (Smith, 2018). For instance, it has been demonstrated that Duolingo's adaptive language learning activities enhance language proficiency, which is associated with better language course grades (Anderson, 2021). Smith (2018) evaluated how Quizlet affected college students' study habits and academic achievement. A sample of 200 students who often utilized Quizlet for their studies participated in the study. Data on students' study habits, app usage frequency, and reported advantages were gathered through surveys. Additionally, students' grades before and after using the app were used to gauge their academic success. According to the results, students who used Quizlet regularly showed improved knowledge retention and received higher marks, with an average GPA improvement of 0.5 points. Additionally, the study discovered that Quizlet's features—such as games, quizzes, and flashcards—helped students improve their test preparation and reinforce their information. Numerous students stated that the app enhanced motivation and engagement by making learning less boring and more interesting. Smith suggested using Quizlet as a useful study aid, especially for topics that need for memory and repeated repetition. In order to improve academic results, the research also recommended that teachers encourage students to integrate digital study tools into their daily routines. This study highlights how mobile learning apps may boost academic achievement and change study habits. It also emphasizes how crucial interactive and captivating teaching resources are to sustaining students' enthusiasm. The study offers insightful information about the real-world uses of mobile learning tools in higher education. For educators and organizations wishing to incorporate digital technologies into their pedagogical approaches, Smith's conclusions are especially pertinent.

Brown (2019) assessed how Google Classroom may improve academic performance and student engagement in a high school context. Three hundred students participated in the study; one group used Google Classroom, while the other group used conventional classroom techniques. Numerous variables, including participation, attendance, and grades, were monitored throughout the course of a semester. The results demonstrated that students who used Google Classroom had better grades, with an average improvement in their total academic performance of 15%. Additionally, the study found that Google Classroom users were more engaged in class activities and had better attendance. Students found the site useful for organizing their work and getting prompt feedback from professors, according to surveys done as part of the study. Additionally, instructors claimed that Google Classroom improved student collaboration and communication. Brown suggested that Google Classroom be widely used in online learning to improve student engagement and academic achievement. The study underlined how crucial it is to teach educators how to use digital technologies efficiently and incorporate them into their lesson plans. The advantages of employing complete digital platforms in teaching are amply demonstrated by this study. It also emphasizes how technology may be used to make learning settings more dynamic and captivating. For educators and legislators hoping to enhance educational results through technological integration, Brown's findings are important. The impact of mobile learning apps on STEM education among middle school students was examined by Santos (2019), who tracked 400 students over the course of two academic years, focusing on their use of apps

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like Khan Academy and GeoGebra. Test scores, student surveys, and teacher interviews were used to gather data. The study found that students who regularly used these apps had higher engagement levels and improved performance in STEM subjects, with an average test score increase of 18%. Additionally, the interactive and visual nature of the apps helped students better comprehend their classroom instruction. The study also emphasized how crucial it is for educators to pursue ongoing professional development in order to successfully integrate these resources into their instruction. The use of digital technologies to enhance academic achievement in STEM topics is further supported by this study. It emphasizes how mobile learning applications may interest students and improve their comprehension of difficult material. For educators, developers, and legislators who want to use technology to enhance STEM education, Santos' conclusions are pertinent. Lee (2020) looked into how mobile learning apps are used in higher education, with an emphasis on how they affect academic achievement and student happiness. Over the course of an academic year, 150 undergraduate students who utilized a variety of mobile learning apps, such as Coursera and Edmodo, participated in the study. Academic performance records, interviews, and questionnaires were used to gather data. The results showed that academic performance and student happiness had significantly improved, with an average GPA gain of 0.4 points. According to students, the applications offered flexible learning options that let them study whenever and wherever it was most convenient for them. Additionally, the study discovered that mobile learning applications improved communication between students and teachers and made information easier to obtain. In order to enhance student learning and boost academic results, Lee suggested incorporating mobile learning applications into higher education courses. In order to leverage the advantages of these technologies, the study highlighted the necessity for institutions to offer sufficient assistance and training for both staff and students. This study demonstrates how mobile learning apps may revolutionize higher education by increasing accessibility and personalization. Universities hoping to use technology to improve academic achievement and student engagement will find Lee's results very pertinent. White (2021) evaluated high school students' use of mobile applications in blended learning settings. 500 students participated in the study, and they were divided into two groups at random: a traditional learning group and a blended learning group that used mobile apps like Moodle and Schoology. Test results were used to gauge academic success, while attendance and participation logs were used to monitor involvement. The blended learning group's test scores were much higher, with an average improvement of 12%, according to the results. Additionally, the study discovered that these kids had higher levels of participation and engagement. According to surveys, students valued the mobile apps' accessibility and flexibility, which enabled them evaluate content and do tasks at their own speed. Instructors stated that the applications made courses more dynamic and interesting. In order to improve academic performance, White suggested that policies promote the use of mobile learning apps in educational institutions. In order for instructors to use these tools successfully, the research also recommended continual professional development. This study offers solid proof of the advantages of mobile learning apps in blended learning settings, emphasizing their capacity to enhance academic results. For educators and legislators looking to successfully incorporate technology into the classroom, White's conclusions are crucial.

Methodology

The study used a questionnaire to collect data using a descriptive survey approach. 156 first-year students who were chosen at random from the university libraries under investigation make up the study's population. Only 132 of the 156 questionnaires that were issued were recovered, yielding an 84.6% return rate. Descriptive statistics were used to evaluate the data. A mean score of 2.5 or higher and a percentage score of 50% were taken into consideration.

Table 1

Population of the study

S/N	Institutions	Population **of** first year students
1	Delta State University Abraka	56
2	University of Lagos	61
3	University of Nigeria Nsukka	39
	Total	**156**

The Table I shows the population of the study. Delta State University Abraka has 56 first year students to represent, University of Lagos has 61 first year students' representatives, while University of Nigeria Nsukka has 39 students respectively.

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Table 2

Presentation of Results

Research Question One

What are the benefits of integration of mobile learning on academic achievement among university first year undergraduate students in South South geographical zone of Nigeria?

The benefits of mobile learning on academic achievement of first year students in government owned university in South South, Nigeria

S/N	Items Statement	A	SA	D	SD	X
1	Flexibility and accessibility	34	52	23	23	2.7
2	Increased engagement	65	41	21	5	3.2
3	Personalized learning	23	44	45	20	2.5
4	Continuous learning	49	42	19	22	2.8
5	Real-world application	21	23	43	45	2.1

From Table 2 above, it shows the benefits of mobile learning on academic achievement of first year students in government owned university in South South, Nigeria as flexibility and accessibility (2.7), increased engagement (3.2), personalized learning (2.5), continuous learning (2.8), and real-world application (2.1) respectively.

Research Question two

What are the challenges affecting the integration of mobile learning on academic achievement among university first year undergraduate students in South South geographical zone of Nigeria?

Table 3

The challenges affecting mobile learning of first year students in government owned university in South South, Nigeria

S/N	Items Statement	A	SA	D	SD	X
1	Technical Issues Like Poor Internet Connectivity	56	45	23	8	3.1
2	Device Limitations	66	43	19	4	3.2
3	Privacy Concerns	58	56	16	2	3.2
4	Digital Literacy Gaps	54	53	21	4	3.1
5	Software And Hardware Heterogeneity	61	54	10	7	3.2

Table 3, The challenges affecting mobile learning of first year students in government owned university in South South, Nigeria are technical issues like poor internet connectivity (3.1), device limitations (3.2 privacy concerns (3.2), digital literacy gaps (3.1), and software and hardware heterogeneity (3.2) respectively.

Discussion of results

The study is on mobile learning and academic achievement of first year students in government owned university in South South, Nigeria. Two research questions were formulated to guide the study. The study revealed the benefits of mobile learning on academic achievement of first year students in government owned university in South South, Nigeria as flexibility and accessibility, increased engagement, personalized learning, continuous learning, and real-world application. The further affirmed the challenges affecting mobile learning of first year students in government owned university in South South, Nigeria are technical issues like poor internet connectivity, device limitations, privacy concerns, digital literacy gaps, and software and hardware heterogeneity respectively.

Recommendations

1. Digital literacy training should be crucial for both students and educators.
2 Improving the infrastructure and access to mobile learning devices are essential.

Conclusion

Mobile learning which has been demonstrated to improve students' comprehension and academic achievement is made easier by mobile learning. Platforms that let first year students communicate with their classmates outside of the classroom promote teamwork, dialogue, and idea exchange. First-year students demonstrated improved problem-solving abilities and a better comprehension of the course material when they utilized mobile devices for group activities and discussions.

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Students can benefit from peer-to-peer interactions and develop critical thinking skills through collaborative learning, both of which improve academic success. In addition to these benefits, mobile learning systems offer exams and real-time feedback, which are essential for helping students identify their areas of strength and growth. Students were able to concentrate on their areas of difficulty and enhance their overall academic performance thanks to this prompt feedback loop. Nevertheless, despite the many advantages of mobile learning, a number of studies point out issues that may restrict its ability to raise students' academic achievement.

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Impact of Team-Teaching Strategy in English -as-Second- Language Classroom among Tertiary Institution Students in Imo State, Nigeria

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Abstract

Traditional single-teacher classroom arrangements have increasingly proven inadequate for large ESL classes, particularly in maintaining students' attention and ensuring effective engagement. This study investigated the problems and prospects of team teaching in English as Second Language (ESL) classrooms in selected tertiary institutions in Owerri, Imo State, Nigeria. A descriptive survey design was adopted. Data were collected from 85 respondents comprising students and teachers using structured questionnaires based on a four-point Likert scale. Two research questions guided the study. Data were analyzed using mean ratings with a criterion mean of 2.50 for acceptance. The study was anchored on Bandura's (1977) Social Learning Theory and Clark's (2002) General Theory of Teaching. Findings revealed that although team teaching may generate competition, conflicts, and occasional monopolization of instruction among teachers, its benefits outweigh its limitations. The study established that team teaching enhances instructional quality, promotes teacher collaboration, increases student interest, and improves student–teacher relationships. It was therefore concluded that team teaching remains a viable instructional model for 21st-century ESL classrooms. Continuous professional development and proper orientation on team teaching were recommended.

Keywords: Team Teaching, ESL, Collaborative Instruction, Language Learning, Tertiary Education

Introduction

Language and culture distinguish various societies into categories of multi-cultural or multi-lingual. A multi- lingual society like Nigeria is a home with diverse cultures and several languages. The diversity of cultures has various implications for national development. This necessitates a second language as a link or bridge in communication in a heterogeneous society like Nigeria. English language functions as a second language in Nigeria with over four hundred indigenous languages and a population of over two hundred million people. The acceptance of English language in Nigeria as a second language operating in all strata of the society is because of its neutrality in a heterogeneous linguistic environment. A second language is not regarded as a foreign language (FL) but as a language of unification of a people in a multi-lingual environment. A second language is conferred with all the functions of a mother tongue (MT) quite unlike a foreign language (FL) which performs limited function for the speaker. Thus, the significant difference between a mother tongue and a second language (SL) lies in the way they are learned. The natural process in which a child learns his native language is known as acquisition, and this can be differentiated from learning a second language. However, a child acquires a first language as a result of random exposure to the language. This has been proved by different scholars that language exposure is a function of the cultural and situational context of learning. With reference to a second language, a learner who has a different cultural background faces different challenges. Therefore, ESL learners in Nigeria are exposed to some challenges ranging from difficulties inherent in the language. This is as a result of psychological and sociological factors; then, the teacher factor to other anomalies in the school system. The African background in relation to language issues have given rise to the adoption of different instructional approaches, methods and models in the teaching of English as a second

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language. These divergent challenges of ESL learners have driven educationists into exploring various teaching methods, approaches and models like team teaching, to help enhance their learning outcomes. Team teaching is an ideal concept introduced for a common goal of advancing the scholastic achievement of the learners. It is an instructional model that has garnered momentum across the globe. It could also be referred to as co-teaching, collaborative teaching, or cooperative teaching, and co- enrollment (Carpenter et al; 2007:54). Team Teaching involves two or more teachers cooperatively planning, instructing and evaluating one or more groups in an appropriate instructional space and in a given length of time, so as to take advantage of the special competencies of team members (Singer, 1964; in Buckley, 2000). The main rationale behind this coordinative approach is in teams with different backgrounds and expertise that can complement each other to maximize efficiency in their common mission of language teaching. Therefore, this joint collaboration in ESL classroom is believed to present significant benefits for both teachers and students. This study sets out to investigate the perceived problems and prospects of Team Teaching in an ESL classroom situation.

Statement of the Problem

The teaching of English as a Second Language (ESL) in Nigerian tertiary institutions faces significant hurdles, primarily due to the country's complex multilingual landscape. While English serves as a vital bridge for communication and national unification, learners frequently struggle with low proficiency levels. These difficulties are exacerbated by large class sizes, often ranging from 250 to 350 or more students, which render traditional single-teacher arrangements inadequate for maintaining attention and ensuring effective engagement. Furthermore, ESL instruction is hindered by: (1) First Language (L1) Interference: Students often rely on native linguistic forms, leading to errors in phonology, syntax, and semantics. (2) Teacher Factors: A lack of specialized expertise in areas like phonetics or syntax can result in incorrect instruction. (3) Instructional Mismatch: Standard methods often fail to account for the heterogeneous backgrounds and varied learning needs of a diverse student body. Despite the growing global momentum of team teaching (or co-teaching) as a collaborative solution to instructional challenges, its specific impact and feasibility within the unique socio-cultural and educational context of Imo State, Nigeria, remain under-explored. While theoretical frameworks like Bandura's Social Learning Theory suggest that observational learning from multiple models can enhance student performance, there is a lack of empirical data regarding how this model functions in large-scale Nigerian ESL classrooms. Specifically, a gap exists in understanding the tension between the instructional benefits of team teaching and the interpersonal conflicts (such as teacher competition or monopolization) that may arise in this specific academic environment. Based on the theoretical underpinnings and the descriptive survey design of this study, the findings are expected to demonstrate that: (1) Team teaching will significantly enhance the quality of instruction by allowing teachers to leverage their specific competencies and specializations. (2) The model will likely increase student interest and improve teacher-student relationships, as smaller group instructions (like Parallel Instruction or Differentiated Split Class) become more feasible. (3) Collaborative Friction: However, the implementation may be marred by "teacher factors" such as professional competition, occasional negligence, or conflicts over teaching procedures. Ultimately, the study is expected to find out that the prospects of a collaborative 21st-century teaching model might outweigh the problems, provided there is continuous professional development and proper orientation for staff.

Objectives of the Study

The study aimed to:

1. Examine the problems associated with team teaching in ESL classrooms.
2. Identify the benefits of team teaching in ESL instruction.

Research Questions

1. What are the problems associated with team teaching in an ESL classroom?
2. What are the benefits of team teaching in ESL instruction?

Scope of Study

The area of study is the Department of English Language and Literature, Alvan Ikoku Federal University of Education; and Federal Polytechnic, Nekede, both in Owerri, Imo State. The population of this study comprises both students and teachers from the English Departments of selected institutions. The population of the students is 200 while that of the teachers is 100. The researchers decided to do a purposive sampling of 85 which comprised of students and teachers from same department.

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Discourse knowledge of Team Teaching

Team teaching is an instructional procedure whereby two or more teachers jointly share the responsibility of directing, teaching and evaluating the learning of a group of students (Offorma and Ofoefuna, 2005; Heather, 2019). From the traditional point of view, team teaching refers to a situation where a group of teachers come together to share the teaching of content and skills to a group of students at the same time during the lesson. All the members of the team are in the class as each one has some roles to play in the execution and evaluation of the lesson plan they have designed: for example teacher "A" can introduce the concept while teacher "B" explains it using resources. Teacher "A" can come in again to illustrate using examples from the learners' background and using question to help learners consolidate knowledge. Teacher "B" will then come in to summarize and evaluate the lesson. Models of team teaching identified by Maroney (1995) and Robinson and Schlaible (1995) are as follows:

Collaborative Teaching: This type of team teaching refers to a situation where a team of teachers agree to teach a group of learners. They do not use monologue. The discussion is usually elaborate, taking into consideration the basic characteristics of the learners and the pace of discussion is such that will enable the learners follow the discussion process. After the discussion, there are follow-up activities which could be asking the students to relate the topic with their background, to explore a related aspect of the topic discussed or represent the topic from their perspectives.

Complimentary/Supportive Team Teaching: This type of team teaching is where a team of teachers agree to work together. This means that after the team has designed the course and materials to be used in teaching the content to the students, the members will provide follow up activities on related topic or on study skills.

Parallel Instruction: In this type of team teaching the learners are divided into two groups and each teacher is responsible for teaching the same materials to his/her smaller group. This enables the teacher to reach every child who is in need and gives the necessary support.

Differentiated Split Class: In this context, a class is divided into smaller groups based on their peculiar learning needs and each member of the team becomes responsible for providing the group with instruction required to meet their learning needs.

Monitoring Teaching: This type of team teaching refers to a situation where a group of teachers working as a team to teach a particular course shares the task of teaching and monitoring among members, for instance, teacher A will teach, while teacher B monitors learner understanding and behavior. The role can be reversed in the following lesson.

Literature Review

Teaching and Learning English in Nigerian Higher Institutions

With the widespread and status of English Language in Nigeria, one would expect to have a reasonably higher performance and competence in English among Nigerians and in particular among students. In the exact words of Njoku ang Izuagba, (2012) "but observations and data emanating from research carried out here in Nigeria on the performance of learners, achievement tests reveal reveals that they are very poor in English language and other school subjects" (14). There is still low- level of English proficiency in Nigeria with particular concern on English language teaching which is regarded as far from satisfactory among students in the country and a lot of factors have been identified as being responsible for poor teaching and learning of English in tertiary institutions. Some of the factors discovered by some scholars through research are:

Language Differences

According to Akujobi and Chukwu as cited in Hamisu et al second language learners experience a lot of challenges in the learning process "due to the differences between the forms and meaning of English and those of the forms and meaning of English and those of the native language" These are differences between the phonemes, grammar, syntax and culture of the learner's first language or mother tongue and that of the target language. The use of English by speakers with different native languages is known as English as a second language. According to Wikipedia.org, language education for people learning English may be known as English as a second language (ESL), English as a foreign language (EFL), English as an additional language (EAL), or English for speakers of other languages (ESOL). In Nigeria English is learnt as a second language. The multiplicity of languages and the absence of a National have made it imperative for English to be learnt and used as a second language. Although some linguists are of the view that the spread of English language in Africa vis- a viz Nigeria, stems down from colonialism. Ogu (1992 cited in Nwachukwu, 2007) argues that; The emphasis on the learning

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of the English language was because the colonizers found out that the language was needed to run the government and to adjudicate cases in law courts. They made the acquisition of the English language a key to both social and economic advancement. In Nigeria, irrespective of varied views on the use of English, the fact still remains that the multiplicity of languages and the absence of a National has made English to thrive as a second language. A second language is defined by Nwachukwu (2007:32) as "an adopted language which performs some internal social functions in a country, such as being used in government administration, politics, law, commerce and Education. English is adopted in a heterogenous society like ours owing to its neutrality in the midst of a multiplicity of indigenous languages where the choice of any as a national language may trigger off a chain of negative reactions. Several researchers have proved that learning a second language differs considerably in many respects from acquiring a mother tongue. The most obvious contrast between the two, according to Wilkins (1974 in Nwachukwu 2007) is the amount of exposure to language: language exposure is said to be a function of the cultural and situational context of learning. Baldeh, (1990) in supporting this assertion says that it is utterly naïve to think that the child in a second language context learns language usage in the same way as the child in a native setting. Second language learners therefore, experience over whelming challenges in learning the second language. However, these challenges are due to the differences between the forms and meanings of English and those of the native language. Castello, (2015) added that the learners' environment and setting have been acknowledged as an important one in second language learning. There are a wide variety of challenges that face the ESL learner, even in the best of learning situations. The most basic of these challenges proved by several literatures is first language interference or negative transfer, the psycholinguistic tendency to rely on familiar forms of expression when the intent is to develop a new form, that of second language. Ellis (1997:52), defines interference or negative transfer as "the influence that the learner's L1 (first language) exerts over the acquisition of an L2 (second language)". According to Nwachukwu, (2007: 38), the errors caused by L1 interference takes the following forms: (1) Submission of wrong vowels or consonants. (2) Insertion of vowels where there are consonant clusters in. (3) Use of wrong stress, rhythm, and intonation as a result of different speech systems. (4) At the grammatical level, lack of correspondence between systems. (5) At the semantics level, interference occurs mainly as a result of transliteration, in which learners first think in their native and try to translate their language idioms into English. Other challenges of ESL learners according to Schwarz and Terril (2000) are; (1) Mismatch between the instructors teaching style and the learners' needs. (2) Socio- cultural factors such as age, physical health, social identity. (3) Interference of a learner's native language. All these challenges and more drove educationists into exploring various teaching methods, approaches and models like Team teaching to help advance the scholastic achievement of an ESL learner.

Language Background

In a typical Nigerian classroom, you find learners coming from different language backgrounds and no matter how efficient the language teachers are it is a problematic situation. The language teacher may not be able to identify all of the learner's problems because of the heterogeneous nature of the language classroom. The teacher may not know the learner's mother tongue in order to trace the source of error or even have enough time to attend to all challenges faced by the student or learner (Njoku and Izuagba, 2004). For instance, this is seen when a Nigerian English bilingual obliterates the distinction in vowel quality between long and short ones. Akindele and Adegbite (1999) gave an instance where 'bit' /bit/; is pronounced 'beat'/bi:t/; and 'pot' /pɔt/ as port /pɔ:t/. They explain further that a reduced vowel system involves substitution such as "/e/ is substituted for /*ei*/, /ɔ/ for /ɔ:/, /a/ for /a:/, /u/ for /u:/, /θ/ in think as /t/ in think, /s/ for /z/, /f/ for /v/ and /$ʂ$/ for /v/ and /ʃ/ for /tʃ/" (P. 62).

These phonological systems differ from one another both supra-segmentally and segmentally. As was previously mentioned, most Nigerian languages lack diphthongs and contain five to ten vowels at the segmental level (the Igbo language has five vowels). These few vowel sounds are stretched to serve the purpose of the twenty English pure vowels (12 monophthongs and 8 diphthongs). Again, "The Igbo language has the syllable structure of CVCV, while English language has the structure C^{0-3} VC^{0-4}, as a result, Igbo words do not use consonant clustering, although English words do allow clustering" (Anyadiegwu, 2008, p. 87). In learning English as a second language in Nigeria, therefore, the user tends to insert vowel sounds in any structure that has consonant cluster. There is also insertion of epenthetic vowel /u/ and /i/ between a word final syllabic consonant and the proceeding consonant. The reason for the last consonant insertion is

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because consonant sounds do not end words in many Nigeria languages. Thus, unless a second language teacher has this background knowledge of the learner's mother tongue to enable him trace the source of error.

Time Factor

Asides the English language students in our tertiary institutions who are exposed more on many courses on aspects and the use of English language, other students studying other courses are only exposed to the study of English language only in their first year as a general course known as Use of English. Hence, as a result this, time factor may mediate against its effective teaching and learning (Ugwuanyi E, N and Omeje, J., 2013).

Lack of Teaching Expertise

Sometimes teachers designated to teach English language classes are not very knowledgeable in some aspects of the language like grammar, syntax, phonetics and phonology among others. When the teacher lacks competence in the target language, he ends up teaching the learners wrongly. An efficient language teacher should follow up students work to check their level of improvement.

Problems Inherent in the Target Language

This is a major challenge for both teachers and learners of English language. For instance, the irregularity in spelling or lack of correspondence between grapheme and phoneme is one of the problems of English language (Njoku and Izuagba, 2004). The problem of irregularity can also be seen in verbs, tenses and numbers. This accounts for one of the reasons most times students can spend years in school and graduate without acquiring competence in these areas.

Large Class Size

If the class size is manageable, teaching and learning will be more effective. The common situation in our institutions of higher learning today is the overwhelming size of our language classrooms. Most times it is indeed a very cumbersome task for the teachers to control a class of about 250-350 students. Based on this scenario, one teacher cannot attend to the students' academic challenges while teaching or afterwards. Also, in some situations, the classrooms/lecture halls may not contain all the students and some may end up hanging around and thus pay little or no attention. The teaching of English language requires the teacher to take the students on oral or written skills and given the class size the teacher finds it impossible to mark, score and talk to the students on areas where they are wrong. The large class size is a big challenge even with using our language laboratories in our institutions (Njoku and Izuagba; Ugwuanyi & Omeje,).

Team Teaching

Wilbert, (2004) defined team teaching as a formalized arrangement in which two or more teachers work together in planning, implementing and evaluating instruction of a large group of learners. In team teaching, teachers come together, set goals for courses, design syllabus, prepare individuals and evaluate the result. Buckley, (1999) states that a team simply means two or more people working together while teaching is a process of giving lessons or to show how to do something in a subject in the class. Thus, team teaching can be defined as a process involving group of two or more teachers working to plan, conduct and evaluate the learning activities for the same group of learners.

The Constraints to Team Teaching Approach by some scholars

The constraints to team teaching approach could be seen in two ways; constraints to learners and constraints to team members/teachers. Brandenbury, (2007) posits that as team teaching involves two or more teachers teaching a particular class, inevitability of large class maybe detrimental for some students especially students with attention deficit disorder**.** He further explained that some students maybe confused by conflicting opinions among members or variation in teaching. The potential diversity and ubiquity among team members may prove disconcerting for students who might become confused by more than one way of looking at issues or grading assignments. According to him these students may be unwilling to try out new techniques such as small group work from different teachers. To improve on his findings on some of the constraints of team-teaching Branden-Bury recommends that team members teaching the same class should meet either daily or weekly to decide the following;

1. What will be taught and the order it should be presented to the learners.
2. The materials to be used/ presented to the learners,
3. Who will do the presentation?
4. If the students will be regrouped, who will be in charge of the sub-group?
5. How the students will be assessed during and at the end of the lesson.

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At the end of the semester members should review activities thus;

1. Has teaching and learning improved?
2. What problem has arisen?
3. How can the problem be addressed?

In the same vein Schlaible, (1995) in addressing how to improve team teaching advised that although the number of team members is never fixed but it should be limited to two. He also added that the prospective team partner should be someone who has a healthy psyche and does not demand excessive power or control over the other members of the team.

Another scholar Goetz, (2002) outlined the following factors as the major constraints to team teaching; (1)Time (2) Communication (3) Man power (4) Inadequate lecture halls (5) Indiscipline among team members

Theoretical Framework

The theoretical frameworks of this study are Clark, (2002) general theory of teaching and Bandura, (1977) Social learning theory.

Social Learning Theory

According to Bandura, (1977) learning occurs through the process of observation, imitation and modeling by the learners. Bandura in his advanced social learning theory see human learning as accomplished by observing others without any direct or personal reinforcement or by giving the learner any opportunity for practice. He called this method observational or vicarious learning owing to the fact that all required for the personality of the learner to improve is for the person to observe another individual and take him as a model. By implication a student in a classroom with team teachers can also learn effectively by observing the different teachers they come in contact with who have their peculiar method of carrying out instructions (teaching) ensure that the students achieve the required objectives. In the same vein Vygotsky, (2007) opines those greater efforts results from teaching through social learning theory. He further explains that when teachers come to identify with other members of their team greater performance results is achieved on the part of the teachers and high academic performance is also recorded for the students in the teaching and learning process. Therefore, the social learning theory is of very great benefit to this study because it focuses mainly on the benefits of team teaching garnered towards effective teaching and learning process.

General Theory of Teaching

Clark, (2002) propounded a general theory of teaching; he states that teaching is a process which is designed and performed to produce model in behavior of students. He emphasized that teaching is a contractual relationship between the teachers and the learners and that their relationship consists of certain activities to be performed by the teacher such as analyzing teaching tasks, determining learning goals, identifying behavior and selecting teaching strategies and managements. Among the teaching strategies and arrangements mentioned is team teaching. Clark, (2002) states that team teaching is typically composed of two or more teachers working together or collaboratively to plan thematic units and lesson plans in order to provide a more supportive environment for students. He suggested that for an effective team teaching to take place, the teachers or team members must come together or communicate with each other in order to plan and evaluate their learning objectives. Exposure to the views and skills of more than one teacher can enable the students to develop a more mature understanding or knowledge. Clark also mentioned certain factors that can hinder the effective implementation of team-teaching approach, these include, unavailability of lecture hall/class size, time, lack of communication and commitment to work. In relation to the study this theory suggests that in as much as there are lots of benefits regarding team teaching but there are also challenges. Thus, the question here should be; is team teaming more beneficial or problematic?

Methodology

A descriptive survey design was adopted to examine teachers' and students' perceptions of team teaching. The study was conducted in the Department of English Language and Literature, Alvan Ikoku Federal University of Education, and the Department of English, Federal Polytechnic, Nekede, Owerri, Imo State. The population comprised 300 respondents (200 students and 100 teachers). A purposive sampling technique was used to select 85 respondents directly involved in ESL teaching and learning. A structured questionnaire containing 20 items was used. Items were structured on a four-point Likert scale: Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). The instrument underwent face and content validation by experts in English Language Education and Measurement and Evaluation. Reliability was established

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using the test-retest method, yielding a satisfactory coefficient. Data were analyzed using mean scores. A benchmark means of 2.50 determined acceptance or rejection of items.

Presentation of Result

Research Question 1: What are the problems of team teaching?

Table 1

N/S	QUESTIONS	Responses SA 4	A 3	D 2	SD 1	Total	∑FX	X	REMARK
1	Team teaching brings about competition among teachers.	30 120	30 90	15 30	10 10	85	250	2.94	Accepted
2	Team teaching encourages laziness among the team members.	10 40	15 45	40 80	20 20	85	185	2.18	Rejected
3	A team member could monopolize teaching during team teaching.	20 80	50 150	10 20	05 05	85	255	3.00	Accepted
4	Team teaching encourages negligence or nonchalant attitudes among team members.	30 120	30 90	15 30	10 10	85	250	2.94	Accepted
5	Team teaching brings about conflicts among team members.	40 160	45 135	0 0	0 0	85	295	3.47	Accepted
6	Teachers in your institution do not practice team teaching.	10 40	10 30	45 90	20 20	85	180	2.12	Rejected
7	Team teaching does not encourage student's better understanding of the subject.	10 40	20 60	30 60	25 25	85	185	2.18	Rejected
8	Teachers do not cover the scheme during team teaching.	10 40	20 60	30 60	25 25	85	185	2.18	Rejected
9	Teachers usually skip lessons as a result of team teaching.	40 160	45 135	0 0	0 0	85	295	3.47	Accepted

The answer to the research question 1 is answered by the responses to item 1-9. The findings are as follows: From item 1, the total is 250 and the mean score is 2.94, Item 2 has a total of 185 with mean score of 2.18, Item 3 has a total of 255 with mean score of 3.00. Item 4 have a total score of 250 with mean score of 2.94. Item 5 has a total score of 295 with 3.47 as mean score, item 6 has a total score of 180 with a mean score of 2.12, item 7 has a total score of 185 with mean of 2.18, item 8 has a total of 185 with a mean score of 2.18 while item 9 has a total of 295 with a mean score of 3.47. Therefore, the findings reveal that team teaching has some problems like creating conflicts among team members, skipping of lessons by some team members, monopolizing of teaching during team teaching by a team member and bringing about competition among members.

Research Question 2: What are the benefits of team teaching?

Table 2

N/S	**QUESTIONS**	**RESPONSES SA 4**	**A 3**	**D 2**	**SD 1**	**Total**	**∑FX**	**X**	**Remark**
10	Team teaching enables teachers to know the intellectual capability of students.	5 20	5 15	30 60	45 45	85	140	1.65	Rejected
11	Team teaching enables team members to discover the major challenges in teaching and learning.	25 100	25 75	25 50	10 10	85	235	2.76	Accepted
12	Teachers are more active and vibrant during team teaching.	30 120	30 90	15 30	10 10	85	250	2.94	Accepted

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13	Students develop more interest in the lesson when team teaching is practiced.	25 100	28 84	18 36	14 14	85	234	2.75	Accepted
14	Team teaching improves the student-teacher relationship.	30 120	30 90	15 30	10 10	85	250	2.94	Accepted

MEAN RATING $= \frac{4+3+2+1}{4} = 2.50$

The answer to research question 2 is offered by the response to the questions 10-14 as follows: From item 10, the total is 140 and mean score of 1.65, item 11 has a total of 235 with mean score 2.76. Item 12 has a total of 250 with mean score of 2.94, item of 13 has a total score of 234 with mean score of 2.75 and item 14 has a total score of 250 with 2.94 as mean score. Hence, items 11, 12, 13 and 14 were accepted since their means are greater than 2.50 (rating mean). That is to say, team teaching is of great benefit to both students and teachers.

Discussion of Findings

Research Question 1: The research questions are divided into two; research question one is used to elicit responses on the problems of team teaching, while research question two addresses the benefits. The responses were analyzed by computing and comparing the mean of all the items with the mean rating of 2.50 as the validation of items in the research questions. Hence, if the mean rating is less than 2.50, it signifies that the item is rejected; otherwise, the item is accepted. Based on this, items 1,3,4,5 and 9 were accepted while items 2, 6, 7 and 8 were rejected. The responses to the questions under research question 1show that team members usually disagree on matters of presentation, timetable, form of evaluation, restriction on individual teacher freedom of teaching procedure among others. The findings reveal that indeed there are problems that emanate from team teaching

Research Question 2: The research question 2 sought to know the benefits of team teaching to both teachers and students in the teaching and learning of English as a second language. The findings show that students are exposed to specialists thus improving their knowledge. Also, there is improved quality of instruction as team members encourage various teaching and learning styles. Hence, items 11, 12, 13 and 14 were accepted since their mean ratings are greater than 2.50 while item 10 was rejected.

Conclusion

Having carried out the review of relevant scholarship and having presented and analyzed the data of this study, the study therefore concludes that team teaching has the following problems: it brings about competition among teachers, a team member could monopolize teaching during team teaching, it encourages negligence or nonchalant attitudes among team members, brings about conflicts among team members among others. However, the benefits outweigh the problems in the sense that: team teaching enables team members to discover the challenges in teaching and learning, teachers are more active and vibrant during team teaching, students develop more interest in the lesson when team teaching is practiced and it improves the student-teacher relationship. From the foregoing, team teaching could be considered to be among the best teaching approaches in the 21st century ESL classroom.

Recommendations

This paper recommends that:

1. There should be continuous training and re-orientation of teachers on team teaching approach.
2. Students should be willing to try out new learning techniques such as small group-work from different teachers.
3. There should be connection in the content of curriculum to real life situations.
4. Compatibility of team members should also be put into consideration.

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meticulous face and content validation of the structured research instruments ensured the reliability and academic rigor of the findings presented in this paper. We also acknowledge the foundational influence of the theorists whose work anchored this study, particularly Bandura (1977) and Clark (2002), whose Social Learning Theory and General Theory of Teaching provided the essential framework for investigating collaborative instruction.

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Perceptions of the Core Course Minimum Academic Standard's Entrepreneurship Courses on Self-Employment Readiness and Poverty Reduction among Undergraduate Students in University of Benin, Edo State, Nigeria

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Abstract

This study examined Social Studies undergraduates' perceptions of the effectiveness of the Core Curriculum and Minimum Academic Standards (CCMAS) entrepreneurship courses in promoting self-employment readiness and poverty reduction in Nigeria. Using a descriptive survey design, the study involved the entire population of 64 full-time 300 and 400 level Social Studies undergraduates (2025/2026 academic session) in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin. Data were collected via a structured questionnaire titled "Undergraduates' Perception of the Effectiveness of the CCMAS Entrepreneurial Courses in Promoting Self-Employability Readiness and Reducing Poverty in Nigeria" and analyzed using descriptive statistics, including means and standard deviations, with a criterion mean of 2.50. Findings revealed that students perceive the CCMAS entrepreneurship courses (ENT211 and ENT312) as effective in developing practical, entrepreneurial, and employability skills, enhancing self-employment readiness, and contributing to poverty reduction. However, structural, instructional, and financial constraints were identified as barriers to the curriculum's full impact. The study recommends improving practical exposure, strengthening faculty and mentorship capacity, facilitating access to start-up funding, and promoting university–industry linkages to maximize the curriculum's potential in reducing poverty among graduates.

Keywords: Social Studies, Entrepreneurship, CCMAS, Self-Employment Readiness, Poverty Reduction

Introduction

In response to persistent youth unemployment and under-employment in Nigeria, the National Universities Commission (NUC) revised the national undergraduate curriculum, replacing the Benchmark Minimum Academic Standards (BMAS) with the Core Curriculum and Minimum Academic Standards (CCMAS) across Nigerian universities. Officially launched in 2022 and implemented from September 2023, CCMAS aims to produce graduates equipped with 21st-century skills, practical competencies, and entrepreneurial capabilities relevant to national development goals (Ogunode et al., 2024). This reform is also a response to the high level of poverty, which remains one of Nigeria's most pressing socio-economic challenges; over 60% of Nigerians live below the poverty line (National Bureau of Statistics, 2023). Education, particularly disciplines such as Social Studies, is regarded as a key tool for addressing socio-economic inequalities. The curriculum, defined as the totality of learning experiences offered to learners, determines both what is taught and how students are prepared for life beyond school. In Nigeria, curriculum design plays a pivotal role in ensuring that education is relevant and responsive to national development needs. Okoye and Ofoegbu (2018) highlight that curriculum design can directly influence poverty reduction by fostering employability, entrepreneurship, and problem-solving skills among Nigerian youths. Despite numerous reforms, poverty remains a persistent problem, highlighting the need for curricula that are directly linked to economic empowerment and social development (Sen, 1999; Bae, Qian, Miao, & Fiet, 2014). A key feature of CCMAS is the restructuring of the General Studies component, reduced from 36 credit units under BMAS to 12 under CCMAS, while strategically embedding entrepreneurship-oriented courses such as *Entrepreneurship and Innovation (ENT211)* at 200 level and *Venture Creation (ENT312)* at 300 level. These courses are designed to strengthen graduates' capacity for self-employment and enterprise creation. By prioritizing entrepreneurship education, CCMAS aligns with global and national policy calls for higher education to contribute to job creation, self-reliance, and poverty reduction (Fayolle & Gailly, 2015; Nabi, Liñán, Fayolle, Krueger, & Walmsley, 2017). However, the effectiveness of these changes depends not only on curriculum content but also on students' perceptions of their relevance, practical applicability, and potential impact on livelihood opportunities. Also, despite its potentials, several factors may hinder the effectiveness of the

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Social Studies CCMAS in promoting self-employability and reducing poverty; some of the likely factors include inadequate training for lecturers on the new CCMAS contents, lack of instructional materials and technological support, disconnect between curriculum and national policy on poverty reduction and overcrowded classrooms and poor students engagement among others (Eze & Oladipo, 2023). In this context, this study investigates Social Studies undergraduates' perceptions of the effectiveness of the newly introduced CCMAS entrepreneurship curriculum in alleviating poverty in Nigeria and provides recommendations to enhance its socio-economic relevance.

Conceptual Clarifications

Core Curriculum and Minimum Academic Standards (CCMAS)

The Core Curriculum and Minimum Academic Standards (CCMAS) represent a major reform in Nigerian university education introduced by the National Universities Commission (NUC) in 2022 to replace the Benchmark Minimum Academic Standards (BMAS). CCMAS was designed to modernize undergraduate curricula by incorporating contemporary competencies such as digital literacy, innovation, employability skills, and entrepreneurship. This approach aligns with poverty reduction strategies by preparing students for self-reliance and innovation (Odey, 2021). The reform also decentralizes aspects of curriculum development by allowing universities to design up to 30% of their programme content while retaining 70% nationally prescribed core standard (NUC, 2022). Within this framework, entrepreneurship education was strengthened as a cross-cutting requirement for all disciplines, including Social Studies Education. The inclusion of structured courses such as Entrepreneurship and Innovation (ENT211) and Venture Creation (ENT312) reflects a policy shift from theoretical exposure to practical enterprise development. The reform aligns with broader national development priorities emphasizing graduate employability, private sector participation, and self-reliance. From a curriculum theory perspective, CCMAS reflects elements of competency-based education, where learning outcomes are structured around demonstrable skills rather than purely content mastery (Mulder, 2014). It also reflects a human capital development orientation, which views education as an investment in productive capabilities that can stimulate economic growth (Becker, 1993).

Entrepreneurship Education

Entrepreneurship education refers to structured pedagogical processes aimed at developing entrepreneurial knowledge, skills, attitudes, and intentions. It typically includes opportunity recognition, innovation processes, risk management, business planning, venture financing, and enterprise management. Omo-Egbekuse and Akani (2016) emphasize that entrepreneurship education in Nigerian tertiary institutions plays a crucial role in equipping students with the skills and mindset necessary for self-employment and economic empowerment. Scholars such as Fayolle and Gailly (2015) argue that entrepreneurship education influences learners through three primary dimensions: cognitive (knowledge acquisition), affective (attitudes and motivation), and behavioral (venture creation intentions and actions). Empirical studies show a statistically significant relationship between entrepreneurship education and entrepreneurial intention among university students (Bae et al., 2014). In the Nigerian context, entrepreneurship education was formally integrated into tertiary education as part of a national response to youth unemployment (Arogundade, 2011). However, earlier implementations were often criticized for being theoretical and lacking experiential depth. The CCMAS model attempts to address these limitations by embedding innovation-oriented and venture creation components that emphasize practical engagement. Within this study, entrepreneurship education specifically refers to the structured exposure of Social Studies undergraduates to ENT211 and ENT312, focusing on skill acquisition, enterprise development competencies, and self-employment readiness.

Venture Creation and Self-Employment Readiness

Venture creation is the process through which individuals identify opportunities, mobilize resources, and establish new enterprises (Gartner, 1985). It extends beyond intention to actual business formation activities, including prototyping, market validation, financial planning, and operational structuring. Self-employment readiness refers to the extent to which an individual possesses the competencies, confidence, and resources necessary to initiate and sustain an enterprise. According to Krueger, Reilly, and Carsrud (2000), entrepreneurial intentions which are shaped by perceived feasibility and desirability are strong predictors of venture creation behavior. Therefore, curriculum interventions that enhance feasibility perceptions (skills, competence) are theoretically linked to self-employment outcomes. In this study, self-employment readiness serves as a measurable proxy for poverty alleviation potential. Rather than measuring poverty reduction directly,

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which requires longitudinal economic data, perceived readiness provides an immediate indicator of economic empowerment capacity.

Poverty and Poverty Reduction

Poverty is multidimensional and extends beyond income deprivation to include limited access to education, healthcare, housing, and economic opportunities. The World Bank (2023) defines poverty primarily in monetary terms using income thresholds but also acknowledges broader vulnerability dimensions. Sen's (1999) capability approach reframes poverty as deprivation of basic capabilities and the freedom to achieve valued ways of living. Within this theoretical lens, entrepreneurship education contributes to poverty reduction by expanding individuals' economic capabilities and income-generating options. In Nigeria, high youth unemployment significantly contributes to poverty levels. The National Bureau of Statistics (2023) reports persistently high rates of youth joblessness, reinforcing the policy rationale for embedding entrepreneurship education within university curricula. Thus, within this research, poverty alleviation is conceptualized not as immediate income change but as enhanced economic agency and capacity for income generation among undergraduates.

Students' Perceptions of CCMAS and Poverty Reduction

Perception refers to individuals' subjective evaluation or interpretation of experiences, policies, or interventions. In educational research, student perception is considered a critical determinant of curriculum effectiveness because it influences engagement, motivation, and behavioral outcomes. Ajzen's (1991) Theory of Planned Behavior provides a useful explanatory model. According to the theory, attitudes toward a behavior, perceived behavioral control, and subjective norms influence intention formation. Therefore, if students perceive entrepreneurship courses as relevant, practical, and empowering, they are more likely to develop entrepreneurial intentions and pursue venture creation. Preliminary findings from recent studies suggest that undergraduates see the Social Studies CCMAS as moderately effective in addressing poverty. While many agree that the curriculum raises awareness and critical consciousness, others argue that practical implementation is weak due to poor instructional delivery and lack of real-world application (Ikenna & Musa, 2024). Studies have also pointed out the need for better alignment between theoretical content and job market demands. Without concrete internship or community-based components, the impact of the curriculum may remain limited to academic knowledge without practical outcomes.

Purpose of the study

The study aimed at finding out undergraduates' perception of the impact of CCMAS entrepreneurship courses on self-employment readiness and poverty reduction in Nigeria. Specifically, the study sought to:

1. find out the perception of Social Studies undergraduates on the effectiveness of the CCMAS entrepreneurial courses in self-employability readiness and poverty reduction;
2. find out how Social Studies undergraduates perceive the relevance of the skills (practical, entrepreneurial and employability) embedded in the CCMAS entrepreneurial courses for self-employability readiness and addressing poverty; and
3. find out what challenges Social Studies undergraduates perceive as constraining the effectiveness of the CCMAS curriculum in promoting self-employability readiness and poverty reduction.

Research Questions

1. What are Social Studies undergraduates' perceptions of the effectiveness of the CCMAS entrepreneurial courses in promoting self-employability readiness and poverty reduction?
2. How do Social Studies undergraduates perceive the relevance of the skills (practical, entrepreneurial and employability) embedded in the CCMAS entrepreneurial courses for addressing self-employability readiness and poverty?
3. What challenges do Social Studies undergraduates perceive as constraining the effectiveness of the CCMAS curriculum in promoting self-employability readiness and poverty reduction?

Methodology

A descriptive survey research design was adopted for this study. The population consisted of 64 full-time Social Studies undergraduates in 300 and 400 levels (2025/2026 academic session) in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin. Since the population was manageable, all students were included in the study as the sample. Data were collected using a structured questionnaire titled *"Undergraduates' Perception of the Effectiveness of the CCMAS Entrepreneurial Courses in Promoting Self-Employability Readiness and Reducing Poverty*

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in Nigeria." The data were analyzed using descriptive statistics, including mean scores and standard deviations, with a criterion mean set at 2.50 to determine acceptance of the items.

Presentation of Results

Research question 1:

What is the perception of Social Studies undergraduates on the effectiveness of the CCMAS entrepreneurial courses in promoting self-employability readiness and reducing poverty?

Table 1: Social Studies Undergraduates' Perceptions of the Effectiveness of the CCMAS Entrepreneurial Courses in Promoting Self-Employability Readiness and Reducing Poverty

S/N	Items	N	Mean Score	Remark
1	The CCMAS entrepreneurial courses are effective for self-employability readiness and reduction of poverty in Nigeria.	64	2.64	Effective
2	ENT211 & ENT312 has contents on how to become economically viable and self-reliant through its entrepreneurial contents.	64	2.88	Effective
3	The CCMAS entrepreneurial courses create awareness of social problems such as poverty, inequality and unemployment.	64	2.52	Effective
4	The CCMAS entrepreneurial courses address the causes and effects of poverty as well as practical solutions for tackling poverty.	64	2.78	Effective
5	ENT211 & ENT312 can help in achieving Sustainable Development Goal of ending poverty.	64	2.78	Effective

Criterion mean: 2.50 Grand mean: 2.72

The data in Table 1 showed that items 1 to 5 met the criterion mean score of 2.50 and therefore, were all accepted since the criterion mean of 2.50 is lower than the grand mean of 2.72. It was observed that undergraduate perceive the CCMAS entrepreneurial courses for Social Studies as effective in promoting self-employability readiness and reducing poverty in Nigeria, having contents on how to become economically viable and self-reliant through its entrepreneurial contents, creating awareness of social problems such as poverty, inequality and unemployment, addressing the causes and effects of poverty as well as practical solutions for tackling poverty, and helping in achieving Sustainable Development Goal of ending poverty.

Research Question 2:

How do Social Studies undergraduates perceive the relevance of the skills (practical, entrepreneurial and employability) embedded in the CCMAS entrepreneurial courses for addressing self-employability readiness and poverty?

Table 2: Social Studies Undergraduates' Perceptions of the Relevance of the Skills Taught in CCMAS Entrepreneurial Courses for Addressing Self-Employability and Poverty

S/N	Items	N	Mean score	Remark
1	The CCMAS entrepreneurial courses equip students with practical skills that can help them generate income after graduation.	64	2.64	Accepted
2	ENT211 & ENT312 encourage entrepreneurial thinking among Social Studies students.	64	3.32	Accepted
3	The CCMAS curriculum prepares Social Studies graduates for self-employment rather than dependence on paid job alone.	64	3.26	Accepted
4	Skills acquired through the CCMAS entrepreneurial courses are relevant to addressing real socio-economic problems.	64	2.79	Accepted
5	My exposure to ENT211 & ENT312 enhances my confidence in my ability to be self-employed and contribute to poverty reduction in my locality.	64	2.71	Accepted

Criterion mean: 2.50 Grand mean: 2.94

The data in Table 2 showed that items 1 to 5 met the criterion mean score of 2.50 and therefore, were all accepted since the criterion mean of 2.50 is lower than the grand mean of 2.94. It was observed that Social Studies undergraduates perceived the skills taught in the CCMAS entrepreneurial courses as effective in equipping them with practical skills to

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generate income, encourage entrepreneurial thinking, prepare them for self-employment and addressing real socio-economic problems as well as enhances their confidence in their ability to contribute to poverty reduction.

Question 3: What challenges do Social Studies undergraduates perceive as constraining the effectiveness of the CCMAS entrepreneurial courses in promoting self-employability readiness poverty reduction?

Table 3: Social Studies Undergraduates' Perception of the Challenges to the Effectiveness of CCMAS Entrepreneurial Courses in Promoting Self-Employability Readiness and Poverty Reduction

S/N	ITEMS	N	Mean score	Remark
1	Inadequate infrastructural facilities limit the effective implementation of the CCMAS entrepreneurial courses.	64	2.64	Accepted
2	Limited opportunities to apply skills in real-life situations may reduce the impact of ENT211 & ENT312.	64	2.78	Accepted
3	Limited availability of qualified instructors and industry mentors affects the effectiveness of entrepreneurship courses under CCMAS.	64	2.73	Accepted
4	Insufficient access to funding opportunities or start-up capital reduces the poverty reduction potential of the CCMAS entrepreneurship training.	64	2.62	Accepted
5	Weak linkage between university entrepreneurship training and the local business environment limits the ability of students to translate skills into viable ventures.	64	2.51	Accepted

Criterion mean: 2.50 Grand mean: 2.66

The data in Table 3 showed that items 1 to 5 met the criterion mean score of 2.50 and therefore, were all accepted since the criterion mean of 2.50 is lower than the grand mean of 2.66. This indicates that respondents agreed that several factors constrain the effectiveness of CCMAS entrepreneurship courses in promoting self-employability readiness and poverty reduction. Key perceived challenges include limited opportunities for practical application, inadequate availability of qualified instructors and mentors, insufficient infrastructural facilities, limited access to start-up funding, and weak linkage between university training and the local business environment. Overall, the findings suggest that students perceive structural, instructional, and financial constraints as limiting the self-employability readiness and poverty reduction potential of the CCMAS entrepreneurship courses.

Discussion of Findings

The finding suggests that students view the CCMAS entrepreneurship courses as relevant instruments for economic empowerment and poverty reduction. This supports evidence that entrepreneurship education enhances entrepreneurial skills and self-employment capacity, which are critical pathways to income generation (Bae, Qian, Miao, & Fiet, 2014; Fayolle & Gailly, 2015). It also aligns with Sen's (1999) capability approach, which links skill acquisition and expanded economic agency to poverty reduction. The finding also supports that of Ogunode et al. (2024), who argued that the new curriculum is effective in addressing both national and international challenges through pragmatic teaching, research, and community service, thereby contributing to poverty reduction. Nonetheless, prior meta-analytic evidence cautions that the actual economic impact of entrepreneurship education depends largely on implementation quality and contextual factors (Bae et al., 2014). Findings also revealed that Social Studies undergraduates perceive the practical, entrepreneurial, and employability skills embedded in the CCMAS entrepreneurship courses as relevant for income generation and poverty reduction. This aligns with empirical evidence that entrepreneurship education strengthens entrepreneurial mindset, self-efficacy, and intention toward self-employment (Fayolle & Gailly, 2015; Bae, Qian, Miao, & Fiet, 2014). The perception that the curriculum promotes entrepreneurial thinking and self-employment readiness is consistent with human capital theory, which posits that skill acquisition enhances individuals' productive capacity and economic outcomes (Becker, 1993). Furthermore, the reported increase in confidence to address socio-economic problems supports findings by Nabi et al. (2017), who concluded that entrepreneurship education has positive effects on entrepreneurial competencies and perceived employability outcomes. However, while students perceive these skills as relevant, evidence suggests that translating such competencies into sustainable venture creation depends significantly on ecosystem support and post-graduation opportunities (Nabi et al., 2017). Findings further indicate that students perceive structural, instructional, and financial barriers as limiting the self-employability readiness and poverty reduction potential of the CCMAS

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entrepreneurship courses. This is supported by Eze and Oladipo (2023), who identified similar challenges in Nigerian universities, including inadequate training of lecturers on new curriculum content, lack of instructional materials and technological support, weak alignment between the curriculum and national poverty reduction policies, overcrowded classrooms, and low student engagement. This also aligns with evidence that the effectiveness of entrepreneurship education depends not only on curriculum content but also on experiential learning opportunities, qualified instructors, and institutional support systems (Nabi et al., 2017). The concern about limited real-life application supports arguments by Pittaway and Cope (2007), who emphasize that experiential and practice-based approaches are critical for meaningful entrepreneurial learning. Similarly, inadequate access to start-up capital and weak university–industry linkages reflect broader ecosystem constraints that hinder venture creation, particularly in developing economies (Acs, Autio, & Szerb, 2014). Thus, while entrepreneurship education may enhance intentions and skills, its poverty reduction impact is likely to be constrained where infrastructural, mentorship, and financial support mechanisms are weak.

Conclusion

The study concludes that Social Studies undergraduates perceive the CCMAS entrepreneurship courses (ENT211 and ENT312) as effective and relevant for enhancing self-employment readiness and contributing to poverty reduction. Students acknowledged that the courses develop practical, entrepreneurial, and employability skills while raising awareness of socio-economic challenges such as poverty, inequality, and unemployment. However, the effectiveness of the courses is constrained by structural, instructional, and financial challenges, including inadequate infrastructure, limited opportunities for real-life application, insufficient mentorship, and weak university–industry linkages. Overall, while CCMAS is positively perceived as a tool for promoting economic empowerment, the realization of its poverty reduction potential depends on improving these supporting conditions.

Recommendations

Based on the findings and conclusion of this study, the following recommendations are proposed:

1. Universities should provide more opportunities for hands-on entrepreneurship experiences, such as business simulations, internships, and community-based projects, to enable students to apply the skills learned in real-life contexts.
2. There is need for the recruitment and training of qualified instructors, coupled with engagement of industry mentors, which would improve the quality of entrepreneurship education and ensure students receive relevant guidance.
3. Universities and government agencies should create mechanisms for students to access start-up capital, grants, and low-interest loans to support venture creation and poverty alleviation initiatives.
4. Efforts should be made to strengthening partnerships with local businesses and industries to enhance relevance, market readiness, and sustainability of student-led enterprises.
5. There should be regular evaluation and updating of CCMAS entrepreneurship courses to ensure alignment with current economic realities and socio-economic development goals, including poverty reduction, should be institutionalized.

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Evaluation of Operationality and Utilization of Instructional Materials for Teaching and Learning of Economics among Senior Secondary Schools in North-West, Nigeria

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Abstract
The research examined the Evaluation of operationality and extent of utilization of Instructional Materials for Teaching and Learning of Economics in Senior Secondary Schools in North West, Nigeria. The objective of this study is to evaluate the operationality and extent of utilization of instructional materials for teaching and learning of Economics among Senior Secondary Schools in North West, Nigeria; The study established two specific objectives, two research questions and two null hypotheses which were subsequently tested for the study. The study reviewed two related theories, concepts and thirty (30) relevant empirical studies. The study employed a descriptive survey research design. The target population of the study comprised of one hundred and eight thousand, nine hundred and seventy-four (108,974) respondents which included Senior Secondary School Two (SS II) Economics students and Economics teachers from the seven states of the North West Geo-Political Zone of Nigeria. A sample size of three hundred and eighty-four (384) respondents were selected for the study using multistage sampling techniques. A 4-point-likert scale questionnaire with fifty (50) items were used as instruments for this study. The instrument was pilot tested and the reliability coefficients of 0.85 was obtained using Cronbach's Alpha. The data collected was analyzed using descriptive and inferential statistic. Frequency and mean was used to analyze the research questions while the two null hypotheses were tested using Mann-Whitney U-test at 0.05 level of significance. This is because, the data obtained was ordinal and discreet in nature. The results indicated the retaining of all the hypotheses at a significance level of 0.05. The study's findings revealed that, instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria were not operational and not utilized in teaching and learning of Economics. The study concluded that, instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria were generally not operational and utilized during teaching and learning of Economics. Based on the findings and conclusion of this study, the following recommendations were made: Governments, school management and stakeholders should promote and encourage the operationality of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria. Moreover, Governments, school administrators, and policymakers should encourage teachers and students to make adequate utilization of the available instructional materials during teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria. Additionally, workshops, seminars and conferences should urgently be organized for Economics teachers on operationality and innovative utilization strategies of instructional materials in schools.
Key Words: Operationality, Utilization, Instructional Materials, Teaching and Learning.

Introduction
Instructional Materials, covers all types of instructional materials, learning materials, tools, curriculum resources or media which Economics teachers and students can operate and utilize during teaching and learning processes of Economics to

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ease students' learning activities and improve academic performance. The practical nature of Economics makes it unique and requires different types of instructional materials for its effective classroom instructions. This will ease teachers' efforts, encourage decision making skills, enhance practical skills, improve problem solving skills, simplify complex Economics topics, support statistical or mathematical skills, enhance Economics lesson delivery and performance. However, when managed or used appropriately during the teaching and learning of Economics, these instructional resources have the full potential to significantly impact students' learning activities and outstanding academic achievement. Additionally, they can give students the chance to use the most powerful learning resources, enhance their own development, support efficient instruction, make a significant contribution to their academic success, lessen stress, enhance learning, enhance memory retention, and enhance students' practical and manipulative Economics skills. Therefore, in order to maintain lesson delivery, skill development, and academic achievement, mostly in Nigerian North Western Secondary Schools, these instructional resources must be analyzed or assessed to determine their utilization and operationality. However, poor or faulty use, and operational problems of the used instructional materials during teaching and learning of Economics can result in critical issues and challenges, including poor performance, ineffective study habits, mental confusion, and students' dissatisfied academic achievements in school. These are the major issues that the majority of Economics teachers and their students face in most schools. The proper use and operationality of educational resources in the study areas are the only factors that determine how well teaching and learning processes work. The inability of teachers to use appropriate teaching resources, inadequate lesson plans, flawed curriculum objectives, inappropriate teaching methods, and most importantly, ineffective teacher delivery are some of the negative factors that contribute to low student academic performance, issues with curriculum delivery, and ineffective Economics proficiency. However, Some Economics teachers in the North West Geopolitical Zone of Nigeria consistently engage in these unprofessional behaviours and endeavours, which can lead to student distraction, classroom chaos, poor classroom management, subpar academic achievement, and incalculable Economics failures (Hussain, Altine and Muhammad, 2024). Therefore, it was necessary to conduct an investigation to assess their operationality and utilization for Economics instruction in Nigeria's North Western Secondary Schools.

Statement of the Problem

Economics education in the North Western Secondary Schools are facing serious problems of unproductive learning activities, slow rate of learning, poor students' academic performance, inefficient teacher delivry, and massive failures in both internal and external examinations which are largely imputed to the deficient utilization, inadequacy and inaccessibility of instructional materials utilized in teaching and learning of Economics as well as teachers' inability to utilize and avail themselves with the appropriate instructional materials required for effective teaching and learning processes. However, these problems could also be linked to lack of improvisational skills, poor teaching skills, teachers' attitude and inexperience in teaching and learning processes and above all, teachers' unpreparedness, lack of practical skills, and expertise require to operate and utilize the appropriate instructional materials in any classroom instructions. These alarming problems might distort students' learning activities, academic achievement, retention rate, as well as the effective classroom mnagement in schools. According to Yusuf (2018), Economics students continue to perform lamentably poor in their external and internal examinations which resulted in ineffective educational delivery and poor academic achievements due to the unskilled utilization or inadequacy of the relevant instructional materials in North Western secondary schools. According to West African Examinations Council (WAEC), (2019) Nigeria recorded the aggregate failures of 47.7% in 2016; 43.47% in 2017 and 51.85% in 2018 across all school subjects, Economics inclusive. Moreover, the reports of National Examination Council (NECO), (2023), also depicted that, 728, 254 candidates sat for Economics examination in 2023, but 4.5% failure were recorded across the country particularly in the North Western secondary schools which revealed the defective Economics pedagogical delivery, slow rates of learning and poor academic performance among students. These are serious and most alarming problems facing Economics educations in all the states in the North West, Geo-Political Zone of Nigeria. These also portrayed the necessity of conducting research to evaluate the operationality and adequacy of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North Western Nigeria.

Objectives of the Study

The objectives of the study were to:

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1. Evaluate the operationality of instructional materials for teaching and learning of Economics among Senior Secondary Schools in North West, Nigeria;
2. Determine the extent of utilization of instructional materials for teaching and learning of Economics among Senior Secondary Schools in North West, Nigeria;

Research Questions

The study answered the following research questions:

1. What is the operationality of instructional materials for teaching and learning of Economics among Senior Secondary Schools in North West, Nigeria?
2. What is the extent of utilization of instructional materials for teaching and learning of Economics among Senior Secondary Schools in North West, Nigeria?

Hypotheses

The study was guided by the following research hypotheses:

H_{O1}: There is no significant difference in the operationality of instructional materials for teaching and learning of Economics among Senior Secondary Schools in North West, Nigeria.

H_{O2}: There is no significant difference in the extent of the utilization of instructional materials for teaching and learning of Economics among Senior Secondary Schools in North West, Nigeria.

Concept of Instructional Materials

Instructional materials are teaching tools that are operated, manipulated and utilized by Economics teachers to effectively communicate learning experiences to students. They also refer to anything, anybody or any non-human resources utilize by teachers to impart knowledge, skills, and attitude to students to assist in achieving certain educational aims and objectives. These learning resources stimulate learning and help students appreciate and understand the curriculum contents taught at school, knowledge, practical skills, and attitudes learned. According to Anabel (2025), instructional materials refer to a spectrum of educational materials that teachers use in the classroom to achieve specific learning objectives. These include the lectures, readings, textbooks, multimedia components, and other resources. Augustine, (2022) added that, instructional materials are print and non-print items that are designed to impart information to students in the educational process. According to Ikpesu and Nkem, (2021) instructional materials are collections of materials and equipment that process instruction and training; such materials and equipment may be derived from the objectives of teaching and learning. Moreover, Jerald (2025), added that, instructional materials are those materials used by teachers to simplify their teaching. They include visual and audio- visual aids and could either be concrete or non-concrete. These instructional materials bring life to learning by stimulating students to learn. However, instructional materials are all materials designed for use by students and their teachers as learning resources to help students to acquire facts, skills, and/or to develop cognitive processes. Moreover, Instructional materials can be grouped, classified or categorized into different types and sub-groups to serve multifarious purposes and functions in classroom instructions as followed: Audio instructional materials, visual instructional materials, audio-visual instructional materials, display instructional materials, multimedia instructional materials, printed instructional materials, graphic instructional materials, human instructional materials, infrastructural instructional materials, financial instructional materials, time instructional materials and community instructional materials.

Concept of Operationality of Instructional Materials

Operationality of instructional materials is the workable capability of instructional materials of being operational, applicable, functional or active for utilization in the classroom instructions by both teachers and students. It is also the operative state or conditions of instructional materials to be used by Economics teachers in teaching and learning processes. The operationality of instructional materials could also refer to the ability of instructional materials to be used in classroom for effective teacher delivery, students' comprehension and improvement of academic performance. Instructional materials can be available but not necessarily operative. The operationality of these materials encompasses the condition of being available, functional and at the same time ready to be utilized during lesson delivery. According to Usman (2016), operationality of instructional materials refers to the degree of functionality of instructional materials in teaching and learning of Economics in senior secondary schools. Ikpesu and Nkem (2021), opined that, operationality of instructional materials is the ability of these materials to be used or put into some uses during teaching and learning processes of

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Economics as a subject. To Yusuf (2015), operationality refers to the extent of instructional materials of being usable and operational in any classroom situations.

The operationality state of instructional materials must always be supportive to facilitate students' learning activities, improve academic performance, ease teacher delivery, concretize abstract ideas, make complex concepts simple, be portable, accessible and capable of motivating students, stimulating their interest, usable to the multiple audience and encourage learners' active participation in the teaching and learning processes particularly when they are operated and readily available. However, the operative and available nature of instructional materials essentially promote the development of various skills such as practical skills, life skills and above all, assist Economics teachers to deliver effectively during classroom instructions. To this end, instructional materials can be put into multifarious functions and applicability during lesson delivery. The operationality of instructional materials put the available instructional materials into use which is capable of facilitating class instructions and operational capacities of Economics teachers. This would help to overcome any constraints, obstacles or limitation of instructional materials in teaching - learning environment which will realize the effective delivery in Economics. The operationality of resources enhances students' performance by encouraging active participation and engagement on both teachers and students. Therefore, operationality of instructional materials is the practical and applicable ability of instructional materials of being able to be utilized in Economics teacher delivery which will essentially improve students' academic performance in schools. To this end, the operationality of instructional materials in Economics cannot be over emphasized. Further, Economics teachers and students in Nigerian senior secondary schools particularly in the North West, should applied and make active use of these resources into their classroom teaching and learning processes which often promote students' academic performance.

Utilization of Instructional Materials

Utilization of instructional materials refers to the act, extent, degree or state of applying, utilizing, implementing and employing the available instructional materials into the classroom teaching and learning processes to facilitate instruction, enhance learning activities and performance in Economics. The use of instructional materials by Economics teachers to accomplish lesson goals and raise student achievement is also referred to as "utilization of instructional materials." According to Ahmed (2019), the act of employing and implementing the available instructional materials in the actual teaching/learning process is known as "utilization of instructional materials." Utilization of instructional materials (teaching aids) is defined by Mohammed and Abdullahi (2019), as the act of using and applying the available teaching aids in the actual teaching/learning process. The utilization of instructional materials also makes education to be more accessible, equal and available to all learners. It also eases learning activities which simplify teachers' educational delivery. The utilization of instructional materials increases the rate of learning, enhances students' learning activities, improves academic performance, encourages students' involvement or participation in the lesson and above all, it makes learning become more effective to the learners. These materials are administered, utilized and controlled by the teachers. Uko (2015), stated that, in managing instructional materials (facilities) and for them to meet the objectives, they must not be underutilized nor over-utilized but optimally used. He outlined various degrees of utilization which include: non-utilization, under-utilization, maximum utilization, optimum utilization and over-utilization. Further, non-utilization occurs when a facility is not put into use at all, under-utilization occurs when facilities are not used in its full capacity, over-utilization occurs when a facility is used more than its capacity, optimum utilization occurs when facilities are used for many purposes. On the other hand maximum utilization occurs when facilities are put into effective use in line with primary objectives. However, the attainment of the lesson objectives by utilizing the instructional materials depends on the proper selection, utilization and the competency of the Economics teachers in handling these materials. The skilled utilization of instructional materials by the Economics teachers can stimulate students' interest, improve students' learning activities, motivate students, improve their understanding, encourage problem-solving skills in students and finally reduce and tackle the problems of poor academic performance of students and misunderstanding among others. For effective utilization of instructional materials to take place in the classrooms, the Economics teacher must provide the materials, study them well and make familiar with them, rehearse, puts limit and be conscious of time provided. He should look at their side effects to his students. These will help effective utilization of instructional materials. Bright and Jonathan (2019), mentioned some strategies for effective utilization of instructional materials which include: Materials are available in the right amount, Support materials are available, students are aware of the existence of such materials and students must be ready to use the instructional materials when these materials are considered, the materials can be effectively utilized. Today, most

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Economics teachers in senior secondary schools are not properly utilizing teaching and learning materials in their instructions. Over the past decades, teaching and learning of Economics is done in traditional way through rote learning which makes instruction to be teacher-centred rather than students-centred; sometimes teachers are not in possession of the appropriate instructional materials talk less of utilizing them to facilitate instructional delivery. They verbally communicate new experiences, skills and knowledge to their students unprofessionally. Augustine (2022), identified criteria for the appropriate utilization of instructional materials in classrooms or lesson delivery as follow: "Practicability, accuracy, effectiveness, they must be educative, the use of materials should be systematic, purposefulness, they should be used in a conducive classroom environment, and preparation for pupils". However, Bara'u (2020), provided guides to skillful utilization of instructional materials. She stated that, instructional materials are professionally used in three different times (places) in a lesson. These include: At the beginning of the lesson, at the middle of the lesson and at the end of the lesson Moreover, Danladi (2016), stated that, for effective utilization of teaching and learning aids or instructional materials, teachers must be familiar with the aids and should always call the attention of the learners to what they expected to focus. The teacher should also consider the objectives of the lesson and unit to be accomplished in the process of acquiring and utilizing teaching and learning aids. In utilizing instructional materials, Economics teachers need to consider certain number of factors before utilization such as their relevance to the objectives, lesson and learners, some materials are audio, visual or audio-visual. Therefore, effective use of teaching resources can bring cheers, arouse interest, curiosity and motivation among students. However, Kpegi (2019), has delineated the subsequent procedures for using educational materials: "Examine the learning objectives and aims in relation to the students' cognitive abilities, select educational techniques, decide which media is ideal for each of the lesson's components, locate and examine the current course materials, determine whether new materials need to be created or, if applicable, adapt the currently available teaching resources, perform formative assessment, advancement that follow directions and materials and assess the contributions made by the particular guidelines". In light of this, it is essential to take proper measures, while selecting and utilizing educational resources in order to achieve stated learning objectives. However, for efficient utilization of any instructional materials, these materials must be brought to the class and plan ahead. Verily, proper utilization often support teaching and learning in schools, aid teachers to provide useful information to the learners, facilitate practical skills, motivate students' interest, strengthen learning activities and improve academic performance.

Methodology

The research employed a descriptive survey research design. Specifically, in this design, the researcher used a survey method. The population of this study was one hundred and eight thousand, nine hundred and seventy-four (108,974) respondents comprising all Economics teachers and students in Senior Secondary Schools in North West, Nigeria. It also included one hundred and five thousand, seven hundred and nineteen (105,719) Senior Secondary School Two (SSII) Economics students and three thousand, two hundred and fifty-five (3,255) Economics teachers from the seven states of the North West Geo-Political Zone of Nigeria. The study's respondents were spread across one thousand, six hundred and twenty-four (1,624) Senior Secondary Schools that were offering Economics in the seven (7) states of the North West Geo-Political Zone of Nigeria, namely Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto and Zamfara states. The total sample size of this study comprised three hundred and eighty-four (384) respondents sampled from Economics teachers and students in the study area. This was based on the recommendation of Research Advisor 2006 under 95% confidence, (Dada, 2016). Multistage sampling techniques were employed in the selection of sampled teachers, students and schools. Firstly, the simple random sampling procedure was used in selecting fifty-eight (58) Economics teachers from one thousand, eight hundred and sixty-five (1,865) Economics teachers from the three sampled states. Secondly, the three hundred and twenty-six (326) sampled students were selected using proportionate sampling procedure whereby each sampled state contributed a proportion to the sample size based on their population strength. However, proportionate sampling procedure was also used in selecting fifty (50) schools out of eight hundred and seventy-six (876) schools as the school sample size. Thirdly, three (3) sampled states were chosen by assigning numbers to all the seven states; then, all the even numbers were systematically taken as the sample size. The instrument used for this study was the researcher self-designed questionnaire for both teachers and students using a four (4) modified Points Likert Scale. It was divided into sections A - E which contained fifty (50) items that required respondents' responses. The instrument used for this study was validated by some experts from Department of Educational Foundations and Curriculum, Faculty of Education Ahmadu Bello University, Zaria. The researcher carried out a pilot test at Alhudahuda College Zaria, Kaduna State, Nigeria in order to assess the

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effectiveness of the instrument to be used. The test was conducted in the school which was not part of the sample size where twenty (20) copies of the instrument were administered to three (3) teachers and seventeen (17) students in the pilot school. The results were computed while the Cronbach's Alpha was employed to determine the Reliability Coefficient of the pilot test. The reliability coefficient of the instrument was assessed following a successful pilot test conducted with twenty (20) copies of the instrument from the pilot school. The test–retest reliability method was employed and the results were analyzed using Cronbach's Alpha. The obtained Cronbach's Alpha value was 0.85 which was in proximity to one (1). However, Aliyu (2023), opined that, any reliability index ranging from 0.5 and above can be deemed high enough for use in real research. Therefore, the instrument used demonstrated high reliability and consistency for the intended study, as the results was close to one (1). This justified the use of the instrument and made it reliable for the study proper. The research was set by taking an introductory letter obtained from the Department of Educational Foundations and Curriculum, Faculty of Education, Ahmadu Bello University, Zaria to all the Principals of the sampled schools which solicited permission to use their Economics teachers and students in the collection of data for the study. The data collected were analysed using descriptive and inferential statistics. The research questions were analysed using frequency and mean while non-parametric statistics, specifically the Mann-Whitney U-Test was employed to test all the five null hypotheses formulated for the study at 0.5 level of significance.

Presentation of Results

This section presented the results of data analysis, discussion and interpretations of the findings based on the data gathered during the course of this study. Essentially, the analysis involved analyzing of the research questions using descriptive statistics of frequency and mean and statistical testing of the hypotheses formulated for the study using inferential statistics of Mann-Whitney test at 0.05 level of significance.

Analysis of Research Questions

This section presented the analysis of two (2) research questions raised during the course of this study which were analysed using descriptive statistics of frequency and mean. The bench mark for acceptance was 2.5. All the research questions and their anlysis were presented in Tables 1-2 as follow:

Research Question One: What is the operationality of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria?

In order to answer this research question, the data collected on the operationality of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria were analysed using frequency and mean. The outcomes of this analysis were succinctly summarized in Table 1 as follows:

Table 1: Frequency and Mean on the Operationality of Instructional Materials for Teaching and Learning of Economics in Senior Secondary Schools in North West, Nigeria.

S/N	Item statements	N	FO	O	PO	NO	Mean
21	Radios, public address system, audio books, cassette players, audio CD players, podcasts, audio tapes, microphones, recordings, tape recorder and loudspeaker are operational for teaching and learning of Economics in my school.	384	9	115	144	116	2.1
22	Blackboards, whiteboards, magnetic boards, bulletin boards, flashcards, slides, e-books, e-journals, drawings, pictures and photographs are operational for teaching and learning of Economics in my school.	384	144	110	60	70	2.8
23	Educational television, videos, documented films, filmstrips, projector, films projectors, sound slide, videotapes and interactive video are operational for teaching and learning of Economics in my school.	384	43	128	144	69	2.4
24	Posters, models, specimen, display board, felt board display, realia, real objects, cartoons, cartograms, photographic print and local currency are operational for teaching and learning of Economics in my school.	384	53	109	134	88	2.3
25	Computers, mobile phones, I-pads, tablet device, smart boards, internet, internet facilities and multimedia board are operational for teaching and learning of Economics in my school.	384	48	108	132	96	2.3

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26	Charts, graphs, graph sheets, diagrams, tables, maps, globes, atlases, flow charts and pie charts are operational for teaching and learning of Economics in my school.	384	102	133	70	79	2.7
27	Digital charts, digital graphs, digital diagrams, digital tables, infographics, PowerPoint presentation and projected maps are operational for teaching and learning of Economics in my school.	384	48	147	127	62	2.4
28	Newspapers, magazines, periodicals, pamphlets, journals, articles, gazettes, wall newspapers and workbooks are operational for teaching and learning of Economics in my school.	384	21	114	120	129	2.1
29	Textbooks, handouts, structured notes, assignment sheets, fact sheets, wall charts, flip charts, dictionaries, course and study guide are operational for teaching and learning of Economics in my school.	384	35	139	134	76	2.3
30	Interactive whiteboard, multimedia projector, DVD, VCD, CD, slide projector, Economics simulators, printers and scanners are operational for teaching and learning of Economics in my school.	384	89	169	67	59	2.7
	Cumulative Mean						**2.4**

Source: *Field Work, 2025/Bench Mark 2.5*

Table 1 presented the analysis of responses on the operationality of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria. The cumulative mean was 2.4 which is less than the 2.5 benchmark. This also implied that, instructional materials were not operational during teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria.

Research Question Two: What is the extent of utilization of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria?

In order to answer this research question, the data collected on the extent of utilization of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria were analysed using frequency and mean. The outcomes of this analysis were succinctly summarized in Table 2 as follows:

Table 2: Frequency and Mean on the Extent of Utilization of Instructional Materials for Teaching and Learning of Economics in Senior Secondary Schools in North West, Nigeria.

S/N	Item statements	N	FU	AE	NU	AN	Mean
41	Radios, public address system, audio books, cassette players, audio CD players, podcasts, audio tapes, microphones, recordings, tape recorder and loudspeaker are utilized for teaching and learning of Economics in my school.	384	18	95	149	122	2.0
42	Blackboards, whiteboards, magnetic boards, bulletin boards, flashcards, slides, e-books, e-journals, drawings, pictures and photographs are utilized for teaching and learning of Economics in my school.	384	17	134	97	136	2.1
43	Educational television, videos, documented films, filmstrips, projector, films projectors, sound slide, videotapes and interactive video are utilized for teaching and learning of Economics in my school.	384	21	70	164	129	2.0
44	Posters, models, specimen, display board, felt board display, realia, real objects, cartoons, cartograms, photographic print and local currency are utilized for teaching and learning of Economics in my school.	384	34	133	119	98	2.3
45	Computers, mobile phones, I-pads, tablet device, smart boards, internet, internet facilities and multimedia board are utilized for teaching and learning of Economics in my school.	384	18	116	117	133	2.0
46	Charts, graphs, graph sheets, diagrams, tables, maps, globes, atlases, flow charts and pie charts are utilized for teaching and learning of Economics in my school.	384	49	166	113	56	2.5
47	Digital charts, digital graphs, digital diagrams, digital tables, infographics, PowerPoint presentation and projected maps are utilized for teaching and learning of Economics in my school.	384	71	129	101	83	2.5

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48	Newspapers, magazines, periodicals, pamphlets, journals, articles, gazettes, wall newspapers and workbooks are utilized for teaching and learning of Economics in my school.	384	70	122	99	93	2.4
49	Textbooks, handouts, structured notes, assignment sheets, fact sheets, wall charts, flip charts, dictionaries, course and study guide are utilized for teaching and learning of Economics in my school.	384	55	178	99	52	2.6
50	Interactive whiteboard, multimedia projector, DVD, VCD, CD, slide projector, Economics simulators, printers and scanners are utilized for teaching and learning of Economics in my school.	384	60	172	111	41	2.7
	Cumulative Mean						**2.31**

Source: *Field work 2025/Bench Mark 2.5*

Table 2 presented the analysis of responses on the extent of utilization of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria. The cumulative mean was 2.31 which was less than the 2.5 benchmark. This implied that, instructional materials were not utilized during teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria.

Test of Hypotheses

This section presented the analysis of two (2) null hypotheses formulated during the course of this study which were tested using the inferential statistical tool of Mann Whitney Test at 0.05 level of significance. The summaries of the test analysis were presented in Table 3-4 as follow:

Hypothesis One: There is no significant difference in the operationality of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria. To test the null hypothesis one (1), Mann-Whitney (U-test) statistic was used. The summary of the analysis is presented in Table 3 as follows:

Table 3: Summary of Mann Whitney Test Analysis on the Operationality of Instructional Materials for Teaching and Learning of Economics in Senior Secondary Schools in North West, Nigeria.

Variables	N	df	H-cal.	P-Value	Decision
Teachers Students	384	382	44.500	.932	Retained

P-Value = 0.932 > α = 0.05

Table 3 presented the Mann Whitney Test analysis result which revealed H.cal value equal to 44.500 and the P-value equal to 0.932. The calculated P-value of 0.932 is greater than the alpha value of 0.05 (P = 0.932 > 0.05). This implies that, there is no significant difference in the operationality of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria. Based on this evidence, the null hypothesis that said, there is no significant difference in the operationality of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria was retained. Moreover, the result also indicated that, no significant difference between teachers and students regarding operationality of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria.

Hypothesis Two: There is no significant difference in the extent of the utilization of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria. To test the null hypothesis two (2), Mann-Whitney (U-test) statistic was used. The summary of the analysis is presented in Table 4 as follows:

Table 4: Summary of Mann Whitney Test Analysis on the extent of the Utilization of Instructional Materials for Teaching and Learning of Economics in Senior Secondary Schools in North West, Nigeria.

Variables	N	df	H-cal.	P-Value	Decision
Teachers Students	384	382	6096.500	.297	Retained

P-Value = 0.297 > α = 0.05

Table 4 presented the Mann Whitney Test analysis result which revealed H.cal value equal to 6096.500 and the P-value equal to 0.297. The calculated P-value of 0.297 is greater than the alpha value of 0.05 (P = 0.297 > 0.05). This implied that, there is no significant difference in the extent of the utilization of instructional materials for teaching and learning of

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Economics in Senior Secondary Schools in North West, Nigeria. Based on this evidence, the null hypothesis that said, there is no significant difference in the extent of the utilization of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria was retained. Furthermore, the result also indicated that, no significant difference between teachers and students regarding utilization of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria.

Summary of Findings

This section presented the summary of the findings of this study:

1. The finding disclosed that, instructional materials for teaching and learning of Economics among Senior Secondary Schools in North West, Nigeria were not functional (P-value 0.932)
2. The finding also revealed that, instructional materials for teaching and learning of Economics among Senior Secondary Schools in North West, Nigeria were not utilized (P-value 0.297).

Discussion of Findings

The finding number one disclosed that, instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria were not functional. This finding was in agreement with the finding of Ali, Kura, Abdul and Aliyu (2020), which revealed that, instructional materials were mostly not operational in Senior Secondary Schools in Maiduguri Metropolis, Borno State, Nigeria. The finding was also supported by the findings of Kaizer and Okoli (2021), whose findings revealed that, instructional materials were not operational and eight out of the ten identified instructional materials were neither available nor adequate for the teaching of office skills in Business Studies at the secondary school's level in Delta State, Nigeria. The result also aligned with the findings of Dahiru, Akinpade, and Aluko (2021), who found that, instructional facilities are not operational and need to be improved. It was also discovered that, the available facilities were not fully utilized in teaching Agricultural Science. However, in support of this finding, Salihu, Ibrahim and Tigga's (2020), research disclosed that, the findings of the study revealed that, majority of respondents agreed that they don't always use any instructional materials during lecture period, no supplied of instructional materials available in their school. The finding number two revealed that, instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria were not utilized. In support of this finding, Chikendu and Ekoyo's (2024), research disclosed that, the available instructional materials are not utilized for teaching Computer Studies in senior secondary schools in Idemili North Local Government Area. The finding was also backed up, by the findings of Bukoye (2019) who found that, the available instructional materials were not utilized by the teachers in most schools and majority of the teachers did not take cognizance of the importance derived from the use of instructional materials while teaching. Those that adopted the utilization did not use them appropriately. The finding was also supported by the findings of Yusuf (2018), which revealed that, instructional materials for teaching Economics were sufficient, but their utilization was relatively low. However, the current study's outcome also found reinforcement in the research conducted by Ehirim, Iwuchukwu and Okenyi (2020), who observed that, many instructional materials were available, but they were not adequately utilized and chemistry teachers do not appropriately improvise instructional materials when not available in the teaching and learning of chemistry. In support of this finding, Ile and Ndubuisi's (2021), research disclosed that, Business subject teachers rarely utilized modern instructional materials for teaching Business subjects. Moreover, the discovery of this study also aligned, with the research conducted by Isma'il and Lukman (2022), who reported that, some of the required instructional materials are fairly available but are not regularly use by Biology teachers. The finding was also supported by the findings of Odinakachi, Mbalisi, Ukhurebor, Opateye and Leonard (2023), who also reported that, teaching without instructional resources was ineffective; thus, for efficient teaching and learning teachers should make use of the instructional materials that are already accessible.

Conclusion

Based on the findings of this study, it was concluded that, instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria were generally not operational and utilized during teaching and learning of Economics. Statistical analysis further confirmed that, there were no significant differences in operationality and utilization of Instructional Materials across the studied schools (P-values > α). This constrained the effectiveness of these materials in enhancing meaningful learning and efficient teaching processes in Economics.

Recommendations

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Based on the findings and conclusion of this study, it was recommended that:

1. Governments, school management and stakeholders should promote and encourage the operationality of instructional materials for teaching and learning of Economics among Senior Secondary Schools in North West, Nigeria. This could be done by ensuring school heads supervise the effective functionality of instructional materials, regular maintenance, servicing, storage and replacement of instructional materials so they can be functional again in schools. They should also ensure Economics teachers and students have access to the said materials when needed.
2. Governments, school administrators, and policymakers should encourage teachers and students to make adequate utilization of the available instructional materials during teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria. This could be done through organizing workshops, seminars, conferences and webinars by government and school authorities for Economics teachers on selection, skillful and innovative utilization strategies of instructional materials. They should also encourage Economics teachers to utilize the relevant instructional materials every time they have lessons. However, teachers and students that emphasize on using instructional materials should be recognized and motivated by the school heads.

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Effects of STAD Strategy on Achievement in Nervous System Concept among Secondary School Male and Female Field-Dependent and Field-Independent Learners in Bwari Area Council, Abuja, Nigeria

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Abstract

Gender has long been investigated as a potential predictor of academic achievement in science disciplines. Scholars have attributed observed gender disparities in achievement to factors such as task difficulty, cognitive competence, and persistent gender stereotypes. This study investigated gender as predictor of achievement among Field-dependent and Field – Independent secondary Biology students taught the nervous system using Student –Teams - Achievement –Division (STAD) in Abuja, Nigeria. The study adopted a quasi-experimental pre-test- post-test research design. A sample of 133 Senior Secondary School 11 (SS2) students was drawn using multi stage sampling technique from a population of 7,756 SS2 students in Bwari Area Council. For data collection, two instruments- Nervous System Achievement Test (NSAT) and Group Embedded Figure Test (GEFT) were used. The reliability of the instruments was determined using Kuder-Richardson formula 21 (K-R21) and both yielded reliability coefficients of 0.88 for NSAT and 0.81 for GEFT. The research questions were answered with means and standard deviation while Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 level of significance. Findings revealed that males had higher achievement scores than the females and field-independent learners performed better than the field-dependent learners. The results also revealed the effectiveness of STAD as an excellent approach for conveying complex and abstract concepts such as the nervous system. Consequently, it was recommended that biology teachers adapt instructional strategies such as STAD and consider students learning styles in order to encourage collaborative learning in heterogeneous groups, promote individual accountability and provide equal opportunities for achievement.

Keywords: Student Teams Achievement Division, Field-Dependent Students, Field- Independent Students and Achievement.

Introduction

Gender encompasses the economic, social, political, and cultural attributes and opportunities linked to being male or female, varying across cultures and over time. The World Health Organization defines it as socially constructed roles, behaviours, activities and attributes that societies consider appropriate for women, men, girls and boys, distinguishing it from biological sex. In Science Education, particularly Biology, gender has long been investigated as a potential predictor of academic achievement in science disciplines, with mixed findings across contexts influenced by instructional methods and contextual factors. Studies like Etobro and Fabinu (2017) report that gender has no significant influence on achievement scores of students in Biology when equitable instructional practices are applied (e.g., experiential and cooperative methods), highlighting that males and females can perform comparably when classroom environments support engagement for all learners. Conversely, Sada and Adamu (2023), identifies differential outcomes across gender suggesting that gender may interplay with psychological and contextual factors to shape academic results in STEM domains. Academic achievement in Biology remains an integral goal of effective science education, fostering conceptual mastery which is critical to students' future pathways in STEM careers. Despite the importance of Biology, it is worrisome to note that many secondary school learners continue to fluctuate or perform below expectations in science subjects, including Biology (Saka and Onanuga, 2022). The likely causes of fluctuating performance have continuously grabbed the attention of stakeholders in science education and how to combat this continuous trend. Research suggests that multiple factors such as topic difficulty, learner characteristics such as gender and cognitive style interact with instructional strategies to influence achievement. As regards difficulty of a topic, Ezechi (2019), identified nervous system as a particularly challenging Biology topic for students. The West African Examination (WAEC) chief examiners' report (from 2008-2023) on students' achievement in nervous system gives credence to Ezechi's assertion. According to the report, students find it

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extremely difficult to spell technical terms, they illustrate reflex arcs with poor diagrams which are often untitled, improperly titled and un labelled. In many cases, guidelines were drawn with free hand and did not touch the structure to be labelled and most students omit vital parts when required to draw a nerve cell/neuron. Consequently, this affects their performance in a topic such as nervous system which covers about 10- 15% of the questions in biology examination. Moreover, individual cognitive styles particularly field-dependent (FD) and field-independent (FI) orientations have been shown to affect how learners process, organize, and recall scientific information. Field-independent learners typically outperform field-dependent peers in science. Previous studies in secondary education contexts have found that field-independent students tend to achieve higher academic scores in science disciplines compared to their field-dependent peers, and that cognitive style may mediate instructional effects on achievement (Saka and Onanuga, 2022). Student Teams-Achievement Divisions (STAD), a cooperative learning strategy grounded in social interdependence theory, has demonstrated efficacy in enhancing academic achievement across subjects by fostering peer support and active engagement. Cooperative learning paradigms like STAD have been associated with improved academic achievement and sustained knowledge retention, particularly when learners collaboratively construct understanding of complex topics like the nervous system. Despite evidence on STAD and cognitive style, limited studies have jointly examined gender and cognitive style as predictors of achievement in the nervous system using STAD in Nigerian secondary schools. By examining how gender and cognitive style jointly influence immediate learning, the study offers a deeper understanding of instructional equity and cognitive diversity in science education, potentially improving achievement in challenging Nigerian contexts like WAEC exams.

Objectives of the Study

The main objective of this study is to investigate gender as predictor of achievement among Field-dependent and Field-Independent secondary Biology students taught the nervous system using Student –Teams - Achievement –Division (STAD) in Abuja, Nigeria.

The study seeks :

1. To determine the influence of gender on field-dependent students' achievement when taught the nervous system using STAD.
2. To determine the influence of gender on field-independent students' achievement when taught the nervous system using STAD.

Research Questions

1. What are the mean achievement scores of male and female field-dependent Senior Secondary School 2 biology students taught the nervous system using STAD?
2. What are the mean achievement scores of male and female field-independent Senior Secondary School 2 biology students taught the nervous system using STAD?

Hypotheses

H_{o1}: There is no significant difference in the mean achievement scores of male and female field-dependent Senior Secondary School 2 biology students taught nervous system using STAD.

H_{o2}: There is no significant difference in the mean achievement scores of male and female field-independent Senior Secondary School 2 biology students taught nervous system using STAD.

Methodology

This study employed a quasi-experimental design comprising two experimental groups (the field-dependent group and field-independent group), which participated in the pre-test and post-test focused on achievement in the nervous system. The population of the study was 7,756 senior secondary II students in all eleven (11) coeducational schools in Bwari Area Council. After formal permission was given by the school authorities, a sample of 133 students were selected from the population using multistage sampling technique. The sample comprised 74 males and 59 females respectively. Data were collected using two instruments; Nervous System Achievement Test (NSAT) which yielded a reliability index of 0.88 and Group Embedded Figure Test (GEFT) adapted from Herman Witkin which yielded a reliability index of 0.81. NSAT comprised 40 multiple choice test items adopted from past questions in JAMB and SSCE to determine achievement in nervous system. While GEFT comprised 18 complex figures administered within 20 minutes to test and determine cognitive style of the respondents. The higher the score of the respondents, the more field-independent the respondent is.

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A respondent who scores 9 or more marks is classified as field-independent while a respondent who scores lesser than 9 is classified as field-dependent. Data analysis was conducted using mean and standard deviation and Analysis of Covariance (ANCOVA) was used to test the hypotheses at 0.05 level of significance.

Presentation of Results

Research Question One

What are the mean achievement scores of male and female field-dependent senior secondary students taught nervous system using STAD?

The result to answer this research question is presented in Table 1.

Table 1: Mean Achievement Scores and Standard Deviations of Male and Female Field- Dependent Students Taught Nervous System Using STAD

Gender FD		Pre-test	Post-test
Male	Mean	13.42	22.76
	N	38	38
	Std. Deviation	2.445	2.476
Female	Mean	13.33	21.27
	N	30	30
	Std. Deviation	3.437	2.318

Table 1 shows the mean achievement scores of male and female field-dependent students taught nervous system using STAD. The results from the table indicate sample sizes of 38 and 30 respectively, the male had a pre-test score of 13.42 with a standard deviation of 2.445 and a post-test score of 22.76 and a standard deviation score of 2.476 while the female had a pre-test score of 13.33 with a standard deviation of 3.437 and a post-test score of 21.27 with a standard deviation of 2.318.

Research Question Two

What are the mean achievement scores of male and female field-independent Senior Secondary biology students taught nervous system using STAD?

The result to answer this research question is presented in Table 2.

Table 2 Mean Achievement Scores and Standard Deviations of Male and Female Field -Independent Students Taught Nervous System Using STAD

Gender FI		Pre-test	Post-test
Male	Mean	18.64	29.81
	N	36	36
	Std. Deviation	2.900	3.495
Female	Mean	19.86	25.69
	N	29	29
	Std. Deviation	2.216	2.285

Table 2 shows the mean achievement scores of male and female field-independent students taught nervous system using STAD, the male student had a pre-test score of 18.64 with a standard deviation of 2.900 and a post-test score of 29.81 and a standard deviation score of 3.495, while the female had a pre-test score of 19.86 with a standard deviation of 2.216 and a post-test score of 25.69 with a standard deviation of 2.285 respectively.

Hypothesis One

Ho_1: There is no significant difference in the mean achievement scores of male and female field-dependent senior secondary students taught nervous system using STAD.

The result to test this hypothesis is presented in Table 3.

Table 3: ANCOVA Result of Mean Achievement Scores of Male and Female Field- Dependent Senior Secondary Students Taught Nervous System Using STAD

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	52.268[a]	2	26.134	4.616	.013	.124
Intercept	1186.366	1	1186.366	209.542	.000	.763
Pre-test	14.724	1	14.724	2.601	.112	.038
Gender FD	36.828	1	36.828	6.505	.013	.091

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Error	368.011	65	5.662
Total	33641.000	68	
Corrected Total	420.279	67	

a. R Squared = .124 (Adjusted R Squared = .097)

Table 3 shows the results of analysis of co-variance of the mean achievement scores of male and female field-dependent students taught nervous system using STAD. It is observed from the table that the F ratio of 6.505 was obtained with associated probability value of 0. 013 i.e. (F = 6.505, P = .013 < α = .05). Since the associated probability 0.013 is less than 0.05 set as level of significance, the hypothesis was rejected. It therefore implies there was a significant difference between the mean achievement scores of male and female field-dependent students taught nervous system using STAD.

Hypothesis Two

H_{O2}: There is no significant difference in the mean achievement scores of male and female field-independent senior secondary students taught nervous system using STAD.

The result to test this hypothesis is presented in Table 4.

Table 4: ANCOVA Result of Mean Achievement Scores of Male and Female Field- Independent Senior Secondary Students Taught Nervous System Using STAD

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	297.740[a]	2	148.870	16.837	.000	.352
Intercept	608.282	1	608.282	68.795	.000	.526
Pre-test	25.648	1	25.648	2.901	.094	.045
Gender FI	296.438	1	296.438	33.526	.000	.351
Error	548.198	62	8.842			
Total	51694.000	65				
Corrected Total	845.938	64				

a. R Squared = .352 (Adjusted R Squared = .331)

Table 4 shows the results of analysis of co-variance of the mean achievement scores of male and female field-independent students taught nervous system using STAD. It is observed from the table that an F ratio of 33.526 was obtained with associated probability value of .000 i.e. (F = 33.526; P = .000 < α = .05). Since the associated probability .000 is less than 0.05, the hypothesis was rejected. It therefore implies there was a significant difference between the mean achievement scores of male and female field-independent students taught nervous system using STAD. In other words, field-independent male students performed better than the field-independent female students taught nervous system using STAD.

Discussion of Findings

The findings of this study reveal gender as predictor of achievement among field-dependent and field-independent secondary biology students taught nervous system using STAD in Abuja, Nigeria. The discussion is in line with the key variables in the study gender, STAD, cognitive styles (field-dependent and field-independent) and achievement.

Gender: Gender differences were evident in the achievement scores of both male and females. Male students achieved significantly higher mean scores compared to female students when taught using STAD. This aligns with the study of Sada and Adamu (2023) but contradicts that of Etobro and Fabinu (2017) who argued that gender does not influence biology achievement. The competitive nature of STAD appear to resonate more with male learners while female learners may benefit less due to difference in group dynamics and learner traits.

STAD (Student Teams Achievement Division): The findings of the study indicate that students achievement scores increased significantly after they were taught using the STAD method. This aligns with previous studies of Chopel et al., 2023; Gana, 2023; Sada and Adamu, 2023, which demonstrated that cooperative learning strategies like STAD promote better academic outcomes. The effectiveness of STAD can be attributed to its foundation in Positive Interdependence Theory, emphasizing individual accountability, group performance, and peer teaching.

Cognitive Style (Field-Dependent vs. Field-Independent): The study revealed significant differences in achievement between field-dependent and field-independent students taught using STAD. Field-independent students performed better than their field-dependent counterparts, supporting findings from Ahmed and Aliyu (2020) and Agu and Samuel (2019). This suggests that cognitive styles influence how students

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process visual, social, and environmental aspects of learning. However, the findings refute that of Saka and Onanuga (2022), who reported no significant differences between these cognitive styles. The disparity may arise from the interactive nature of STAD, which aligns more closely with field-independent learners' strengths in self-directed learning.

Achievement: Achievement scores were significantly influenced by both gender and cognitive style. Male students outperformed their female counterparts when taught using STAD. This finding contradicts the studies of Jacob et al. (2022) and Ihejiamaizu et al. (2020), which found no gender differences in achievement scores. Likewise, cognitive style influenced achievement score of learners; field-independent learners achieved higher than their field-dependent counterparts. This finding agree with Agu and Samuel (2019); Ahmed and Aliyu (2020); Nnabuife (2021); Sada and Adamu (2023) and Gana (2023).

Conclusion

The findings of this study concluded that gender is a significant factor that affected students' achievement in nervous system. There was a significant difference in the mean achievement scores of male and female field-independent and field-dependent students taught nervous system using STAD. The males outperformed their female counterparts. Likewise, the findings of this study have shown the effectiveness of STAD as a superior teaching approach for conveying complex and abstract concepts such as nervous system in Biology. The evidence suggests that STAD not only enhances understanding but also promotes student engagement in challenging topics. It equally encourages students to collaborate in order to improve their achievement at individual level and as a team.

Recommendations

1. Biology teachers should be encouraged to adapt Student Teams Achievement Division to enhance overall achievement in nervous system and other difficult topics in biology like homeostasis, evolution, skeletal system and genetics to mention just few.
2. Biology teachers should consider students learning style to enable them tailor their instructions to meet the needs of their students.
3. Biology students should be encouraged to work collaboratively in heterogeneous groups (Male, Female, field-dependent and field-independent) to promote individual accountability and provide an opportunity for equal achievement.

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Evolution of African Civilization and Pan-Africanism, Typified By Yoruba History And Culture in Nigeria: Lessons For The Present And Future Generations

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Abstract
The paper examined the Evolution of African civilization of Pan -African Countries: Typified by Nigerian-Yoruba History and Culture from up to 19th Century: Lessons for the Present and Future Generations. The conceptual framework on which the study was hinged Evidence Theory. The study adopted a historical research design relying on primary and secondary sources. The paper extensively discussed the following: the extent to which the assertion of Professor Trevor Roper proved affirmative or negative, the concept of Pan-Africanism; the channels used by the Pan-Africanists, the clergies and Nationalists in agitating for African Nationalism and the lessons learnt by the present and future generations of Africa Nigeria on Evolution of African Civilization on Pan-African Countries. Findings from the discussions of the paper revealed that Africans had been in existence before the arrival of the white men a very superb political organization was put in place in Old Oyo Empire with operation of a sophisticated system of checks and balances with instrument of separation of powers. Africans were blessed with formidable Nationalists who struggled for and agitated for African emancipation to political independence with notable figures as, Chief Obafemi Awolowo, Herbert Macaulay. Based on the discussions of this paper, it was recommended that the spirit of Pan-Africanism and political consciousness should be reawakened in the mind of young elites Pan–African countries should motivate students to study Africa history and national history of their countries. Lastly, the study of history should be made compulsory schools.

Key Words: African Civilization, Pan –Africanism Re-Awakening, Nigerian-Yoruba History and Culture,

Introduction
The subject of "African Civilization: From Ancient Kingdoms to Modern Societies" explores the history, culture, and development of African civilizations from ancient times to the present day. It provides a comprehensive understanding of the rich and diverse civilizations that have existed in Africa throughout history and their significance in shaping the continent's identity and trajectory. Falola (1999) Yoruba traditions regard Ile-Ife not only as the centre of the world but also the place where all mankind was created. Information about the significance of Ile-Ife must have attracted Oduduwa there. Urbanization of Yorubaland therefore, connotes civilization. The cultural history of Yorubaland is no exception. The beginning of Yoruba cities marked the inception of the Yoruba Golden Age (1086-1793) Falola (1999p)
In addition to initiation of urbanization of Yorubaland, Oduduwa established a highly sophisticated constitutional monarchy with well-defined system of separation of powers and checks and balances based on an unwritten constitution. However, the system of government differs from one community to another. It also varies in structures from leadership to the governed. For example, Ibadan modernized the hereditary monarchial system and evolved a republican system made up of the civil and the military traditional council and kingmakers. Ibadan also introduced women as headed by Iyalode into the system.

Trans-Saharan trade led to the exchange of ideas and cultures, resulting in the development of new social norms and practices. The trade also created new social classes and hierarchies, as some individuals became wealthy while others remained poor (UNESCO, 2018). Groups like the Tuareg people and merchants in the Kingdom of Mali gained wealth and influence through their participation in the trade. Culturally, trans-Saharan trade facilitated the exchange of ideas, languages, and religions. It played a significant role in the spread of Islam throughout West Africa, which unified different ethnic groups and influenced African cultures and societies. Crowther (1980) went down the memory lane by acknowledged that the exploration of Africa by Mungo Park and his crew, Major Clapperton, Dr Oudney, Lander, brothers (Richard and John) specifically on River Niger reached the capital of Old Oyo at Katunga all these were historical evidence on the existence of African and its geographical features. Mungo Park sited River Niger in 1805 and was highly impressed when he made the following remark: 'I saw with an infinite pleasure, the great object of my mission, the long sought

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majestic Niger glittering to the morning sun and flowing slowly eastwards as the like Thames at West Minister" as documented by Isaaco in his Diary (his Personal assistant). Pastor John Kwegyr Agreey of Gold Coast (now Ghana) was bold to promote the Spirit of Pan-Africanism when he said "am proud of my colour, whoever, is not proud of his colour is not fit to live" (Buah, 1978) Ifemesia (1980), remarked that "the British apostles of civilization mobilized all the agencies of civilization- Government agencies, commerce and Christianity into the interiors of West Africa during their civilizing mission in 1841" (p. 87). The role of the Christian missions in the spread of European civilization in Southern Nigeria cannot be over-emphasized. The Christian missionaries did a lot on humanitarian services the missionary education constitutes their fundamental contribution to the civilization of southern Nigeria. The missionaries were pioneers of education in Nigeria. Akinwumi (1988) asserts that: awakened new aspirations, quickened the urge towards emulation, and accelerated the process of Nigerian civilization. It was the policy of the missionaries to produce converts who would engage in gainful employment, and be better citizens. Odudoye (1994) acknowledge that: Printing which was introduced into Nigeria by the Townsend of the CMC Mission *Iwe Irohin* Nigeria's first newspaper at the C.M.S. press

Objectives of the Paper

This paper provides an in-depth analysis of African civilization, examining its pre-colonial history, its expansion, and its modern developments and lessons for the present and future generation in Nigeria. The main focus of the paper is to debunk the erroneous assertion of Professor Trevor Rapper on non-existence of African history before the coming on the Europeans. Pan- Africanism was the desire of the African intellectuals and nationalists to design a coordinated strategy to confront racism and imperialism on the African continent. For the total liberation and freedom of Africa. It is divided into several parts, each of which explores different aspects of African civilization typified by Yoruba History and culture which includes a system of governance, division of labor, and shared beliefs, values, and customs that provide a sense of identity and cohesion for its members.

Statement of the Problem

In this study a conscious effort is made to debunk the assertion of Professor Trevor Roper "that Africa South of Sahara has no history before the coming of Europeans". The modalities employed by the African scholars, clergy men, pan-Africanist and Nationalist who fought tooth and nail to salvage Africans from the onslaught of Europeans Imperialism. This paper therefore is set out to provide answers to the underlisted questions with particular reference to Yoruba History and Culture

1. To what extent was Professor Trevor Roper's assertion that African South of Sahara have no history before the coming of Europeans could be debunked?
2. Account for the evidence and semblance of African Civilization on Pan-Africanism as Typified by Yoruba History and Culture
3. Examine the concept of Pan Africanism
4. In what ways were the Pan-Africanists, the clergies and Nationalists agitated for African Nationalism?
5. What lessons do present and future generations of Africa and Nigeria learn from evolution of African civilization through Pan-Africanists and others?

Methodology

The author adopted the historical method based on the primary and secondary source of historical information to collect data for the paper. Secondary sources used were charters of African Unions, archival documents, economic report on Africa and other documentary analysis through library and internet search, journals, and textbooks relevant to African history and culture.

Theoretical Framework

Evidence Theory

Evidence is the spoken words of a witness or a photograph produced in support of an account of something proved beyond reasonable doubt is evidence. Similarly, a direct awareness of the fact that such words are spoken in the presence of people concerned that certain outlines and shades exist on a piece of paper. From these facts, by the aid of some such general propositions as those witnesses usually speak the truth or that photographs usually resemble their objects, as major premises, the jury infer that some fact asserted by the witness exists or that a certain object was of a certain nature. Evidence of this first kind is of three classes, namely:

1. Oral evidence; spoken words; presented to the triers' *sense of* hearing;

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2. Written evidence; written words; presented to the triers' *sense of* sight;
3. Real evidence; other objects introduced as evidence, such as photographs, models, etc,; We use the word evidence when we say that hearsay is not evidence We act on real truth or straight forward account of something, this is evidence, and such evidence is often extremely good evidence.

African Narrative a Panacea to debunk the erroneous assertion of Professor Trevor Roper's that African South of Sahara have no history before the coming of Europeans

Modern African civilizations face complex social issues shaped by historical, cultural, economic, and political factors. The history and development of African civilizations showcase the richness, diversity, and complexity of human cultures. Precolonial African civilizations such as Ancient Egypt, Ghana, Mali, and Great Zimbabwe achieved remarkable advancements in governance, trade, agriculture, and the arts. These civilizations maintained a strong cultural identity and preserved their traditions despite the influences of trans-Saharan trade and the slave trade (Hunwick, 2003). Modern African civilizations face challenges including political instability, economic inequality, social discrimination, and human rights abuses. The African Union plays a crucial role in fostering peace, security, and cooperation among member states, while human rights provide a framework for social justice and equality. Economic development is essential for shaping the future of African civilizations. Preserving cultural heritage is another critical aspect of the future of African civilization. Efforts to protect traditional languages, music, and art forms, and promote cultural tourism are vital in the face of globalization and modernization.

Western Influence

There is no doubt it was Christianity that laid the intellectual and ethical foundation of infant and adolescent Europe. The academies of Rome and Constantinople, the monastic schools of Europe, the early beginnings of University of Bologna, and Paris, Oxford and Cambridge stand to testify. It would therefore not be a wild claim to say that the contributions of Christianity were the historical prerequisites for the European renaissance and for the dawn of the so-called age of reason (Hani,2023). There is therefore, an abundance of historical evidence to substantiate the role claim of Christianity as the custodian and promoter of human civilization. European explorers of the nineteenth century in Africa had revealed the presence in Africa of some commodities of vital importance to European markets. They were convinced that their missionary ventures could not succeed in a continent where social, economic and political conditions differed considerably from the European type. Thus, they contended that if missionary activities were to succeed, the social, economic and political condition of Africa must first be civilized in European pattern. With this contention, much effort were made by five missionary societies- The Church Missionary Society, the Wesleyan Methodists, the Scotland Presbyterians, the Southern Baptist convention and the Catholic Society of African Mission to encourage the creation in West Africa one or more states in the image of contemporary Europe. A particular reference should be made to the monumental roles of women missionaries such as Mammy Sutherland and Mary Slessor of Calabar, Anna Hinderer of Ibadan, Sarah Townsend of Abeokuta and many others. Apart from their normal work as missionaries, they could enter into intimacy of understanding with mothers of Nigeria and thus imparting to them their European civilization which the mother in turn extended to their children. It is only left to point out that if you educate a man, you educate an individual, but if you educate a woman, you educate a family. Furthermore, these missionary women acted as mothers to the high number of children whom the slave trade and social upheavals of wars left homeless (Ayandele, 1966).

Evidence and Semblance of African Civilization on Pan-Africansim Typified by Yoruba Cultural History (*Pre-colonial African Civilization*)

Yoruba Political System

Oderinde (2011) reported that tradition has it that the Yoruba people originated from Ife. There is a legend that Oduduwa, the father of the Yoruba people, came from the East, conquered the people and settled at Ife. It was said that Oduduwa, at Ife, had seven sons who later became the first seven kings of Yorubaland. The Oba of Beini descended from one of these seven sons of Oduduwa. Oduduwa later moved his headquarters to Oyo. Later Yoruba land was divided into fourteen kingdoms which were rules by Obas. These Obas traced their descent through the male line of Oduduwa. A sophisticated system of checks and balances were the political organization of Oyo which revolved around four organs. First is the Alaafin who was regarded chief executive, the first among equals, the Iku Baba Yeye, Alase Ekeji, Orisa who was chosen from a royal family. Is a council of chiefs, seven in number with Basorun, who was the Prime Minister as the head of Oyo Mesi the seven traditional kingmakers. They have the power to elsewhere and to dethrone on Alaafin. The third organ is

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the Ogboni fraternity, a secret cult consisting of aged, influenced and experienced people it was regarded as an earth cult. This body is headed by Oluwo who must be versative in Ifa oracle and domination. The Ifa oracle and when a new Alaafin is to be selected military, it consisted of 70 soldiers who were war lords, recruited from the vassal states of Oyo. Beside all these organs, there were a number of other important political functionaries and chiefs in the political organization of Oyo among them are: Ona Efa, Osi Efa, Baba Iyaji, Ona Isokun, Iba Samu, Alapinni. There are a number of palace chiefs, the Eunuch, Kudefu, who head royal herein, the drummers, the trumpenter, the Arokin, a national historian (Lloyd, 2020). *The Aludundun:* or the Dundun drummer, He has to attend at the palace every day within certain hours, including visiting or business hours. He has one of the front Kobi's assigned to him, where he sits discussing events with his drum, all during his office hours with it, he pre-announces the presence of any visitor in the palace, so that in whatever part of the palace the king may be, he can tell by the sound of the drum who has entered the courtyard before the personage is actually announced. Johnson (2022) opined that this is one of the peculiarities of the Yoruba language and the art of the drummers. *The Arokins:* These are the rhapsodists or national historians, an hereditary title, they have an apartment to themselves where they repeat daily in songs the genealogy of the kings, the principle events of their lives and other notable events in the history of the Yoruba country. Johnson (2022)

Concept of Pan Africanism

At the conference of Negro Writers and Artists, Second Congress, Rome 25 March - 1 April 1959, the resolution of the commission on philosophy of Pan Africanism was adopted. In the resolution that was preceded by a preamble "considering the dominant part played by philosophic reflection in the elaboration of culture", the commission declares summarising:

1. That for the African Philosopher, philosophy can never consist in reducing the Africa reality to western systems;
2. That enquiries by African philosopher be on the certainty that the western philosophic approach is not the only possible one calls upon the African philosopher, faced by the totalitarian of egocentric philosophers of the west, to divest himself of a possible inferiority complex, which might prevent him from starting from his African being to judge the foreign contribution to debunk the erroneous assertions postulated by the Euro-cen tric Historian, Professor Trevor Roper of Oxford University who opined that African South of Sahara have no history before the coming of the Europeans, this was a fallacy without any proof (Hegel, 1977).

Features of Pan-Africanism

In propagating the various strands of African nationalism and Pan-Africanism; while recognising that all Pan-Africanists had at least one thing in common, namely that Africa should be free; there were differences on the kind of Africa that will be required after independence. Some who were radicals wanted a politically united free Africa; others the functionalists wanted a free Africa, which would be functionally united. These are well-known accepted principles of International Law. The core of the Black Revolution is in Africa, and until Africa is united under a socialist government, the Black man throughout the world lacks a national home. Africa is *one* continent, *one* people, and *one* nation. The notion that in order to have a nation it is necessary for there to be a common language, a common territory and a common culture but alas all this is need in time. *Kwame Nkrumah,* the foremost radical African nationalist of his generation ever produced be the Ghana as in his written in Autobiography (1965) the tactics which were applied in the anti- colonialism struggles in Ghana, prescribes strategies for other African countries (Poe, 2003). Kaunda and Sithole in Central Africa, Tom Mbaya in Kenya, Sekou Toure of Guinea, Julius Nyerere of Tanzania, Obafemi Awolowo of Nigeria, Bishop Samuel Ajayi Crowther of Nigeria were contributors to this phase of nationalist and Pan-Africanist struggles.

Ways by which the Pan-Africanists, the Clergies and Nationalists agitated for African Nationalism?"

The evolution of Nigeria as a multi- nation state from the colonial era has been retarded politically and development wise. The nation building process has been bedeviled by the antics of the British colonialist from it's inception. Incidentally, Education, cultural awareness, travels and foreign contacts leading to knowledge of anti -colonialist and imperialist political domination and economic exploitation in other countries ultimately aroused conscious Nigerians to engage in anti-colonial rule by joining political and other associations in Nigeria. Nigerian participation in Pan- African cultural and radical nationalist activities through contributions at conferences and Pan- African congresses, articles in newspapers and writing books. Ben Enwonwu, a famous sculpture had presented the African perspectives on arts, music, dance, ancestral worship and sculptor. Chief Obafemi Awolowo and Dr Nnamdi Azikwe who later became regional and national leaders in

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pre and post- independence Nigeria were in the fore front of the struggles against colonialism and for total liberation of Nigeria from the yoke of imperialism. In the anti-colonial struggle for independence, attempt to create a formidable political platform- the National Council of Nigeria and the Camerouns (NCNC) in 1944 waned mostly for ethno- religious reason. Herbert Macauly (Yoruba) became the President, and Nnamdi Azikwe (Igbo), Secretary.

Contributions of Yoruba Nationalist to Pan-Africanism

Chief Obafemi Jeremiah Oyeniyi Awolowo, GCFR (1909— 1987)

Chief Obafemi Jeremiah Oyeniyi Awolowo, was a Nigerian nationalist and statesman who played a key role in Nigeria's independence movement, the First and Second Republics and the Civil War (Olufemi, 2009). He is most notable as the outstanding first premier at the Western Region hut was also a successful federal commissioner for finance and vice president of the Federal Executive Council in the Civil War and as thrice a major contender for his country's highest office. A native of Ikenne in Ogun State of south-western Nigeria. Awolowo remains perhaps Nigeria's most controversial politician (Awolowo,1966 and 2013). Awolowo, a visionary leader introduced free primary education for all and free health care for children in the Western Region, established the first television service in Africa in 1959, and the Oduduwa Group, all of which were financed from the highly lucrative cocoa industry which was the mainstay of the regional economy. Obafemi Awolowo University in Ile-Ife, Osun State (formerly University of Ife), Obafemi Awolowo Stadium (formerly the Liberty Stadium) and the Obafemi Awolowo Institute of Government and Public Policy in Lekki, Lagos State. His portrait is on the ₦100 naira note, He was also the author of several publications on the political structure and future prospects of Nigeria, the most prominent of which are Path to Nigerian Freedom, Thoughts on the Nigerian Constitution.

Lessons Learnt by Present and Future Generations of Africa and Nigeria on the Evolution of African civilization on Pan-Africanism Typified by Yoruba History and Culture

Ife and Oyo Art Works

These comprises bronze head, beads, and terra-cotta (Adediran 1992:91). In his extended discussion of the concept of *odù*, the indigenous Ife religious scholar Idowu notes (1962:33) that the same term also indicates a "very recent to Esie where a group of similar artistic figures were found These Esie works conceivably also were identified with Moremi, the local heroine who became Ife's queen (Bascom, 1969).

Oyo's work of art such as drum, bead and crown making; calabash and wood carving, leather work, sculpturing. The palace pillar decorations, archaeological artefacts such as terra-cotta, brass casting, bead making from Ile – Ife, the cradle of Yoruba civilization; Obelisk in form of Oranmiyan Staff all this depict that truly Ile-Ife was the nexus of black race.

Notable Tourist Centres in Yoruba Land

Another indices of attraction were tourist centres of Idanre waterfalls and Ikogosi warm spring in Ondo State, Olumo rock (Abeokuta), Iya Mapo Hills (igbeti) and Ikere Gorge Dam (Iseyin). It was interesting to note that the Africans have their own peculiar way of communicating between themselves. They employ channels such as drums, music, religious festivals, languages mode of dressing acrobatic displays to express themselves (Obidi,1990).

Festivals in Yorùbá Land

Before colonization, the Yoruba people of present-day southwestern Nigeria had a rich and deeply spiritual festival culture that reflected their religious beliefs, social structure, and worldview. Festivals were not merely entertainment events but sacred occasions rooted in traditional religion and community identity. The Yoruba believed in a supreme deity known as Olódùmarè, served by numerous divinities called Òrìṣà. These religious foundations shaped major festivals that honored specific deities, ancestors, kings, and natural forces (Awolalu, 1979).

Osun Osogbo

One of the most significant pre-colonial festivals was the Òṣun-Òṣogbo festival, dedicated to the river goddess Òṣun. This annual celebration, held in the sacred grove of Osogbo, involved rituals, sacrifices, prayers, and processions led by the Ataoja (king of Osogbo) and priestesses (Olaniyan, 2014). The festival symbolized fertility, protection, and the covenant between the people and the goddess. It reinforced communal unity and spiritual cleansing while preserving sacred traditions passed down orally through generations (Drewal, 1992).

Sango Festival: Another important festival was the Ṣàngó festival, celebrated in honor of Ṣàngó, the god of thunder and lightning and a former Alaafin of Oyo. Worshippers gathered to perform drumming, chanting, fire displays, and ritual dances to invoke the power and protection of Ṣàngó. The festival emphasized courage, justice, and royal authority. It also demonstrated the connection between political leadership and spiritual power in pre-colonial Yoruba society (Peel, 2000).

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Egungun (Masquarades): The Egúngún festival was also central to Yoruba religious life. Egúngún represented the collective spirits of ancestors who were believed to return to bless, guide, and sometimes discipline the living. During the festival, masked performers dressed in elaborate costumes embodied ancestral spirits and moved through communities offering prayers and moral instruction. This celebration strengthened family lineage ties and maintained social order by reminding the community of ancestral expectations (Bascom, 1969), Ogunba and Irele, 1978).

Oro (The Earth Cult) The Ọ̀rò festival was another traditional ceremony observed mainly by male initiates. It was associated with spiritual cleansing and the enforcement of social laws. During the festival, certain restrictions were placed on movement, especially for women and non-initiates. The rites were believed to protect the community from evil forces and maintain spiritual balance. The secrecy surrounding Ọ̀rò reflected the structured and hierarchical nature of Yoruba traditional religion (Peel, 2000).

Conclusion

The study explores the history and culture of African civilizations, from pre-colonial kingdoms and empires to modern political, economic, and social structures. It provides an overview of African civilizations with their unique features also dives into the pre -colonial African civilizations, examining their economic, political, and social structures. African civilizations and their impact on African cultures were extensively discussed. More importantly, preservation of African cultures, language preservation, music and literature, and visual arts were typified by Yoruba history and culture were also examined. In conclusion, the African countries of which Nigeria is inclusive were blessed with many Nationalists who strived very hard to see the progress and unity of their country. It is expected that it is expected that history must accord them due respect as heroes. In Nigeria for instance, the effigy of some Nationalists appeared in the national currency and to some important places were named after them such as tertiary education and important national monuments.

Recommendations

Based on the discussions on this paper, it was recommended that:

1. The Spirit of Pan-Africanist and Political consciousness should be reawakening in the minds of young and progressive elite with the burning desire of nationalism in their blood.
2. Efforts should be made by the Pan-Africanist countries to motivate students to study African History and National History of their Country.
3. To this end, more importantly the study of history should be made compulsory right from the basic schools to tertiary education.

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Effects of Self-Regulated Learning Intervention on Motivation and Academic Performance in Cellular Respiration among Secondary School Students in Katsina State, Nigeria

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Abstract
This study investigated the effect of a Self-Regulated Learning Intervention (SRLI) on motivation and academic performance in Biology among secondary school students in Katsina State, Nigeria. Four research questions and four corresponding null hypotheses were formulated to guide the study. A quasi-experimental, pretest–post-test control group design was adopted to determine the impact of the intervention on students' motivation and academic performance in cellular respiration. From a population of 5,378 SSII students in Dutsin-Ma Education Zone, Katsina State, a multi-stage sample of 85 students was drawn and categorised into experimental (n = 48) and control (n = 37) groups. Data were collected using the Motivational Strategies for Learning Questionnaire (MSLQ) and a Cellular Respiration Performance Test (CRPT), which were validated by three experts and pilot tested, yielding reliability coefficients of 0.859 and 0.816, respectively. Data were analysed using descriptive statistics and Analysis of Covariance (ANCOVA). Results showed that the SRLI group had significantly higher post-test scores in motivation (MD = 11.84) and academic performance (MD = 3.03) than the control group. ANCOVA indicated a significant main effect of the intervention on motivation, F (1, 80) = 39.72, p < .05, and academic performance, F (1, 80) = 25.67, p < .05. No significant gender differences were found for motivation, F (1, 80) = 1.30, p > .05, or academic performance, F (1, 80) = 0.106, p > .05, indicating that the intervention was equally effective for male and female students. The study concludes that SRLI is a highly effective, gender-inclusive strategy for teaching complex biological concepts and recommends its systematic integration into classroom practice.
Keywords: Self-Regulated Learning Intervention (SRLI), Motivation, Academic Performance.

Introduction
The evolving landscape of 21st-century education has triggered a major shift from traditional, teacher-centred models toward approaches that position learners as active constructors of their own knowledge. International policy frameworks and Nigeria's National Policy on Education emphasise the need to equip learners beyond subject-specific areas but include enduring competencies like critical thinking, metacognition, problem solving, and self-directed learning (Federal Republic of Nigeria, 2013; Organisation for Economic Co-operation and Development [OECD], 2018). These competencies are particularly salient in science education, where Biology underpins national responses to public health challenges, agricultural productivity, and environmental sustainability. Despite the centrality of Biology to national development, persistent concerns remain about students' learning outcomes in the subject across Nigeria and especially in northern states such as Katsina. Cellular respiration and genetics are consistently cited as the most difficult concepts in the Chief Examiners' assessment reports to the West African Examinations Council (WAEC), which show deficiencies in students' conceptual understanding, problem-solving abilities, and capacity to apply knowledge to new circumstances (WAEC, 2022). The 2022 West African Senior School Certificate Examination (WASSCE) biology pass rate in Katsina State was roughly 48%, which is lower than the national average and indicates persistent challenges in grasping basic biological concepts (Katsina State Ministry of Basic and Secondary Education [KSMBSE], 2023). These patterns raise concern not only for individual learners' progression into Science, Technology, Engineering, and Mathematics (STEM) pathways but also for the state's human capital development. In response to these challenges, scholars have increasingly turned to SRL being a promising framework aimed at understanding, improving students' learning processes and outcomes. To be able to achieve desired learning outcomes, SRL is often described as a proactive, cyclical process in which students create objectives, implement strategies, track their progress, and control their motivation, behaviour, and thought processes

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(Zimmerman, 2002; Zimmerman, 2020). Unlike traditional views that frame learning as something done to students, SRL conceptualises learners as agents who plan and manage their own learning, drawing on metacognitive, motivational, and behavioural strategies (Panadero, 2017). The academic performance of Nigerian secondary school pupils in biology, notably in Katsina State, remains a major problem. Biology is an important fundamental scientific topic for developing human capital in fields such as public health, agriculture, and environmental management. However, studies from the West African Examinations Council (WAEC) repeatedly identify weak comprehension of biological concepts and difficulty in applying knowledge to solve practical challenges, with cellular respiration and genetics recognised as particularly troublesome areas (WAEC, 2022). In Katsina State, the Biology pass rate in the 2022 WASSCE was approximately 48%, below the national average (Katsina State Ministry of Basic and Secondary Education [KSMBSE], 2023). Persistent low achievement in Biology not only restricts students' access to Science, Technology, Engineering, and Mathematics (STEM) pathways but also constrains the socio-economic development of the region, signaling an urgent need for pedagogical innovation. Although there is a significant body of literature that ties SRL to academic achievement, few studies have empirically evaluated the causal influence of organised SRL treatments on both motivation and performance concurrently. Recent reviews affirm that while SRL is robustly associated with achievement, interventions that integrate cognitive and motivational components remain relatively rare, and their joint causal mechanisms are underexplored (Theobald, 2021; Dent & Koenka, 2016). Methodologically, many existing studies are correlational or involve short-term laboratory-based designs, limiting their ecological validity. Research on the impact of integrated SRL treatments on long-term learning outcomes in classrooms is limited (de Boer et al., 2018; Dignath & Veenman, 2021). This gap is particularly pronounced in Nigeria, and even more so in northern Nigeria. Existing work in the region has mainly explored correlational relationships among SRL, motivation, and performance (e.g., Garba & Abubakar, 2020), while experimental studies of structured SRL programmes are scarce. A recent review of educational interventions in sub-Saharan Africa further underscores the need for locally adapted, methodologically rigorous studies that move beyond documenting associations to testing causal mechanisms (Stern et al., 2021). In this context, the current quasi-experimental study explores the impact of a self-regulated learning intervention on secondary school students' motivation and academic performance in cellular respiration in Katsina State, Nigeria.

Literature Review

Theoretical Perspectives on Self-Regulated Learning

Several influential models have been proposed to explain how SRL operates and how it can be fostered in classrooms. According to Zimmerman's social cognitive model, SRL occurs in three cyclical phases: forethought (goal setting, strategic planning, and self-efficacy), performance (strategy implementation and self-monitoring), and self-reflection (self-evaluation, causal attributions, and adaptive reactions) (Zimmerman, 2002, 2020). Pintrich's approach highlights the management of cognition, motivation/affect, conduct, and situation through the stages of foresight, monitoring, control, and reflection (Panadero 2017). Boekaerts' dual-processing model distinguishes between a development pathway, in which students work hard to attain learning objectives, and a well-being pathway, in which they safeguard their emotional state, emphasising the importance of motivational and emotional management in SRL (Smit et al., 2019). These models converge in portraying self-regulated learners as those who actively goals setting, selection and adaption strategies, progress monitoring, and reflection on their outcomes to improve subsequent performance. Importantly, they also highlight that SRL can be taught and scaffolded through targeted instructional interventions, rather than treated as an innate trait that students either possess or lack (Dignath & Veenman, 2021). In other words, SRL provides not only a descriptive account of how effective learners operate but also a prescriptive framework for designing classroom interventions.

Self-Regulated Learning and Motivation

Motivation is essential to SRL, since it provides the energy and direction for self-regulatory mechanisms. According to self-determination theory, there are two types of motivation: autonomous (intrinsic motivation and identifiable regulation) and controlled (external and introjected regulation), with autonomous motivation being linked to deeper learning and perseverance. In the setting of SRL, intrinsically driven learners are more likely to adopt personally relevant objectives, persevere in the face of adversity, and participate in metacognitive monitoring (Schunk & DiBenedetto, 2020). Empirical research consistently show a favourable relationship between SRL, motivating beliefs, and engagement. Smit et al. (2019) discovered that motivational techniques such as increasing task value, self-consequating, and environmental structuring influenced the link between students' motivational beliefs and participation in learning. Tanti et al. (2020) found that pupils

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with stronger self-regulation shown increased interest and perseverance in learning science. Saghir and Batool (2019) found substantial positive connections between SRL and motivation among university students, but they also observed gender variations in several motivational characteristics. In science and Biology education, SRL and motivation play a critical role because students often encounter abstract concepts, multiple representations, and complex laboratory activities that demand sustained cognitive effort. When learners lack appropriate strategies, repeated failure can erode their self-efficacy and interest, whereas structured SRL interventions can help them set realistic goals, monitor their understanding, and attribute success to controllable factors such as strategy use (Ekuri & Offiah, 2018; Suhandoko & Hsu, 2020). This is particularly relevant for topics like cellular respiration, where students must integrate microscopic, macroscopic, and symbolic representations to grasp energy transformation in living systems.

Self-Regulated Learning, Academic Performance, and Intervention Research

Meta-analytic evidence provides robust support for the positive association between SRL and academic achievement across educational levels. Dent and Koenka (2016) found medium-sized relationships between SRL components and achievement from infancy through adolescence, while de Boer et al. (2018) showed that interventions incorporating explicit strategy instruction and metacognitive training tend to produce higher impacts on performance than those using on motivation alone. Theobald (2021) reported that SRL training programmes significantly improved university students' grades, especially when interventions were embedded in regular courses rather than delivered as stand-alone workshops. However, several gaps remain. First, many SRL studies are correlational, making it difficult to infer causal effects of SRL training on achievement (Dent & Koenka, 2016). Second, a substantial proportion of intervention studies are conducted in laboratory-like settings with short time frames and small samples, limiting ecological validity (de Boer et al., 2018). Third, relatively few interventions simultaneously target both cognitive such as metacognition, strategy use and motivational like task value and self-efficacy components of SRL in authentic classroom contexts (Dignath & Veenman, 2021). In sub-Saharan Africa, the evidence base is even more limited. Stern et al. (2021) reviewed educational interventions across the region and concluded that relatively few programmes systematically integrated SRL principles into everyday instruction, and even fewer used rigorous quasi-experimental designs with appropriate controls. In Nigeria, Garba and Abubakar (2020) found that self-regulated learning techniques predicted academic progress among senior secondary students, with no significant gender differences, but they did not examine a structured SRL intervention. Ejelue (2017) discovered minor positive associations between SRL skills and Biology success in both male and female students, but did not investigate the causal effect of SRL-based education.

Gender, Self-Regulated Learning, and STEM Achievement

The role of gender in SRL and academic performance has received increasing attention, with varied conclusions. Some studies suggest that female students tend to report higher use of metacognitive and organisational strategies and sometimes higher motivation, while male students may show advantages in particular domains or under certain instructional conditions (Saghir & Batool, 2019). Other studies, particularly in African settings, find minimal or no gender differences in SRL and achievement, especially when instruction is designed to be inclusive and supportive for all learners (Ejelue, 2017; Garba & Abubakar, 2020). In STEM fields, gender disparities in participation and achievement often reflect complex interactions among cultural norms, self-beliefs, teacher expectations, and classroom climate. Interventions that explicitly foster SRL may help mitigate some of these disparities by promoting self-efficacy, mastery goals, and adaptive attributions for both male and female students. Yet, relatively few studies in Nigeria have examined whether SRL interventions produce comparable benefits across gender groups, particularly at the secondary school level in Biology.

Rationale of the Study

Given persistent low achievement in Biology in Katsina State, the strong theoretical and empirical support for SRL, and the limited quasi-experimental evidence from Nigerian classrooms, there is a clear need for locally grounded intervention research. Moreover, understanding whether SRL-based interventions benefit male and female students equally is essential for designing equitable pedagogical strategies. Against this backdrop, the present study implemented a Self-Regulated Learning Intervention integrated into the teaching of cellular respiration and examined its effects on students' motivation and academic performance, as well as potential gender differences in these effects.

Objectives of the Study

The specific objectives of the study are to:

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1. Determine the effect of the Self-Regulated Learning Intervention (SRLI) combined with conventional teaching on students' motivation towards learning cellular respiration.
2. Determine the effect of the Self-Regulated Learning Intervention (SRLI) combined with conventional teaching on students' academic performance in cellular respiration.
3. Examine the influence of gender on the motivation of students taught cellular respiration using the Self-Regulated Learning Intervention (SRLI) combined with conventional teaching.
4. Examine the influence of gender on the academic performance of students taught cellular respiration using the Self-Regulated Learning Intervention (SRLI) combined with conventional teaching

Research Questions

Thus, the following research questions have been raised:

1. What is the mean difference in motivation towards learning cellular respiration between students taught using the Self-Regulated Learning Intervention (SRLI) and conventional method and those taught using the conventional method only?
2. What is the mean difference in academic performance scores between students taught cellular respiration using SRLI and the conventional method and those taught using the conventional method only?
3. What is the mean difference in motivation towards learning cellular respiration between male and female students taught using SRLI and the conventional method only?
4. What is the mean difference in academic performance scores between male and female students taught cellular respiration using SRLI and the conventional method only?

Hypotheses

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

H_{o1}: There is no significant difference in motivation towards learning cellular respiration between students taught with SRLI and the conventional method and those taught using the conventional method only.

H_{o2}: There is no significant difference in academic performance scores in cellular respiration between students taught using SRLI and the conventional method and those taught using the conventional method only.

H_{o3}: There is no significant difference in motivation toward learning cellular respiration between male and female students taught using SRLI and the conventional method

H_{o4}: There is no significant difference in academic performance scores in cellular respiration between male and female students taught using SRLI and the conventional method

Methodology

Research Design

The study used a quasi-experimental, pretest-posttest control group design. A quasi-experimental design was chosen over a true experimental design due to the inherent constraints of conducting research in authentic educational settings, where randomly assigning individual students to conditions is often logistically impractical and ethically questionable because it disrupts intact classroom structures (Shadish et al., 2002). To mimic the rigour of an experiment and boost causal inference, intact classes were randomly assigned to the experimental or control conditions. The pretest-posttest control group approach is considered since it allows for the comparison of changes over time between groups while accounting for pre-existing disparities. The inclusion of a pretest allows for the use of Analysis of Covariance (ANCOVA), which statistically compensates for baseline scores, boosting the precision of the analysis and the validity of findings about the intervention's effect (Field, 2018). This design is regarded as reliable for assessing the efficiency of educational interventions when full randomisation is not possible (Creswell & Creswell, 2018)..

Population, Sampling, and Assignment

The target population comprised all 5,378 Senior Secondary School Year II (SSII) students offering Biology in public schools within Katsina State, Nigeria, during the 2022/2023 academic session. A multi-stage sampling technique was implemented to enhance the representativeness and practicality of the sample. First, two co-educational public secondary schools with comparable characteristics including student academic profiles, teacher qualifications, and laboratory facility access were purposively selected from the same Local Government Area to minimize the influence of extraneous contextual variables. Second, two intact SSII classes from each school were selected via simple random sampling (balloting). Finally,

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one class was assigned randomly to the experimental group (n = 48) while the other was assigned as the control group (n = 37), resulting in a total sample of 85 students. This sampling strategy ensures that the groups are as equivalent as possible prior to the intervention, strengthening the internal validity of the comparison. The use of intact classes preserves ecological validity, ensuring the findings are relevant to typical classroom practice.

Instrumentation

Data were collected using two primary instruments: (1) Motivational Strategies for Learning Questionnaire (MSLQ)
The motivation section of the well-established MSLQ (Pintrich et al., 1991) was adapted for this study's context. The original subscales assessing intrinsic goal orientation, task value, and self-efficacy for learning and performance were adjusted. The language was condensed for secondary school comprehension, and all item examples were linked to the Biology lesson on cellular respiration. This modification is justified to ensure the instrument's content validity and relevance to the specific participant group and study issue. (2) Cellular Respiration Performance Test (CRPT) The researcher created a 30-item accomplishment exam with 25 multiple-choice questions and 5 structured short-answer questions. The exam pattern was designed to coincide with the SSII national curriculum for cellular respiration, testing cognitive areas such as knowledge, understanding, application, and analysis in order to move beyond rote recollection. This instrument is motivated by the necessity for a domain-specific, curriculum-aligned assessment of the particular academic concept being investigated.

Validity and Reliability of the Instruments

To assure validity, the instruments were evaluated by a panel of three specialists in scientific education, educational psychology, and test measurement. Their suggestions for item clarity, relevance, coverage, and suitability for the intended audience were incorporated into the final editions. A pilot research included 30 SSII Biology students from a non-participating school. Cronbach's alpha analysis indicated reliability values of.859 for the modified MSLQ and.816 for the CRPT. These coefficients imply good to exceptional internal consistency, confirming the instruments' dependability for research usage (DeVellis, 2017).

Data Analysis Techniques

The data were analysed with the Statistical Package for the Social Sciences (SPSS) version 23. Descriptive statistics (means and standard deviations) were used to summarise the data and respond to the four research questions on mean differences. For hypothesis testing, Analysis of Covariance (ANCOVA) was employed. The use of ANCOVA is strongly justified, as it tests for differences between groups on the post-test scores while statistically controlling for any pre-intervention differences captured by the pretest scores. This control increases the sensitivity of the test and reduces error variance, providing a more powerful and accurate assessment of the intervention's true effect on the dependent variables (motivation and academic performance) after accounting for initial ability levels (Pallant, 2020). This analytical approach aligns with best practices for analysing pretest-posttest control group designs in educational studies.

Presentation of Results

Research Question One: What is the mean difference in motivation towards learning cellular respiration between students taught using SRLI and conventional method and those taught using the conventional method only?

Table 1:

Means and Standard Deviations of Motivation Levels of Students toward Cellular Respiration in Experimental and Control Groups

Groups	*N*	M	SD	MD
SRLI (EG)	48	70.27	5.59	
Conventional Method (CG)	37	58.43	11.20	11.84

M = Mean, SD = Standard Deviation, MD=Mean Difference

Table 1 shows that students taught using SRLI recorded a higher mean motivation score (M = 70.27, SD = 5.59) than those taught with the conventional method (M = 58.43, SD = 11.20), with a mean difference of 11.84 in the favour of the experimental group. This suggests that the SRLI substantially enhanced students' motivation toward learning cellular respiration compared with the conventional approach alone.

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Research Question Two: What is the mean difference in academic performance scores between students taught cellular respiration using SRLI and conventional method and those taught using the conventional method only?

Table 2:

Means and Standard Deviations of Academic Performance Scores of Students in Cellular Respiration in Experimental and Control Groups

Groups	*N*	M	SD	MD
SRLI (EG)	48	14.35	2.03	
Conventional Method (CG)	37	11.32	3.30	3.03

M = Mean, SD = Standard Deviation, MD=Mean Difference

Table 2 indicates that students exposed to SRLI achieved a higher mean academic performance score (M = 14.35, SD = 2.03) than those taught using the conventional method (M = 11.32, SD = 3.30), with a mean difference of 3.03. This demonstrates that SRLI is more effective than the conventional method in improving students' academic performance in cellular respiration.

Research Question Three: What is the mean difference in motivation towards learning cellular respiration between male and female students taught using SRLI and conventional method only?

Table 3:

Means and Standard Deviations of Motivation Levels of Male and Female Students toward Cellular Respiration in Experimental Group only

Gender	N	M	SD	MD
Male	28	70.43	5.01	0.38
Female	20	70.05	6.50	

M = Mean, SD = Standard Deviation, MD=Mean Difference

Table 3 shows that male students in the experimental group had a mean motivation score of 70.43 (SD = 5.01), while female students had a mean score of 70.05 (SD = 6.50), resulting in a mean difference of 0.38 in favour of males. This difference is small, indicating that SRLI produced comparable motivation levels for both male and female students.

Research Question Four: What is the mean difference in academic performance scores between male and female students taught cellular respiration using SRLI and conventional method only?

Table 4:

Means and Standard Deviations of Academic Performance Scores of Male and Female Students in Cellular Respiration in Experimental Group Only

Gender	N	M	SD	MD
Male	28	14.25	2.34	0.22
Female	20	14.43	1.81	

M = Mean, SD = Standard Deviation, MD=Mean Difference

Table 4 indicates that male students had a mean score of 14.25 (SD = 2.34), while female students had a mean score of 14.43 (SD = 1.81), yielding a mean difference of 0.22 in favour of females. The very small difference suggests that SRLI supports similar levels of academic performance for both male and female students.

Hypotheses Testing

Motivation (H_{01} & H_{03})

Table 5:

Analysis of Covariance for Motivation Scores by Group and Gender

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3440.983[a]	4	860.246	14.543	.000
Intercept	2974.556	1	2974.556	50.288	.000
Pretest	178.427	1	178.427	3.016	.086
Groups	3042.697	1	3042.697	51.440	.000
Group * Gender	117.027	1	117.027	1.978	.163
Gender	77.031	1	77.031	1.302	.257
Error	4732.029	80	71.332		

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Total	362375.000	85
Corrected Total	8173.012	84

An ANCOVA was conducted on posttest motivation scores, with pretest motivation as the covariate. After adjusting for pretest scores, there was a statistically significant main effect of instructional group on motivation, $F(1, 80) = 51.44$, $p < .001$, indicating that students in the experimental group reported higher motivation than those in the control group; therefore, H_{01} was rejected. The Group × Gender interaction, $F(1, 80) = 1.98$, $p = .163$, and the main effect of gender, $F(1, 80) = 1.30$, $p = .257$, were not significant. Thus, H_{03} was retained.

Academic Performance (H_{02} & H_{04})

Table 6:

Analysis of Covariance for Academic Performance Scores by Group and Gender

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	198.387[a]	4	49.597	6.882	.000
Intercept	885.074	1	885.074	122.819	.000
Pretest	1.629	1	1.629	0.226	.636
Groups	184.995	1	184.995	25.671	.000
Group * Gender	3.407	1	3.407	0.473	.494
Gender	0.761	1	0.761	0.106	.746
Error	576.507	80	7.206		
Total	15218.000	85			
Corrected Total	774.894	84			

An ANCOVA was conducted on post-test academic performance scores, with pre-test performance as the covariate. After controlling for pre-test differences, a statistically significant main effect of instructional group was found, $F(1, 80) = 25.67$, $p < .001$, indicating higher achievement for students in the SRLI group compared to those in the conventional group; thus, H_{02} was rejected. The Group × Gender interaction, $F(1, 80) = 0.47$, $p = .494$, and the main effect of gender, $F(1, 80) = 0.11$, $p = .746$, were not significant; therefore, H_{04} was retained.

Discussion of Findings

The results of this study show that SRLI had a statistically significant, favourable influence on students' motivation to learn Biology, specifically cellular respiration, when compared to the conventional technique. This is consistent with past research by Tanti et al. (2020) and Saghir and Batool (2019), which found substantial positive relationships between self-regulation and student motivation. The intervention's efficacy can be ascribed to SRL tactics like as goal planning, self-monitoring, and self-reflection, which actively involve learners and foster more ownership of learning, thereby improving intrinsic motivation. The study also found that SRLI resulted in much better academic achievement in cellular respiration than the standard technique. This is consistent with the findings of Ekuri and Offiah (2018), who found a substantial association between self-regulatory qualities and academic success, and Suhandoko and Hsu (2020), whose intervention enhanced undergraduate accomplishment. SRLI promotes strategic, reflective learning over rote memorisation, allowing students to gain deeper conceptual knowledge, which results into improved exam scores. However, the positive effect on performance differs somewhat from the findings of Younes Doostian et al. (2015), who observed gains in achievement motivation but not in science test scores, indicating that the design and integration of SRLI in this study were particularly effective in converting motivational gains into measurable achievement. In terms of gender, there are no significant variations in motivation or performance, in contrast to Saghir and Batool (2019), who found gender disparities in self-regulation and motivation at the university level. Instead, the current findings are similar with Ejelue (2017), who found low positive associations between SRL and success in both males and females, with no significant gender differences. This implies that, in the setting of Katsina State secondary schools, SRLI functioned as a gender-neutral teaching instrument that helped learners equally.

Conclusion

Based on the empirical findings, the study finds that SRLI is a very successful pedagogical technique for teaching complex biology concepts like cellular respiration. When compared to standard teaching methods, the intervention dramatically increased students' motivation, self-efficacy, and academic achievement. Importantly, the effects were equal for both male and female students, demonstrating that SRLI is gender-friendly and inclusive. SRLI shows tremendous promise for

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enhancing scientific learning results in Katsina State and comparable contexts since it transforms students from passive users of knowledge to active, self-directed learners.

Recommendations

Based on the findings, the following recommendations are proposed:

1. Biology teachers at the secondary school level should systematically incorporate SRLI strategies (e.g., goal setting, self-monitoring, and self-evaluation) into their lesson plans for complex topics such as cellular respiration and genetics.
2. Ministries of education and professional bodies, such as the Science Teachers Association of Nigeria (STAN), should organize regular workshops and in-service training to build teachers' capacity to design and implement SRL-based instruction.
3. Educational policymakers in Katsina State and beyond should provide curricular and assessment guidelines that explicitly encourage SRL practices and allocate resources for scaling up evidence-based interventions like SRLI across schools.

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Qualitative Study on Divorce and It's Psychological Impact among Couples in Nigeria: A Systematic Review

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Abstract
Divorce is a global phenomenon, and is becoming a burden to the institution of marriage in recent times. It also have severe psychological consequences for couples whose marriages are affected with conflict. The purpose of this paper is to give a qualitative analysis of divorce and its psychological impact on Nigerian couples. This paper provides a holistic view on the causes of divorce, psychological problems couples may face after divorce, psychological well-being, marital stability and prevention of divorce. The paper concludes that divorce has psychological and emotional effects on couples who have experienced divorce. It also noted that divorced can cause serious emotional instability among couples leading to loneliness, depression and other challenging situations which can be psychologically draining for the couples. The paper recommends that divorced women should be supported by government at all levels by providing a community based emotional support. It also recommends that cultural stigma that result from a divorce should be tackled through public sensitization.

Keywords: Divorce, Psychological Impact, Couples, Nigeria

Introduction
In recent times, divorce is becoming the most controversial topic in Nigerian societies and its rate has risen remarkably all over the world. Some disturbances such as deviations, crimes, and suicides can be blamed at modernity urbanization and progress in technology. Divorce is another consequence of these changes that can be related to structural transformations of society and has considerable impacted the way people see life. A breakup in relationship is certainly the most terrible situation for a person, which can result into emotional setback. The mental health indicators shows that newly divorced couple's health are affected by divorce, depression, anger, low self-esteem, and anxiety. Divorce has consequential impacts in the lives of couples in. It also affects their psychological well-being. It has also been observed that stressful occupations has the tendency of interfering with couple's companionship and other family obligations due to their commitments to their jobs which could create marital issues thereby causing conflict that could in the long run lead to divorce (Odebode, 2019). In Nigeria most families are strained in marriage interactions between couples living together. Marital disharmonies which lead to marriage conflict are a great concern to the society. (Aliero, Aliero & Usman, 2021). Marriage is viewed as an ancient-cultural institution as well as a legal union of a man and a woman as husband and wife. In Nigeria, marriage is an important institution through which intending couples enter into some forms of contract for reciprocal obligations as husband and wife, and a bond between families is involved. Marriage guarantees procreation, care and socialization, as well as the survival of human race (Idris, 2021). The main goals for intending couples who desire marriage are the need for harmony, reciprocity, cohesion, fidelity, high degree of stability and unconditional love. The term marriage is defined as a relationship involving two or more people of the opposite sex, whose relationship is expected to endure beyond time. It is further explained that marriage is the union of one man and one woman for their mutual help and happiness, procreation and child rearing until death (Okesina, 2022). Marriage is also seen as a legal union between a man and a woman as husband and wife, which further connotes matrimony, wedlock, alliance, association and union (Okesina, 2022). Marriage is a basic

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institution in every society, it may also be described as one of the most important and fundamental human relationships. It is a culturally, religiously and socially recognized union, normally between a man and a woman, who are referred to as husband and wife. This union establishes rights and obligations between a spouse, their children and even between them and their in-laws. As a very important human institution, marriage not only provides the initial structure to establish family relations, but also serves as avenue to raise and train future generations (Agboola & Oluwatosin, 2018). Divorce is the dissolution or the separation from marriage between spouses. It is the termination of marital union, the canceling of legal duties and responsibilities of marriage. That is, when couples divorce they would no longer stay together and are expected to allow ex-spouse to re-partner (Malak & Kirubakaran, 2022). In Nigeria some couples experience serious challenges with their marriagies which is apportioned to the developing problem they face in their homes. Such as atmosphere filled with less unconditional acceptance and love for each member. As a result of the absence of love, the couples find themselves in a conflict situation which might eventually lead to divorce (Mozhdeh & Abdollah, 2016). Divorce has become a serious problem; challenging the establishment of a family in a routine manner and causing severe impacts on the emotional and mental health of the couples. Since women are considered as the binding force in the family, they are believed to be responsible for whatever wrong is done. It has been argued that women invest more in the family, take a larger responsibility for marriage, and therefore perceive divorce as a greater failure than men do (Rathi, & Pachauri, 2018). Bradson in Idris, (2021) sees divorce as the process by which a marriage recognizes as valid can be revoked in a life time of the partners who then revert to single status and are free to remarry. It is essential to state that divorce are basically emotional and personal decisions by couples or spouses, nonetheless; researches have proven beyond this perceptions to include other factors not mentioned. Divorce is viewed as the dissolution of intimate relationship between a man and a woman, adjudged by customary laws and traditions (Idris, 2021).

Couple are vulnerable psychological in the situation of a divorce most especially if they are deeply emotionally attached to the just dissolved marriage. Psychological problems of divorced couples can be influenced directly or indirectly there by affecting them. Based on the interviews conducted on divorced couples, different forms of psychological problems were observed (Rathi, & Pachauri, 2018). When the couples were asked about the psychological impacts of their divorce, majority of them reported that the divorce left them in depression and health problems, because they would not been able to continue their marriage for the rest of their life. They also noted that whenever relatives or other people tried to discuss the inability them to continue their marriages, they stopped meeting them, even avoid general conversation with them because they wish to forget that aspect of their lives (Rathi, & Pachauri, 2018).

Causes of Divorce

Divorce causes several uncomfortable situations which include causing psychological, physical, and mental problems for both spouses and their children which could be economic and educational problems. The adverse effects will certainly affect the productivity couples as well as the impact on their children which might be detrimental to their future. According to Ibrahim, Abubakar, Dan Dange, (2021:3) some causes of divorce includes

1. Falling out of love among the couple due to irreconcilable disputes
2. Lack of commitment to managing marriage financial obligations and problems
3. Husbands abandon their wives for an extended period
4. Drugs and Alcohol addiction on the part of the husband
5. Communication problems
6. Lack of maturity and physical abuse, especially on couples who were forced to marry.
7. Domestic violence and lack of patience and tolerance to one another
8. Unnecessary interference by in-laws in the affairs of married couples.
9. Lack of shared interest and incompatibility among the couples
10. Infidelity and adultery among married couples is a common reason for divorce

Social Conflict Theory

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The social conflict theory model was propounded Karl Marx. Karl Marx offered a comprehensive examination of conflict at a large scale. He believed that conflict emerges as a result of economic exploitation and the inherent disparities of capitalism. According to Marx, conflict plays an important role in pushing social change, ultimately resulting in revolutionary transformations and the eventual construction of a society without social classes. He also asserted that conflict theory focuses on power dynamics in relationship. He noted that the conflict is not actually the problem in marriage, but the method to which new realities that individuals in the relationship can create. This allows sense of entitlement that can develop in aspects of relationships to be challenged. The theory exposes the grievances between individuals or groups whose interest towards the object of contention is conflicting. Social change from the Marxian perspective it is seen as the outcome of class struggle motivated by economic interest. The facts remains that the conflict theory never divorces it's self-sufficiently from its structural functionalist but turned on its head than a truly critical theory of the society. The conflict theorist believes that divorce is as a result of conflict over resources in marriage (Oluyeye, 2024).

Psychological Problems Women May Face After Divorce

Divorced couples often exhibit emotional instability characterized by euphoria, loneliness, sadness, depression, suicidal thoughts, associated changes in self-concept and self-esteem. Divorce is seen generally as a prominent cause of depression among divorced couples. Haimi, Lerner, and Genomics as cited in Ibrahim, Abubakar and Dan Dange, (2021:4) asserted that divorce elevate depression, anger, decreased self-esteem, increased suicide among others. In the words of Akter, Begum, and Remarriage (2012), they noted that women would suffer from various types of psychological problems, which according to Ibrahim, Abubakar, Dan Dange, (2021:3) includes

1. Physiological function (e.g., difficulty falling asleep, decreased appetite etc.)
2. Emotional function (e.g., frustration, hopelessness, suicide etc.)
3. Cognitive impairments (e.g., distressful thoughts about real-life crises? I have become valueless etc.)
4. Behavioral impairments (e.g., easily angered for every silly thing, quarreling with family members, relatives etc.)
5. Social functions impairments (Feeling embarrassed to meet other people avoided any social program, isolated etc.).

Psychological Well-being and Marital Stability

One of the important factors that encourage marital stability is couples' ability to know the state of their psychological health because poor psychological well-being reduces the chance of marital fulfilment (Okojide, Adekeye, & Adejumo, 2021). Randall & Bodenmann (2017) asserted that individuals who had poor psychological well-being face stressful situations and engaged in hostile conversations with their spouses, and this could lead to marital conflic, instability, and reduced psychological well-being. As note by the Mental Health Leadership and Advocacy Programme (2012), the prevalence of poor psychological well-being is about twenty per cent. African Polling Institute and EPIAFRIC 2020 also reported that 20%-30% of Nigerian Population suffer from one mental disorder or the other (Okojide, Adekeye, & Adejumo, 2021).

Effect of Divorce on Children

according to Ukpong, (2018: 175), the following are some of the effects of divorce on children:

1. Problems of Adjustment: Children from divorced homes are confronted with questions from their peers, particularly when they are in primary or nursery school, about why they have only one parent at home. They will have to adjust to a change in primary relationships, and possibly to restricted interaction with one of the parents (mostly the father). Apart from this, "they have to cope with parental conflict, which may continue after the divorce, and with attempts by each parent to gain the child's loyalty and affection at the expense of the other parent.
2. Psychological Problems: Divorce affects the children of divorced parents psychologically. Sometimes the children feel withdrawn when they are with their peers, especially when their peers are discussing about their own parents and family life. They may even carry this psychological problem into their own marriages.
3. Object of Abuse by Parents/Others: In some cases, parents pour their anger on their children in the absence of their divorced spouse. They transfer aggression to their children. This often than not affects the children's self-esteem who may also become objects of abuse and ridicule by the larger society. Therefore, instead of having parental warmth which is expected of a growing child, these children end up having abuses.

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4. Hatred Towards One Parent: Sometimes children from divorced marriages tend to develop hatred towards one of the parents whom they feel was the cause of the divorce. This is usually based on the information they received, especially when the divorce happened when they were very young.
5. Lack of Balance Training: Children are normally expected to be trained by both parents each supplying what may be deficient in the life of the other parent. In the case of divorce, the children will only be trained by one parent. Single parenthood has its own flaws which are easily transferred to the children.
6. Prone to Social Problems: Children from divorced marriages are prone to social problems. With the deficiency in their upbringing, they may decide to join peers and adults outside who may introduce them to vices which are inimical to their lives and that of the society. They may indulge in sexual vices, illicit drugs, alcoholism, robbery, area boys etc. Even though, children from unbroken homes may also be involved in these vices.
7. Economically: Though economically, children from both non-divorced and divorced homes may suffer economically, but children from the divorced homes suffer more economically. This affects their educational and other endeavors in life.
8. Educationally**:** Children from divorced marriages find it very difficult to complete their education right from primary up to tertiary level, very few of them can have that opportunity because of the negative treatment they will face with the members of the family particularly from the father's site and the step mother.

Prevention of Divorce

It is the belief of so many counsellors that man or woman cannot survive well without seeking one another if at all they are healthy. For healthy people, marriage is essential, and it has to be planned and prepared in such a way as to avoid marital discord since it is a lifelong affair.

The following suggestions are considered important for curtailing divorce by Abdullahi in Gaya, (2017)

1. Marriage is a permanent affair; therefore, should be careful and dynamic planning and preparation.
2. Couples should seek for professional information.
3. Couples should knowledge more about each other in a way that does not involve any immoral or deceptive and exploitative behaviour.
4. Couples are encouraged to choose partners on the basis of permanent values, i.e. moral integrity, religious devotion among others and not on the basis of wealth or family prestige or mere physical attraction.
5. Marriage should be contracted, by both the husband and wife, on mutual understanding that will assist in the growth and development of the family; and partners should be reliable, God fearing, hardworking, dependable and trustworthy.
6. Couples should develop the habit of appreciating what one does, no matter how slight it is.
7. Any fault discovered between them should be addressed by them in a peaceful and clear mood not through harassment.
8. Marriage is an institution that is demanding time of its own. Therefore, husbands and wives should not be devoting much time to work at the expense of the marriage
9. Third-party interferences should be avoided by the couples.
10. Couples should be educated on their marital responsibilities including saving, investment, reproductive health and child rearing, and so on.
11. From the very beginning of the marriage couples should ensure security in terms of religion, genotype, character, sexual desire, interest and blood group of one another.
12. Couples should sit, eat pray together for Go's guidance in your marital activities.
13. When couples are in crises and it has gone to the extreme, families of couples concerned should be called in to try effecting reconciliation or they should consult a counsellor.
14. Religious leaders should come in to propagate the ills divorces will hatch at any forum they find themselves.
15. Government should come in by providing welfare package to couples when contracting the marriage
16. Government should come in by providing welfare package to workers such as tax relief and basic needs on farms or condition to fulfill when contracting the marriage.

Conclusion

From the study, it was obvious that Divorced can cause serious emotional instability among couples leading to loneliness, sadness, depression, suicidal thoughts among other challenging situations, it was noted that marital conflicts should be managed when they happen or prevented from happening in the first place in order for it not to lead to the total collapse of

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the marriage. It was also revealed that divorce can seriously affect the psychological and emotional wellbeing of couples as well as children experience more social isolation, which makes them end up producing greater feelings of loneliness, unhappiness and lower self-esteem. Some psychological and emotional effects of divorced couples could include factors like difficulty in sleeping, disturbances, worthlessness, suicidal attempt, decreased level of confidence, feeling of shame, and feeling of sorrow in her heart, worry, anxiousness, irritated with life among other things as the major emotional and psychological effects of divorce.

Suggestions

In line with the paper's submission, the following suggestions were offered: -

1. Government at all levels and non-governmental organizations should help make available the services of counsellors and encourage religious leaders and other stake holders to strengthen the need for couples through sensitization in order for couples to attend compulsory premarital counselling before marriage and when needed marital counselling after getting married. This will help reduce cases of divorce.
2. Community sensitization should be encouraged on the need for husband to assist their wives in running the home when needed in order to foster love and unity in the home and reduce conflict.
3. Counselling centers should be established in every state and local government jn Nigeria in order to help couples facing marital issues to get interventions.

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Evaluation of the Impact of Exchange Rate Policy on Manufacturing Sector Output in Nigeria

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Abstract

Globally, exchange rate policy plays crucial role in both money market and real sector activities owing to their impact on the value of domestic currency. This study evaluates the impact of exchange rate policy on manufacturing sector performance in Nigeria, spanning 1981 to 2023. The Autoregressive Distributed Lag Error Correction Model (ARDL-ECM) regression was used as technique of analysis. The results revealed that balance of payment (BOP) had significant negative impact on manufacturing sector performance, the lagged FDI (-1) had significant negative impact on manufacturing sector performance. The results also revealed that short-run exchange rate (EXR) had insignificant positive impact on manufacturing sector performance and insignificantly negative impact in the long-run. Also, foreign exchange reserves (FXR) in the shot-run and long-run had significant positive impact on manufacturing performance. It was found that inflation rate (INF), both in the short-run and long-run, had insignificant negative impact on the performance of manufacturing sector. The results showed that in both short-run and long-run interest rate (INT) had significant negative effect on manufacturing sector performance. Also, the results showed that in both short-run and long-run, exchange rate implementation regime (EXP) proxied by dummy variable, had insignificant positive impact on manufacturing sector performance. The results also revealed that in the short-run, exchange rate implementation status (EXS) dummy variable, had insignificant negative impact on the performance of manufacturing sector, while in the long-run it had significant negative impact on manufacturing sector performance. The study concluded that exchange rate policy significantly impacts manufacturing sector performance and recommended among others that government should promote export diversification by providing incentives that encourage a wide range of manufacturing sector firms and export-related products, they should mandate the deposit money banks through the Central bank to maintain a single digit interest rate to boost investors' confidence on the economy, government should channel a portion of foreign reserves in providing financial supports, subsidies and export incentives to manufacturers, effective import substitution policy and implement effective exchange rate management policy to avoid exchange rate swings and encourage manufacturing sector investment stability in order to raise the level of performance of the manufacturing sector.

Keywords: Exchange Rate, Balance of payment, Inflation Rate, Interest Rate, Foreign Direct Investment, Foreign Exchange Reserves, Manufacturing sector performance

Introduction

The manufacturing sector is an integral component of the real sectors of the economy that has the potentials of propelling economic growth through is job creation and income generation capacity. Mlambo (2020) stated that the manufacturing industry has traditionally, been one of the key drivers in most national economies. The manufacturing sector is an avenue for trade expansion and it is a vital source of innovation and competitiveness and it makes outsized contributions to exports and productivity growt (Onwuka, 2022). The manufacturing sector contributed a modest 4.8% in 1960, manufacturing sector's contribution to the country's GDP increased to 7.2% in 1970 and to 7.4% in 1975 (Central Bank of Nigeria, 2020). Prior to the oil boom of the 1970s, Nigeria's manufacturing sector contributed approximately 10% to Nigeria's GDP. Subsequently, increased revenues from sales of crude oil caused the sector's relative GDP share to drop. In 1980, it dropped to 5.4% but then surged to a record high of 10.7% in 1985 (CBN 2020). The fall has affected the foreign exchange reserve of Nigeria to decline tremendously. The recession caused by the fall in oil prices in the early 1980s triggered policy attention

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to turn back to the manufacturing sector, with steel production gaining prime focus (World Bank, 2020). The contribution of manufacturing sector to GDP of Nigeria was 13% in 2020, while the contribution of this sub-sector of the real economic in Bangladesh was 19%, and 20% in low and middle-income economies. Exchange rate is a prominent determinant of Nigerian manufacturing activities and world trade, receiving much attention in the context of national and global imbalances. It is obvious fact that the Nigerian manufacturing sector highly imports dependent for input factors and as such, must be mindful of the exchange rate system that governs import and export activities. The subject of exchange rate fluctuation became a tropical issue in the Structural Adjustment Programme (SAP) in Nigeria, as a result of fluctuations of naira exchange rate in 1986. In 1990 for instance the naira exchanged for 7.39 per US dollar, and later in 2000 it exchanged for 85.98 per US dollar before rising to over 500 per US dollar in 2022 (World Bank,2022). Exchange rate depreciation increases the cost of imported capital goods for manufacturing firms and this result to a fall in domestic investment among others. The exchange rate is therefore an important relative prices as it has influence on the external competitiveness of domestic manufactured goods, especially in countries like Nigeria that is import dependent for manufacturing input (Andrew& Omoruyi, 2018). This likely leads to an increase in the expected value of capital and its level of investment. Chong and Tan (2016) found that exchange rate is responsible for changes in macroeconomic fundamentals for the developing economies. It is relevant to establish that exchange rate fluctuations influence domestic prices through their effects on aggregate supply and demand. (Abiola,2018). The Central Bank of Nigeria's attempts to manage the exchange rate in the face of inflationary challenges have often proven futile, leading to increased uncertainty. The policy has created distortions in the market and undermined investor confidence. As its aftermath is the endless free fall in value of the naira, Nigeria's inflation rate has been on a rise and stood at 12.1% in 2018 but slightly slope-down to 11.4% in 2019 and instantaneously upsurge to 133.2 in 2020, 17% in 2021 and 18.8% in 2022. This scenario is believed to be occasioned by continuous depreciation of local currency compared to the dollar which has since raised from 306.08 US$ in 2018 to 306.92 US$ in 2019. Subsequent years between 2020 and 2022 saw the local rate further slide down to 358.81 US$ in 2020 to 401.14 US$ and 425.98 US$ in 2021 and 2022 (World Bank, 2022). Besides the fluctuation in the exchange rate have undulating effects on macroeconomic variables such as foreign reserves, interest rate, inflation rate, and economic growth (Okoli, Mbah, & Agu,2016). In the light of this view, foreign reserves are those external assets that are readily available and controlled by a country's monetary authorities. It further comprises foreign currencies and gold reserves. Dodo, Richard and Abdullahi (2023) asserted that foreign reserves represent the number of external assets held by a nation. However, since this reserves re not kept in local currencies, their prices or rates of converting them from foreign to local currency justifies they need for stability in the exchange rate.

Empirical Review

The relationship between exchange rate and manufacturing sector performance has been widely studied in extent literature, but there are variations in research findings which could be due to choice of variable, study area or other methodological issues. Tonye and Gbarawae (2023) evaluated the effects of exchange, and interest rates on manufacturing sector performance in Nigeria. The data were sourced from the World Bank's World Development Indicators (WDI) and the Statistical Bulletin of the Central Bank of Nigeria (CBN) for the analysis. The Auto-regressive Distributive Lag (ARDL) model. High volatility in exchange and interest rates have a positive effect on manufacturing sector performance, as shown by the results of the Autoregressive Distributive Lag (ARDL) bound test, and the results from Arch and Garch corroborate these findings. Auto-regressive Distributive Lag (ARDL) results indicated a positive and statistically significant relationship between the exchange rate and the performance of the manufacturing sector over time at 0.05 level. Bank size revealed a positive but insignificant relationship with manufacturing sector performance in the short-run, while the coefficient of interest rate spread and inflation rate were both negative and significantly influenced manufacturing sector performance in the current year period. The study concluded that Nigeria's manufacturing sector is strongly correlated with the country's exchange and interest rates and recommended amongst others that, the federal government should peg the local currency rate and mandate the deposit money banks through the Central bank of Nigeria (CBN) to maintain a single digit interest rate. The strength of this research is predicated on the fact that it captures exchange rate and interest rates s explanatory variables of manufacturing sector performance, but failed to take into cognizance the role of inflation and exchange rate dummy in the analysis. Orji and Ezeanyaeji (2022) examined the impact of exchange rates on the performance of the manufacturing sector in Nigeria between 1990 and 2020. Using canonical cointegrating regression (CCR) framework, the result obtained showed that exchange rate devaluation constrains manufacturing sector while

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exchange rate fluctuation hampers manufacturing output. The study indicated that price increase leads to decline in the manufacturing sector, the study recommends among other things the need to formulate policies that align with the exchange rate to the actual needs of the manufacturing sector. The study further suggests that change in exchange rate management strategy should be allowed to run a reasonable course of time. Jettisoning strategies at will and on frequent basis has implication for exchange rate and obvious consequence for a sector that depends on foreign inputs. The strength of this empirical study is predicated on the fact that it focused on exchange rate and manufacturing sector performance, but while the researchers covered 1990 to 2020 and canonical cointegration, the present research extended the period to 2023 to accommodate changes that have taken place in exchange rate policies in Nigeria and ARDL estimation technique that addresses the problem of endogeneity. Ugwoke (2022) investigated the impact of inflation on the manufacturing sector output in Nigeria using time series data obtained from Central Bank of Nigeria (CBN) statistical bulletin, National Bureau of Statistics (NBS), World Bank Development Indicators (WDI) and World Economic Organization (WEO). The Autoregressive Distributed Lag (ARDL) bound test approach was adopted. The result revealed that inflation rate was correctly signed and thus had a negative effect on the manufacturing sector output, although this proved to be statistically insignificant. The paper recommended that government should encourage investors in local raw materials through direct incentives, and overhaul access to credit for the productive sector particularly the manufacturing sector. The choice of inflation and manufacturing sector output and the used of ARDL estimation is an indication that the study is a guide to the current research. However, variables such as exchange rate, interest rate and foreign exchange rate that may exert influence on the real sector performance were not capture in the previous study. Onwuka (2022) examined the impact of exchange rate volatility on the performance of manufacturing sector in Nigeria using ARCH/GARCH model and Autoregressive Distributed Lag Model (ARDL). The ARDL results show that exchange rate volatility; interest rate and inflation rate had a negative impact on the performance of manufacturing sector in the long run while import and gross capital formation have a positive effect on manufacturing performance in the long run. Also, exchange rate volatility, gross capital formation and interest rate were found to have a significant impact on manufacturing performance while import and inflation were found to be non-significant. The strength of the study lies on the fact that it concentrated on the performance of the manufacturing sector in Nigeria, while the scholars focused in the volatility of exchange that necessitated the usage of ARCH/GARCH, this study is delimited to exchange rate policy and captures foreign exchange rate, inflation rate and exchange rate dummy as explanatory variables. Ac-Ogbonna(2021) examined the impact of fluctuations of macroeconomic variables such as exchange rate, lending rates and inflation rates on the manufacturing output in Nigeria. The study used descriptive statistics. The findings revealed that macroeconomic instability impacted negatively on the manufacturing output. The paper therefore recommended that policies that will streamline the multiple and volatile exchange rates, interest rate and inflation control should be designed and implemented to ensure their predictability to aid planning and attract both domestic and foreign investors to the, manufacturing sector. This is expected to increase manufacturing output in Nigeria. The study is relevant to the work because it concentrated on exchange rate, lending rates and inflation rates on the manufacturing output which indicates the performance of the sector, but the researchers did not also examine how foreign exchange rate and crude oil revenue impact the performance of the manufacturing sector. Furthermore, while previous study used descriptive statistics, this study employed the ARDL regression as an inferential statistic for the analysis. Asaleye, Maimako, Inegbedion,Lawal and Ogundipe (2021)investigated the effect of exchange rate on manufacturing performance in Nigeria. The study employed Structural Vector Auto regression (SVAR), ECM and Canonical Co-Integrating regression to examine the shock effect, short and long-run elasticities of exchange rate on the manufacturing performance. While employment and output were used as a proxy for manufacturing sector performance. The findings showed that changes in the exchange rate are fairly elastic with output and employment both in short and long-run. However, changes in the exchange rate are insignificant with employment in the short run. The variance decomposition form of the SVAR showed that forecast error shock of the exchange rate is more prolong on employment than output. The outcome of the result indicated that the Nigerian exchange rate has not improved output and employment in the manufacturing sector. The study is relevant to the work based on the fact that it focuses on exchange rate and manufacturing sector in Nigeria, but while the researchers used SVAR, this study employed the ARDL method. Samuel and Wale-Odunaiya (2021) investigated the consequences of undervaluation of exchange rate in Nigeria on the manufacturing output and economic growth between 1981 and 2019. The Vector Error Correction Mechanism was employed and it was found from the impulse response function that real effective exchange rate does not significantly affect economic growth and it

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is negatively related with manufacturing output. This study is relevant in terms of variables and study area, but its major weakness is it used time series data covering 1981 o 2019, while this research extended the period to 2023 considering the dynamic nature of exchange rate policy in Nigeria. Mlambo (2020) examined the impact of the exchange rate on manufacturing performance in the Southern African Customs Union (SACU) states using the panel group FMOLS and PMG approaches for the period 1995 to 2016. The results showed that the exchange rate, imports and foreign direct investments have a negative relationship with manufacturing performance. Exports and inflation had a positive relationship with manufacturing performance. The study is relevant to the work because it was on exchange rate and manufacturing sector performance, but while the scholar focused on the situation in Southern African Customs Union and used the FMOLS, this study is delimited to Nigeria and used the ARDL Techniques.

Theoretical Framework

The study is anchored on the monetary theory of exchange rate determination developed by Frankel (1976) and supported by Bilson (1978). The theory emphasizes that the demand for money is a function of the different motives for holding money, but that interest rate plays important role in speculative demand for money. According to the theory, interest rate is determined exogenously because there is perfect mobility of factors. The theory states in that in the long-run, nominal money demand is stable and positively related to nominal income, but inversely related of the interest rate. This implies that the higher the level of nominal income, the higher the demand for money, but the higher the rate of interest, they lower the demand for money. This means that the money demand and supply equilibrium can be affected by nominal income and interest rate and this has a lot of effect on changes in exchange rate. Thus, under a fixed exchange rate, the theory argues that excess money supply leads to deficit balance of payment, while depreciation of currency occurs under flexible exchange rate regime.

Methodology

The study used the *expost-facto* design approach as is guide. This design was considered appropriate because the research examined the relationship between variables that cannot be manipulated since time series data were used. The study used annual time series data spanning 1970 to 2023 sourced from World Development Indicators (WDI). This study used the Autoregressive Distributed Lag (ARDL) regression approach in the estimation of the relationship between the variables. The ARDL model was first developed by Pesaran and Shin (1999). The ARDL regression provides consistent estimate of the long run coefficient that are asymptotically normal irrespective of whether the underlying regression are purely 1(0), 1(1) or mutually, integrated. First, ARDL integrates the relationships between variables of interest in the short and long run. Moreover, the ARDL model is beneficial since it uses the lags as instruments to adjust for endogenous regressors and residual serial correlation (Abdul-Mumuni, 2016).

Model Specification

The theoretical basis for the specification of the model is the monetary theory of exchange determination put forward by Frankel (1976) and Bilson (1978) with modification of variables. This theory shows that changes in exchange rate, interest rate and inflation are key determinants of an equilibrium position between domestic and foreign currencies. However, the generic specification of the ARDL model showing both its short-run and long-run relationship is as follows:

$$\Delta Y_t = \beta_0 + \beta_1 Y_{t-1} + \beta_2 X_{t-1} + \beta_3 Z_{t-1} + \sum_{i=1}^{p} \lambda_i \Delta Y_{t-1} + \sum_{i=0}^{p} \psi_j \Delta X_{t-1} + \sum_{i=0}^{p} \phi_j \Delta Z_{t-1} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where:

The model in equation 1 shows that Y represents the dependent variable which in this study is manufacturing sector performance measured as by the percentage of manufacturing sector contribution to the GDP (MGDP), while X and Z shows explanatory variables of the independent variable, namely exchange rate (EXR), inflation rate (INF), interest rate (INR), foreign exchange reserves (FER), foreign direct investment (FDI), balance of payment (BOP) as well as the exchange policy regime dummy (EXP) and exchange rate implementation status (EXS). Also, β_0 is the slope parameter measuring the magnitude of the effect of the independent on the dependent variable, β_1 β_2 and β_3 are the long-run parameters. Furthermore, the model shows that , λ_1, Δ and ϕ are the short-run parameters of the ARDL Model, while ε is the linear stochastic or error term that measures the effect of other variables that can exert influence on manufacturing

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sector performance aside the variables in the specified model. The functional or implicit form of the relationship between exchange rate policy explanatory variables and manufacturing sector performance (MGDP) is expressed as follows:

$$MGDP = f(EXR, INF, INT, FDI, BOP, FXR, EXP, EXS) \quad \text{.....(2)}$$

The explicit specification of the implicit or functional model in equation 2 used the model used in the empirical study of Abiola (2022) that examined impact of exchange rate volatility on the manufacturing sector growth performance in Nigeria, but with modification in terms of variable and study period. The original model used manufacturing sector contribution to GDP as dependent variable, while exchange rate, inflation rate, interest rate, manufacturing foreign direct investment and imports were used as explanatory variables of the independent variable. The modified model following the dynamic ARDL Error Correction Model (ARDL-ECM) explicit model from equation 2takes the form:

$$\Delta MGDP_t = \beta_0 + \beta_1 MGDP_{t-i} + \beta_2 EXR_{t-i} + \beta_3 INF_{t-i} + \beta_4 INT_{t-i} + \beta_5 FDI_{t-i} + \beta_5 BOP_{t-i}$$
$$+\beta_5 FXR_{t-i} + \beta_5 EXP_{t-i} + \beta_5 EXS_{t-i} + \sum_{i=1}^{p} \lambda_i \Delta MGDP_{t-i} + \sum_{i=0}^{p} \psi_j \Delta EXR_{t-i} + \sum_{i=0}^{p} \phi_j \Delta INF_{t-i}$$
$$\sum_{i=1}^{p} \theta_j \Delta INT_{t-i} + \sum_{i=0}^{p} \delta_j \Delta FDI_{t-i} + \sum_{i=0}^{p} \sigma_j \Delta BOP_{t-i} + \sum_{i=0}^{p} \partial_j \Delta FXR_{t-i} + \sum_{i=0}^{p} \omega_j \Delta EXP_{t-i}$$
$$+\sum_{i=0}^{p} \eta_j \Delta EXS_{t-i} + \rho_i ECM_{t-1} + \varepsilon_t \quad (3)$$

The ARDL model in equation 3 captures both short-run and long-run relationship between the variables and the Error Correction Mechanism (ECM). The Error Correction Model denoted by ECM_{t-1}measures the adjustment path to a long-run equilibrium relationship between the variables, where ρ is a parameter used to determine the speed of adjustment or adjustment path from short-run disequilibrium due to a shock to a long-run equilibrium level. Three conditions necessary for this adjustment are that the sign of the coefficient of ECM_{t-1} must be negative, its coefficient must be less than one and statistically significant to ensure convergence of the dynamics to the long-run equilibrium. Also, from the model, the p's are the lag length and ε_t is the error term.

Table 2: Results of ADF Unit Root Test

Variable	ADF-Test Coefficients		PP-Test Coefficient	
	Coefficient	Order of Integration	Coefficient	Order of Integration
MGDP	-6.741853 (0.0000)	1(1)	-6.799991 (0.0000)	1(1)
BOP	-7.353843 (0.0000)	1(1)	-8.007067 (0.0000)	1(1)
EXR	-5.583285 (0.00439)	1(1)	-3.419037 (0.0060)	1(1)
FDI	-4.408693 (0.0000)	1(0)	-4.363607 (0.0010)	1(0)
INF	-3.587285 (0.0093)	1(0)	-3.410966 (0.0049)	1(0)
INT	-10.12042 (0.0000)	1(1)	-10.25634 (0.0000)	1(1)

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FXR	-6.377287 (0.0000)	1(1)	-6.572975 (0.0000)	1(1)

Source: Eviews 13

The results of both the Augmented Dickey-Fuller (ADF) and Philip-perron unit root tests revealed that inflation(INF) and foreign direct investment (FDI) were integrated at level,1(0),while manufacturing sector contributions to GDP, exchange rate (EXR), balance of payment (BOP), interest rate and foreign reserves (FXR).The results further indicated the ADF and PP unit root test are two different ways of assessing the order of integration of trending pattern of data in regression analysis. The results revealed the presence of different order of integration, that 1(0) and 1(1), justifying the need for the estimation of the mode using the Autoregressive Distributed Lag (ARDL) estimation technique.

Table: Results of ARDL Short-Run Estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MGDP(-1))	-0.145917	0.102694	-1.420893	0.1831
D(MGDP(-2))	-0.544033	0.128601	-4.230385	0.0014
D(BOP)	0.164474	0.044570	3.690266	0.0036
D(BOP(-1))	0.003034	0.027486	0.110392	0.9141
D(BOP(-2))	0.082227	0.029754	2.763522	0.0184
D(EXP)	0.266411	0.800870	0.332652	0.7457
D(EXP(-1))	-5.988046	1.265822	-4.730559	0.0006
D(EXR)	0.007246	0.005795	1.250471	0.2371
D(EXR(-1))	0.041319	0.013609	3.036092	0.0113
D(EXR(-2))	0.234912	0.029707	7.907515	0.0000
D(EXR(-3))	0.041939	0.019752	2.123304	0.0572
D(EXS)	-5.809726	0.812873	-7.147151	0.0000
D(EXS(-1))	1.365552	1.117211	1.222287	0.2471
D(EXS(-2))	1.468303	0.639979	2.294300	0.0425
D(EXS(-3))	4.338229	0.648818	6.686361	0.0000
D(FDI)	0.044448	0.085603	0.519231	0.6139
D(FDI(-1))	-1.231743	0.193127	-6.377908	0.0001
D(FDI(-2))	-1.058788	0.155896	-6.791616	0.0000
D(FDI(-3))	-0.371417	0.100246	-3.705063	0.0035
D(FXR)	0.163182	0.029840	5.468553	0.0002
D(FXR(-1))	0.491533	0.070114	7.010452	0.0000
D(FXR(-2))	0.350105	0.060227	5.813137	0.0001
D(FXR(-3))	0.312851	0.068144	4.591048	0.0008
D(INF)	-0.019672	0.015189	-1.295196	0.2218
D(INF(-1))	0.011747	0.012543	0.936533	0.3691
D(INF(-2))	0.064743	0.014149	4.575830	0.0008
D(INT)	-0.404728	0.082860	-4.884454	0.0005
D(INT(-1))	-0.136646	0.082348	-1.659370	0.1253
D(INT(-2))	-0.211217	0.059794	-3.532403	0.0047
CointEq(-1)*	-0.322724	0.130677	-7.826325	0.0000

R-squared	0.925361	Mean dependent var	0.106800
Adjusted R-squared	0.817134	S.D. dependent var	1.785749
S.E. of regression	0.763638	Akaike info criterion	2.582263
Sum squared resid	11.66285	Schwarz criterion	3.729477
Log likelihood	-34.55657	Hannan-Quinn criter.	3.019129
Durbin-Watson stat	2.239436		

Source: *Eviews 13*

The results of short-run estimation in Table 3 revealed that MGDP (-1) had a coefficient of 0.145917 and probability value (p-value) of 0.1831, which means that at lag one, MGDP in the short-run had an insignificant negative effect of the current value of MGDP as a measure of manufacturing sector performance. The findings showed that MGDP (-2) had a coefficient

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of -0.544033 and p-value of 0.0004 or p<0.05. This implies that two years previous values of MGDP had significant negative effect on its current value. The implication of this finding is that in the short-run, the current value of manufacturing sector performance does not depend on its previous values. The results of analysis revealed that balance of payment (BOP) had a coefficient of -0.544033 and p-value of 0.0014 or p<0.05. The results support theoretical postulation that balance of payment is supposed to impact positively on manufacturing sector performance in Nigeria. The t-statistic of -4.230385 falls within the rejected region; hence the null hypothesis was rejected and the conclusion is that BOP in the current period had significant negative effect on manufacturing sector performance in Nigeria. This implies a unit increase in BOP was associated with 54.4% decreases in manufacturing sector performance in Nigeria. This could be attributed to the over-dependence of Nigeria on foreign manufactured goods, leading to excessive spending and unfavourable balance of payment. Furthermore, the results showed that exchange rate (EXR) had a coefficient of 0.007246 and p-value of 0.2371 which means p>0.05. This contradicts the *apriori*expectation, a situation that could be attributed to the volatile nature of the dollar to naira exchange rate experienced in Nigeria that led to currency depreciation. However, EXR(-1) had a coefficient of 0.041319 and p-value of 0.0113 or p<0.05.The t-statistic had a coefficient of 3.036096 signifying that it falls within the rejection region; hence the study rejected the null hypothesis and the conclusion drawn is that in the short-run, the two years previous values of exchange rate had significant positive effect on manufacturing sector performance. Similarly, the results established that foreign direct investment (FDI) in the sector had a coefficient of 0.044448 and p-value of 0.6139, indicating an insignificant positive effect of current value of FDI on manufacturing sector performance. The positive coefficient of FDI agrees with the assumption in theory that foreign direct investment is expected to impact positively on manufacturing sector performance in the domestic economy, owing to its perceived role in raising local output and contribution of the sector to the Gross Domestic Product. The findings showed that FDI(-1) had a coefficient of -1.231743 and p-value of 0.0001 or p<0.05, meaning that the t-statistic falls within the rejection region. Based in this, the null hypothesis was rejected and the conclusion drawn is that one-year previous or lag value of FDI had significant negative effect on manufacturing sector performance. Also, foreign exchange reserves (FXR) had a coefficient of 0.163182 and probability value of 0.002 which is less than 0.05 level of significance. The null hypothesis was rejected because the t-statistic of 5.468553 was found to be in the rejection region and the study concluded that in the shot-run, FXR had significant positive effect on manufacturing performance in Nigeria. The findings support with the expectation in economic theory because foreign exchange reserve is expected to be used stabilize the economic whenever there are negative shocks; hence the relationship between FXR and manufacturing sector performance is expected to be positive and significant. The results further revealed that a unit increase in foreign exchange reserves leads to about 16.32% significant effect of the performance of the manufacturing sector in the economy. This justifies the theoretical postulation that an increase in reserves, raises domestic production and exports promotion. Also, exchange rate implementation regime dummy (EXP) had coefficient of 0.266411 with a p-value of 0.7457 or p>0.05,while EXP(-1) had a coefficient of 0.041319 and a probability value of 0.0113 which means that p<0.05.These findings imply that current value of exchange rate implementation dummy had insignificant positive effect, while previous year value of exchange rate implementation policy dummy had significant positive effect on the performance of manufacturing sectors in Nigeria. This implies that an increase in manufacturing sector performance was attributed to the implementation of floating exchange rate policy. The findings showed that exchange rage implementation status (EXS) dummy which measures the effect of full or managed exchange status on the performance of manufacturing sector had a coefficient of -5.809726 and a probability value of 0.6139, which shows that p>0.05, while the two years previous value of EXS (-2) had a coefficient of 1.468303 and probability value of 0.0425 which shows that p<0.05,indicating that the current value of exchange rate implementation status (EXS) dummy had insignificant negative effect on the performance of manufacturing sector, while two years previous value of exchange rage implementation status (EXS) dummy had significant positive effect on the performance of manufacturing sector in Nigeria. The positive and negative coefficients of EXS suggest in Nigeria, the exchange rate implementation status have witnessed periods of both favourable and unfavourable exchange rate despite the exchange rate regime implemented. These findings could be link to economic realities experienced in Nigeria over the years. For instance, due to the oil boom of 1970 to 1970, there was stability in the exchange rate, making the policy favourable but between 1981-1993 the exchange implementation was unfavourable to the domestic economy because of the oil price crash that was associated with devaluation of currency. Also, between 1993 to 1999 the policy was unfavourable because of political instability and foreign exchange restriction. Again, by 1999 to 2007, favourable exchange was experienced as results of the

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implementation of economic reforms including managed exchange rate policy and increased foreign reserves. Nigeria also experienced an unfvourable exchange rate between 2008 to 2016 majorly due to the emergence of the global financial crisis attributed to collapse of the U.S Prime mortgage and oil crash, but by 2017 to 2019, foreign exchange reforms were implemented leading to increased reserves and favourable exchange rate policy. Furthermore, between 2020-2023, the outbreak of the covid-19 pandemic led to unfavourable exchange rate in Nigeria, because the pandemic led to the implementation of many protocol that affected production, including manufacturing sector performance. The results of the adjusted R square revealed that 81.71 percent of the changes or variations in manufacturing sector performance were explained by changes or variables in the explanatory variables of exchange rate policy and the conclusion is that the estimated model was found to be a good-fit of the relationship between exchange rate policy and manufacturing sector performance in Nigeria.

Discussion of Findings

The findings from reviewed literature revealed that over the years, both the fixed and floating exchange rate policy have been implemented, but the impact of each regime on manufacturing sector is still a debating issue in Nigeria. The results of short-run estimation revealed that manufacturing sector contributions to the Gross Domestic Product (MGDP (-1)) had significant negative effect on its current value of manufacturing sector performance. That is, in the short-run, the manufacturing sector performance does not significantly depend on its previous year value. The results of analysis revealed that balance of payment (BOP) had significant negative effect on manufacturing sector performance in Nigeria. This could be attributed to the over-dependence of Nigeria on foreign manufactured goods, leading to excessive spending and unfavourable balance of payment. This findings supports that of Adebanjo, Oluwasegun, Adegbola, Festus, Peter, Ben-Caleb, Bamisele, Niyi-Oyebanji and Damilola (2019) who reported that exchange rates, imports and manufacturing foreign direct investment have a negative significant relationship with the performance of the Nigerian manufacturing sector, but contradicted that of Onwuka (2021) who found that in the long run import which is an integral component of balance of payment had insignificant positive effect on manufacturing performance in Nigeria. The findings revealed that short-run exchange rate (EXR) had insignificant positive effect on manufacturing sector performance, while two years previous values of exchange rate had significant positive effect on manufacturing sector performance. This implies that in the short-run, an increase in exchange was associated with an insignificant increase in manufacturing sector performance. Adebanjo, Oluwasegun, Adegbola, Festus, Peter, Ben-Caleb, Bamisele, Niyi-Oyebanji and Damilola (2019) in their study revealed a devaluation of the Naira has a negative impact on the performance of the Nigerian manufacturing sector as it was found that exchange rate has a negative significant long run relationship with the performance of the sector. The long-run results showed an insignificant negative effect of exchange rate on manufacturing sector performance in Nigeria. Tonye and Gbarawae (2023) found a positive and statistically significant relationship between the exchange rate and the performance of the manufacturing sector. Also, the insignificant negative effect of exchange rate on manufacturing sector performance which agrees with economic theory suggest that even if there is appreciation in the value of domestic currency, the effect may real sector activities, including manufacturing sector may not last long because of the volatile nature of exchange rate and instability in the financial sector in Nigeria. This supports the findings of Udeagbala (2022), that the low performance of the sector could be attributed to the scarcity of foreign exchange, difficulty in access to credit, rising cost of raw materials, high cost of energy and poor infrastructural facilities. The results revealed that short-run foreign direct investment (FDI) had insignificant positive effect of current value of FDI on manufacturing sector performance. Contrary to this, Nwafor (2022) in their study found a negative correlation between FDI and manufacturing output, and that this correlation is statistically significant. The long-run findings showed a significant positive effect of foreign direct investment on manufacturing sector performance. The positive relationship between FDI and manufacturing sector performance agrees with the assumption in theory that foreign direct investment is expected to impact positively on manufacturing sector performance in the domestic economy, owing to its perceived role in raising local output and contribution of the sector to the Gross Domestic Product. The findings showed that foreign exchange reserves (FXR) in the shot-run had significant positive effect on manufacturing performance in Nigeria, while long-run estimates indicated that foreign reserves had significant positive effect on manufacturing sector performance. This agreed with the findings of Oke and Olaiya (2021) who found foreign reserve has a positive effect but in significant effect on Nigerian manufacturing sector's performance. The findings support with the expectation in economic theory because foreign exchange reserve is expected to be used stabilize the economic whenever there are negative shocks; hence the relationship between FXR and manufacturing sector

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performance is expected to be positive and significant. This results further validate the theoretical postulation that an increase in foreign or external reserves, raises domestic production and exports promotion. The results of analysis found that inflation rate (INF) had in the short-run, the current value of inflation had an insignificant negative effect on the performance of manufacturing sector. Ogbu (2018) studied the relative effect of interest and currency rate variations on industrial production in Nigeria and found that interest rate and currency rate changes had short term positive influence on the production of manufacturing sector, which implies that manufacturing output in Nigeria is a function of interest and currency rates. Anthonia and Taiwo (2017) examined the impact of interest rate changes on Nigeria's manufacturing sector. The empirical findings showed that interest rates had a detrimental effect on value added and capacity utilization in Nigeria's manufacturing sector. It was also shown that interest rate changes have a long-term effect on the productivity of Nigeria's industrial sector. In the long-run also, inflation had insignificant statistically negative effect on manufacturing sector performance in Nigeria. This finding supports inverse relationship that exist between inflation and manufacturing sector performance because it indicates that the higher the price level, the higher the cost of incurring inputs like raw materials required for increased production in manufacturing sector. Oduor *et'al*., (2021) investigated the effect of inflation on growth of manufacturing sector and found that inflation has a statistical and significant negative effect on the growth of the manufacturing sector. The negative relationship between the variables further justifies the assumption in literature that inflationary pressure in the economy lowers manufacturing sector output and supply which are key measures of performance. Ugwoke (2022) found that the manufacturing sector which depends heavily on imported raw materials and capital and intermediate goods has severely been affected in recent time by the sharp decline in the value of naira and the concurrent rise in the exchange rate. In Nigeria, inflation remains a serious macroeconomic problem that have negative multiplier effects on both the money and real sectors of the economic owing to its impact on money demand and cost of production. Adegbemi (2018) carried out a study on the macroeconomic dynamics and the manufacturing output in Nigeria and found that there exists a negative relationship between inflation rate, interest rate, exchange rate, broad money supply and manufacturing output. The results indicated that in the short-run, interest rate (INT) had significant negative effect on manufacturing sector performance in Nigeria.The long-run coefficient also revealed that interest rate had significant negative effect on manufacturing sector performance. Onwuka (2021) study found that exchange rate volatility, interest rate and inflation rate had a negative impact on the performance of manufacturing sector in the long run while import and gross capital formation have a positive effect on manufacturing performance in the long run. The finding from both the short-run and long-run results is in consonance with the expectation in economic theory that manufacturing sector performance is inversely related to the interest rate because an increase in interest rate makes loanable funds expensive and lowers money demand and investment in the goods sector, thereby limiting output and manufacturing sector performance in Nigeria. Chukwuani and Ezeudo (2018) found that inflation rate and interest rate have significant impact on manufacturing sector output both in the short-run and long-run and recommended that adequate allocation of credits to the sector will positively increase the sectoral output which will in turn promote economic growth and development. Also, the analysis showed that in the short-run, exchange rate implementation regime dummy (EXP) had insignificant positive effect, while previous year value of exchange rate implementation policy dummy had significant positive effect on the performance of manufacturing sectors in Nigeria. The long-run estimates showed that exchange rate implementation regime policy had insignificant positive effect on manufacturing sector performance. These findings indicates that in both short-run and long-run, the effect of exchange rate policy regime implemented which could be fixed or floating on manufacturing sector performance was found to be positive and statistically insignificant. Nwokoro (2017) stated that improving the performance of the manufacturing sector by reducing import dependence and promoting manufacturing for export, one of the major objectives of the reform was exchange rate deregulation which allowed exchange rate determination to be market driven. In Nigeria, the fixed exchange regime implemented between 1970 to 1985 was associated with favourable exchange rate, while floating exchange rate implemented between 1986 to 1999 led to an unfavourable exchange rate. This justifies the fact that the stability of exchange regime and its effect on real sector activities in developing countries like Nigeria that are characterized by the Dutch disease syndrome and also vulnerable to external shocks in international market, the effect of exchange rate policy may not only be insignificant, it may be for a short-term. This may be so because if there is an increase in the exchange rate, domestic currency depreciates, thereby impacting negatively on manufacturing sector, while a decrease in exchange rate leads to domestic currency appreciation and increase manufacturing sector performance, but this may not last longer because of the volatile nature of the exchange rate. Nsofo,

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Takson andUgwuegbe (2017) observed that the ability of the manufacturing industry to imports input materials depend on the level of the exchange rates. It is evident that most organisations source their inputs externally; hence the devaluation or depreciation of exchange rate tends to impede the performance of the sector. The findings showed that exchange rage implementation status (EXS) dummy had insignificant negative effect on the performance of manufacturing sector. The results revealed that in the long-run; exchange rage implementation status (EXS) had significant negative effect on manufacturing sector performance in Nigeria. These results indicated that in the long-run an increased in exchange rate implementation policy which signifies a depreciation in the value of domestic currency (unfavourable exchange rate policy) was associated with a decrease in the performance of the manufacturing sector. Modebe and Ezeaku (2016) revealed that inflation and interest rate have negative and non-significant effect on manufacturing sector growth while exchange rate appear to positively and significantly influence the growth of manufacturing sector value added. In Nigeria, the exchange rate policy has been largely unfavourable because between 2020 to 2023, the outbreak of the covid-19 pandemic and its associated protocol impacted negatively on manufacturing sector performance. This was the case between 1981 to 1999 that was characterized by global oil crash, devaluation of currency that became the order of the day with the introduction of SAP as well as political instability experienced in the country. The scenario repeated itself between 2008 to 2016 due to the collapse of the U.S Prime Mortgage that caused the global financial crisis and another crash in the international oil prices.

Conclusion

The review of literature shows that in developing economies, exchange rate policy plays crucial role in real sector activities. The findings revealed that in the short-run results revealed that balance of payment had significant negative effect on manufacturing sector performance. The results revealed that short-run exchange rate had insignificant positive effect on manufacturing sector performance, while the long-run results showed an insignificant negative effect of exchange rate on manufacturing sector performance. The findings showed that foreign exchange reserves in the shot-run had significant positive effect on manufacturing performance and in the long-run estimates indicated that foreign direct investment had significant positive effect on manufacturing sector performance. Also, the results showed that in both short-run and long-run, exchange rate implementation regime dummy had insignificant positive effect on manufacturing sector performance. The results revealed that exchange rate implementation status dummy had insignificant negative effect on the performance of manufacturing sector, while in the long-run it had significant negative effect on manufacturing sector performance. The study concluded that exchange rate policy affects manufacturing sector performance in Nigeria.

Recommendations

1. The Central Bank of Nigeria should offer special credit facilities at low interest rate to manufacturers to enable them access investment financial resources necessary for increase manufacturing sector performance.
2. Government should simplify foreign direct regulations and provide functional infrastructure to attract more foreign direct investment in the manufacturing sector so as to raise the sector's output and performance.
3. To ensure that the balance of payment contributes to manufacturing sector activities, government should promote export diversification by providing incentives that encourage a wide range of manufacturing sector firms and export-related products, as well as import substitution policy that promote "made in Nigeria".
4. The government through the monetary authority should implement effective exchange rate management policy to avoid exchange rate swings and encourage manufacturing sector investment stability in order to raise the level of performance of the manufacturing sector.

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Evaluation of Relevance of Instructional Materials for Teaching and Learning of Economics among Senior Secondary Schools in North West, Nigeria

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Abstract

This research examined the Evaluation of Relevance of Instructional Materials for Teaching and Learning of Economics among Senior Secondary Schools in North West, Nigeria. The main objective of this study is to evaluation the relevance of instructional materials for teaching and learning of Economics in senior secondary schools in North West, Nigeria. The study established one specific objective, one research question and one null hypothesis which were subsequently tested for the study. The study reviewed two related theories, concepts and thirty (30) relevant empirical studies. The study employed a descriptive survey research design. The target population of the study comprised of one hundred and eight thousand, nine hundred and seventy-four (108,974) respondents which included Senior Secondary School Two (SS II) Economics students and Economics teachers from the seven states of the North West Geo-Political Zone of Nigeria. A sample size of three hundred and eighty-four (384) respondents were selected for the study using multistage sampling techniques. However, a 4-point-likert scale questionnaire with fifty (50) items was used as instruments for this study. The instrument was pilot tested and the reliability coefficients of 0.85 was obtained using Cronbach's Alpha. The data collected was analyzed using descriptive and inferential statistic. Frequency and mean was used to analyze the research questions while the two null hypotheses were tested using Mann-Whitney U-test at 0.05 level of significance. This is because, the data obtained was ordinal and discreet in nature. The results indicated the retaining of the hypothesis at a significance level of 0.05. The study's findings revealed that, instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria were relevant. The study concluded that, instructional materials were generally relevant for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria. Based on the findings and conclusion of this study, the following recommendation was made: Governments, policymakers, and school management should provide and sustain the provision of relevant instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria. This could be done by ensuring school heads, head of departments, and head of subjects take regular supervision of lessons to ascertain the instructional materials relevance, proper utilization, handling and storage. Furthermore, School heads should also encourage the school PTA for their continuous supply and supports in the aspect of instructional materials.

Key Words: Relevance, Instructional Materials, Teaching and Learning.

Introduction

Instructional materials encompassed all types of teaching and learning materials that can be used to make lesson explicit to the learners. They can be grouped or classified into different forms and types to serve multifarious purposes and functions in classroom instructions. The proper use and accessibility of educational resources in the study areas are the only factors that determine how well teaching and learning processes work. The inability of teachers to use appropriate teaching resources, inadequate lesson plans, flawed curriculum objectives, inappropriate teaching methods, and, most importantly,

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ineffective teacher delivery are some of the negative factors that contribute to low student academic performance, issues with curriculum delivery, and ineffective Economics proficiency. It is unethical for some teachers to use traditional teaching methods during class time at the expense of appropriate teaching resources, controlling the activities by making their students passive or unresponsive. Therefore, it is necessary to assess the actual situation in the research region. In order to fill the vacuum, this kind of research must also be conducted. Ineffective teacher instruction, poor academic performance syndromes, misuse, inaccessibility, inadequacy, operational issues, and a lack of instructional materials, along with students' severe failures in internal and external exams in the majority of Nigerian North Western Secondary Schools, were the driving forces behind this study. However, the lack of access, under-utilization, and non-operational conditions of the teaching and learning resources for Economics may also lead to teacher and student dissatisfaction, which may result in poor academic performance and learning challenges for secondary school pupils. In essence, it bemoans the fact that, most Nigerian secondary schools, especially those in the North West, lack teaching materials that are entirely unavailable, irrelevant, inaccessible, non-operational, or non-existent (Yusuf, 2018). While teachers struggle to improvise or have access to the absent ones, some are available but out-of-date. Research on the effects of assessing the availability and use of educational resources on teaching and learning processes is also being called for. These sincerely demanded that this kind of research be done in order to close the gaps that were already there.

Statement of the Problem

The decline of Economics education in senior secondary schools in North West Nigeria is alarming and could likely be attributed to inefficient Economics instructional delivery, poor Economics curriculum implementation, slow rate of learning, poor students' academic performance, massive failures, lack of practical skills, poor teaching skills, lack of improvisational skills, lack of relevant instructional materials, teachers' unpreparedness, as well as teachers' inability to avail themselves with the appropriate and relevant instructional materials required for effective Economics teaching and learning processes. These are serious and most alarming problems facing Economics educations in all the states in the North West, Geo-Political Zone of Nigeria. They also portrayed the necessity of conducting a research to evaluate the relevance of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North Western Nigeria. Furthermore, according to WAEC Chief Examiners' Reports of (2022), candidates showed terrible and unquantified weakness or deficiency in their abilities to draw graphs, read from the drawn graphs or apply graphical representations to Economics analysis during examination. These also unveiled and illustrated the gravity and intensity of the problems associated with unavailability and non-utilization of relevant instructional materials in teaching and learning of Economics in the study area. Azi and Dajan (2022), added that, the dearth of instructional materials has gradually affected lesson delivery, students' learning activities and performance in Economics. Furthermore, Yusuf (2018), disclosed that, Economics students continue to perform lamentably poor in their external and internal examinations which resulted in ineffective educational delivery and poor academic achievements due to the unskilled utilization or unavailability of the relevant instructional materials in North Western secondary schools. These problems necessitated the conduct of this research in order to evaluate the relevance of these instructional materials for teaching and learning of Economics in Nigerian North Western Senior Secondary Schools.

Objectives of the Study

The objectives of the study was to:

1. identify the relevance of instructional materials for teaching and learning of Economics among Senior Secondary Schools in North West, Nigeria;

Research Questions

The study answered the following research question:

1. What is the relevance of instructional materials for teaching and learning of Economics among Senior Secondary Schools in North West, Nigeria?

Hypotheses

The study was guided by the following research hypothesis:

H_{O1}: There is no significant difference in the relevance of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria.

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Concept of Instructional Materials

Instructional materials encompassed all types of teaching and learning materials that are used by Economics teacher to facilitate instruction, make lesson explicit to learners, promote problem solving, collaborative and decision making skills. Guga (2019), explained that, instructional resources are all materials the teacher uses to facilitate and concretize learning. These instructional resources are further classified into tangible and intangible materials. At the same time, Uyagu and Bara'u (2018), opined that instructional resources refer to all things (human and non-human) that are purposefully used to make teaching and learning more meaningful and productive. Further, Mohammed and Abdullahi (2019), opined that, the instructional materials teachers and students utilize to facilitate effective teaching and learning are known as teaching aids. Different information carriers are used as instructional resources or materials to record, store, preserve, transfer, or retrieve information for educational purposes, (Yusuf, 2018). Bara'u (2020), added that, instructional materials refer to a collection of human and non-human resources that a teacher can utilize in a teaching and learning environment to achieve the intended set objectives in a particular session. However, instructional materials have significant influence on teaching and learning of Economics and academic performance when properly utilized. They can also make learning interactive and collaborative, motivate learners, facilitate instructions and students' retention rate. Moreover, Instructional materials can be grouped, classified or categorized into different types and sub-groups to serve multifarious purposes and functions in classroom instructions as followed: Audio instructional materials, visual instructional materials, audio-visual instructional materials, display instructional materials, multimedia instructional materials, printed instructional materials, graphic instructional materials, human instructional materials, infrastructural instructional materials, financial instructional materials, time instructional materials and community instructional materials.

Concept of Relevance of Instructional Materials

The relevance of instructional materials refers to the qualitative natures of instructional materials of being appropriate, relevant, satisfied, adequate and applicable to all Economics teaching and learning processes. For instructional materials to be relevant, they must be simple, available, adequate, audible, visible, durable, practicable and accurate in any teacher delivery which enhances learning and students' active participation. When properly sorted out, instructional materials help teachers to make lesson explicit to the learners, help students improve their academic performance, study habits and practical skills. It is parts of instructional materials relevance to assist teachers in imparting knowledge and information to learners, by facilitating instructions and clarifying ideas or difficult Economics concepts. The irrelevance and inappropriateness of instructional materials distract Economics classroom instructions, dull the class and render teachers' efforts useless and abortive. Umeohana (2024), stated that, instructional materials are fundamental, their relevance are contingent upon how well they align with the curriculum objectives. The relevant choice of instructional materials in Economics teacher delivery and facilitate the alignment of the curriculum elements such as objectives, contents, instructional methodology and evaluation. Umeohana (2024), added that, the relevance of instructional materials signifies appropriateness, significance and importance of instructional materials in designing educational contents, learning objectives and competencies in enabling hands-on learning and practical application of concepts. Essentially, teachers' efforts in ensuring effectiveness in teaching and learning processes must comply to the rules and regulations guiding the relevance of instructional materials. Moreover, the relevance of instructional materials often ease instructions, simplify difficult concepts, strengthen effective learning activities, improve academic performance, stimulate students' interest, boost retention rate, save time and help clarify complex concepts in Economics. Tety (2016), revealed that, the schools that possess adequate or relevant teaching and learning materials such as textbooks, charts, pictures, real objectives for students to see, hear and experiment with, stand a better chance of performing well in examination than poorly equipped ones. Therefore, the relevance of instructional materials in teaching and learning of Economics cannot be over emphasized.

Methodology

The research employed a descriptive survey research design. Specifically, in this design, the researcher used a survey method. The population of this study was one hundred and eight thousand, nine hundred and seventy-four (108,974) respondents comprising all Economics teachers and students in Senior Secondary Schools in North West, Nigeria. It also included one hundred and five thousand, seven hundred and nineteen (105,719) Senior Secondary School Two (SSII) Economics students and three thousand, two hundred and fifty-five (3,255) Economics teachers from the seven states of the North West Geo-Political Zone of Nigeria. The study's respondents were spread across one thousand, six hundred and

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twenty-four (1,624) Senior Secondary Schools that were offering Economics in the seven (7) states of the North West Geo-Political Zone of Nigeria, namely Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto and Zamfara states. The total sample size of this study comprised three hundred and eighty-four (384) respondents sampled from Economics teachers and students in the study area. This was based on the recommendation of Research Advisor 2006 under 95% confidence, (Dada, 2016). Multistage sampling techniques were employed in the selection of sampled teachers, students and schools. Firstly, the simple random sampling procedure was used in selecting fifty-eight (58) Economics teachers from one thousand, eight hundred and sixty-five (1,865) Economics teachers from the three sampled states. Secondly, the three hundred and twenty-six (326) sampled students were selected using proportionate sampling procedure whereby each sampled state contributed a proportion to the sample size based on their population strength. However, proportionate sampling procedure was also used in selecting fifty (50) schools out of eight hundred and seventy-six (876) schools as the school sample size. Thirdly, three (3) sampled states were chosen by assigning numbers to all the seven states; then, all the even numbers were systematically taken as the sample size. The instrument used for this study was the researcher self-designed questionnaire for both teachers and students using a four (4) modified Points Likert Scale. It was divided into sections A - E which contained fifty (50) items that required respondents' responses. The instrument used for this study was validated by some experts from Department of Educational Foundations and Curriculum, Faculty of Education Ahmadu Bello University, Zaria. The researcher carried out a pilot test at Alhudahuda College Zaria, Kaduna State, Nigeria in order to assess the effectiveness of the instrument to be used. The test was conducted in the school which was not part of the sample size where twenty (20) copies of the instrument were administered to three (3) teachers and seventeen (17) students in the pilot school. The results were computed while the Cronbach's Alpha was employed to determine the Reliability Coefficient of the pilot test. The reliability coefficient of the instrument was assessed following a successful pilot test conducted with twenty (20) copies of the instrument from the pilot school. The test–retest reliability method was employed and the results were analyzed using Cronbach's Alpha. The obtained Cronbach's Alpha value was 0.85 which was in proximity to one (1). However, Aliyu (2023), opined that, any reliability index ranging from 0.5 and above can be deemed high enough for use in real research. Therefore, the instrument used demonstrated high reliability and consistency for the intended study, as the results was close to one (1). This justified the use of the instrument and made it reliable for the study proper. The research was set by taking an introductory letter obtained from the Department of Educational Foundations and Curriculum, Faculty of Education, Ahmadu Bello University, Zaria to all the Principals of the sampled schools which solicited permission to use their Economics teachers and students in the collection of data for the study. The data collected were analysed using descriptive and inferential statistics. The research questions were analysed using frequency and mean while non-parametric statistics, specifically the Mann-Whitney U-Test was employed to test all the five null hypotheses formulated for the study at 0.5 level of significance.

Presentation of Results

This section presented the results of data analysis, discussion and interpretations of the findings based on the data gathered during the course of this study. Essentially, the analysis involved analyzing of the research questions using descriptive statistics of frequency and mean and statistical testing of the hypotheses formulated for the study using inferential statistics of Mann-Whitney test at 0.05 level of significance.

Analysis of Research Question

This section presented the analysis of research question raised during the course of this study which was analysed using descriptive statistics of frequency and mean. The bench mark for acceptance was 2.5. The research question and its analysis was presented in Tables 1 as follow:

Research Question One: What is the relevance of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria?

In order to answer this research question, the data collected on the relevance of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria was analysed using frequency and mean. The outcomes of this analysis was succinctly summarized in Table 1 as follows:

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Table 1: Frequency and Mean on the Relevance of Instructional Materials for Teaching and Learning of Economics in Senior Secondary Schools in North West, Nigeria.

S/N	Item statements	N	ER	R	SR	NR	Mean
1	Radios, public address system, audio books, cassette players, audio CD players, podcasts, audio tapes, microphones, recordings, tape recorder and loudspeaker are relevant for teaching and learning of Economics in my school.	384	155	108	3	118	2.9
2	Blackboards, whiteboards, magnetic boards, bulletin boards, flashcards, slides, e-books, e-journals, drawings, pictures and photographs are relevant for teaching and learning of Economics in my school.	384	21	210	143	10	2.6
3	Educational television, videos, documented films, filmstrips, projector, films projectors, sound slide, videotapes and interactive video are relevant for teaching and learning of Economics in my school.	384	160	126	18	80	3.0
4	Posters, models, specimen, display board, felt board display, realia, real objects, cartoons, cartograms, photographic print and local currency are relevant for teaching and learning of Economics in my school.	384	151	115	18	100	2.8
5	Computers, mobile phones, I pads, tablet device, smart boards, internet, internet facilities and multimedia board are relevant for teaching and learning of Economics in my school.	384	144	107	21	112	2.7
6	Charts, graphs, graph sheets, diagrams, tables, maps, globes, atlases, flow charts and pie charts are relevant for teaching and learning of Economics in my school.	384	40	210	116	18	2.7
7	Digital charts, digital graphs, digital diagrams, digital tables, infographics, powerpoint presentation and projected maps are relevant for teaching and learning of Economics in my school.	384	146	124	28	86	2.9
8	Newspapers, magazines, periodicals, pamphlets, journals, articles, gazettes, wall newspapers and workbooks are relevant for teaching and learning of Economics in my school.	384	126	108	16	134	2.6
9	Textbooks, handouts, structured notes, assignment sheets, factsheets, wall charts, flipcharts, dictionaries, course and study guide are relevant for teaching and learning of Economics in my school.	384	138	144	21	81	2.9
10	Interactive whiteboard, multimedia projector, DVD, VCD, CD, slide projector, Economics simulators, printers and scanners are relevant for teaching and learning of Economics in my school.	384	104	181	47	52	2.9
	Cumulative Mean						**2.8**

Source: *field work (2025)/Bench Mark 2.5*

Table 1 presented the analysis of responses on the relevance of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria. The cumulative mean was 2.8 which is greater than the 2.5 benchmark. This implied that, instructional materials were relevant for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria.

Test of Hypothesis

This section presented the analysis of the formulated null hypotheses during the course of this study which were tested using the inferential statistical tool of Mann Whitney Test at 0.05 level of significance. The summaries of the test analysis were presented in Table 2 as follow:

Hypothesis: There is no significant difference in the relevance of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria. To test this null hypothesis, Mann-Whitney (U-test) statistic was used. The summary of the analysis is presented in Table 2 as follows:

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Table 2: Summary of Mann Whitney Test Analysis on the Relevance of Instructional Materials for Teaching and Learning of Economics in Senior Secondary Schools in North West, Nigeria.

Variables	N	df	H-cal.	P-Value	Decision
Teachers					
	384	382	81.000	.266	Retained
Students					

P-Value = 0.266 > α = 0.05

Table 2 presented the Mann Whitney Test analysis result which revealed H.cal value equal to 81.000 and the P-value equal to 0.266. The calculated P-value of 0.266 is greater than the alpha value of 0.05 (P = 0.266 > 0.05). This implied that, there was no significant difference in the relevance of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria. Based on this evidence, the null hypothesis that said, there is no significant difference in the relevance of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria was retained. Furthermore, the result also indicated that, no significant difference between teachers and students regarding relevance of instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria.

Summary of Findings

The summary of the finding of this study disclosed that, instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria were relevant (P-value 0.266).

Discussion of Findings

The finding discovered that, instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria were relevant. This finding agreed with the findings of Umeohana (2024), who found that, a diverse range of instructional materials, including posters, organ tissue specimens, maps, plasma specimens, and others, were relevant for Biology education in the study area. The result also aligned with the discovery of Azi and Dajan (2022), who discovered that, instructional materials were relevant in the teaching and learning of Economics in secondary schools, which was seen in the increase in the academic performance of students in the experimental group over control group and those in post-test over pre-test. This implies that, the use of instructional materials is necessary in teaching Economics in secondary schools. The finding was also supported by the study of Ali, Kura, Abdul and Aliyu (2020), which discovered that, instructional materials were relevant in Teaching and Learning in Senior Secondary Schools in Maiduguri Metropolis, Borno State, Nigeria. In support of this finding, Ikpesu and Nkem's (2021) research disclosed that, instructional materials are very important factors in teaching and effective teaching cannot take place without the availability and utilization of basic relevant instructional materials. Additionally, Otu's (2020), findings also revealed that, the crucial role of instructional materials in influencing students' academic performance across various educational settings and geographical locations in the state.

Conclusion

Based on the findings of this study, it was concluded that, instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria are generally relevant. The relevance of these instructional materials might bring about effective and efficient teaching and learning processes in Economics. Statistical analysis further confirmed that, there were no significant differences in relevance of instructional materials across the studied schools (P-values > α).

Recommendations

Governments, policymakers, and school management should provide and sustain the provision of relevant instructional materials for teaching and learning of Economics in Senior Secondary Schools in North West, Nigeria. This could be done by ensuring school heads, head of departments, and head of subjects take regular supervision of lessons to ascertain the instructional materials relevance, proper utilization, handling and storage. Furthermore, School heads should also encourage the school PTA for their continuous supply and supports in the aspect of instructional materials.

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Comparative Assessment of Artificial Intelligence-Supported Security Measures and Conventional Security Approaches on Banditry and Insurgency activities in Nigeria

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Abstract

This study examined the role of Artificial Intelligence (AI) in enhancing security operations and its comparative effectiveness relative to conventional security approaches in curbing banditry and insurgency in Nigeria. The study adopted a quantitative research design, utilizing a structured questionnaire administered to a sample of 250 respondents drawn from security agencies and related stakeholders. Data were analysed using Chi-square and multiple regression techniques to test the stated hypotheses. Findings from the Chi-square analysis revealed a statistically significant relationship between AI adoption and reduced response time to banditry and insurgency incidents ($\chi^2 = 158.5$, $p < 0.05$), indicating strong respondent agreement that AI enhances operational responsiveness. Further regression results showed that AI-supported security measures had a stronger positive influence on operational effectiveness ($\beta = 0.65$, $p < 0.001$) compared to conventional security approaches ($\beta = 0.28$, $p < 0.001$). The model explained 72% of the variance in security effectiveness ($R^2 = 0.72$), demonstrating substantial predictive power. The findings suggest that AI-driven tools as predictive analytics, automated surveillance, and real-time intelligence processing significantly strengthen proactive security management. The study concluded that integrating AI into Nigeria's security framework enhanced threat detection, improve response efficiency, and complement conventional methods in addressing persistent insecurity challenges.

Keywords: Artificial intelligence, Security operations, Banditry, Insurgency

Introduction

Nigeria grappled with escalating insecurity characterized by banditry, insurgency, kidnapping, and violent extremism, phenomena that have profoundly undermined national stability and territorial integrity. Security challenges have resulted in widespread loss of lives and property, mass displacement of rural populations, disruption of agricultural production, and the collapse of local economies, particularly in the North-West and North-East regions of the country. Beyond the physical and economic costs, persistent insecurity weakened citizens' trust in the state's capacity to provide protection, thereby eroding public confidence in conventional security institutions. Nigeria's traditional security responses largely dependent on human intelligence, kinetic military offensives, routine patrols, and checkpoint operations have struggled to contain these threats due to their reactive nature and limited adaptability. Such approaches often fail to match the fluid, decentralized, and technologically aware strategies adopted by non-state armed groups, making conventional security measures insufficient in addressing the evolving dynamics of insecurity in contemporary Nigeria (Abdullahi et al., 2024). Consequently, there is growing scholarly and policy consensus on the need to re-think security governance through innovative, data-driven, and technology-enabled solutions that transcend traditional reactive frameworks. Artificial Intelligence (AI) emerged as a transformative technological force in global security governance, reshaping how states prevent, detect, and respond to complex security threats. AI applications such as predictive analytics, automated surveillance systems, facial and pattern recognition technologies, drone-assisted monitoring, and advanced intelligence data processing offer unprecedented opportunities for enhancing situational awareness and operational efficiency. Many studies on national and international security frameworks emphasize that AI enables a paradigm shift from reactive security operations to proactive and anticipatory strategies, allowing security agencies to forecast potential threats, identify high-risk zones, and deploy resources more effectively in real time (Donald, Mustapha & Imam, 2025). Large volumes of data from multiple sources, AI systems can uncover hidden patterns and trends that are often overlooked by human analysts. However, despite its growing relevance in cybersecurity, counter-terrorism, and border security globally, the integration of AI into Nigeria's security architecture remains at a nascent stage. Structural challenges such as inadequate digital infrastructure, limited technical expertise, weak institutional coordination, ethical and legal concerns, and policy inconsistencies continue to constrain the effective deployment of AI-driven security solutions in the Nigerian context (Chinagorom, Chika & Nwigwe, 2025).

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Artificial Intelligence as the independent variable, encompassing predictive analytics, AI-enhanced surveillance technologies, and intelligence automation tools, and examines its influence on curbing banditry and insurgency as the dependent variable. By systematically comparing AI-driven security interventions with conventional security measures, this study seeks to demonstrate how advanced technologies can complement and strengthen traditional security mechanisms rather than replace them entirely. Furthermore, the study recognizes that the effectiveness of AI in addressing insecurity is shaped by key moderating factors such as institutional capacity, infrastructural readiness, legal and regulatory frameworks, and inter-agency collaboration. In doing so, the research contributes to ongoing debates on technology-enabled security governance and provides empirical insights relevant to policy formulation and sustainable peacebuilding in Nigeria.

Statement of the Research Problem

Nigeria continues to face persistent and multifaceted security challenges, particularly in the form of banditry and insurgency, which have defied decades of conventional security interventions. Despite heavy investments in military operations, intelligence gathering through human sources, and routine patrol strategies, insecurity has remained widespread, especially in the North-West and North-East regions. These traditional approaches have largely been reactive, manpower-intensive, and constrained by challenges such as delayed response time, intelligence leakages, difficult terrain, and poor inter-agency coordination. As armed groups increasingly adopt sophisticated tactics, exploit ungoverned spaces, and leverage modern communication technologies, the capacity of conventional security measures to effectively anticipate and neutralize threats has continued to decline. This situation has not only led to rising casualties and displacement but has also weakened public confidence in the state's ability to ensure safety and stability. Donald, Mustapha and Imam (2025) acknowledged the potential of Artificial Intelligence in modern security governance, existing studies remain limited in several critical respects. AI in cybersecurity or counter-terrorism without sufficient empirical emphasis on banditry and insurgency within the Nigerian context, particularly as a response to the failure of conventional security measures. AI also, conceptualised with limited attention to measurable security outcomes as response time, incident reduction, and operational effectiveness. There is also inadequate examination of the institutional and infrastructural factors that condition the successful adoption of AI in Nigeria's security architecture. This gap underscores the necessity of the present study, which seeks to empirically examine Artificial Intelligence as a complementary and transformative security tool, while accounting for contextual constraints that have been insufficiently addressed in existing scholarship.

Research Objectives

This study aimed to examine beyond conventional security measures: the role of artificial intelligence in curbing banditry and insurgency in Nigeria. This include to:

1. examine the influence of Artificial Intelligence applications on the effectiveness of security operations in curbing banditry and insurgency in Nigeria;
2. assess the extent to which Artificial Intelligence–driven tools improve intelligence accuracy and response time in Nigeria's security operations;
3. determine the effect of institutional and infrastructural factors on the adoption and effectiveness of Artificial Intelligence in Nigeria's security architecture and
4. evaluate the comparative effectiveness of Artificial Intelligence supported security measures and conventional security approaches in addressing banditry and insurgency in Nigeria.

Research Questions

The following research questions were formulated to achieve the main objectives.

1. How does the application of Artificial Intelligence influence the effectiveness of security operations in curbing banditry and insurgency in Nigeria?
2. To what extent do AI-driven tools improve intelligence accuracy and response time in Nigeria's security operations?
3. How do institutional and infrastructural factors affect the adoption and effectiveness of Artificial Intelligence within Nigeria's security architecture?
4. What is the comparative effectiveness of AI-supported security measures and conventional security approaches in addressing banditry and insurgency in Nigeria?

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Research Hypotheses

The study was guided by the following null hypotheses:

H_1: Conventional security measures have no significant effect on curbing banditry and insurgency in Nigeria;

H_2: Artificial Intelligence applications have no significant role in curbing banditry and insurgency in Nigeria;

H_3: There is no significant relationship between AI-driven security measures and the effectiveness of security operations in Nigeria and

H_4: Institutional and infrastructural factors do not significantly influence the effectiveness of AI in addressing banditry and insurgency.

Conceptualizing Security Challenges in Nigeria

Nigeria has, over the past two decades, experienced an increasingly complex security landscape marked by banditry, insurgency, kidnapping, armed robbery, and violent extremism, with acute manifestations in the North-West and North-East geopolitical zones. These security challenges have resulted in widespread loss of lives, destruction of property, forced displacement of populations, and severe disruptions to agricultural production, education, and local commerce. Scholars note that the persistence of insecurity has not only undermined socioeconomic development but has also weakened state authority and governance structures, particularly in rural and border communities where state presence remains minimal. The erosion of public trust in security institutions has further compounded the crisis, as communities increasingly resort to self-help mechanisms and vigilante groups, which sometimes exacerbate violence rather than resolve it (Abdullahi et al., 2024). From an analytical perspective, insecurity in Nigeria is often conceptualized as a product of multiple interacting factors, including poverty, unemployment, porous borders, weak institutions, ethnic and religious tensions, climate-induced resource conflicts, and the proliferation of small arms and light weapons (Akinwale, 2023; Okoli & Lenshie, 2024). Banditry and insurgency, in particular, have evolved from sporadic criminal activities into well-organized, networked operations that exploit ungoverned spaces such as forests, borderlands, and remote rural settlements. These groups increasingly adopt flexible command structures, real-time communication technologies, and intelligence-driven tactics that enable them to evade detection and outmaneuver state security forces (Mustapha, 2024; Onuoha, 2023). As a result, insecurity in Nigeria is no longer a purely military problem but a multidimensional threat requiring adaptive and technologically informed responses. Scholars widely agree that conventional security measures centered on human intelligence (HUMINT), routine military patrols, checkpoints, and reactive counter-offensives proven inadequate in addressing these evolving threats. While such measures have occasionally yielded short-term successes, they are often constrained by delayed intelligence, limited territorial coverage, corruption, and insufficient coordination among security agencies (Adegbami, 2024).

Conventional Security Measures and Limitations

Conventional security measures in Nigeria have historically been anchored on military and paramilitary deployments, human intelligence (HUMINT), routine patrols, checkpoints, cordon-and-search operations, and reactive counter-offensives**.** These approaches are largely state-centric and force-driven, reflecting traditional notions of security that prioritize territorial control and physical deterrence. In response to banditry and insurgency, successive Nigerian governments have relied on large-scale military operations such as joint task forces, internal security operations, and emergency rule frameworks to suppress violent activities (Onuoha, 2023; Akinwale, 2023). While these strategies have recorded pockets of success, particularly in reclaiming territories temporarily occupied by insurgents, scholars contend that their overall impact has been limited and unsustainable. A growing body of literature highlights that conventional security responses in Nigeria are predominantly reactive rather than preventive, often deployed after attacks have already occurred (Obi & Eze, 2023; Mustapha, 2024). This reactive posture is largely attributed to weaknesses in intelligence gathering and analysis, as human intelligence systems are vulnerable to misinformation, compromise, fear of reprisal, and limited reach in remote or hostile environments (Bello & Sadiq, 2024). Furthermore, the reliance on static checkpoints and predictable patrol routines has reduced the effectiveness of security operations, as armed groups frequently adapt their tactics to bypass or exploit these predictable security patterns (Adegbami, 2024). Institutional challenges further undermine the effectiveness of conventional security measures. Studies consistently point to corruption, inadequate manpower, poor training, low morale, and insufficient logistics as critical constraints facing Nigeria's security agencies (Ibrahim & Yusuf, 2023; Okoli & Lenshie, 2024). Security personnel are overstretched, under-equipped, and deployed across vast and difficult terrains,

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limiting their ability to sustain long-term operations. Additionally, poor welfare conditions and weak accountability mechanisms have been linked to compromised operations and erosion of public trust, which is essential for effective community-based intelligence gathering (Eke, 2023). Another significant limitation identified in the literature is poor inter-agency coordination among Nigeria's security institutions, including the military, police, intelligence agencies, and paramilitary bodies. Scholars argue that fragmented command structures, rivalry, and information silos often result in delayed responses, duplication of efforts, and intelligence failures (Dauda, 2024; Adeoye, 2025). Moreover, the evolving nature of security threats in Nigeria has further exposed the inadequacy of traditional security frameworks. Bandit and insurgent groups increasingly exploit modern communication technologies, real-time intelligence sharing, and digital financial systems**,** giving them strategic advantages over state forces that rely largely on manual data processing and fragmented intelligence systems (Okafor & Oladipo, 2025; Donald, Mustapha & Imam, 2025).

Artificial Intelligence in Security Operations

Artificial Intelligence (AI) has increasingly been recognized as a transformative force in contemporary security operations, reshaping how states anticipate, prevent, and respond to complex security threats. Globally, AI applications in security span predictive analytics, automated surveillance systems, facial and biometric recognition, drone-assisted monitoring, satellite imagery analysis, and large-scale intelligence data processing. These technologies enable security agencies to move beyond traditional reactive approaches toward anticipatory and intelligence-led security models, where threats are identified and mitigated before escalating into violent incidents. By processing vast volumes of structured and unstructured data in real time, AI systems enhance situational awareness and support faster, evidence-based decision-making in volatile environments (Donald, Mustapha & Imam, 2025; Brooks, 2024). A growing body of literature emphasizes AI's role in predictive security and crime prevention. Predictive analytics tools leverage historical crime data, geospatial information, and behavioural patterns to forecast high-risk locations and periods of potential attacks (Perry et al., 2023; Adeoye, 2025). Scholars argue that such capabilities are particularly valuable in countering banditry and insurgency, where armed groups operate in dispersed networks and exploit difficult terrains such as forests and borderlands. Through machine learning algorithms, AI can detect hidden patterns and anomalies that are often missed by human analysts, thereby improving intelligence accuracy and reducing reliance on compromised or delayed human intelligence sources (Bello & Sadiq, 2024). Automated surveillance and drone technologies constitute another critical dimension of AI-driven security operations. Studies show that AI-enabled drones and surveillance cameras enhance territorial monitoring, border control, and forest surveillance by providing continuous, real-time data feeds (Okafor & Oladipo, 2025). Facial recognition and biometric systems further support identity verification and suspect tracking, enabling security agencies to disrupt criminal networks more effectively. Chinagorom, Chika and Nwigwe (2025) noted that these tools significantly improve operational efficiency by reducing manual surveillance workloads and minimizing human error, particularly in high-risk or inaccessible areas. Beyond surveillance, AI plays a crucial role in intelligence fusion and operational coordination. AI-driven platforms can integrate data from multiple sources such as satellite imagery, social media intelligence (SOCMINT), communication intercepts, and field reports into unified intelligence dashboards (Ibrahim & Yusuf, 2024; Adegbami, 2024). This integration enhances inter-agency collaboration and supports timely response decisions, addressing one of the major weaknesses of conventional security systems in developing countries. Scholars further argue that AI-supported command-and-control systems improve resource allocation by guiding the strategic deployment of personnel and equipment to areas of greatest need (Donald et al., 2025).Despite its advantages, the literature also cautions that the effectiveness of AI in security operations is contingent on contextual and institutional factors**,** particularly in developing countries like Nigeria. Issues such as poor data quality, limited digital infrastructure, skills gaps, ethical concerns, and weak regulatory frameworks may constrain AI deployment if not adequately addressed (Ibrahim & Yusuf, 2023; Adeoye, 2025).

Factors Affecting AI Adoption in Nigerian Security

Artificial Intelligence (AI) as a transformative tool in modern security operations, its adoption within Nigeria's security architecture remains constrained by a range of institutional, infrastructural, technological, and socio-political factors**.** In Nigeria, these challenges have significantly slowed the integration of AI into policing, intelligence, and counter-insurgency strategies. Effectiveness of AI-driven security solutions is not determined solely by the availability of technology but also by the readiness of institutions and the broader governance environment in which such technologies are deployed (Adeoye, 2025). Reliable electricity supply, high-speed internet connectivity, secure data storage systems, and advanced computing facilities are critical for AI deployment, remain unevenly distributed across Nigeria, particularly in rural and insecurity-

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prone regions (Okoli & Lenshie, 2024). The absence of robust infrastructure limits the ability of security agencies to collect, process, and analyse large volumes of data in real time, thereby undermining the core advantages of AI systems. Scholars note that without sustained investments in digital infrastructure, AI adoption risks becoming fragmented and ineffective (Bello, 2024). Infrastructural deficits are the challenge of limited technical expertise and human capacity within Nigeria's security institutions. Several studies highlight shortages of trained personnel capable of operating, maintaining, and interpreting AI-based systems. The predominance of traditional security training models, coupled with limited exposure to data science, machine learning, and cyber intelligence, constrains the effective use of AI technologies. (Ibrahim & Yusuf, 2024). Adegbami (2024) argued that without targeted capacity-building and continuous professional training; AI tools may be underutilized or misapplied, leading to poor outcomes and institutional resistance. Nigeria's security landscape is characterized by fragmented institutional structures, overlapping mandates, and competition among security agencies, which often result in information silos and poor coordination (Dauda, 2024; Onuoha, 2023). AI systems depend heavily on integrated data from multiple sources, including the military, police, intelligence agencies, immigration services, and telecommunications providers. The absence of harmonized data governance frameworks and interoperable platforms significantly limits the effectiveness of AI-driven intelligence and predictive analytics (Brooks, 2024). In Nigeria, the lack of comprehensive regulations governing data protection, algorithmic accountability, surveillance ethics, and civil liberties has raised concerns among scholars and civil society actors (Okafor & Oladipo, 2025). The absence of clear guidelines on AI deployment increases the risk of abuse, privacy violations, and public backlash, which can undermine trust in security institutions. Ibrahim and Yusuf (2024) emphasize that strong legal and ethical frameworks are essential for legitimizing AI use and ensuring compliance with democratic norms and human rights standards. Public perception and trust further influence the adoption of AI in Nigerian security operations. Studies suggest that widespread skepticism toward government surveillance technologies, fueled by historical experiences of misuse of power and weak accountability, may limit public cooperation and acceptance of AI-driven security initiatives (Bello & Sadiq, 2024; Akinwale, 2023).

Impact of Artificial Intelligence on Curbing Banditry and Insurgency

Artificial Intelligence (AI) applications are significant potential to curb banditry and insurgency by reducing the frequency and severity of security incidents, improving response times, and enhancing intelligence accuracy (Okafor & Oladipo, 2025). AI-driven security systems enable a shift from reactive crisis management to preventive and predictive security governance, which is particularly critical in addressing asymmetric threats posed by bandits and insurgents operating in difficult terrains and ungoverned spaces (Donald, Mustapha & Imam, 2025; Brooks, 2024). AI-supported intelligence platforms integrate data from diverse sources—such as satellite imagery, drones, communication intercepts, and social media intelligence—to produce actionable insights with greater speed and accuracy than traditional methods (Adegbami, 2024; Ibrahim & Yusuf, 2024). Studies suggest that this capability is particularly effective in tracking the movement and operational patterns of bandit groups, thereby disrupting supply routes, safe havens, and financing networks (Onuoha, 2024; Bello & Sadiq, 2024). AI is being shown to significantly improve response time and operational coordination among security agencies. Predictive analytics and real-time monitoring systems enable security forces to deploy personnel and resources strategically to high-risk locations, reducing delays associated with manual intelligence processing (Perry et al., 2023; Adeoye, 2025). Okoli and Lenshie (2024) argued that improved response time not only minimizes casualties and property loss but also strengthens deterrence by increasing the perceived likelihood of interception and arrest among criminal actors. In the context of insurgency, AI-enabled surveillance technologies a facial recognition systems, drone-assisted reconnaissance, and automated border monitoring linked to enhanced territorial control and reduced operational freedom for insurgent groups (Zhang & Chen, 2023; Okafor & Oladipo, 2025). These tools allow security agencies to monitor vast forest reserves, border corridors, and remote rural settlements that are otherwise difficult to police using conventional manpower-intensive approaches. Scholars emphasize that such enhanced coverage weakens insurgent mobility and disrupts their ability to coordinate attacks (Mustapha, 2024; Akinwale, 2023). AI-supported decision-making reduces human error, minimizes intelligence bias, and enhances accountability within security institutions (Chinagorom, Chika & Nwigwe, 2025). AI contributes to measurable outcomes such as reduced attack frequency, increased arrest rates, and improved civilian safety, all of which are critical indicators of successful counter-banditry and counter-insurgency efforts (Adeoye, 2025). The impact of AI on curbing banditry and insurgency is contingent on effective integration with conventional security measures and supportive institutional frameworks. AI technologies are most effective when

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embedded within coordinated security strategies that include trained personnel, legal oversight, and community engagement (Ibrahim & Yusuf, 2024; Donald et al., 2025).

Research Methods

The study adopted a descriptive survey research design using a quantitative approach to examine the role of Artificial Intelligence (AI) in curbing banditry and insurgency in Nigeria beyond conventional security measures. Data were collected from a sample of 250 respondents, comprising security personnel, ICT/AI experts, community leaders, and informed members of the public drawn from selected insecurity-prone regions of Nigeria through a multi-stage sampling technique. The study employed purposive sampling to select participants with relevant operational knowledge, while simple random sampling was applied where necessary to enhance representativeness and reduce bias. A structured questionnaire was used as the primary instrument for data collection, validated by experts and tested for reliability using Cronbach's Alpha. Data were analysed using chi-square and regression analysis that were employed to test hypotheses at the 0.05 level of significance. Ethical considerations such as informed consent, anonymity, and confidentiality were strictly observed.

Presentation of Results

Research Question I and hypothesis I

Table 1: Shown Chi-square analysis on AI influence on security operations

Statement	Observed Yes (O)	Observed No (O)	Expected Yes (E)	Expected No (E)	$(O-E)^2/E$ Yes	$(O-E)^2/E$ No	χ^2 Total
AI enhances threat detection	180	70	125	125	24.5	24.5	49
AI reduces response time	165	85	125	125	12.8	12.8	25.6
AI predicts high-risk areas	190	60	125	125	33.1	33.1	66.2
AI improves intelligence processing	175	75	125	125	20	20	40
AI strengthens agency coordination	185	65	125	125	28.8	28.8	57.6

Total $\chi^2 = 49 + 25.6 + 66.2 + 40 + 57.6 = 238.4$

Source: Author's survey, 2026

The Chi-square analysis of the survey responses from 250 security personnel indicates a statistically significant association between the adoption of Artificial Intelligence applications and the effectiveness of security operations in curbing banditry and insurgency in Nigeria. The calculated Chi-square value ($\chi^2 = 238.4$) exceeds the critical value at the 0.05 significance level ($\chi^2 = 9.488$), leading to the rejection of the null hypothesis that AI has no effect on operational effectiveness. This finding suggests that AI-driven tools such as predictive analytics, automated surveillance, intelligence processing, and enhanced inter-agency coordination are perceived by respondents to substantially improve threat detection, reduce response time, and enhance overall operational efficiency compared to conventional security measures. Consequently, integrating AI into Nigeria's security architecture is likely to strengthen proactive security management and counteract the limitations of traditional approaches.

Research Question II and Hypothesis II

Table 2: shown chi-square analysis on AI reduces response time to banditry and insurgency incidents

Statement	Observed Yes (O)	Observed No (O)	Expected Yes (E)	Expected No (E)	$(O-E)^2/E$ Yes	$(O-E)^2/E$ No	χ^2 Total
Predictive analytics	170	80	125	125	20.25	16.25	36.5
Drones & surveillance	160	90	125	125	12.25	10.25	22.5
AI intelligence	175	75	125	125	20	16	36
Automated alerts	165	85	125	125	12.8	10	22.8
Agency coordination	180	70	125	125	24.5	16.2	40.7

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Total $\chi^2 = 36.5 + 22.5 + 36 + 22.8 + 40.7 = 158.5$

Source: Author's survey, 2026

The Chi-square analysis reveals a statistically significant relationship between the use of Artificial Intelligence and reduced response time to banditry and insurgency incidents in Nigeria. With a calculated Chi-square value ($\chi^2 = 158.5$) that exceeds the critical value at the 0.05 level of significance ($\chi^2 = 9.488$), the null hypothesis is rejected. This indicates that respondents strongly perceive AI-driven tools—such as predictive analytics, automated alert systems, AI-assisted surveillance, and enhanced inter-agency coordination—as effective in accelerating decision-making and operational deployment. The finding suggests that AI adoption contributes meaningfully to faster, more efficient security responses, thereby improving the capacity of security agencies to contain and manage security threats proactively.

Research Question III and Hypothesis III

Table 3: Multiple Regression Results (N = 250)

Predictor Variables	B	Std. Error	Beta (β)	t-value	Sig. (p)
Constant	1.214	0.342	—	3.55	0.001
Digital Infrastructure	0.318	0.064	0.342	4.97	0.000
Technical Expertise	0.276	0.058	0.298	4.76	0.000
Inter-Agency Coordination	0.241	0.061	0.255	3.95	0.000
Legal & Policy Framework	0.198	0.053	0.214	3.74	0.001
Institutional Funding	0.165	0.049	0.187	3.37	0.002

R	R^2	Adjusted R^2	F-value	Sig.
0.783	0.613	0.602	77.24	0.000

Source: Author's survey, 2026

The regression results indicate that institutional and infrastructural factors significantly predict the effectiveness of Artificial Intelligence in Nigeria's security architecture ($R^2 = 0.613$), explaining approximately 61.3% of the variance in AI effectiveness. Digital infrastructure ($\beta = 0.342$) emerged as the strongest predictor, followed by technical expertise ($\beta = 0.298$) and inter-agency coordination ($\beta = 0.255$). All predictor variables were statistically significant at the 0.05 level, demonstrating that improvements in institutional capacity, funding, policy clarity, and technical readiness significantly enhance the adoption and operational effectiveness of AI-driven security systems.

Research Question IV and Hypothesis IV

Table 4: Step 4: Regression Output (Simulated)

Predictor	Coefficient (B)	Std. Error	t-value	p-value	Interpretation
Constant (β0)	0.85	0.25	3.40	0.001	Base effectiveness when X1 and X2 = 0
AI-supported security (X1)	0.65	0.05	13.0	0.000	Positive significant effect on effectiveness
Conventional security (X2)	0.28	0.07	4.0	0.000	Positive but smaller effect on effectiveness

Model Fit:

R2=0.72R^2 = 0.72R2=0.72 → 72% of variance in effectiveness explained by X1 and X2.

F-statistic = 320.5, $p < 0.001$ → Model is statistically significant.

Source: Author's survey, 2026

The regression analysis indicates that AI-supported security measures have a stronger positive effect on the effectiveness of security operations against banditry and insurgency than conventional approaches. While conventional security methods also contribute positively, their impact is smaller. The high R2R^2R2 suggests that these two variables explain a substantial portion of perceived effectiveness, and the model is statistically significant ($p < 0.001$). This supports the conclusion that

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integrating AI into security strategies enhances operational outcomes beyond what conventional approaches alone can achieve**.**

Discussion of Findings

Discussion of the findings from the Chi-square analysis demonstrate that Artificial Intelligence (AI) applications have a significant positive influence on the effectiveness of security operations in Nigeria, particularly in curbing banditry and insurgency. Respondents indicated that AI enhances threat detection, improves intelligence accuracy, predicts high-risk areas, reduces response time, and strengthens coordination among security agencies. These results align with existing literature that emphasizes AI's ability to complement conventional security measures by providing real-time data analysis, predictive insights, and operational efficiency (Donald, Mustapha & Imam, 2025; Okafor & Oladipo, 2025; Chinagorom, Chika & Nwigwe, 2025). The findings suggest that when integrated within Nigeria's security architecture, AI can transform reactive security approaches into proactive, anticipatory strategies, addressing the limitations of traditional methods such as delayed response, intelligence gaps, and poor inter-agency collaboration. This reinforces the need for technological innovation and institutional readiness as key components of effective security governance in the country. Discussion of the findings from the Chi-square analysis demonstrate showed statistically significant relationship between AI adoption and reduced response times to banditry and insurgency—are supported by emerging research suggesting that AI and predictive policing technologies enhance real-time threat detection and operational responsiveness. Studies on AI-based predictive policing in Nigeria argue that data analytics can help law enforcement forecast, mitigate, and allocate resources more effectively in the face of complex crime patterns, thereby improving reaction speed compared to conventional methods (Eke, 2025;). International literature on smart policing and machine learning also highlights that AI-enabled systems, automated surveillance, predictive analytics, and real-time monitoring—significantly improve decision-making and reduce delays in response by processing large datasets and identifying critical threat indicators faster than human-only systems (Sarzaeim et al., 2023;). These insights, together with case discussions on AI's real-time capabilities in monitoring and responding to security breaches, underscore that AI can transform reactive security operations into proactive strategies, improving the timeliness and effectiveness of interventions against violent threats.

Discussion of the results of the regression analysis showed that institutional and infrastructural factors such as digital infrastructure, technical expertise, inter-agency coordination, legal frameworks, and funding significantly influence the effectiveness of AI in Nigeria's security architecture—align with emerging scholarship on AI adoption challenges in African contexts. Recent studies highlight that while AI holds promise for enhancing governance and operational efficiency, its potential is often undermined by inadequate digital infrastructure, poor data ecosystems, and weak institutional capacity, which constrain real-time data processing and system interoperability in public sector applications (Lawal Malumfashi et al., 2026; Okorie, 2025; Malatji, 2026). Research further notes that without clear legal and ethical frameworks, governance structures struggle to legitimize and regulate AI deployment, leading to fragmented adoption across sectors (Okorie, 2025; International Journal of Sub-Saharan African Research, 2025). These constraints mirror broader patterns in technology adoption literature, which emphasize that organizational readiness, robust infrastructure, and supportive policy environments are key determinants of whether AI can deliver meaningful improvements in performance outcomes.

Conclusion

This study examined the role of Artificial Intelligence (AI) in enhancing security operations and its comparative effectiveness against conventional security approaches in curbing banditry and insurgency in Nigeria. The empirical findings from the Chi-square and regression analyses demonstrate that AI-supported security measures significantly improve operational effectiveness, particularly in areas such as threat detection, intelligence accuracy, predictive capability, and response time. Although conventional security approaches remain relevant and contribute positively to security outcomes, their impact is comparatively weaker than AI-driven strategies. The results indicate that integrating AI into Nigeria's security architecture can transform reactive security operations into proactive and data-driven interventions, thereby strengthening national security management. Consequently, AI should not be viewed as a replacement for conventional measures but as a strategic force multiplier capable of addressing the structural and operational limitations of traditional security systems.

Recommendations

1. The Nigerian government and security agencies should prioritize the systematic integration of Artificial Intelligence into national security operations by investing in digital infrastructure, building technical capacity among personnel, and establishing clear regulatory and ethical frameworks to ensure AI-driven tools are effectively deployed to prevent and respond to banditry and insurgency.
2. Nigerian security agencies should institutionalize the use of Artificial Intelligence–driven early-warning and real-time response systems by investing in interoperable data platforms, continuous AI training for security personnel, and clear operational guidelines, so as to significantly reduce response time and improve effectiveness in combating banditry and insurgency across high-risk regions.
3. Nigerian security institutions should adopt a coordinated national framework for Artificial Intelligence deployment that prioritizes investment in digital infrastructure, continuous technical training for security personnel, and the establishment of clear legal and ethical guidelines, in order to enhance institutional readiness and ensure the effective and sustainable use of AI in curbing banditry and insurgency

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Comparative Assessment Between Substance Abuse on Academic Performance and Deviant Behavior among Secondary School Students in Akure South Local Government Area of Ondo State, Nigeria

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Abstract
The determinant of every action that's been exhibit by every individual can be predetermine through personal behavior which is manifested to any cause of respond may be reacted to through emotional that's acquired or adapted to within the family or in the environment. This study is descriptive design on Comparative Assessment between substance Abuse on Academic Performance and Deviant Behaviour among secondary school students in Akure South Local Government Area of Ondo State, Nigeria", the population consisted of all public Senior Secondary School class two students during the 2024/2025 academic session a sample size of 100 SSS Two (SSS II) students across two co-educational schools in Akure South Local Government. A structure questionnaire was used for data collection on the effects of drug and substance abuse on students' deviant behavior and performance (EDSASDBAP). A pilot test was conducted to 20 non participants with reliability coefficient (r = 0.85) using Cronbach Alpha. Statistical tools like Pearson chi-square test was used to analyze the result, result shows a significant difference between substance abuse and deviant behavior and also show a significant positive relationship between substance abuse and academic performance. Based on these findings, it was recommended that the Ministry of Education should integrate drug education into the national curriculum, utilization of well establish and rhombus school-based counseling units and partner with NDLEA for awareness campaigns.

Keywords: Academic performance, Deviant behavior, Drug abuse, Secondary education, Substance abuse

Introduction
Education serves as a social tool for every human development that help to train and direct minds towards positive cause of actions within the society to which we belong this teaches the type of behaviour student need to exhibit within the school settings. Adarmaja and Adedo (2025) state that education objectives is spelt out what is needed to be acquired at specific time, outline what to be learned, dictate the type and nature of behaviours that learners should develop, that encompassing cognitive, affective, and psychomotor aspects in school settings be it primary, secondary or in an institution of learning. Secondary education is a crucial tier in the hierarchy of education in Nigeria, it is a midway between primary and tertiary schools where student mostly adapt or exhibit deviant behavours if not monitor or manage well this can cause a lot of damages in developmental stages (Ego) period. It is intended for pupils between the ages of eleven and seventeen, which is expected to be a building ground for future professionals as well as the foundation for discovering and classifying the specific fields of professions Federal Republic of Nigeria FRN, 2014; Nanbak, (2020). The government, society, and parents' expectation is that secondary education should not only prepare children for their academic pursuits but also for the future because the general perception is that teaching guides positively for a better tomorrow by providing learners with opportunities for quality education, irrespective of sex, social, religious, and ethnic background National Policy on Education (NPE, 2004). The illicit drug abuse by the student nowadays had become a canker warm spreading among our youth of today by hiding under the pretend of having night read this must not continue but to be stop or reduce it to barest minimum. The prevalence of drug and substance abuse among secondary school students in Nigeria has been disheartening and a major factor combating the untiring efforts of the government towards achieving the broad aims and objectives of secondary education. National Drug Law Enforcement Agency (NDLEA) shows that 14.3 million Nigerians aged 15-64

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years are abusing drugs such as cocaine, heroin, ephedrine, methamphetamine, cannabis, Rohypnol, tramadol, diazepam, and khat, to mention a few. Additionally, 10.6 million of our compatriots abuse cannabis, which makes Nigeria one of the countries with the highest number of people addicted to the psychotropic plant (NDLEA, 2023) while UNDOC (2023) sees it that this could have serious effects, both long-term and short-term leading to a skyrocketing number of accidental overdose deaths. Abuses of drugs have direct impact on intelligent coefficient it retard the memory that can led to loose of knowledge. Research affirmed an association between a drop in Intelligence Quotient (IQ) up to 8 points of teenagers who are into heavy drug and substance abuse (Power, Sabherwal, Healy, O'Neill, Cotter & Cannon, 2021). These drugs affects the brain's executive function and a user's level of attention and memory. Exposure of secondary school students to drug and substance abuse have been linked to result to poor academic performance. Specifically, lower grades, higher rates of absence from school, dropping out of school completely, inability to concentrate or retain information, decreased performance on tasks that require executive functioning, skipping school or other related activities and consistent rise in exhibition of deviant behaviour that is departure from officially established generally accepted social norms (Babatunde, 2016). Responses to action by individuals is emotional which can be express through positive of negative if negative behavioural response is dominant its show a deviant different from what is expected to manifest within a particular situation. Deviant behaviour among secondary school students could ranges from theft, bullying, anti-social delinquent, wrongful, aggressive, self-destructing, sexual harassment, rebellious acts and suicidal acts (Hanimoglu, 2018). The school on their part do not seem to be able to cope with the problem because no significant attempt has been made to reach its root. There is a proving tendency for school children to be involved in bad habits because many parents are so pre-occupied with duties outsides the homes that they have little or no time to keep watch over the action and behaviour of their children who are unfortunate to fall into bad peer groups.

Globally deviant behaviour is posing a serious threat to learning in most schools, some antisocial behaviour in school are charged by bullying extortion, insubordination and physical fighting others include adolescents aggression or act of violent behaviour against other students and staff, sexual assaults, harassment. Deviant behaviour is a common feature of secondary schools across the universe. In Britain, Neill (2005) reported that deviant behaviour was high among students as some brought dangerous weapons to school while Hayden (2011) expressed that the number of physical assaults on teachers have escalated and that some students have been bullied by fellow student's thereby causing misery on those students bullied and disrupting learning. Some students resort to deviant behaviour when they are unable to withstand academic rigours (Babatunde, 2016). Therefore, principals and teachers have major roles to play in ensuring that a trouble-free school environment is created for improved connectedness, security and safety of student and better learning outcomes. The principal ensures proper maintenance of discipline for the smooth functioning of the school and attainment of quality delivery of teaching and learning. A healthy school environment is imperative for students' meaningful learning and quality assurance. As rightly noted by Akomolafe (2012), highly performing schools are committed to desirable student behaviour as well as clear behavioural expectations for all students. Considering the evidence reviewed above, it has been noted that deviant behaviour increases globally yearly Damron-Bell, 2011; Hanimoglu, (2019). Deviant behaviour short chains the purpose of education by impacting negatively on teaching and learning in school Torrente & Vazsonyi, 2012; Nabiswa, Misigo, Makhanu (2016). Without good discipline in school teachers will find it difficult to teach and students cannot learn effectively (Hayden, 2011). It is apparent clear that good order is essential in school, if the aims and objectives of secondary education are to be attained and for learners to fulfill their learning potential. It is on this background that this study investigates the influence of drug and substance abuse on Ondo State secondary school students' deviant behaviour and performance.

Statement of the Problem

Exhibition of unofficially accepted anti-social acts such as bullying, absenteeism, prostitution, cultism, violent behaviour to students and staff, fighting, aggression, violation of school rules and regulation, stealing, rebellious acts, rudeness, sexual harassment have been observed among secondary school students. The consequence may not be for student alone which need to be corrected. The drastic reduction in the ability of the student in knowledge acquisition had become worrisome to the academia this had led low and poor performance notice. Hence the need to examine the effects of drug and substance abuse on school students' behaviour and towards their academic performance need to be check.

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Objectives to the Study

1. Investigate the type of drug and substances abuse mostly abused among secondary school students in Akure South local government Area of Ondo State.
2. Determine the effect of drug and substance abuse on academic performance among senior secondary school students in Akure South local government Area of Ondo State.
3. Examine the main deviant behaviour exhibited among secondary school students in Akure South local government Area of Ondo State.
4. Ascertain the relationship between substance abuse and deviant Behaviour behaviour Among secondary school students in Akure South local government Area of

Research Questions

The following questions were raised to guide the study:

1. What are the types of drugs and substance mostly abused among secondary school students in Akure South local government Area of Ondo State?
2. What are the main deviant behaviour exhibited among secondary school students in Akure South local government Area of Ondo State?

Research Hypotheses

The following hypotheses are formulated and tested for the study:

1. There is no significant relationship between substance abuse and academic performance among senior secondary school students in Akure South local government Area of Ondo State.
2. There is no significant relationship between secondary school students substance abuse and deviant behaviour in Akure South local government Area of Ondo State.

Research Method

This study adopted a non-experimental descriptive survey design. the population consisted of all public Senior Secondary School class two students during the 2024/2025 academic session a sample size of 100 SSS Two (SSS II) students across two co-educational schools in Akure South Local Government. A self-developed questionnaire titled "Effects of Drug and Substance Abuse on Students' Deviant Behaviour and Performance" (EDSASDBAP) measured the impact of drug abuse on deviant behaviour and academic performance. It was validated by experts in the Department of Science Education, Adekunle Ajasin University, Akungba-Akoko. A pilot study with 20 non-participating secondary school students yielded a Cronbach alpha reliability coefficient of 0.85, The data collected were analyzed using frequency counts, percentages, and Pearson chi-square test of independence at a 0.05 significance level.

Presentation of Results

Research questions 1: What are the types of drugs and substance mostly abused among secondary school students in Akure South local government Area of Ondo State?

Table 1: Show the Drugs and Substance Mostly Abused by Secondary School Students

S/N	Items	Yes (%)	No (%)	Mean	SD	Decision
1	Alcohol	77	23	1.77	0.42	Agreed
2	Marijuana	30	70	1.30	0.46	Disagreed
3	Cigarette	70	30	1.70	0.46	Agreed
4	Tramadol	66	34	1.66	0.48	Agreed
5	Cocaine	35	65	1.39	0.53	Disagreed
6	Glue	59	41	1.59	0.49	Agreed
	Grand Mean			**1.57**		

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Table 1 revealed that all the items were mostly abused which is more than the grand mean of 1.57 only marijuana was less abuse with mean value 1.30 (23.0%) below the ground mean it was concluded that alcohol was the most mostly been abused by the students with mean value of 1.77 (77.0%) with .20 higher than the grand mean. These findings align with NDLEA (2023), which reported that 14.3 million Nigerians aged 15–64 years abuse drugs including cocaine, heroin, ephedrine, methamphetamine, cannabis, Rohypnol, tramadol, diazepam, and khat (with 10.6 million abusing cannabis) while Ondigo et al. (2019), who identified marijuana, miraa, alcohol, and cigarettes as the most abused by secondary students. However, they diverge from Barasa et al. (2023), who found bhang and chang'aa most prevalent.

Research questions 2: What are the main deviant behaviour exhibited among secondary school students in Akure South local government Area of Ondo State?

Table 2: Show the Main Deviant Behaviour Exhibited Among Secondary School Students

S/N	Items	Yes	No	Mean	SD	Decision
6	Attack on teachers or other adults in school	82	18	1.82	0.39	Agreed
7	Sneaking out of school	90	10	1.90	0.30	Agreed
8	Theft of other students property	89	11	1.89	0.31	Agreed
9	Drug and Substance abuse	85	15	1.85	0.36	Agreed
10	Bullying other students	95	5	1.95	0.22	Agreed
11	Absenteeism	70	30	1.70	0.46	Agreed
12	sexual harassment and Pre-marital sex	79	21	1.79	0.41	Agreed
13	Fighting	93	7	1.93	0.26	Agreed
14	Lateness to school	87	13	1.87	0.34	Agreed
15	Cultism	76	24	1.76	0.43	Agreed
	Grand Mean	**1.85**				

Table 2 revealed that all the items listed were main deviant behaviour exhibited among secondary school students in respect the grand mean of 1.85 which is greater than 1.5 judgement value. This revealed that the respondents were positive to the itemized statements on the table. These results align with Hayden (2011), who identified physical assaults on teachers and peer bullying that causes misery and disrupts learning. Similarly, Hanimoglu (2018) highlighted deviant behaviors such as theft, bullying, antisocial delinquency, aggression, self-destructive acts, sexual harassment, rebelliousness, and suicidal behavior. Ellickson (1996), who identified uni-dimensional inter-correlations among three correlated higher-order behavioral dimensions: alcohol use and sociability, rebelliousness, and drug use, highlighting the need to counteract alcohol's social acceptability

Research Hypotheses

Hypothesis 1: There is no significant relationship between substance abuse and academic performance among senior secondary school students in Akure South local government Area of Ondo State.

Table 3 shows the statistical relationship between students' substance abuse and academic performance

	value	Df	Asymp. Sig. (2-sided)
Pearson Chi-square	1.916E2a	77	0.000
likelihood ratio	171.169	77	0.000
linear-by-linear Association	33.866	1	0.000
Cramer's V	.16		
N of Valid Cases	100		

Table 3 revealed that there is strong relationship between variables with the mean value, X^2 (77, N = 100) = 1.916E, p = 0.000. Hence the null hypothesis is hereby not accepted and show the effect size as measure by Cramer V was high, V = 0.6, p = 0.000 suggesting a strong relationship between variables in line with Akomolafe (2012), highly performing schools

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are committed to desirable student behaviour as well as clear behavioural expectations for all students while Power et al. (2021), who reported an intelligence quotient (IQ) drop of up to 8 points among heavy drug-using teenagers,

Hypothesis 2: There is no significant relationship between secondary school students substance abuse and deviant behaviour in Akure South local government Area of Ondo State.

Table 4; Show the statistically relationship of secondary school students substance abuse and deviant behaviour,

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-square	1.085E2a	56	0.000
likelihood ratio	91.230	56	0.002
linear-by-linear Association	0.975	1	0.325
N of Valid Cases	100		

Table 4 Revealed that there is a statistically relationship of secondary school students substance abuse and deviant behavior with the mean value X^2 (55, N = 100) = 1.085E, p = 0.000. Hence the null hypothesis is hereby not accepted and show the effect size as measure by Cramer V was high, V = 0.6, p = 0.000 suggesting a strong relationship between secondary school students substance abuse and deviant behavior in line with Babatunde, (2016) Some students resort to deviant behaviour when they are unable to withstand academic rigours while Adamu et al. (2020) attributed deviant academic behaviors among secondary students primarily to drug and substance abuse. Barasa et al. (2023) found that students abusing bhang, chang'aa, and busaa often engage in riots, property destruction, and theft of classmates' textbooks to fund their habits. This is the main reason while most of the secondary school student developed negative behavior towards a peculiar situation.

Conclusion

This study concludes that substance abuse among secondary school students in Ondo State negatively impacts their academic performance and fosters socially unacceptable deviant behaviors with a strong positive associations between substance abuse and both diminished academic performance and causes deviant behaviors.

Recommendations

1 The government, in collaboration with the Ministry of Education, revise the national school curriculum to integrate drug abuse education.

2 Establish school-based counseling units that will sensitize student who exhibit deviant behavior.

3 Enforce regular drug screening for student entry into secondary school for enrolment.

4 Partner with NDLEA for awareness campaigns.

5 Provide teacher with training, seminars and workshop on early substance abuse identification.

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Evaluation of Staff Development Programme on Job Performance among Secondary School Teachers in Kaduna North Local Government Area of Kaduna State, Nigeria

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Abstract

This study investigated staff development programmes and job performance of teachers in secondary schools of Kaduna North Local Government Area of Kaduna state. Four (4) purposes of the study, research questions and hypotheses each were formulated and tested in this study. Population of the study was comprised of three hundred and twenty-four (324) teachers. A sample of one hundred and seventy (170) respondents was selected through the simple random sampling technique. A structured questionnaire served as the sole instrument for data collection. The validity and reliability of the instrument were established, yielding a reliability coefficient of 0.86. Data were analyzed using descriptive statistics (frequency and mean) and inferential statistics (Chi-square). Findings revealed that consistent investment in staff development significantly enhances teachers' performance and consequently improves students' learning outcomes in public secondary schools within the study area. Results showed in-service training programmes have a significant and positive impact on teachers performance in the secondary schools across the study area. Conference improves teachers professional knowledge provide opportunities for networking and enhance their performance. It was recommended that in-service training should be improved to focus on pedagogical knowledge of teachers to effectively deliver their lessons. During conference there should be a period set aside where the teachers can have a forum to share their individual ideas and discoveries. Finally, workshop facilities should be provided for practical and hands on for every participating teachers where errors can be tracked and corrected.

Key words: Job Performance, Secondary Education, Staff Development, Teachers

Introduction

Staff development programmes have become a cornerstone of educational improvement worldwide, playing a vital role in enhancing teachers' professional competencies, instructional strategies and overall effectiveness in the classroom. These programmes encompass various activities such as in-service training workshops, seminars, mentoring, curriculum updates, and ongoing professional learning designed to strengthen teachers' skills, knowledge, and attitudes toward teaching. In many educational systems, particularly in developing countries, the quality and scope of staff development initiatives are critically linked to school performance and students' learning outcomes. Invariably, the success of an organization depends on the effectiveness of its staff in terms of their job performance. Their expertise, skills and confidence in coming up with original ideas will all play significant role in how well they do their duties daily (Nura, 2022). In Kaduna state, secondary education is fundamental to fostering human capital and socio-economic development, its effectiveness however remains a key concern for policymakers, school administrators and education stakeholders. Secondary school teachers are therefore expected not only to deliver the prescribed curriculum in schools but also to adapt to modern pedagogical demands, integrate technology, manage diverse learners, and respond to evolving educational standards. However, challenges such as limited training opportunities, inadequate resources, and inconsistent professional support can hinder teachers' ability to perform optimally. Recall that teachers play a crucial role in ascertaining whether or not the desired educational results would be achieved or otherwise. They are the backbone and bedrock of the entire educational system. However, their effectiveness is perhaps the most important factor affecting the future development of education (Ikebusi and Iheanacho, 2016). Teachers teach, train and assist students to acquire the necessary life skills that would enable them to survive and contribute meaningfully to the society they belong. Without adequate training and retraining viz-a-viz short and long term

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courses, they will remain at the same level they have been all these years. Staff development programme is a vital aspect of school administration which enhances teacher's performance. Owing to the challenging demands of their jobs occasional by technological innovations, teachers must be capable and willing to continually upgrade their knowledge, skills and practices. Staff development has thus become the vehicle for meaningful change which plays an integral part in developing the school philosophy, goals and expectation. It is through training and development programmes that teachers can perform better and effectively. There are however different staff development programmes used to improve the quality of teacher's performance in schools. These include seminars, In-service training and conference to mention but a few. This study thus seeks to explore the relationship between staff development programmes and the job performance of teachers in secondary schools in Kaduna.

Concept of In-Service Training

In-service training is the training given to teachers already in the service. In-service could also refers to periodic upgrading and additional professional development received on the job or during employment (Ingersoll & Gold in Husaini, 2015). It is also called post-employment training. Akinyemi (1991) defined in - service training as all activities and courses aimed at extending the professional knowledge and skill of a serving teacher (or inspector or supervisor or head teacher, etc). According to him, after acquiring the necessary know-how, a teacher (a supervisor, a counselor or significant others) needs to improve on his standard from time to time so as to prevent the quality of his teaching from diminishing and to improve it. He has to update and upgrade his knowledge so that such knowledge may not become out-modeled and stale.

Concepts of Conference

The Latin root of the word "conference" means literally bring together. Therefore, conference is a gathering of people with a common interest or background, with the purpose of allowing them to meet one another and to learn about and discuss issues, ideas and work that focus on a topic of mutual concern. A conference brings people together with common interest to participate in discussions of important information or ideas or listen to lectures to obtain information. A conference needs to be planned in terms of location, space, timing, content and form, all need to be determined. Any conference needs to inform its intended audience of its existence and to be convinced that the audience will attend. Shaibu (2016) observed that conference is not highly formalized, since the trainees are treated as participants and not just perceive recipients. The theme chosen for conferences must be relevant to the organization's objectives. Ezenne (1998) said that conferences are usually used to tackle a single or set of problems". It may involve session of various types; such as lectures, panel discussions, workshops etc.

Concepts of Workshop

Workshop comprises a small, selected group of teachers or experts. A workshop is a gathering like working, meeting where the participants are actively involved. The main aim is to acquire new knowledge that relates to the work of the participants. According to Hussaini (2015), a workshop is an office or conference room meeting intended to create or generate plans, analysis or design to support organizational efforts. The main aim of workshop is to acquire new knowledge and skills, and practice behavior in simulated working environment. They identify needed change in behavior, learn new skills and practice behavior in simulated work environment. An effective workshop is built around what is practiced and relevant from the learner perspective. It is specific and focuses on its subject matter. Through workshops, teachers are exposed to new skills which they may not necessarily acquire in the school. According to Altalib (1993), effective workshop is built around what is practical and relevant to the need of the learner's perspective. It is specific and focused on its subject matter. Based on the above, workshop is a sort of re-training exercise not to upgrade qualification but to update knowledge and skills. Kate wood and Jackson (updated) added that "workshop is a meeting of people to discuss and perform practical work in a subject or activity" a drama/poetry/training workshop.

Concept of Seminar

According to Hussaini (2015) seminar is a more rigorous activity that facilitates learning through presentations about a subject that a teacher teaches or interested in. a seminar being a topic-oriented event is designed to educate, inform an audience about subject of interest, (Abutalib,1993). A seminar may be for one, two or three days and may extend to two or three weeks. In such a programme, professionals (resource person from outside especially from universities and or ministries of education), come to present papers and answers questions posed by participants. Such a programme may also be domicile in school premises or at a designated out-of-school venue, may allow the organizers of such programme give

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pre-programme test or questionnaires to participants to assess their entry knowledge or skill, and at the end of the programme, a post-test to assess what they have gained as a result of their participation in the training exercise. Shuaibu (2016) observed that seminar is a small group discussion in a formal setting with a clear agenda. In a seminar, a speaker presents a theme or a set of papers and discussed by all those who participate. The chairman/chairperson of the seminar guides, directs coordinates and the discussion in a systematic manner in order to optimize time, resources and get more benefits. In a seminar, teachers can discuss problems regarding admission, staff development, evaluation, new idea of teaching or relevant innovations etc. in a seminar, a teacher may contribute a paper on an idea, constructively criticize or review a conventional approach.

Statement of the Problem

Staff development is one of the most promising ways for improving job performance of teachers and subsequent classroom instruction. But reverse is the case in recent times as those teachers genuinely requiring the refresher training are either not selected or considered for reasons best known to school leadership who are to make the selection. This is considered unacceptable and unfair to the system. If this is allowed to continue, achieving the objectives of secondary school education will be a mirage. Another is the challenge of inadequate or insufficient funding of staff development programmes. Dadey and Harber in Omoniwa (2016) observed that due to financial constraints which exist in almost every country in Africa. Some teachers have not had access to training (conference, seminar or even workshop) for once in a decade and others are regular attendees.

Purpose of the Study

The specific purpose of this study are as follows:

1. Find out the impact of in-service training programmme on job performance of teachers' in secondary schools of Kaduna North Local Government area of Kaduna state.
2. Examine the impact of conferences on job performance of teachers' in secondary schools of Kaduna North Local Government Area of Kaduna state.
3. Determine the impact of workshop on job performance of teachers' in secondary schools of Kaduna North Local Government area of Kaduna state.
4. Examine the impact of seminar on job performance of teachers' in secondary schools of Kaduna North Local Government Area of Kaduna state.

Hypotheses

The following null hypotheses were tested at 0.05 level of significance for acceptance or otherwise.

H_{o1}: There is no significant impact of in-service training programme on job performance of teachers' in secondary schools.

H_{o2}: There is no significant impact between conferences attended by teachers and their job performance in secondary schools.

H_{o3}: There is no significant impact between workshop attended by teachers and their job performance in secondary schools.

H_{o4}: There is no significant impact between seminar attended by teachers and their job performance in secondary schools.

Methodology

This study adopted descriptive survey research design. According to Yin (2014), descriptive survey research design is useful for providing a comprehensive understanding of a phenomenon or population. The target population for this study was comprised of all educators in public secondary schools located in Kaduna North Local Government Area. Within the study area, there are thirty-two (32) registered public secondary schools with an estimated total of three hundred and twenty-four (324) teachers. Therefore, a sample size of one hundred and seventy (170) respondents was selected at random for this study using purposive sampling technique. In any research as this, purposive sampling technique which is also judgment sampling is a non - probability sampling method where participants are selected based on the researchers' judgment and expertise. It allows for selection of sample that is representative of the population, but not necessarily randomly selected (Creswell, 2014). The sole instrument used for data collection in this study was questionnaire and titled "questionnaire on staff development programmes and the performance of teachers in secondary schools" (QSDPTSS). Pilot study was conducted in Government Secondary School, Kawo and a reliability co-efficient of 0.89 was obtained. Data analysis was undertaken using descriptive statistics such as frequency counts and simple percentages on the research questions formulated for this study.

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Presentation of Results

Hypothesis 1: There is no significant impact between in-service training programme and job performance of teachers in secondary schools. Because of its applicability, the statistical method known as Chi-square (X^2) was selected for use in the investigation of this particular hypothesis.

Table 1: Chi-square statistics between in-service training programme and job performance of teachers in secondary schools

Variable	SA	A	D	SD	N	df	X^2 Cal	X^2 Crit	P-value
Impact of In-service training programme on teacher's performance	78	57	27	8	170	15	56.02	24.99	0.011
	60.0	52.67	35.17	22.17					

Source: Field work (2025) p-value = 0.011 < 0.05

Results of the chi square (X^2) statistics revealed that in-service training programme has significant impact on teacher's performance in secondary schools. This is because the calculated p-value of 0.011 is below the 0.05 alpha level of significance, and its X^2 computed value of 56.020 is greater than the X^2 critical value of 24.99 at df 15. Their highest observed frequencies are responses on this were 78, 57, 27 and 8 for strongly agreed, agreed, disagreed and strongly disagreed respectively. This suggest a very high impact of in-service training programme on job performance of teachers. Therefore, the null hypothesis which states that there is no significant impact of in-service training programme on job performance of teachers in secondary schools, is hereby *rejected*.

Hypothesis 2: There is no significant impact between conferences attended by teachers and their job performance in secondary schools. Because of its applicability, the statistical method known as Chi-square (X^2) was selected for use in the investigation of this particular hypothesis.

Table 2: Chi-square statistics on impact of conferences attended by teachers on job performance of teachers in secondary schools

Variable	SA	A	D	SD	N	df	X^2 Cal	X^2Crit	P-value
impact of conferences attended by teachers on teacher's performance	65	44	38	23	170	15	33.53	24.99	0.004
	58.3	50.0	37.1	24.5					

Source: Field work (2025) p-value = 0.004 < 0.05

Results of the chi square (X^2) statistics revealed that conferences attended by teachers has significant impact on teacher's performance in secondary schools. This is because the calculated p-value of 0.004 is below the 0.05 alpha level of significance, and its X^2 computed value of 33.53 is greater than the X^2 critical value of 24.99 at df 15. Their highest observed frequencies are responses on this were 65, 44, 38 and 23 for strongly agreed, agreed, disagreed and strongly disagreed respectively. This suggests a very high impact of conferences attended by teachers on job performance of teachers. Therefore, the null hypothesis which states that there is no significant impact of conferences attended by teachers on teacher's performance in secondary schools, is hereby *rejected*.

Hypothesis 3: There is no significant impact between workshop attended by teachers and their job performance of teachers in secondary schools. Because of its applicability, the statistical method known as Pearson Correlation Co-efficient (PPMC) was selected for use in the investigation of this particular hypothesis.

Table 3: Chi-square statistics on impact of workshop attended on teacher's performance in secondary schools

Variable	SA	A	D	SD	N	df	X^2 Cal	X^2Crit	P-value
Impact of workshop attended by teachers' on performance	74	58	29	9	170	15	38.14	24.99	0.001
	63.0	50.6	33.0	23.3					

p-value = 0.001 < 0.05, X^2 Computed = 38.141 > X^2 critical value of 24.99 at df 15,

Results of the chi square (X^2) statistics revealed that workshop attended by teachers has significant impact on teacher's performance in secondary schools. This is because the calculated p-value of 0.001 is below the 0.05 alpha level of

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significance, and its X^2 computed value of 38.141 is greater than the X^2 critical value of 24.99 at df 15. Their highest observed frequencies are responses on this were 74, 58, 29 and 9 for strongly agreed, agreed, disagreed and strongly disagreed respectively. This suggests a very high impact of workshop attended by teachers on teachers performances. Therefore, the null hypothesis which states that there is no significant impact of workshop attended on teachers' performance in secondary schools, is hereby *rejected*.

Hypothesis 4: There is no significant impact between seminar attended by teachers and their job performance of teachers in secondary schools. Because of its applicability, the statistical method known as chi-square (X^2) was selected for use in the investigation of this particular hypothesis.

Table 4: Chi-square (X^2) statistics on impact of seminar attended on teacher's performance in secondary schools

Variable	SA	A	D	SD	N	df	X^2 Cal	X^2Crit	P-value
Impact of seminar attended on teacher's performance	76	55	28	11	170	15	43.55	24.99	0.001
	60.3	52.5	35.8	21.3					

p-value = 0.001 < 0.05, X^2 Computed = 43.552 > X^2 critical value of 24.99 at df 15

Results of the chi-square (X^2) statistics revealed that seminar attended by teachers has significant impact on teacher's performance in secondary schools. This is because the calculated p-value of 0.001 is below the 0.05 alpha level of significance, and its X^2 computed value of 43.552 is greater than the X^2 critical value of 24.99 at df 15. Their highest observed frequencies are responses on this were 76, 55, 28 and 11 for strongly agreed, agreed, disagreed and strongly disagreed respectively. This suggests a very high impact of seminar attended by teachers on their performances. Therefore, the null hypothesis which states that there is no significant impact of seminar attended by teachers on teacher's performance in secondary schools, is hereby *rejected*.

Summary of the Findings

Based on the analysis of data carried out here, the following findings emerged:

1. In-service training programme has significant impact on teacher's performance in secondary schools across the study area.
2. Conferences attended by teachers has significant impact on their performances in secondary schools.
3. The study unraveled that workshop attended by teachers has significant impact on their performances in secondary schools in the study area.
4. Respondents revealed that seminar attended by teachers are of significant impact on their performances in secondary schools.

Discussion of Findings

In hypothesis I, significant impact between in-service training programme and job performance of teachers in secondary schools was tested. The result of this test conducted using chi-square procedure revealed that the respondents were of the opinion that significant impact exist between in-service training and teachers' performance in public schools of the study locality. The null hypothesis was therefore rejected. It was noted from the responses of the respondents that teachers' performance can be impacted on account of in-service training. This was the conclusion drawn from the data.

Hypothesis II examined whether or no significant impact exists between conferences attended by teachers and their job performance in secondary schools. It was rejected in favour of significant impact exist between conferences attended by teachers and their relative performance in the discharge of duties and students' academic attainment in public secondary schools of the study area. According to the related items of the variable, respondents are of the opinion that conferences attended by teachers provide a platform to share best practices, experiences and enable one another to learn new methods of teaching. Also, opportunity to network with other teachers from different schools are available. Exposes participating teachers to new ideas, research and innovation in education as to improve their teaching practices in the classrooms. The issue of no significant impact between workshop attended by teachers and their performance in secondary schools was analyzed in hypothesis three. The outcome of this study revealed that significant impact exists between the duo. An affirmation that the null hypothesis was rejected. According to the related items of the variable, respondents are of the opinion that workshop provides hands-on training to teachers which can be applied in their teaching practices on daily

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basis. It also helps to address diverse needs of teachers making the students understand more. Classrooms can be better managed if only teachers are granted the opportunity to attend this training programme. The issue of no significant impact between seminar attended by teachers and their job performance in secondary schools was examined in hypothesis four. This particular null hypothesis has been rejected by the respondents. According to the related items of the variable, respondents believed that teachers who might have attended seminars are introduced to new teaching strategies, methods and techniques to improve classroom instruction. Seminar further motivate teachers to be more committed to teaching, an indication of job satisfaction. Classroom practices is sort what reduced as the knowledge gained cannot assist them to perform their duties efficiently. This can be attested to, as teachers' knowledge, skills and practices are improved, same way as students' learning also improves.

Conclusion

The impact of staff development programmes on job performance of teachers in secondary schools of Kaduna North Local Government Area cannot be overemphasized. This study has shown that staff development initiatives, when properly planned and implemented, significantly enhance teachers' knowledge, instructional skills, and professional confidence. Teachers who actively participate in workshops, seminars, in-service training, and continuous professional development activities are better equipped to adopt innovative teaching strategies, manage classrooms effectively, and respond to the diverse learning needs of students. Consequently, the quality of instruction improves, which directly translates to improved student learning outcomes and overall school performance. Staff development also fosters teachers' sense of commitment and motivation. Exposure to modern pedagogical practices, curriculum innovations, and technological integration promotes creativity, problem-solving, and adaptability in the classroom.

Recommendations

The following recommendations were put forward:

1. In-service training should be improved upon to focus more on pedagogical knowledge of teachers to effectively deliver their lessons.
2. During conferences there should be period set aside where the teachers can have a forum to share their individual ideas and discoveries and if possible include this as core part of the conferences.
3. During workshops facilities should be provided for practical and hands-on for every participating teachers where errors can be tracked and corrected.
4. During seminars students should also be allowed to participate to freely demonstrate what they are being taught so that other teachers around can correct them.

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Influence of Capacity Building on Utilization of Instructional Materials, Teaching Pedagogy and Lesson Planning among Secondary School Teachers in South-West, Nigeria

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Abstract

The study examined the Influence of Capacity Building on utilization of Instructional Materials, Teaching Pedagogy and Lesson Planning among Secondary School Teachers in South-West, Nigeria. The study had 3 objectives among which were to; determine of the Influence of Capacity Building on Teachers' Ability to use Instructional Materials in Public Secondary Schools in South-West Zone, Nigeria, examine the influence of Capacity Building Training on Teachers' Method of Teaching in Public Secondary Schools in South-West Zone, Nigeria. Three research questions and three hypotheses were asked and formulated respectively, which are in line with objectives. The study adopted a descriptive survey research design with a population of 76,360 comprising 2,686 Principals, 72,055 Teachers, and 1,619 Officials of Ministries of Education and a sample of 383. Descriptive statistics (frequency and mean) were used to answer the research questions, while One-Way Analysis of Variance (ANOVA) was used to test the hypotheses at a 0.05 level of significance. The findings of the study revealed, that Capacity building on teachers' ability to use instructional materials positively influenced teaching and learning in secondary schools (P=0.134). Capacity building on teachers' methods of teaching influenced instructional practices in secondary schools (P=0.317) and Capacity building on lesson preparation by teachers enhanced teachers' planning and organization of lessons (P=0.257). The study concluded that capacity building significantly enhanced teachers' performance in public secondary schools in the South-West Zone, Nigeria. The study recommended among others that Teachers should be trained to apply diverse teaching methods to enhance students' learning outcomes and classroom engagement. School administrators should ensure teachers are supported in lesson preparation, including planning, sequencing and use of relevant resources. Keywords: Capacity Building, Teaching, Learning, Teaching and Learning, Teaching Contents.

Introduction

In recent time, there is no doubt that qualified and committed teachers are prerequisite for successful and excellent education. Teachers perform nation-building roles through effective implantation of curriculum in schools. The role of teachers will continue to increase in tandem with the current developments in the world of education because education is a social phenomenon that is dynamic often subjected to changes and innovations in the society (Omar, Khuan, Kamaruzaman, Marinah and Jamal, 2011). In order to achieve this laudable objective, capacity building for teachers is crucial for improving teaching and learning outcomes in secondary schools in Nigeria. Studies have shown that teachers who undergo capacity building programmes are equipped with modern teaching techniques and positively influencing students' academic performance at long-run. Teachers therefore need to be effective in the performance of their role especially in meeting with national development. However, there is a dire need for building teachers' capacity to improve teachers' performance. Teachers must strive towards excellence and provide their students with the tools to succeed, which is an essential component of their growth and development as professionals. The government, parents and all the stakeholders need to take radical steps to reverse the culture of students' failure. Therefore, to improve teachers' skills, knowledgebase and competencies, it involves simultaneously providing the appropriate training or re-training of teachers,

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provision of the necessary resources, materials and infrastructure that will foster sustainable teacher commitment to effective teaching and learning as well as ensure the successful implementation of the nation's educational policies. Poor academic performance has been observed in core subjects such as mathematics and English Language in both Junior and Senior Secondary Schools in Nigeria which is not only frustrating to the students and the parents alone, both equally affecting the society at large in terms of inadequate manpower in the nation's economy, politics and educational sector. More also, with the national policy statement above, the poor achievement of the students cannot enable the government to achieve its' objectives on Education. Meanwhile the students' poor performance was tagged to teachers' attitude toward their jobs in terms of poor attendance to lessons, absence from duty, inadequate delivery of lessons, un-care attitude of students in their academic work, lack of updating their knowledge to learn new skills and ideas (Adebule, 2014). In-spite of government commitment in (financial, manpower, school facilities, infrastructures, ICT facilities and teachers training) there seems no any remarkable improvement in students' accomplishment in term of academic performance. The continuous changes in the school curriculum made it imperative for the teachers to be well prepared for these changes and challenges. This is where the researcher's belief that teachers' capacity building could be the most important ingredient that can be used to improve students' academic performance. If teachers are exposed regularly to training like on personality coupled with discipline which may influence students' academic performance by emulating their teacher, teaching methodology which can enhance better teaching delivery that may bring credible results by the students and training on teaching methods. for teachers which may improve effective teaching and learning process. Subject mastery competence of teacher is another indicator of teacher's effectiveness. Here, the teacher draws on deep and well-integrated disciplinary knowledge; draws on well-developed Pedagogical Content Knowledge; has knowledge of recent developments in the field; helps pupils associate concepts and principles to their everyday experiences; and, is able to apply his/her subject matter knowledge to help learners of different levels understand core concepts and their applications (Egbo, 2011). Therefore, poor subject matter mastery by any teacher indicates ineffectiveness on the part of the teacher. Teacher's subject mastery is reflected through the way he/she introduces the lesson and proceeds in delivering the lesson.

Statement of the Problem

Despite the government resources that are being committed to education, it is observed that the students still perform poorly. This is partly attributed to the lack of capacity building on the part of the teachers. The purpose of the study, therefore, is to assess the Impact of Capacity Building of Teachers on Teaching and Learning Process in Secondary Schools in South-West Zone, Nigeria. In recent time, statistics from available WAEC (2025) WAEC results show that students performed poorly as 38.32% (Five (5) including Mathematics and English Language) was recorded in the external examinations for 2025. Hence, the objectives of secondary education are far from been achieved. This unfortunate development has been a great concern amongst parents and the public who usually put the blame of poor performance and increasing incidence of students' drop out, indiscipline and bad behaviours, inability of teachers to use instructional materials effectively, inability to apply diverse methods of teaching, inadequate lesson plan, among others, as sources of the ugly incidence in the school. These problems result to poor academic climate and culture not conducive for effective teaching and learning process resulting in continuous poor performance of students in certification examinations, poor learning outcomes and products quality. Therefore, the declining in the quality of education in secondary schools rooted in inadequate teacher training, insufficient resources, and ineffective teaching methods, leading to poor students' performance and engagement in learning activities has been a major concern to all stakeholders in education sector in Nigeria. Research efforts have equally shown that the problem was caused by poor training and appointment of principals into Nigeria secondary schools. In a bid to salvage secondary schools from this ineffectiveness, Federal Government lunched capacity-building programme. The programme was meant to empower secondary school teachers and improve their ability in such areas as teachers' ability to use Instructional Materials, enhance Method of Teaching, Preparation of Lesson by Teachers, among others. It is against this background that the study is set out to investigate the extent of impact which teachers' capacity building programmes have on their effectiveness in teaching-learning process especially, in South-West, Nigeria.

Objectives of the Study

The specific objectives of the study are to:

1. assess the Influence of Capacity Building Training on Teachers' Ability to use Instructional Materials in Public Secondary Schools in South-West Zone, Nigeria;

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2. examine the Influence of Capacity Building Training on Teachers' Method of Teaching in Public Secondary Schools in South-West Zone, Nigeria; and
3. find out the Influence of Capacity Building Training on Preparation of Lesson by Teachers in Public Secondary Schools in South-West Zone, Nigeria; and

Research Questions

The following research questions are asked to guide the study:

1. What is the Influence of Capacity Building Training on Teachers' Ability to use Instructional Materials in Public Secondary Schools in South-West Zone, Nigeria?
2. How does Capacity Building Training influence on Teachers' Method of Teaching in Public Secondary Schools in South-West Zone, Nigeria? and
3. What is the Influence of Capacity Building Training on Preparation of Lesson by Teachers in Public Secondary Schools in South-West Zone, Nigeria?

Hypotheses

The following hypotheses are formulated and tested to guide the study:

H_{O1}: There is no significant Difference in the Opinions of Principals, Teachers and Officials of Ministry of Education on Influence of Capacity Building on Teachers' Ability to use Instructional Materials in Public Secondary Schools in South-West Zone, Nigeria;

H_{O2}: There is no significant Difference in the Opinions of the Respondents on Influence of Capacity Building on Teachers' Method of Teaching in Public Secondary Schools in South-West Zone, Nigeria; and

H_{O3}: There is no significant Difference in the Opinions of the Respondents on Influence of Capacity Building on Preparation of Lesson by Teachers in Public Secondary Schools in South-West Zone, Nigeria

Scope of the Study

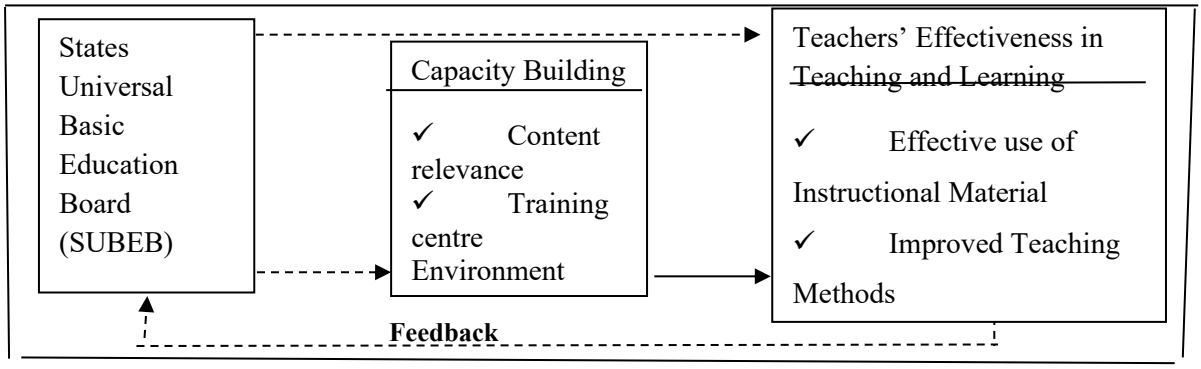
The study was delimited to Influence of capacity Building on Teaching and Learning in Secondary Schools in South -West Zone, Nigeria. The population of the study covered the entire Public Secondary Schools in South- West Zone, Nigeria using Teachers, Principals and Ministries of Education (MoE) Officials as respondents of the study. Stratified Sampling Techniques was used for the study. Public Secondary School is of interest to the researcher because most capacity building programmes by the Sate Universal Basic Education Board (SUBEB) are for the secondary school teachers.

Literature Review

The study reviewed some related literatures and came up with a conceptual framework relevant to the study. Followed by Theoretical Framework related to the study. Other reviews include Influence of Capacity Building on Teachers' Ability to Use Instructional Materials in Secondary Schools, Influence of Capacity Building Training on Teachers' Method of Teaching in Secondary Schools, Influence of Capacity Building on Preparation of Lesson by Teachers in Secondary Schools. Empirical Studies related to the present study were conducted and summarised.

Conceptual Framework of Capacity Building on Teachers Effectiveness in Teaching and Learning

This framework illustrates how capacity building influences teaching and learning through teachers' effectiveness using some determinants. There are two constructs from the topic; Capacity Building (Independent variable) and Teaching and Learning Process (Dependent variable).



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Source: Researcher's Design, 2025

Theoretical Framework

Two theories were adopted for the study. They are: Social Constructivist Theory by Lev Vygotsky (1896-1934) and Social Cognitive Learning Theory (Bandura, 1977-1986)

Methodology

The research design used for this study is descriptive survey design, which is particularly effective for gathering data about people's opinion and perceptions, beliefs, and attitudes in a systematic manner (Creswell & Creswell, 2018) aimed at finding out the Influence of Capacity Building on Teaching and Learning in Secondary Schools in South-West Zone, Nigeria. In line with the objectives and hypotheses of this study, a descriptive survey study is chosen because it describes the respondents' perceptions on the variables that make up the organizational climate. Again, it can be used to elicit information about people's thought, felling, attitudes and opinions. The population of this study has 76,360 comprising 2,686 Principals, 1,619 Officials of Ministry of Education and 72,055 Teachers in the South-West Zone, Nigeria. The states include: Ekiti, Lagos, Ogun, Ondo, Osun and Oyo States. Table 1 provides a detailed breakdown of the population studied across six states in South-West, Nigeria. The population of the study was made up of all principals of public secondary schools, all teachers of the public secondary schools and all officials of the Ministry of Education (MoE) in the six states of South -West Zone, Nigeria. Ekiti State has 192 Principals, 7,286 Teachers, and 162 Officials of Ministry of Education (MoE), totalling 7,640 individuals. Lagos State has the highest number of Principals (688) and a significant number of Teachers (17,918), with 184 Officials of Ministry of Education (MoE), making a total of 18,790. Ogun State has 513 Principals, 11,942 Teachers, and 175 Officials of Ministry of Education (MoE), totalling 12,630. Ondo State has 308 Principals, 8,486 Teachers, and 462 Officials of Ministry of Education (MoE), making 9,256 while Osun State has 356 Principals, 6,360 Teachers, and 291 Officials of Ministry of Education (MoE), totaling 7,007 and Oyo State has 629 Principals, a significant number of Teachers 20,063, and 345 Officials of Ministry of Education (MoE), making 21,037.

Table 1: Population of the Study

S/N	No of State in South-West Zone	No of Principals	No of Teachers	No of official of MoE	Total
1	EKITI	192	7,286	162	**7,640**
2	LAGOS	688	17,918	184	**18,790**
3	OGUN	513	11,942	175	**12,630**
4	ONDO	308	8486	462	**9,256**
5	OSUN	356	6,360	291	**7,007**
6	OYO	629	20,063	345	**21,037**
	Grand Total	**2,686**	**72,055**	**1619**	**76,360**

Source: State Ministries of Education – South-West Zone, Nigeria, (2025)

Table 1 showed the number of respondents (Principals, Teachers and Ministries of Education (MoE) Officials) across the six states in the South – West Zone, Nigeria.

Sample and Sampling Techniques

The sample size for the study was 383 as recommended by Research Advisor Table (2006) comprising 260 teachers, 90 Principals and 33 officials of the Ministries of Education in the Zone distributed by using proportionate sampling. The stratified sampling technique was used to sample 3 states out of the 6 states in South-West Zone. The states are: Ogun, Ekiti and Osun state. This sample size provided the representation of the entire Zone used. The basis for stratification was geographic, characteristics of the population, age and year of teaching, etc. Table 2 describes sample of the study. Three (3) states out of the six (6) states were selected as the sample for the study. The state selected are Ekiti State with total respondents of 113, Ogun State with the highest respondents of 160 and Osun State with the total respondents of 110. The research sample was based on the research advisor table of 2006. Hence, the total sample for the study was 383 and it comprised of principals (90), Teachers (260) and Ministry of Education (MoE) Officials (33) across the sampled states in South – West Zone, Nigeria.

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Table 2: Sample of the Study

S/N	States in South-West	Principals in each State	Teachers in each State	No of official of MoE	Total
1	EKITI	40	65	8	**113**
2	OGUN	30	120	10	**160**
3	OSUN	20	75	15	**110**
	Grand Total	**90**	**260**	**33**	**383**

Source: Field work (2025)

Table 2 showed the number of respondents (Principals, Teachers and Ministries of Education (MoE) Officials) for the selected sample size (Ekiti, Ogun and Osun) within South – West Zone, Nigeria. The instrument used for collecting data for this study was a structured questionnaire designed by the researcher. Opinions of Respondents were obtained using 5-point Likert scale as 5 = Strongly Agree, 4 = Agree, 3= Undecided, 2 = Disagree and 1 = strongly Disagree respectively. Test- re - test method of two weeks interval was observed on the respondents in ascertaining the reliability of the instrument. The reliability index stood at 0.812 at 0.05 level of significance and data collected were analysed using frequency and mean for research questions while hypotheses was tested using one-way analysis of variance (ANOVA) respectively.

Presentation of Result

Research Question One: What is the Influence of Capacity Building Training on Teachers' Ability to use Instructional Materials in Public Secondary Schools in South-West Zone, Nigeria?

The research question one relates to items 1 - 9 in section B of the questionnaire designed to gather respondents' (principals, teachers and Ministries of Education officials) opinions on Teachers' Ability to use Instructional Materials in Public Secondary Schools in South – West Zone, Nigeria and data obtained were analyzed using frequency and mean as summarized in Table 3.

Table 3: Opinions of Respondents on the Influence of Capacity Building on Teachers' Ability to use Instructional Materials in Secondary Schools in South-West Zone, Nigeria

S/N	Item Statement	Respondents	SA	A	U	D	SD	Mean
1	Through capacity building, the teacher makes effective use of the teaching and learning materials/media.	Teachers	120	90	28	14	8	4.15
		Principals	40	32	10	5	3	4.12
		MOE Officials	15	12	3	2	1	4.15
2	Through capacity building, instructional materials such as pictures, flash cards, posters, maps and charts are effectively used by the teachers in this school.	Teachers	110	100	26	16	8	4.11
		Principals	38	34	10	5	3	4.10
		MOE Officials	14	13	3	2	1	4.12
3	Through capacity building, visual materials provided are effectively used by the teachers in this school.	Teachers	108	98	28	18	8	4.08
		Principals	36	34	12	5	3	4.06
		MOE Officials	13	13	4	2	1	4.06
4	Through capacity building, Computer ICT facilities such as slide projectors, projector and over-head projectors provided for this school are effectively used by the teachers.	Teachers	100	90	30	26	14	3.91
		Principals	34	32	12	8	4	3.97
		MOE Officials	12	12	4	3	2	4.00

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S/N	Item Statement	Respondents	SA	A	U	D	SD	Mean
5	Through capacity building, Library facilities provided are adequately used by the teachers in this school.	Teachers	105	92	30	22	11	3.91
		Principals	36	32	10	7	5	3.94
		MOE Officials	14	11	4	2	2	4.03
6	Through capacity building, Laboratory facilities provided are adequately used by the teachers in this school.	Teachers	98	90	34	26	12	3.91
		Principals	33	34	12	7	4	3.94
		MOE Officials	13	12	5	2	1	4.03
7	Through capacity building, Audio Visual materials provided are adequately used by the teachers in this school.	Teachers	102	94	32	22	10	3.98
		Principals	35	33	12	6	4	3.99
		MOE Officials	13	13	4	2	1	4.06
8	Through capacity building, chalkboard provided is adequately used by the teachers in this school.	Teachers	115	92	28	17	8	4.11
		Principals	38	34	10	5	3	4.10
		MOE Officials	14	13	3	2	1	4.12
9	Through capacity building, textbooks and other print materials provided are effectively used by the teachers in this school.	Teachers	118	90	26	18	8	4.12
		Principals	40	32	10	5	3	4.12
		MOE Officials	15	12	3	2	1	4.15
	Grand Mean							**4.05**

Source: Field work (2025)

Note: SA = Strongly Agree, A = Agree, U = Undecide, D = Disagree, SD = Strongly Disagree

Research Question Two: How does Capacity Building Training Influence Teachers' Method of Teaching in Public Secondary Schools in South-West Zone, Nigeria?

The research question one relates to items 1 - 9 in section C of the questionnaire designed to gather respondents' (principals, teachers and Ministries of Education officials) opinions on Teachers' Method of Teaching in Public Secondary Schools in South – West Zone, Nigeria and data obtained were analyzed using frequency and mean as summarized in Table 4

Table 4: Opinions of Respondents on the Influence of Capacity Building on Teachers' Method of Teaching in Secondary Schools in South-West Zone, Nigeria

S/N	Item Statement	Respondents	SA	A	U	D	SD	Mean
10	Through capacity building, lecture method is effectively used for teaching and learning by the teachers in this school.	Teachers	110	88	32	20	10	4.03
		Principals	38	34	10	5	3	4.10
		MOE Officials	15	12	3	2	1	4.15
11	Through capacity building, demonstration method is effectively used for teaching and learning by the teachers in this school.	Teachers	108	90	34	18	10	4.03
		Principals	37	33	11	6	3	4.06
		MOE Officials	14	13	3	2	1	4.12
12	Through capacity building, discussion method is effectively used for teaching and learning by the teachers in this school.	Teachers	112	92	28	18	10	4.07
		Principals	36	34	12	5	3	4.06
		MOE Officials	14	13	3	2	1	4.12

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S/N	Item Statement	Respondents	SA	A	U	D	SD	Mean
13	Through capacity building, discovery guided inquiry method is effectively used for teaching and learning by the teachers in this school.	Teachers	100	96	32	20	12	3.97
		Principals	35	34	12	6	3	4.02
		MOE Officials	13	13	4	2	1	4.06
14	Through capacity building, laboratory activity method is effectively used for teaching and learning by the teachers in this school.	Teachers	98	92	34	24	12	3.92
		Principals	33	34	14	6	3	3.98
		MOE Officials	13	12	5	2	1	4.03
15	Through capacity building, project method is effectively used for teaching and learning by the teachers in this school.	Teachers	102	94	30	22	12	3.97
		Principals	36	32	12	7	3	4.01
		MOE Officials	13	13	4	2	1	4.06
16	Through capacity building, field trip/excursion method is effectively used for teaching and learning by the teachers in this school.	Teachers	95	90	36	26	13	3.88
		Principals	34	32	14	7	3	3.97
		MOE Officials	12	13	4	3	1	3.97
17	Through capacity building, individualized learning method is effectively used for teaching and learning by the teachers in this school.	Teachers	100	88	34	26	12	3.91
		Principals	35	32	13	7	3	3.99
		MOE Officials	13	12	5	2	1	4.03
18	Through capacity building, teachers use all the teaching methods for teaching and learning in this school.	Teachers	108	90	30	22	10	4.02
		Principals	37	33	12	5	3	4.07
		MOE Officials	14	13	3	2	1	4.12
	Grand Mean							**4.03**

Source: Field work (2025)

Note: SA = Strongly Agree, A = Agree, U = Undecide, D = Disagree, SD = Strongly Disagree

Research Question Three: What is the Influence of Capacity Building Training on Teacher's Ability to motivate Learners in Secondary Schools in South-West Zone, Nigeria.

The research question one relates to items 1 - 9 in section D of the questionnaire designed to gather respondents' (principals, teachers and Ministries of Education officials) opinions on Teachers' Ability to motivate Learners in Public Secondary Schools in South – West, Nigeria and data obtained were analyzed using frequency and mean as summarized in Table 5

Table 5: Opinions of Respondents on the Impact of Capacity Building on Teachers' Ability to motivate Learners in Secondary Schools in South West Zone, Nigeria

S/N	Item Statement	Respondents	SA	A	U	D	SD	Mean
19	Through capacity building training, there is motivation of both genders' participation and distribution of tasks during class activities in this school.	Teachers	110	100	30	15	5	4.13
		Principals	38	35	10	5	2	4.13
		MOE Officials	15	14	3	1	0	4.30
20	Through capacity building training, students are encouraged to give their own observations/results in practical work and to discuss how they differed from those of others.	Teachers	105	102	28	15	10	4.07

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S/N	Item Statement	Respondents	SA	A	U	D	SD	Mean
		Principals	37	34	12	5	2	4.10
		MOE Officials	14	14	4	1	0	4.24
21	Through capacity building training, students are encouraged to give their prior experiences and explain their ideas related to various subject content.	Teachers	108	98	32	12	10	4.08
		Principals	36	34	12	5	3	4.06
		MOE Officials	14	13	4	2	0	4.18
22	Through capacity building training, the teacher is sympathetic to the needs and problems of the learners in this school.	Teachers	115	95	25	15	10	4.12
		Principals	38	35	10	5	2	4.13
		MOE Officials	16	14	3	0	0	4.39
23	Through capacity building training, the teacher appears to be enjoying the teaching in this school.	Teachers	112	98	25	15	10	4.10
		Principals	37	34	12	5	2	4.10
		MOE Officials	15	14	3	1	0	4.30
24	Through capacity building training, the teacher learns how to exercise patience with his/her students.	Teachers	108	98	30	15	9	4.08
		Principals	36	34	12	5	3	4.06
		MOE Officials	14	14	3	2	0	4.21
25	Through capacity building training, teachers are encouraged to give their own predictions and discuss how they differed from those held by others.	Teachers	105	100	35	15	5	4.10
		Principals	36	34	12	5	3	4.06
		MOE Officials	14	13	4	2	0	4.18
26	Through capacity building training, individualised motivation is used for teaching and learning by the teachers in this school.	Teachers	110	98	30	15	7	4.11
		Principals	37	34	12	5	2	4.10
		MOE Officials	15	13	3	2	0	4.21
27	Through capacity building training, teachers use a series of motivation strategies for teaching and learning with the students in this school.	Teachers	112	100	28	12	8	4.14
		Principals	38	34	10	5	3	4.10
		MOE Officials	16	14	3	0	0	4.39
	Grand Mean							**4.15**

Source: Field work (2025)

Note: SA = Strongly Agree, A = Agree, U = Undecide, D = Disagree, SD = Strongly Disagree

Hypothesis Test Results

The data collected for this study were coded and analyzed using Analysis of Variance (ANOVA) at significant Alpha level of 0.05 as presented in Table 6 to 8.

Hypothesis One: There is no significant Difference in the Opinions of Principals, Teachers and Officials of Ministry of Education (MoE) on Influence of Capacity Building on Teachers' Ability to use Instructional Materials in Public Secondary Schools in South-West Zone, Nigeria

To test this hypothesis, items 1- 9 in section B of the questionnaire were used. Inferential statistics of Analysis of Variance (ANOVA) was used as presented in Table 6.

Table 6: One-way Analysis of Variance (ANOVA) on the Opinions of Principals, Teachers and Officials of Ministry of Education on Influence of Capacity Building on Teachers' Ability to use Instructional Materials in Public Secondary Schools in South-West Zone, Nigeria

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	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	0.412	2	0.206	2.015	0.134	Retained
Within Groups	38.860	383	0.102			
Total	**39.272**	**385**				

Source: Field Work (2025)

The analysis of the result in Table 6 showed the opinions of principals, teachers, and officials of the Ministries of Education on the influence of capacity building on teachers' ability to use instructional materials in public secondary schools in the South-West Zone, Nigeria. The result revealed a p-value of 0.134**,** which is greater than the fixed probability level of 0.05. Thus, there is no significant difference in the opinions of principals, teachers, and MOE officials on the impact of capacity building training on teachers' use of instructional materials in the zone. Therefore, the null hypothesis (H_01) is retained**.**

Hypothesis Two: There is no significant Difference in the Opinions of the Respondents on Influence of Capacity Building on Teachers' Method of Teaching in Public Secondary Schools in South-West Zone, Nigeria;

To test this hypothesis, items 1- 9 in section C of the questionnaire were used. Inferential statistics of Analysis of Variance (ANOVA) was used as presented in Table 7.

Table 7: One-way Analysis of Variance (ANOVA) on the Opinions of Respondents on Influence of Capacity Building Training on Teachers' Method of Teaching in Public Secondary Schools in South-West Zone, Nigeria

	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	0.123	2	0.222	2.234	0.317	Retained
Within Groups	34.721	383	0.121			
Total	34.844	**385**				

Source: Field Work (2025)

The analysis of the result in Table 7 showed the opinions of principals, teachers, and officials of the Ministries of Education on the influence of capacity building on teachers' methods of teaching in public secondary schools in the South-West Zone, Nigeria. The result reveals a p-value of 0.317, which is greater than the fixed probability level of 0.05. This indicates that there is no significant difference in the opinions of the respondents on the impact of capacity building training on teachers' methods of teaching in the zone. Therefore, the null hypothesis (H_0) is retained.

Hypothesis Three: There is no significant Difference in the Opinions of the Respondents on Influence of Capacity Building on Preparation of Lesson by Teachers in Public Secondary Schools in South-West Zone, Nigeria;

To test this hypothesis, items 1- 9 in section D of the questionnaire were used. Inferential statistics of Analysis of Variance (ANOVA) was used as presented in Table 8.

Table 8: One-way Analysis of Variance (ANOVA) on opinions of the Respondents on Influence of Capacity Building on Preparation of Lesson by Teachers in Public Secondary Schools in South-West Zone, Nigeria

	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	0.287	2	0.144	1.364	0.257	Retained
Within Groups	40.094	383	0.106			
Total	**40.381**	**385**				

Source: Field Work (2025)

The analysis of the result in Table 8 showed the opinions of principals, teachers, and officials of the Ministries of Education on the influence of capacity building on teachers' lesson preparation in public secondary schools in the South-West Zone, Nigeria. The result reveals a p-value of 0.257, which is greater than the fixed probability level of 0.05. This indicated that there is no significant difference in the opinions of the respondents on the influence of capacity building training on teachers' lesson preparation in the zone. Therefore, the null hypothesis (H_0) is retained.

Summary of Hypothesis Result

In view of the findings on the respondents' perceived opinions on the influence of capacity building on teachers' ability to perform various instructional and managerial tasks in public secondary schools in the South-West Zone of Nigeria, the following summary of the hypotheses testing was made:

Table 9 provides summary of results based on hypotheses formulated and tested using Analysis of Variance (ANOVA).

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Table 9: Summary of Hypotheses Testing

S/N	Statements	Statistical Method Involved	F-cal	P.val	Remark
1	There is no significant difference in the opinions of Principals, Teachers, and MOE Officials on the influence of capacity building on teachers' ability to use instructional materials in public secondary schools in South-West Zone, Nigeria	ANOVA	2.015	0.134	Retained
2	There is no significant difference in the opinions of Principals, Teachers, and MOE Officials on the influence of capacity building on teachers' methods of teaching in public secondary schools in South-West Zone, Nigeria	ANOVA	2.234	0.317	Retained
3	There is no significant difference in the opinions of Principals, Teachers, and MOE Officials on the influence of capacity building on lesson preparation by teachers in public secondary schools in South-West Zone, Nigeria	ANOVA	1.364	0.257	Retained

Source: Field work (2025)

Table 9 showed the summary of hypotheses testing. All hypotheses tested were retained, indicating that there is no significant difference in the opinions of Principals, Teachers, and MOE Officials on the various aspects of capacity building. The mean scores of the respondents suggest that capacity building has a positive influence on teachers' ability to use instructional materials, teachers' methods of teaching and lesson preparation by teachers in public secondary schools in the South-West Zone, Nigeria.

Summary of Findings

Capacity Building significantly improved teacher performance in the following three areas:

1. Instructional Materials: effective utilization of instructional materials (teaching aids) positively influenced teaching and learning outcomes in secondary schools in South-West Zone, Nigeria (P = 0.134);
2. Teaching Methods: application of diverse method of teaching (lecture, demonstration, discussion, project-based) influenced instructional practices in Secondary Schools in South-West Zone, Nigeria (P = 0.317); and
3. Lesson Preparation: effective planning of lesson note through improved sequencing and identification of learning objectives influenced teachers' preparation of lesson in Secondary Schools in South-West Zone, Nigeria (P = 0.257).

Conclusions

Based on the findings of this study, it is concluded that capacity building significantly enhanced teachers' performance in public secondary schools in the South-West Zone, Nigeria. Capacity building has a positive influence on teaching and learning in secondary schools in South-West, Zone Nigeria. Thus, it could be concluded that: Teachers effectively utilized teaching aids and resources, thereby enhanced classroom engagement and learning outcomes; teachers applied diverse methods (e.g., lecture, demonstration, discussion) to improve student understanding; and teachers planned and organized lessons effectively, identified learning objectives and incorporated relevant resources.

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Recommendations

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

1. Educational authorities should continue to organize regular capacity building programs to equip teachers with more skills for effective use of instructional materials in public secondary schools in South-West Zone, Nigeria;
2. Teachers should continue to be trained to apply diverse teaching methods to enhance student learning outcomes and classroom engagement in public secondary schools in South-West Zone, Nigeria; and
3. School administrators should continue to ensure teachers are supported in lesson preparation, including planning, sequencing, and use of relevant resources in public secondary schools in South-West Zone, Nigeria.

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Assessment of Voter Education on Electorates for Credible Election and Good Governance in Nigeria

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Abstract
Nigerian voter turnout has remained low when compared to other African democracies. Presenting a graphical illustration of this scenario, INEC (2019) citing example of the 2015 general election, voter turnout was only 43.7%, and in 2019, it fell even lower to 34.75%. This downward trend raises questions about how well electoral reforms and voter education can address the obvious barriers to electoral participation and the credibility of elections that can guarantee good governance. It is therefore pertinent to get citizens more informed in discharging their legitimate duties and obligations necessary for credible elections, a basic component of good governance in Nigeria. It is against the foregoing that this study x-rays the place of voter education in attaining credible elections as a means of achieving good governance in Nigeria. Findings from the study revealed that majority of respondents (with mean scores ranging from 3.32 to 3.50) authenticate voter education as Nigeria's democratic process tool; participants generally agreed that voter education plays a significant role in electoral credibility, with mean scores for all five items above 3.0; the mean scores of all the items on how voter education affects election credibility in Nigeria were higher than the neutral value of 2.5, hence, respondents had a favourable opinion of the issue for every item in the t-test since all computed t-values were greater than the critical t-value of 1.658 at the 0.05 significance level. Consequently, it behooves the Independent National Electoral Commission (INEC) and civil society organizations to intensify nationwide civic education campaigns that targets rural and first-time voters, to improve knowledge of voting procedures and reduce voter apathy; education policymakers should include structured voter education modules in secondary and tertiary school curricula to foster early civic responsibility and political awareness among Nigerian youth; both Government and NGOs should maximize the use of social media, radio, and TV programmes in disseminating simplified and timely voter education content, ensure wider reach and reduce misinformation that could undermine election credibility.
Key words: Voter education; Credible election; Good governance; Electoral violence; Voter apathy

Introduction
The foundation of any democratic society is elections, which give people the chance to choose their leaders and shape governance procedures and policies. In Nigeria, electoral processes have been plagued by problems like voter apathy, electoral malpractice, violence, and administrative inefficiencies, which in the words of Adebayo (2020) have eroded public confidence in the electoral system and deterred participation, endangering the legitimacy of Nigeria's democratic institutions. Since Nigeria returned to democracy in 1999, successive governments have implemented a number of electoral reforms to address these problems and improve electoral integrity, however, it is still unclear whether these reforms have been successful. Reiterating this view, it was the contention of Omotola (2013) that the state of the electoral reform vis-à-vis improvement in electorate participation as well as its ability to increase voter turnout is not yet satisfactory; hence, its ability to fortify the democratic process still remains at low ebb. This might not be unconnected with inadequate voter education, corollary of which brings to question the issue of credible elections in the polity. The background to Nigeria's electoral reforms is rooted in a history of electoral controversies and irregularities. Elections in the early post-independence era (1960–1983) as reported by Nwanko (2018) were characterized by widespread rigging, ballot box snatching, and voter intimidation, leading to political instability and military interventions. The transition to democracy in 1999 marked a turning point, yet subsequent elections, particularly in 2003 and 2007, were heavily criticized for fraud and violence. This prompted calls for systemic reforms to restore electoral credibility and public confidence. As a response, the Electoral Act of 2010 and subsequent amendments introduced measures such as biometric voter registration, the use of the Permanent

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Voter Card (PVC), and electronic accreditation systems to enhance transparency and voter participation (INEC, 2015). Despite these reforms, Nigerian voter turnout has remained low when compared to other African democracies. Presenting a graphical illustration of this scenario, INEC (2019) citing example of the 2015 general election, voter turnout was only 43.7%, and in 2019, it fell even lower to 34.75%. This downward trend raises questions about how well electoral reforms and voter education can address the obvious barriers to electoral participation which to Okoh and Osezua (2021), includes socioeconomic factors like poverty and illiteracy, security challenges, and mistrust of the electoral system. Studies have also contended that electoral reforms alone cannot address the structural problems that limit political participation, and that a comprehensive strategy that includes political education and voter education in particular coupled with enhanced security, and stakeholder collaboration is a sine-qua-none of entrenching participatory democratic culture in the citizens (Oni, 2014). Furthermore, in order to improve the credibility and transparency of elections, technological innovations like the Bimodal Voter Accreditation System (BVAS) and the Independent National Electoral Commission's (INEC) Result Viewing Portal (IReV) were introduced. These reforms were implemented in the general elections of 2023 and have shown promise in reducing electoral fraud and ensuring accurate voter accreditation; however, obstacles like inadequate technological infrastructure, power outages, and internet connectivity issues have hindered their full implementation and effectiveness (Akinola, 2023).

The effectiveness of these reforms in encouraging voter participation is still up for debate, especially in rural areas where access to technology is limited. Adebayo (2020) examined the difficulties of electoral reforms in Nigeria and emphasized issues like vote-buying, ballot box snatching, and the influence of "godfatherism." in the politics of Nigeria. According to the study, political meddling and a lack of institutional capacity hindered the implementation of reforms like the Electoral Act amendments, which sought to increase electoral credibility. As a result of the public's lack of trust in the electoral process, voter turnout was low. Additionally, Okoh and Osezua (2021) in their assessment of socioeconomic obstacles to voting in Nigeria in terms of lack of political education, voter education, poverty, and illiteracy revealed that socio-economic factors still make it difficult for citizens to effectively participate in elections, even in the face of technological advancements like the Permanent Voter Card (PVC) and the implementation of the Bimodal Voter Accreditation System (BVAS). Similarly, Akinola (2023) in a study on the part being played by technology in Nigeria's 2023 elections, highlighted the potential of the INEC Result Viewing Portal and BVAS. Together, these studies show that although Nigeria has made progress through electoral reforms, issues like voter apathy, electoral violence, institutional inefficiencies, and socio-economic disparities continue to undermine voter participation. These findings highlight the need for more research into the effectiveness of reforms and the enduring barriers to electoral engagement in Nigeria, the urgency of voter education as a driver of credible election and good governance inclusive. The implication of the foregoing among others is to have a rethink on the issue of voter education and credible election in the nation’s nascent democracy.

The Study

Since the return to civilian rule in 1999, Nigeria has adopted a number of legal and technological measures, such as the Electoral Act amendments, biometric voter registration, Permanent Voter Cards (PVC), the Bimodal Voter Accreditation System (BVAS), and the INEC Result Viewing Portal (IReV) to combat electoral fraud and increase transparency. However, elections continue to be beset by voter apathy, violence, logistical failures, and political interference. These persistent issues not only impede inclusive participation but also cast doubt on the legitimacy of elected governments and governance at large. Furthermore, a significant portion of the population remains marginalized, especially in rural areas, due to deeper structural issues like poverty, illiteracy, insecurity, and restricted access to digital infrastructure and inadequate voter education. Even though technology has shown promise generally across the globe, the uneven nature of its application portends a digital divide that makes voting more difficult, thus, warranting adequate voter education and credibility of elections in the country. It is against the foregoing identified gaps capable of affecting the credibility of elections arising from untoward effects of inadequate voter education culminating in questionable election results that this study set to determine the effects of voter education on election credibility as a measure of good governance in Nigeria.

Objectives of the Study

1. To assess the prevalence of voter education among electorates in Nigeria as a measure of increasing voter turnout during elections in Nigeria.

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2. To ascertain the indices of voter education necessary for the electorates' participation during elections for good governance.
3. To identify the extent to which voter education can promote credible election and good governance in Nigeria.

Research Questions

1. What is the level of prevalence of voter education among electorates in Nigeria?
2. What are the indices of voter education necessary for the electorates?
3. To what extent can voter education promote credible election and good governance in Nigeria?

Concept and Import of Voter Education

Voter education can be described as all efforts targeted at building the literacy level of the electorate for the purpose of taking informed decision necessary for the achievement of election success. This has to do with attaining free, fair, and credible elections in electoral procedures, this transcends civic education and political literacy. It entails a method of getting informed citizens on election issues, a basic function of the state and government in power which Onuigbo et al. (2018) adduced capable of enhancing the credibility of election. Voter education relate to the principles of democracy (Borhaug, 2005) based on the creation of a conducive environment for people's involvement in the development through registering and participating in election needed to foster hearing of citizens` voices in the decision making coupled with the achievement of equity and equality. It is thus concerned with equipping the citizens with relevant and necessary knowledge, skills and traits of character akin to political culture. Buttressing further, Okon (2013) described voter education as the enlightenment of citizens on the advantages of adequate participation in democratic and electoral processes. This involves registering as voters, mobilizing of voters as well as voting. Thus, citizens through voter education do realize the importance of the performance of their civic duties, in order to achieve political, social, and economic development in all spheres of life. It is connoting an act of training and mentoring since voting is the centre of democracy and thus should be given a pride of place focused on the process of voting and issues around elections. Educating and informing the electorates is therefore germane for the planning, voting process, information about electoral rights (Alamu, 2022). The basic goal of voter education is to make facts available and accessible through universal coverage, avoidance of discrimination between the advantaged and disadvantaged, mainstreaming women and men alike, taking cognizance of the illiterate population, minority groups among others (Independent Sectors, 2021). The essential of voter education cannot be overemphasized. It is the center point of election and democratic sustainability. Voter education has been fingered to be of advantage in several ways. The level of political participation of citizens is directly related to the level of voter education at their disposal. Therefore, the extent to which a population will participate in election or even political issues is highly dependent on the information, education at their disposal. Voter education therefore, inspires citizens to be abreast of information as regards election (Onuigbo et al, 2018). Studies have canvassed voter education as a requirement that enhances political abilities, knowledge and participation in democracy, described as the best form of government the world over owing to its representative nature. Furthermore, voter education do assists in motivating the citizens for the required mental capabilities needed to acquire the necessary skills and attitudes in digesting and analyzing political issues as a precursor of right decision and choices in elections (Bage, 2016; Onuigbo et al, 2018; Iwundu, 2021).

In view of the fact that democratic values is evolving in Nigeria and to meet the exigencies of democratic governance, voter education is pertinent as it creates enabling environment for people, not only to play their parts in governance through voting but also make their voices to be heard directly or indirectly which thus prevent apathy (Onuigbo et al, 2018; Oladosu, 2021). In like manner, research has revealed that voter education assists citizens in keeping abreast of information about the dangers of electoral malpractices. This is important to the extent that Nigeria's elections had been at the edge of being riddled with electoral malpractices from ballot box snatching, political violence, bribery, brigandage, arson, killing, and manipulation of results by politicians, protests, intimidation, and vote buying among others. Voter Education will enlighten the people on the ills of engaging in electoral malpractices, before, during and after election (Aroge, 2012; Nnedinso, 2014, Bage, 2016; Verjce et al, 2018). Similarly, scholars have emphasized the need to be global complaint as regards the ever dynamic and fluid of realities pervading the world as new and emerging issues of national and international concerns keep on rising up on daily basis. This according to studies, demands citizens' intellectual focus and inputs in policy decisions formation. The more reason why Aghaele (2013) and Edegoh Amunike (2016) in a separate study affirmed that voter education is an all-important instrument for ensuring proper and adequate dissemination of such issues to citizens in such

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a way as to guide involvement and impact generally. Among others, voter education enables citizens to imbibe the spirit of statesmanship, nationalism, patriotism, loyalty, sacrifice, selflessness, values, virtues, attitudes, behaviour that enhances good citizenship (Nnedinso, 2014).

Components of Voter Education for Credible Election and Good Governance

Putting across effective and efficient voter education requires quite a number of channels. Prominent here is the channel of communication that must be used appropriately. Reiterating this fact Alamu (2022) enthused that, the medium of communicating voter education can make or mar the information being relayed. The environment, situation, recipient and the message must thus be taken into cognizance. One of such means has to do with issues relating to media which could be print and electronics, a veritable means through which voter education is being carried out. Print media includes Newspapers, periodicals, tabloids, magazines, bulletins, the electronics include Radio, television stations and in contemporary time, websites, social media such as Twitter, Instagram, Facebook, Whatsapp. Televisions and Radios are employed through casting, jingles, songs, drama, to mention few (Edegoh & Amunike, 2016; Onuigbo et al. 2018; Verjee 2018 and Independent Sector, 2021). Town hall meetings which are sometimes organized for voter education agents have opportunities of interpersonal interaction with the electorates and where information as regards education is concerned is passed across (UNDP, 2003; Verjee et al, 2018). It presents means through which voters can ask questions on gray areas and have a sense of importance and belongings. This is mostly carried out in the rural areas where there is huge deficit of infrastructure and a high deposit of illiterates. Also, posters and handbills are also medium through which voter education can be carried out on traditional billboards, placing information on public transport, are means through which voters are educated. Vital information can be put in a concise and illustrative manner on posters and bills, such can be placed in public places like supermarkets, hospitals, banks and government establishments for intending voters to pick and read. The information on such mediums are not expected too lengthy, this is to the extent that within few minutes the reading can be dispensed with message must be codified in a catchy form in order to attract citizens' attention. Another component of voter education germane for credible election and good governance is organization of campaigns and rallies by political parties and gladiators. It constitutes (Alamu, 2022) avenue through which electorates are given information and educated on their obligations, duties and rights as regards electoral process. Political parties are noted during campaigns to educate voters, especially on how to vote appropriately and correctly during elections. They also give information on how electorates can conduct themselves as required and expected and teach them how to protect their voters in a peaceful and lawful manner (Vergec et al, 2018; Onuigbo et al, 2018; US Election Assistance, 2021). Other means include direct mailing, drama, playlet, street theatre (Oladiti et al, 2025), technological development. It is on record that as at January 2021, out of the 208.8million estimated population of Nigerians, 104.4million are using mobile phones which represents about 50 percent of the population. It was also stated that out of the 104.4 million that use/phone 93per cent access the internet through mobile phones (http://www.connectingafrica.com.Nigerian internet and mobile penetration grows -connecting Africa, 2 June, 2021). Engaging the internet through Whatsapp, Facebook, Instagram, Twtter, Messenger, and the likes make passage of information to a wider and larger population becomes very possible, less stressful and less costly.

Credible election is a sort of election that is devoid of all manners of electoral malpractices where by, the votes of the electorates really count. This is the more reason why electoral credibility has been described by Ejue and Ekanem (2011) as that which relates to the candidate with the highest votes emerging as winner in an election. This cannot operate in a vacuum; it calls for voters knowing their rights, adequately protected by the instrument of law. Furthermore, in order for any election to be regarded as being credible there is the need to ensure credibility, transparency, neutrality and independence in voter registration, verification process, voting exercise itself, collation of results and announcements of results. All these are a product of effective voter education. Credible elections are sine qua none of achieving democracy and democratization since elections is what provided any government legitimacy and its ability to elicit the support and cooperation of the governed. Credible elections allow for citizens' participation and freedom of choice in terms of who will represent their interest. Thus, indirectly taking part in policy making as it is expected that their elected representatives would pursue their interests (Idike, 2013). Credible elections are essential to the extent that it makes the elected officials to be accountable to the electorates. It enhances the performance of political office holders knowing that they would from time to time give their stewardship to the citizens and ultimately it is this that will peak for them when seeking re-election either for their political party or as candidates (Nwangwu et al, 2018).

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Presentation of Results

Table 1:

Analysis of the Importance of Voter Education

Item	Mean ($\bar{x}$)	Std. Dev. (SD)
Voter education is essential for promoting citizens' political awareness	3.38	0.74
Effective voter education empowers people to make informed electoral choices	3.45	0.65
Voter education helps reduce political apathy among citizens	3.32	0.78
Voter education strengthens democratic values in Nigeria	3.50	0.62
Voter education is necessary to discourage electoral malpractices	3.41	0.70

Source: Authors' survey, 2025

The majority of respondents (with mean scores ranging from 3.32 to 3.50) authenticate voter education as Nigeria's democratic process tool. Voter education is overwhelmingly seen as a pillar of democracy, as evidenced by the highest mean (3.50) for the statement that it strengthens democratic values. Likewise, there is strong agreement (mean score of 3.45) that voter education enables citizens to make informed decisions, which is essential for legitimate elections. The comparatively low standard deviations (0.62–0.78) for each item suggest that respondents generally agreed, as evidenced by the consistent responses that were grouped around the mean. The results of this study are consistent with research by Adebayo (2020) and Alamu (2022), which highlighted the critical role that voter education plays in lowering electoral malpractices, reducing political apathy, and encouraging citizen participation all of which are essential for good governance.

Table 2:

Analysis of Indices of Voter Education by Participants

Item	Mean ($\bar{x}$)	Std. Dev. (SD)
Access to reliable information about voting procedures is a key aspect of voter education	3.45	0.72
Knowledge of political parties' manifestos reflects effective voter education	3.22	0.81
Civic responsibility and awareness are indicators of quality voter education	3.60	0.65
Understanding the roles of electoral institutions demonstrates adequate voter education	3.35	0.79
Voter turnout rate can be used as an index of effective voter education	3.10	0.85

Source: Authors' survey, 2025

Table 2 reveals that respondents generally agreed that voter education plays a significant role in electoral credibility, with mean scores for all five items above 3.0. The category "Civic responsibility and awareness" had the highest mean (3.60), indicating that respondents strongly link voter education to the development of civic consciousness. Similarly, having access to trustworthy voting information (Mean = 3.45) and being aware of the functions of electoral institutions (Mean = 3.35) were also highly rated, supporting the idea that awareness and knowledge are essential for successful voter participation. Relatively little to moderate response dispersion is indicated by the standard deviation values, which fall between 0.65 and 0.85 in terms of variability. This suggests that there is little polarisation in the respondents' views, which are generally consistent. The item on voter turnout as a measure of voter education, however, exhibits the greatest variability (Mean = 3.10, SD = 0.85), indicating that some respondents might be hesitant to use turnout alone to gauge the success of voter education. The results of this study supported the findings of Adebayo (2020), Oladosu (2021) and Iwundu (2021) that found that citizens' confidence and election participation are increased when they have access to trustworthy information and comprehend electoral institutions.

Table 3:

Analysis of the Contribution of Voter Education to Election Credibility in Nigeria

Item	Mean ($\bar{X}$)	SD	t-calculated	t-critical (0.05)	Decision
Voter education reduces incidences of vote buying during elections	3.40	0.80	1.66	1.66	Reject H_0

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Effective voter education promotes free and fair elections in Nigeria	3.60	0.70	1.66	1.66	Reject H_0
Voter education increases citizens' confidence in the electoral process	3.45	0.75	1.66	1.66	Reject H_0
Adequate voter education helps minimize electoral violence	3.38	0.85	1.66	1.66	Reject H_0
Voter education contributes significantly to achieving credible and transparent elections in Nigeria	3.55	0.78	1.66	1.66	Reject H_0

Source: Authors' survey, 2025

From Table 3, the mean scores of all the items on how voter education affects election credibility in Nigeria were higher than the neutral value of 2.5; hence, respondents had a favourable opinion of the issue for every item in the t-test since all computed t-values were greater than the critical t-value of 1.658 at the 0.05 significance level. Accordingly, the majority of respondents believed that voter education is essential for lowering vote buying, encouraging free and fair elections, increases public trust in the electoral process, lowering electoral violence, and improve credible and transparent elections. Finding here aligns with previous studies that established relationship between voter education, credible election and good governance (Adebayo, 2020, Omotola, 2013, Alamu, 2022).

Conclusion

Feelers from this study demonstrated that increased election credibility in Nigeria requires voter education as the respondents firmly believed that having access to trustworthy voting information, being aware of party platforms, and comprehending electoral institutions all support citizens' active engagement in the electoral process, as evidenced by the consistently high mean scores across all items. Voter education is crucial for encouraging civic engagement and prevention of electoral malpractices, as evidenced by the comparatively low to moderate standard deviations, which indicate that respondents hold similar opinions. These findings support the idea that enhanced electoral transparency and bolstering democratic governance requires adequate voter education.

Recommendations

Consequently, it is recommended that

1. The Independent National Electoral Commission (INEC) and civil society organizations should intensify nationwide civic education campaigns, particularly targeting rural and first-time voters, to improve knowledge of voting procedures and reduce voter apathy.
2. Education policymakers should include structured voter education modules in secondary and tertiary school curricula to foster early civic responsibility and political awareness among Nigerian youth.
3. Similarly, both Government and NGOs should maximize the use of social media, radio, and TV programmes in disseminating simplified and timely voter education content, ensure wider reach and reduce misinformation that could undermine election credibility

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Integration of Almajiri System of Education in Universal Basic Education Programs in Western Senatorial Zone of Nasarawa State, Nigeria

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Abstract

The Almajiri system of education, a traditional Islamic schooling model prevalent in Northern Nigeria, remains a critical yet contested component of the country's educational landscape. This study examines the roles and challenges of the Almajiri system in contemporary Nigeria, with a focus on the Nasarawa Western Zone of Nasarawa State. Employing a mixed-methods approach, the research integrates qualitative interviews with key stakeholders—including Mallams, parents, community leaders, and policymakers—alongside quantitative data from school records and government reports. Findings reveal that while the Almajiri system historically provided religious and moral instruction, it now perpetuates poverty, child labor, and insecurity due to systemic neglect and socio-economic pressures. The study identifies gaps in educational access, infrastructure, and teacher quality, exacerbating marginalization. However, opportunities for reform emerge through proposed integration with the Universal Basic Education (UBE) framework, emphasizing curriculum modernization, teacher training, and community engagement. The paper argues that holistic reforms, grounded in collaboration with religious and community leaders, are essential to transforming the Almajiri system into a viable pathway for socio-economic empowerment. Recommendations include policy alignment, sustainable funding, and robust monitoring to ensure inclusive, safe, and quality education for Almajiri children.

Introduction

The Almajiri system of education, once a prominent pillar of Northern Nigeria's educational landscape, has progressively become associated with several significant social, educational, and health challenges in recent decades. While the Almajiri system historically contributed to the moral and intellectual development of children through Qur'anic education and community involvement, it now faces considerable obstacles that compromise its effectiveness. The system, originally rooted in Islamic teaching and community-based support, has gradually evolved into a source of concern due to the socio-economic pressures of urbanization, poverty, and inadequate state support. As a result, Almajiri children are often subjected to street begging, poor living conditions, overcrowded schools, and an overall lack of access to basic education, including literacy, numeracy, and vocational training (Teke, Khalid, & Katami, 2022). At the national level, the Nigerian government has initiated several reforms aimed at integrating Almajiri children into mainstream educational systems. The establishment of the Almajiri Model Schools in 2012 and the inclusion of Almajiri children under the Universal Basic Education (UBE) framework were intended to combine Qur'anic education with formal schooling. These reforms aimed to provide these children with the skills necessary for socio-economic advancement, thereby addressing the issues of illiteracy, poverty, and marginalization. However, these efforts have largely faltered due to weak implementation, inadequate funding, political interference, and inconsistent policy execution (Abubakar-Abdullateef et al., 2024). Despite the introduction of these reforms, the Almajiri system continues to struggle with the same challenges that have plagued it for decades, such as overcrowded classrooms, the lack of qualified teachers, and inadequate infrastructure. In Nasarawa State, and particularly in the Western Senatorial District, the Almajiri system mirrors the national crisis. Almajiri schools in this region continue to face systemic inefficiencies, with most of the learners still subjected to the harsh conditions that have historically defined the system. Although local government and community-based initiatives have sought to support Almajiri children, these efforts remain fragmented and underfunded, often failing to address the root causes of the systemic deficiencies. The rapid urbanization of Nasarawa Western Zone has exacerbated these challenges, resulting in even more children engaging in street begging as their primary means of survival. The failure of government policies to fully integrate Qur'anic education with formal education, along with the lack of adequate welfare support, has meant that many Almajiri children remain excluded from both formal education and adequate social support systems (Dukawa, Usman, & Gwandu, 2023).

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Overview of the Almajiri System of Education in Nigeria

The Almajiri system of education remains one of the most resilient indigenous Islamic learning frameworks in Northern Nigeria. Historically, it was structured to promote Qur'anic literacy, moral discipline, and spiritual refinement through mentorship under Islamic scholars (Mallams), who trained children, known as Almajirai, in Qur'anic recitation, jurisprudence, and ethics (Auwal, 2021). The term "Almajiri" originates from the Arabic "Al-Muhajirun" ("migrants" or "seekers"), reflecting the itinerant nature of these pupils who often left home to pursue Islamic knowledge (Idriss & Hamzah, 2021). Traditionally, communities supported both teachers and pupils through food and shelter, ensuring a holistic model of moral and social development. However, modernization, urbanization, and poverty have disrupted this communal support. The breakdown of state oversight and economic hardship have left many Almajiri children exposed to street begging, malnutrition, and health risks (Muhammad et al., 2023). Empirical evidence suggests that the cognitive development of Almajiri learners remains significantly below that of their peers in formal schools, largely due to limited exposure to structured curricula and inadequate learning environments (Abubakar-Abdullateef et al., 2024). To address these deficiencies, the Nigerian government introduced integration initiatives such as the Almajiri Integrated Model Schools, combining Qur'anic instruction with Western education to promote literacy, numeracy, and vocational skills (Jimba, 2021). Yet, implementation remains uneven due to funding gaps, inadequate teacher training, and cultural resistance (Teke, Khalid, & Katami, 2022). Beyond state interventions, recent scholarship highlights the role of mosques (masaajid) as community-based reform centers that can provide structured learning and welfare support for Almajiri children (Dukawa, Usman, & Gwandu, 2023). Furthermore, there is a growing consensus on leveraging technology to modernize Almajiri education. ICT-enabled teaching, digital Qur'anic learning tools, and community-based literacy applications have shown potential to improve engagement and inclusion (Fahm et al., 2021). Scholars also argue that reform must be underpinned by human-rights and child-protection frameworks to curb abuses and guarantee holistic development (Makama, Makama, & Waziri, 2024). In sum, while the Almajiri system continues to serve as a vital moral and spiritual institution in Northern Nigeria, its sustainability depends on coherent reforms that integrate modern education, community welfare, and cultural sensitivity.

Historical Development of Almajiri System of Education

The Almajiri system of education has a long and distinguished history that predates colonial contact, with its foundation deeply rooted in the Islamic educational traditions of the Western Sudan and Northern Nigeria. Its golden age came during the Sokoto Caliphate (early 19th century), when Qur'anic learning was institutionalized under state patronage. The Caliphate viewed the Almajiri system as essential to moral discipline, religious knowledge, and social cohesion, offering both political and financial support to sustain its institutions. Communities provided food, shelter, and resources for learners, while Islamic scholars (Mallams)—acting as teachers and mentors—were highly respected for nurturing piety, scholarship, and leadership (Jabbi & Kware, 2024). The British colonial era marked a major disruption in this model. With the introduction of Western-style education, colonial administrators deprioritized Islamic learning, leading to the withdrawal of state and community support that had sustained the Almajiri network. This neglect forced learners to depend on begging and menial labor for survival, eroding the system's dignity and structure (Auwal, 2021). By the mid-20th century, the Almajiri institution had transformed from a respected center of Islamic education into a symbol of poverty and social marginalization. Post-independence reforms failed to fully revive its original intent. The Almajiri Integrated Education Programme (AIEP) introduced by the federal government sought to integrate Qur'anic and formal education to address issues of illiteracy and child welfare (Teke, Khalid, & Katami, 2022). Yet, implementation gaps, inadequate teacher training, and poor monitoring hindered success. Scholars note that the persistence of poverty, weak institutional support, and limited community involvement have continued to constrain reform efforts (Nmamor-Obari & Amugo, 2022). Recent studies underscore that the Almajiri system's survival is a result of its adaptability and deep cultural roots. Despite its decline in prestige, it remains a vital mechanism for moral and religious instruction, particularly in rural Northern Nigeria (Muhammad et al., 2023). Understanding this historical trajectory is crucial for designing context-sensitive reforms that balance modernization with cultural continuity (Dukawa, Usman, & Gwandu, 2023).

Roles of Almajiri System of Education in the Society

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Challenges and Criticisms

The key challenges and criticisms include:

Street Begging

One of the most visible and persistent challenges facing the Almajiri system is the widespread practice of street begging among its learners. Many children enrolled in the system are compelled to solicit alms to meet their basic needs, owing to socioeconomic pressures, urbanization and declining communal support (Umar 2025). This reliance on begging exposes learners to physical risks, abuse, exploitation by adult actors, and diversion from instructional time (Suleiman 2024). It detracts from educational goals, while habitual begging generates negative public perceptions and social stigmatization of the Almajiri system (Jamri 2024). Further, empirical data indicate that prolonged street exposure adversely affects psychological wellbeing, leading to low self-esteem, anxiety and diminished motivation to learn (Garba 2025). These realities underscore the urgent need for systemic interventions, including strengthened community support, welfare provisions, and formal education integration, to reduce dependence on street begging.

Poor Living Conditions

Many Almajiri learners endure harsh and unsanitary living conditions, which undermine their health, development and educational engagement. Recent studies show that Almajiri children regularly face overcrowded sleeping-quarters, inadequate sanitation, limited clean water, and poor nutrition (Muhammad 2023). These conditions raise the risk of communicable diseases, malnutrition, cognitive delays and psychological stress (Christianah 2025). In extreme cases, children sleep outdoors or in makeshift structures with minimal protection, further impeding their ability to focus on learning. The cumulative effect of sub-standard living conditions is reduced capacity to engage effectively both in Qur'anic and conventional instruction. The challenge therefore calls for multi-actor coordination, state agencies, community organisations and NGOs, to address infrastructure, health, sanitation and nutrition tailored to Almajiri learners (Sakaba 2025).

Inadequate Funding

Inadequate financial support remains a central impediment undermining the Almajiri system's capacity to deliver both religious and secular education. Many Almajiri centres operate on minimal resources, lacking classrooms, instructional materials, accommodation, trained staff and welfare support (Muhammad 2024). Government-initiated reforms, including model schools and integration programmes, remain constrained by limited budgets, delays in fund disbursement, weak monitoring and ineffective implementation (Teke 2022). This funding gap perpetuates systemic inefficiencies, affecting both instructional quality and learner welfare, thereby undermining the sustainability of the system. Sustainable financing models, drawing from state support, private sector engagement and community contributions, are therefore critical if the system is to fulfil its educational and social mandate.

Mallam–Child Welfare Gaps

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The welfare of Almajiri learners is closely tied to the capacity, commitment and moral-pedagogical competence of the Mallams (Islamic teachers). Yet significant gaps exist in this relationship: Mallams are frequently overburdened with large cohorts of students, minimal welfare resources, and limited formal training in child welfare, pedagogy or inclusive education (Teke 2022). As a consequence, learners may experience neglect, inadequate guidance, or exposure to physical and psychological hardship. The absence of structured support frameworks for health, nutrition, supervision and child protection undermines the aim of providing a holistic education that balances religious, moral and social development. Addressing these gaps therefore requires targeted capacity-building for Mallams, better supervision, provision of welfare resources and training in modern child-protection and educational practices.

Lack of Integration with Western Education

A major criticism of the Almajiri system pertains to its insufficient integration with formal, secular education, including literacy, numeracy, vocational and life-skills training. While the system excels in religious instruction and moral formation, the absence of structured secular curricula limits learners' future opportunities in the broader socio-economic environment (Gambo 2025). Consequently, many Almajiri children face marginalisation in the labour market, low literacy/numeracy skills and limited vocational self-reliance. Although reform efforts (such as model schools and UBE integration) have shown promise, persistent obstacles remain: shortages of qualified teachers trained to deliver dual curricula, poor infrastructure, community resistance to curriculum change, and weak supervision (Muhammad 2024). Successfully bridging this gap therefore requires collaborative planning, culturally-sensitive curricula, sustained teacher development, stakeholder buy-in and robust monitoring to ensure reforms enhance, rather than erode, the system's traditional values.

Reforms and Initiatives

In response to the persistent educational, welfare and social challenges confronting the Almajiri system in Northern Nigeria, a multifaceted reform agenda has emerged, encompassing policy integration, model schooling, non-governmental organisation (NGO) engagement, and community–state partnerships. One of the most significant policy interventions has been the embedding of Almajiri education within the Universal Basic Education (UBE) programme framework. Studies indicate that this integration is designed to grant Almajiri children access to formal literacy, numeracy and vocational skills alongside Qur'anic instruction, thereby addressing their longstanding exclusion from mainstream school systems (Muhammad, 2024). However, empirical evaluations of the UBE-Almajiri interface reveal implementation gaps, weak administrative alignment and stakeholder unawareness which limit its effectiveness (Aliyu et al., 2024).

Complementary to policy alignment is the establishment of Almajiri Model Schools. These serve as pilot institutions where traditional Qur'anic education is deliberately combined with conventional secular curricula in structured settings with classrooms, trained teachers and improved living conditions (Umar, 2025). They are intended to reduce the incidence of street-begging, improve learner welfare and create viable pathways for transition into mainstream or vocational education. Notwithstanding, research into these model schools reports challenges in funding, infrastructure maintenance and full stakeholder buy-in (Okoro, 2025).

NGOs have likewise played a pivotal role in supporting Almajiri reforms, contributing to advocacy, resource mobilisation and programme implementation. For example, NGOs provide educational materials, feeding programmes and health services, effectively complementing governmental efforts and functioning as monitoring agents for learner welfare (Gambo, 2025). Their participation underscores the recognition that meaningful reform requires more than top-down policy, it demands grassroots support and sustained non-state investment (Inde et al., 2024). Finally, community, state partnerships constitute another critical dimension of reform. These collaborations bring together local communities, religious leaders, Mallams, state actors and civil society organisations to mobilise resources, monitor school operations and ensure accountability. By anchoring reform in culturally-sensitive and community-owned processes, these partnerships help bridge the divide between traditional practice and modern educational standards while preserving the religious and cultural identity of the system (Umar & Maaji, 2025). In sum, the array of reforms and initiatives comprises a multidimensional strategy to revitalise the Almajiri system, improving learner welfare, integrating secular education, curbing street-begging, and enabling social mobility. Yet, the success of these interventions hinges upon sustained funding, rigorous monitoring, community engagement and alignment of religious-educational values with formal schooling objectives.

Research Design

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The study adopts a descriptive survey research design to investigate the roles, challenges, reforms, and impacts of the Almajiri system of education in Nasarawa Western Zone, Nasarawa State. A descriptive survey design is appropriate because it allows for the systematic collection of data from a large and diverse population, providing a comprehensive understanding of the current status and perspectives of stakeholders involved in the Almajiri system. This design enables the researcher to describe phenomena as they exist, without manipulating variables, which is critical for capturing the authentic experiences and opinions of Mallams, teachers, learners, community leaders, and policymakers. Through the survey approach, the study will gather both quantitative and qualitative data, allowing for the identification of patterns, relationships, and trends regarding the functions, challenges, and reforms within the system. Moreover, this design facilitates the assessment of stakeholders' perceptions of the effectiveness of reforms and interventions, providing evidence-based insights that can inform policy, planning, and implementation strategies aimed at improving the welfare, educational quality, and social integration of Almajiri learners.

Instrumentation

The instruments for data collection in this study will include a questionnaire, interview guide, and observation checklist, each designed to capture comprehensive information regarding the roles, challenges, reforms, and impacts of the Almajiri system of education in Nasarawa Western Zone. The questionnaire will be structured to collect quantitative data from learners, teachers, and other stakeholders, with items focusing on perceptions of educational roles, welfare conditions, the effectiveness of reforms, and challenges encountered. This instrument allows for the systematic measurement of opinions, attitudes, and experiences across a large sample, providing statistically analyzable data. The interview guide will be used for in-depth qualitative data collection from key informants, including Mallams, community leaders, and policymakers. It will contain open-ended questions designed to explore nuanced perspectives, personal experiences, and contextual factors that may not be captured through structured questionnaires. The observation checklist will enable the researcher to directly record tangible aspects of the Almajiri system, such as the learning environment, instructional materials, classroom interactions, sanitation, and welfare conditions of learners. This triangulation of instruments ensures that both subjective experiences and objective realities are documented, enhancing the reliability and validity of the study. By employing multiple instruments, the study captures a holistic view of the Almajiri system, allowing for robust analysis of the interplay between educational roles, reform initiatives, and practical outcomes.

Data Collection

Data for this study will be collected through a combination of field visits, structured questionnaires, and interviews to ensure a comprehensive and accurate understanding of the roles, challenges, reforms, and impacts of the Almajiri system in Nasarawa Western Zone. Field visits will provide the researcher with first-hand observations of the learning environment, facilities, instructional practices, and welfare conditions of learners, allowing for a practical assessment of the system. Structured questionnaires will be administered to learners, teachers, and other stakeholders to gather quantitative data on perceptions, attitudes, and experiences regarding the effectiveness of educational reforms, the challenges faced, and the roles of the Almajiri system in the community. Interviews, particularly with Mallams, community leaders, and policymakers, will enable the collection of in-depth qualitative data, offering insights into policy implementation, institutional support, and contextual factors affecting the system. By combining these data collection methods, the study ensures triangulation, enhancing the reliability and validity of the findings and providing a holistic view of the contemporary Almajiri educational landscape.

Data Analysis

The data collected for this study will be analysed using both quantitative and qualitative techniques to ensure a comprehensive interpretation of findings. Descriptive statistics, including mean scores, frequencies, and percentages, will be used to summarise and present quantitative data obtained from structured questionnaires. These statistical measures will help to identify patterns, trends, and levels of agreement among respondents regarding the roles, challenges, and impacts of the Almajiri system, as well as the effectiveness of reforms implemented in Nasarawa Western Zone. For qualitative data collected through interviews and observations, thematic analysis will be employed to identify recurring themes, categories, and patterns within participants' responses. This method allows for the extraction of meaningful insights from textual data, highlighting perceptions, experiences, and contextual factors that influence the functioning and reform of the Almajiri system. By combining descriptive statistics with thematic analysis, the study ensures a holistic interpretation of both numerical trends and rich qualitative narratives, enhancing the reliability, validity, and depth of the research findings.

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Summary of Findings

The journal article "Roles and Reforms in Almajiri System of Education in Contemporary Nigeria: Perspectives of Nasarawa Western Zone, Nasarawa State" explores the challenges and proposed reforms for integrating the Almajiri system into Nigeria's Universal Basic Education (UBE) framework to enhance educational access and socioeconomic opportunities for marginalized children. The study highlights historical evolution, contemporary challenges like poverty, child labor, and insecurity, and proposes a holistic integration strategy including curriculum reform, teacher training, infrastructure development, and community engagement. The article emphasizes the need for government policies, sustainable financing, and collaboration with religious and community leaders to transform the Almajiri system into a modern, inclusive educational model. Sources.

Conclusion

In conclusion, the Almajiri system of education in Nigeria, particularly in the Nasarawa Western Zone, remains a critical but contentious component of the country's educational landscape. While the system has traditionally served as a means of religious and moral instruction, its contemporary relevance is undermined by systemic issues such as poverty, child labor, and insecurity, which have transformed many Almajiri schools into sites of vulnerability rather than empowerment. The study underscores the urgent need for comprehensive reforms that integrate Almajiri education into the formal UBE framework, emphasizing curriculum modernization, teacher training, infrastructure development, and community engagement. Successful implementation of these reforms, however, hinges on sustained government commitment, adequate funding, and collaboration with religious and community leaders. Ultimately, transforming the Almajiri system is not merely an educational imperative but a societal one, requiring collective action to ensure that marginalized children are afforded dignity, safety, and opportunities for holistic development. Sources.

Recommendations:

1. Curriculum Modernization: Integrate secular subjects (e.g., mathematics, science, English) alongside religious instruction to equip Almajiri pupils with marketable skills. Align the curriculum with the UBE framework to ensure certification and mobility within formal education pathways.
2. Teacher Training and Incentives: Provide systematic training for Mallams on modern pedagogical methods and child-centered learning. Offer stipends, healthcare, and recognition to retain qualified teachers and reduce reliance on unqualified instructors.
3. Infrastructure Development: Construct safe, well-ventilated classrooms, sanitation facilities, and boarding accommodations to replace overcrowded, unsafe learning environments. Ensure access to clean water, electricity, and digital tools where feasible.
4. Community and Religious Leader Engagement: Involve traditional and religious leaders in sensitization campaigns to shift perceptions about formal education. Foster partnerships with NGOs and CSOs to mobilize resources and monitor program implementation.
5. Government Policy and Funding: Enforce existing policies (e.g., the Compulsory, Free Universal Basic Education Act) and allocate dedicated budgets for Almajiri schools. Explore public-private partnerships to fund infrastructure, teacher salaries, and nutrition programs.
6. Monitoring and Evaluation: Establish a robust M&E system with clear indicators (e.g., enrollment rates, literacy levels, transition to formal schools). Conduct regular audits to ensure transparency and accountability in fund utilization.
7. Economic Support for Families: Introduce poverty alleviation measures (e.g., cash transfers, vocational training for parents) to reduce child labor and encourage school attendance.

By implementing these recommendations, Nigeria can transform the Almajiri system from a marginalized, informal network into a modern, inclusive educational model that empowers vulnerable children and contributes to national development.

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Effect of Artificial Intelligence Technology Using Chatbots-Video Instruction on Achievement in Statistics among Secondary School Students in Ogidi Educational Zone, Anambra State, Nigeria

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Abstract

This study investigated the effect of Artificial Intelligence (AI) Chatbots-video instruction on students' achievement in statistics among secondary school students in Anambra State. 18,500 JSS1 Students formed the population. The sample comprises of 53 students drawn from the population using purposive and simple random techniques. Instrument used for data collection was teacher made Statistics Achievement Test (SAT). The test items covered 50 objective questions from Statistics. The 50 objectives questions were constructed and validated by experts from mathematics education and measurement and evaluation. The reliability coefficient of the instrument was 0.78 obtained using kuder Richardson (K-R-20). Two research questions were posed and answered using mean and standard deviation while two null hypotheses developed were tested at 0.05 level of significance using Analysis of Covariance. The result showed that students who were taught Statistics using Artificial Intelligence (ai) chatbots-video instruction performed better than their counterparts who were taught using the conventional method. There was difference though not significant in the mean achievement scores of male and female students in mathematics when taught using Artificial Intelligence (AI) Chatbots-video instruction. The female students slightly performed better than their male counterparts in achievement. Based on the result, it was recommended among others that teachers should adopt the use of Artificial Intelligence (AI) Chatbots-Video Instruction in teaching since it has been found to enhance achievement in Statistics.

Keywords: artificial intelligence (AI), chatbots, achievement, statistics, video instruction.

Introduction

Mathematics is often described as the universal language, used across cultures to communicate ideas about number, space, and logic (Dehaene, 2020). Mathematics is an indispensable tool in virtually all human endeavors and there is hardly any field where mathematics is not useful (Uka, 2020). Mathematics as a science-based discipline is known as the queen of all subjects. It is a basic tool in the development of science, technology, commerce and industry. Mathematics education plays a very unique role in the making of any student in his field of study. It is a unique subject which encourages the acquisition of skills and knowledge, which explains the natural phenomena of life in society (Uka, 2024). In Nigeria, Mathematics remains a core subject at all levels of the educational system, yet the performance of students, especially in external examinations such as the West African Senior School Certificate Examination (WASSCE) and the National Examination Council (NECO), has continued to be a source of concern to educators, policymakers, and parents alike (WAEC Chief Examiner's Report, 2025). Mathematics performance among Secondary School Students has persisted over the years [West African Examinations Council (WAEC), 2025]. The West African Examinations Council (WAEC) Chief Examiners' Reports (2023-2025) consistently highlight widespread candidate weaknesses in core mathematical areas such as algebra, word problems, and geometry, indicating a systemic failure to grasp fundamental concepts. This trend is not merely statistical but has profound implications for the individual and the nation. Students who perform poorly in mathematics are often limited in their pursuit of Science, Technology, Engineering, and Mathematics (STEM)-related fields in tertiary

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institutions, thereby constraining the pipeline of critically needed technical skills for national development (Okigbo & Okeke, 2021). The root causes of this underperformance are multifaceted and deeply entrenched. Researchers attribute them to a confluence of factors, including but not limited to: overcrowded classrooms, a shortage of qualified mathematics teachers, and the prevalence of abstract, teacher-centered instructional methods (Uka, 2024). Also, Studies in Nigeria have identified a number of factors impeding educational quality, including lack of qualified teachers, inadequate instructional materials, overcrowded classrooms, and the frequent reliance on teacher-centred instructional methods, (Tata, Abba & Sadiq, 2021; Akaba & Audu, 2023). The dominant pedagogical approach in many Nigerian classrooms, often termed the "Conventional Teaching Method," is predominantly chalk-and-talk, characterized by rote memorization and procedural learning. In this model, the teacher acts as the sole knowledge transmitter, while students assume a passive, receptive role (Akinbolola & Ikitde, 2021). This method offers little room for interactive engagement, critical thinking, or the personalized addressing of learning gaps. Consequently, it fails to cater to the diverse learning paces and styles within a classroom, leaving many students behind and fostering math anxiety and disinterest (Nworgu & Onwuakpa, 2023). The persistence of this conventional method, despite its documented inadequacies, forms the core problem that necessitates the investigation of innovative, student-centered, and technologically-enhanced instructional strategies in Anambra State. Artificial Intelligence Chatbots is one of such technologically-enhanced instructional strategies. Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions. AI systems are designed to perceive their environment, learn from data, reason, solve problems, and make decisions, often performing tasks that traditionally require human intelligence.

Artificial Intelligence (AI) Chatbots are sophisticated software applications powered by Natural Language Processing (NLP) and Machine Learning (ML) algorithms, designed to simulate human-like conversations and provide interactive, personalized learning experiences (Winkler & Söllner, 2018). It is a computer program that simulates human conversation through voice commands, text chats, or both. In the context of this study, an Artifical Intelligence (AI) Chatbot refers to a dialog-based intelligent tutoring system with its core functions as Natural language interaction, personalized learning pathways, Adaptive feedback and Scaffolding. It serves as an intelligent tutor, offering real time assistance, answering students' queries, guiding learners through problem solving processes and mimics human intelligence by learning, reasoning, and making decisions (Haenlein & Kaplan, 2019). In Nigeria, the use of AI chatbots is gradually gaining ground. Eze and Olawale (2024) found that students exposed to chatbot-based Mathematics lessons demonstrated better retention of algebraic concepts compared to those taught through traditional lectures. The researchers attributed this to the interactive question–answer format that maintains students' attention and curiosity. This shows that chatbot integration can bridge the feedback gap in resource-constrained classrooms. In Nigeria, although this integration is still emerging, preliminary studies by Okoye and Adebayo (2025) indicate that combining AI chatbots with instructional videos improved students' participation and comprehension in secondary school Mathematics. The researchers noted that the multimodal combination appeals to visual and interactive learners simultaneously, thus reducing math anxiety and promoting conceptual learning. It promotes personalized, self-paced, and engaging education, aligning with the 21st-century learning demands of critical thinking, collaboration, and technology fluency. Thus, for this study, video instruction is conceptualized as a structured digital teaching tool that enhances mathematics learning by offering clear demonstrations and flexible access to content, especially when combined with AI chatbot interactions for further clarification and practice. This Video is embedded in the application - Khan Academy. For this Study, Khan Academy and Gemini AI (Google's Multimodal AI Chatbot) was used. Khan Academy is an educational platform where the students can subscribe to by signing up with their email addresses. It is free. They watch the uploaded lessons after which they interact with the Gemini AI by asking unclear terms taught. Gemini can process not just text, but also images and diagrams. This is beneficial for topics like graphs, tables, or geometric data in statistics. Khan Academy has the features of Interactive and Adaptive Creative Problem Solving Ease of Access via Android and Chrome. Literature reviewed revealed very few studies like Mohammed and Bello (2024), who carried out a study on the effects of video-based learning in flipped and flipped collaborative classroom settings on senior secondary school students' performance and retention in mathematics. The result indicated a significant improvement in the post-test scores of students in the experimental groups compared to the control group, demonstrating that video-based instruction combined with collaborative and flipped classroom strategies enhanced students' understanding, retention and

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overall achievement in mathematics more than the conventional method. Wu (2024) showed that when video lessons are supplemented with chatbot interaction, learners demonstrate improved conceptual understanding, problem-solving accuracy, and sustained engagement compared to traditional instructional formats. Thompson and Garcia (2023), who carried out a study on gender and AI revealed that in usingArtificial Intelligence (AI) Chatbots-Video Instruction, female students fostered a deeper and more confident understanding of mathematical concepts. There is a scarcity of empirical studies in Nigeria, and indeed across Africa, that investigate the integrated effects of an "AI Chatbots-Video Instruction" package. The work of Eze and Adeyemi (2023), on Differential Effectiveness of Collaborative and Technology-Integrated Strategies on Mathematics Achievement of Senior Secondary Students by Gender found that Male students demonstrated their highest achievement in the AI Chatbot-Video Instruction condition when compared to their female counterparts. Nilsson and Berg (2024) carried research titled "Bridging the Gap: A Comparative Study of AI Chatbots and Video Instruction on Calculus Achievement and Gender Differences. "The findings revealed a statistically significant difference in the post-test scores, with the AI Chatbot group outperforming both the Video Instruction and control groups, gender was reported not significant. The present study seeks to see if the result will be different in Anambra State.

Statement of the Problem

Despite numerous reforms and instructional strategies introduced to improve mathematics performance, students in secondary schools across Nigeria, including those in Anambra State, continue to record poor results. Conventional teaching methods, often teacher-centered, may not adequately engage students or cater to their diverse learning needs. With the increasing accessibility of digital tools and the emphasis on learner-centered approaches, the use of Artificial Intelligence (AI) Chatbots-Video Instruction could offer promising alternatives. Yet, the effectiveness of these methods - either independently or in combination, on students' achievement in mathematics has not been adequately explored in this context. This study seeks to investigate the Effect of Artificial Intelligence (AI) Chatbots-Video Instruction on Mathematics achievement among State Secondary School Students.

Objectives of The Study

The purpose of this study is to investigate the Effect of Artificial Intelligence (AI) Chatbots-Video Instruction on the Mathematics achievement of Secondary School Students in Ogidi Educational Zone of Anambra State. Specifically, this study seeks to:

1. Determine the mean achievement scores of students taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction and those taught using Conventional Teaching method
2. Find the mean achievement scores of male and female students taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction

Research Questions

1. What are the mean achievement scores of students taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction and those taught using Conventional Teaching method?
2. What are the mean achievement scores of male and female students, taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction?

HYPOTHESES

The following null hypotheses (**H_0**) are formulated to guide the study and are to be tested at 0.05 level of significance:

H_{o1}: There is no significant difference in the mean achievement scores of students taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction and those exposed to Conventional Teaching method,

H_{o2}: There is no significant difference in the mean achievement scores of male and female students, taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction,

Methodology

This study adopted a quasi-experimental research design because of different extraneous variables the researcher may control at the course of this study. Specifically, the pretest-posttest control group design was used. The population of the study was all the Junior Secondary School One (JSS1) students in Ogidi Educational Zone of Anambra State totaling 18,500 JSS1 Students in 132 Secondary Schools (Zonal Inspector of Education, Ogidi Educational and Zone, July, 2025).

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The sample for this study was drawn using a multi-stage sampling technique, purposive sampling techniques and simple random sampling techniques were employed at various stages. A sample of 53 JS 1 students made of two intact classes was used. The instrument used for data collection was researchers' developed achievement test which was validated by three experts from department of science education, Michael Okpara University of Agriculture Umudike. Data collected were analyzed using mean and standard deviation for research questions and analysis of covariance (ANCOVA) for hypotheses at 0.05 level of significance.

Presentation of Results

The data were analyzed and the result presented according to research questions and hypotheses.

RESEARCH QUESTION 1: What are the mean achievement scores of students taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction and those taught using Conventional Teaching method?

Table 1: Mean achievement scores and standard deviations of students taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction and those taught using Conventional Teaching method

Variable		Pre-test		Post-test		Achievement
Methods	N	X	SD	X	SD	mean difference
AI	27	18.67	5.11	57.34	7.48	38.67
LECTURE	26	19.88	6.90	29.38	5.42	9.50

Where N=Number of students, X=mean, SD = Standard deviation

Table 1 presents the mean achievement scores of students taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction and the Conventional Teaching method. The table shows that students taught using Artificial Intelligence (AI) Chatbots-Video Instruction had a pretest mean score of X = 18.67 (SD = 5.11) and a posttest mean score of X = 57.34 (SD = 7.48), resulting in a mean difference of 38.67, which suggests substantial improvement in achievement. Similarly, students taught using the Conventional Teaching method had a pretest mean score of X = 19.88 (SD = 6.90) and a posttest mean score of X = 29.38 (SD = 5.42), yielding a mean difference of 9.50, which reflects comparatively lower improvement. The relatively similar pretest mean scores of the two groups suggest that the students were at comparable achievement levels before the experiment, while the posttest mean scores indicate that students taught using Artificial Intelligence Chatbots-Video Instruction performed better than those taught using the Conventional Teaching method. The standard deviations across groups are relatively low and comparable, indicating limited variability in students' scores around the mean.

Hypothesis 1

There is no significant difference in the mean achievement scores of students taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction, Jigsaw Strategy and Conventional Teaching method.

Table 2: Analysis of Covariance (ANCOVA) of students mean achievement scores when taught using Artificial Intelligence (AI) Chatbots-Video Instruction and Conventional Teaching method.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Decision
Corrected Model	10376.948[a]	2	5188.474	151.070	.000	
Intercept	8335.702	1	8335.702	242.706	.000	
Pretest	3.210	1	3.210	.093	.761	
Methods	10302.959	1	10302.959	299.986	.000	S
Error	1717.240	50	34.345			
Total	113037.000	53				
Corrected Total	12094.189	52				

a. R Squared = .858 (Adjusted R Squared = .852)

The result in table 2 showed F-ratio of 299.986 for groups with P value of .000 which is less than the alpha value of .05 ($p < 0.05$). The null hypothesis of no significant difference is therefore rejected which implies that there is a significant difference in the mean achievement scores of students taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction and Conventional Teaching method in favour of Artificial Intelligence (AI) Chatbots-Video Instruction.

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Research Question 2:

What are the mean achievement scores of male and female students, taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction?

Table 3: Mean achievement scores and standard deviation of male and female students taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction.

Variable		Pre-test		Post-test		Achievement
Gender	N	X	SD	X	SD	Mean difference
Male	13	20.00	4.24	58.62	6.70	38.62
Female	14	17.43	5.68	56.21	5.10	38.78

Table 3 showed the mean achievement scores and standard deviation of male and female students taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction. Male students had pretest score of 20.00 with standard deviation of 4.24 and a post test score of 58.62 with standard deviation of 6.70 and an achievement gain of 38.62 while female students had a pretest mean score of 17.43 with standard deviation of 5.68 and a posttest mean score of 56.21 with standard deviation of 5.10 and an achievement gain of 38.78. This indicates that female students taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction achieved slightly more than their male counterparts taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction. The standard deviations across groups are relatively low and comparable, indicating limited variability in students' scores around the mean.

Hypothesis 2:

There is no significant difference in the mean achievement scores of male and female students, taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction.

Table 4: Analysis of covariance on the mean achievement scores of male and female students, taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction.

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Decision
Corrected Model	41.870[a]	2	20.935	.355	.705	
Intercept	5355.343	1	5355.343	90.869	.000	
Pretest	3.007	1	3.007	.051	.823	
Gender	31.161	1	31.161	.529	.474	NS
Error	1414.427	24	58.934			
Total	90323.000	27				
Corrected Total	1456.296	26				

a. R Squared = .029 (Adjusted R Squared = -.052)

The result in table 4 showed F-ratio of .529 for groups with P-value of .474 which is greater than the significant value of .05. (P>.05). The null hypothesis of no significant difference is therefore not rejected which indicates that there is no significant difference between the mean achievement scores of male and female students taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction.

Discussion of Findings

The findings of the study revealed that students who were taught statistics using Artificial Intelligence (AI) Chatbots-Video Instruction performed better than students who were taught using conventional method. The female students performed slightly better than their male counterpart when taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction. The study showed that there is a significant difference between the mean achievement scores of students taught statistics using Artificial Intelligence (AI) Chatbots-Video Instruction and those taught using conventional method. This is in agreement with the opinions of Mohammed and Bello (2024), Nilsson and Berg (2024) whose research works indicated that students who learnt through video-based multimedia instruction and AI Chatbots performed significantly better than their counterparts in mathematics. The result is also in tandem with Wu (2024) whose study showed that when video lessons are supplemented with chatbot interaction, learners demonstrate improved conceptual understanding, problem-solving accuracy, and sustained engagement compared to traditional instructional formats. Findings also showed that

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there is no significant difference between the mean achievement scores of male and female students taught Statistics using Artificial Intelligence (AI) Chatbots-Video Instruction though the female students slightly performed better than their male counterparts but not statistically significant .This is in agreement with the findings by Thompson and Garcia (2023), whose work revealed that in using Artificial Intelligence (AI) Chatbots-Video Instruction female students fostered a deeper and more confident understanding of mathematical concepts. This study disagreed with the work of Eze and Adeyemi (2023), on Differential Effectiveness of Collaborative and Technology-Integrated Strategies on Mathematics Achievement of Senior Secondary Students by Gender where Male students, conversely, demonstrated their highest achievement in the AI Chatbot-Video Instruction condition.

Conclusion

From the results obtained in the study, it was found that students taught statistics using Artificial Intelligence (AI) Chatbots-Video Instruction performed better than their counterparts taught using conventional method. Female students performed better than male students though not statistically significant.

Recommendations

Based on the findings of this study, the following recommendations are proffered

1. Teachers should adopt the use of Artificial Intelligence (AI) Chatbots-Video Instruction in teaching since it has been found to enhance achievement in Statistics.
2. Workshops, seminars, and conferences should be organized for teachers by state and federal government, NGOs, Associations like Mathematical Association of Nigeria (MAN) and Science Teachers Association of Nigeria (STAN). This is because Artificial Intelligence (AI) Chatbots-Video Instruction is barely new and some teachers may not be aware of how best to employ or implement it in the classroom.
3. Modules on AI-based instruction should be included in Teacher training programmes so that teachers can acquire the necessary skills to implement chatbot-assisted learning effectively
4. Since gender does not significantly affect learning outcomes in this instructional approach, teachers should provide equal learning opportunities for both male and female students when using Artificial Intelligence (AI) Chatbots-Video Instruction.

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Evaluation of Cybercrime and Internet-Related Fraud activities among Undergraduate Students of Emmanuel Alayande University of Education, Oyo State, Nigeria

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Abstract
Emerging technologies associated with digital transformation, robotic revolution and the pervading Artificial Intelligence, AI has greatly influenced virtually all aspects of human endeavours ranging from polity, education, religious activities, socio-economic aspects to industries and work place. Quite a number of activities, both of positive and negative stance now dominate the cyberspace, hence, increased inter-connectivity for skilling, reskilling and upskilling leading to growth and development. For instance, internet surfing for improved academic activities, legitimate economic activities, multi-tasks encapsulated in gig economy which in no small measure is adding values to lives and job opportunities to the teeming youth population. It is however disheartening that rather than employing the largess of the emerging technologies by Nigerian youth, most of them are tilting towards the negative aspects advertently and inadvertently. It is against this background that this study explores the influence of undergraduates' involvement in cybercrime and internet-related fraud. Using a phenomenological research design involving mixed method approach, a total of 2024/2025 session 150 ESS 212 Emmanuel Alayande University of Education Oyo undergraduates selected thorough total enumeration to whom Key Informant Interview (KII) and Participant Observer (PO) was conducted constitute sample and instrument for the study while data obtained were subjected to descriptive and quantitative analysis. Findings from the study revealed among others, prevalence of cybercrime and internet-related fraud among the students; factors influencing undergraduate involvement in cybercrime and internet-related fraud are multifaceted; the acts do impinge on students greatly. Devolving from the foregoing, it is imperative that policymakers, educational institutions and other stakeholders in internet related practices in this digital transformation era rise up to taking proactive steps in educating students and general public on the ills of cybercrime and internet-related fraud on cybersecurity and corrupt tendencies as a means of promoting responsible online behaviour capable of countering corruption in Nigeria.

Keywords: Cybercrime; Cybercrime and internet-related fraud; Corrupt practices; Digital transformation; Internet-related fraud

Introduction
The 21st century possess a distinguishing feature generally. Prominent in the features are the issue of rapidly developing information communication technology, digital transformation, robotic machines, almighty artificial intelligence and the 21st century children and learners designated 'Gen-Z'. Apparently, to meet the requisite workable institutions for the present time requires a total dispersion from the ideals of the previous centuries which in the current parlance constitute 'old school' to the more orchestrated modern-day exigencies designated 'new normal'. Since education remains the major instrument of redressing societal ills as an ambivalence of the society and a unique social institution, it behooves all levels of education to rise up to the current challenges especially, the higher education sector. This perhaps informed the timely

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nature of this year conference theme, Higher education mandates in mega global realities. It is no longer news that the current crop of youths have crossed the initial 'jet age' to Gen-Z characterized by over reliance on digital transformation tools to the extreme in most cases as many of them tends to manipulate the devices and the opportunities they offer in a negative manner culminating in degenerated social institutions, education inclusive. It is therefore expedient to have a rethink of the mandates that the said higher education is put in place in the present dispensation. Basic in the youth exuberance of the present time is the issue of social problems manifesting in different forms (Oladiti, 2018). Degenerated citizenship ethos and criminal tendencies are becoming the order of the day among tertiary institution students and youths at large manifesting in all manners of abuse of internet, digital transformation tools, social media, get rich quick syndrome at the expense of the basic ideals of the ivory towers in the country. Of particular reference is the issue of cybercrime and internet-related crimes that tends to undermine outputs of higher education vis-a-vis attainment of its mandates. This of course is not without untold effects on the undergraduates generally. Consequently, this study focuses on the perceive influence of undergraduates' involvement in cybercrime and internet-related activities and its implications for higher education mandates in mega global realities.

Statement of the Problem

Online fraud is not good for a country's image or reputation as it represents a degree of engagement in illegal activities that scares investors away, inhibiting both domestic and international investment, which is bad for the economy. However, these sectors such as banking, e-commerce, and education, face challenges as a result of cybercrime. Each new cybercrime is more sophisticated than the one before it, and the number of these crimes is rising alarmingly. Olubokola (2017) stated that four of the top ten countries in the world with the highest incidence of cybercrime are in Africa (Nigeria, Cameroon, Ghana, and South Africa) in a 2011 World Bank report. The Nigerian government has established mechanisms to address the issue as a result of the rising rate of cybercrime activities in the nation. Among them is the Economic and Financial Crimes Commission, which is tasked with the obligation of arresting and prosecuting anyone discovered committing an act of cybercrime, as well as providing jobs, retention programmes, loans, and subsidies, among other things. The government's legal structure and level of policy implementation, however, are thought to be the primary causes of the rise in youth-related cybercrime.

Objectives of the study

This study sets to examine undergraduates' involvement in cybercrime and internet fraud among Emmanuel Alayande University of Education, Oyo, Oyo State. It sought to:

1. examine pervasiveness of cybercrime and internet fraud among EAUED undergraduates.
2. Identify the causes of cybercrime and internet fraud among EAUED undergraduate students.
3. determine how cybercrime and internet fraud impacts on EAUED undergraduates.

Research questions

1. To what extent are EAUED undergraduates involve in cybercrime and internet fraud?
2. What factors are responsible for cybercrime and internet fraud among EAUED undergraduates?
3. what impact have cybercrime and internet fraud on EAUED undergraduates?

While "crime" can be defined as any illegal activity, often carried out by someone with criminal intent, the prefix "cybercrime" is used to mark concepts related to the computer and information age. Using contemporary telecommunication networks like the Internet (Chat rooms, emails, notice boards, and groups), mobile phones, and other technologies, cybercrimes are crimes committed against individuals or groups of individuals with the goal of directly or indirectly endangering the victim's physical or mental health or damaging their reputation (Halde et al., 2011). Završnik asserts that the definition of cybercrime is still a little hazy (2009). Globally, cybercrime is a common occurrence. The phrase "cybercrime" describes a group of behaviours committed by people who interfere with networks, steal confidential data, documents, and bank account information from other people, and then transfer the funds to their own accounts. Since computers are now necessary for government, industry, and entertainment, cybercrime—especially on the Internet—has become more relevant (Goni et al., 2022). Using ICT to commit conventional crimes or crimes that jeopardise the security of ICT-related data and networks is illegal. These crimes are often referred to as computer integrity crimes or cybercrime in a limited sense (crime related to computers). In Nigeria, cybercrime is commonly known as Yahoo Yahoo, Yahoo Plus. One could consider cybercrime to be a crime involving phones as well as a computer via a

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worldwide network called the "internet," as well as a transmission medium or communication device called the "cyberspace" (Onyema et al. 2019). Because of this, cybercrime has grown more complex and costly ever since governments, corporations, and individuals all over the world started using computers for work-related objectives. According to Khan et al. (2021), cybercrime is any criminal offence involving the use of the internet or another computer network. Cybercrimes are crimes committed against individuals or groups of individuals with the criminal intent to intentionally harm the victim's reputation or cause them physical or psychological harm, either directly or indirectly, through modern communication networks, according to Akogwo (2018) such as mobile phones and the internet, such crimes could endanger the nation's security and financial stability. These days, cybercrime is committed by people of all ages, but undergraduates are the most common perpetrators (Adesina, 2017). Other names for the well-known term "cybercrime" include "yahoo yahoo," "G-boys," Maga, Sakawa, VIP export, Mugu customer, scammers, or "brain box of the internet" (Monsurat, 2020). Cybercrimes have seriously harmed Nigerians' reputations both at home and abroad, according to the global/world criminal report. Because the internet was so widely accessible, crime was mostly endemic in Nigeria. Scammers and importers could more readily hypnotise their clients, or "maga," with the help of the internet ways to fall victim to cybercrime. However, this bystander in the twenty-first century heard differing opinions about cybercrime scams and fraudulent cases as a worldwide and international phenomenon, which tarnished Nigeria as the world's most corrupt and fraudster-enhancing nation (Monsurat, 2020). Because of this, Nigeria has been portrayed as the source of the most fraudulent spam that is most likely to surface online, according to Osuji and Amadi (2020).

Perceived Nature, Causes and Consequences of Cybercrime among Tertiary Institution Students

Nigeria faces numerous internet-assisted crimes daily, including identity theft, counterfeiting, online chat rooms, cyber harassment, and spoofing, cyber harassment, fraudulent emails, Automated Teller Machine spoofing, pornography, piracy, hacking, phishing, and spamming are just a few of the many internet-assisted crimes that Nigerians perpetrate on a daily basis. These crimes, often involving deceptive financial pitches, harm the country's reputation abroad and pose a threat to e-commerce. To combat these issues, it's crucial for novice internet users to regularly refresh their knowledge. Cybercriminals typically contact gullible internet users with phone and fraudulent financial proposals as part of their crimes. Nigeria's rising rates of cybercrime have put the country's e-commerce growth in jeopardy. These crimes have also hurt Nigeria's reputation internationally and prevented some innocent Nigerians from taking advantage of possibilities elsewhere. Therefore, it is essential that new internet users develop the habit of regularly brushing up on the constantly evolving nature of ICTs. By doing this, individuals can learn more than just the former, on the other hand, establishes a bailout option in times of crisis without alerting security authorities. The funds are paid via checks, credit cards, Money Gramme, Western Union, and domiciliary accounts. Cybercrime reportedly helps people maintain their standard of living, purchase homes and cars, and pay for their education. This unofficial network will continue to avoid any real attempts to stop cybercrime in Nigeria.

Trends in Cybercrime and Internet Fraud in Nigeria

Cyberspace has both positive and negative aspects; in spite of its benefits, the internet has drawbacks. There are costs associated with cybercrime, and these costs are rising every day. Cybercrime can take many different forms, including loss of life, loss of dignity, and loss of job. Cybercrime has an impact on society as a whole in addition to the victim. Among the negative effects of cybercrime on the economy include decreased productivity, lost money, time squandered, and reputational harm (Ringwelski, 2008). Regretfully, Nigeria loses more than $500 million a year to cybercrime in all its manifestations, including identity theft, cyber terrorism, hacking, harassment, and online fraud (Punch, 22 Nov. 2023). For example, it was determined that an increase of at least 174% was documented in phishing and scams between January and June 2022 alone, with the country experiencing over 2,175 cyber-attacks in 2015 alone (Punch, 22 Nov. 2023). According to Pantamin (2015), around 14% of Nigeria's 97 million internet users experienced cyber-attacks, which made the creation of a Cyber Security Committee a necessity. It is instructive to note that during the past 20 years, the number of immoral cyberspace users using the internet to commit crimes has skyrocketed. This has led to a growing sense of unease about the nation's personal security and cyber environment, as well as mixed emotions of fear and admiration among the general public. The complexity of this issue is increasing, resulting in an exponential rise in the recent time, which is a clear call for prompt action to expedite the implementation of the Cybercrime Act, which was enacted in May

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2015 with the goal of safeguarding the internet and its users. "Those criminal acts either committed in cyberspace, such as various forms of identity theft and bank fraud, or acts that have a physical component and are simply facilitated by the use of internet-based tools," is how Obono (2008) defines cybercrime. These behaviours frequently involve the dissemination of phoney emails and online pornography. He goes on to say that cybercrimes are unlawful actions carried out by one or more individuals utilising networked computers, phones, and other information and communication technology devices to access cyberspace. There are very few crimes in the entire world. Because of our heavy reliance on contemporary technology, cybercrimes are not prevalent in today's society. According to Oketola (2009), some young people use the internet to learn about current events in sports, education, politics, health, and research, as well as to develop their talents and grow personally. Others, however, abuse it for destructive purposes. Many individuals believe that the main factors contributing to young people's engagement in cybercrimes include their poor moral standards, peer pressure, corruption, greed, poverty, get-rich-quick mindset, lack of parental direction, and unemployment. People of diverse ages and nationalities from all over the world may contact with each other thanks to the internet. It has offered the features that its users value most, such as online news. Anything can be posted online by anyone with the required abilities. The internet has expanded significantly over the world because users are not required to obtain licenses or permission in order to upload information. "The internet is changing media use patterns and the lifestyles of millions of people who have come to rely on it as a source of entertainment, information, and communication." "The internet is changing not only how we communicate, but also how we receive and transmit information." Thanks to this interactive medium, people are learning new methods to communicate with others and acquire knowledge. The internet has significantly expanded globally, allowing anyone to post information without licenses or permission. It is changing media use patterns and lifestyles, transforming communication and information transmission. As the internet becomes increasingly important, it is vital for learning new ways to communicate and acquire knowledge. The internet provides a 'many to one' model, combining mass broadcasting and interpersonal communication. It allows users to choose information through email and chat forums, breaking traditional boundaries. It allows individuals to select information, crossing mass, interpersonal, and computing modes, and enables anyone with necessary skills to post anything. "Millions of people who have come to rely on the internet as a source of communication, entertainment, and information are seeing changes in their lifestyles and media consumption patterns." "The internet is transforming not just communication but also information transmission and reception." People are learning new ways to interact with others and gain knowledge because of this interactive medium.

Cybercrime, Internet engagement and Learning Outcome

Student behaviour significantly impacts academic performance, impacting both individual learning capacity and the learning environment. Behavioral learning outcomes, such as punctuality, attendance, attention, and time commitment, are crucial for maintaining instructional effectiveness. Students lacking time for academic activities are more likely to arrive late, refuse assignments, and struggle academically. People all over the world use mobile phones for a variety of other things besides texting and talking on the phone, like browsing the internet. Wi-Fi technologies, which offer various ways to access the internet, have made it possible for mobile phone users to access the internet in developing nations where the technology is still relatively new. "Halar networks of communication and a multitude of information sources allow ideas, initiatives, and information to spread and exchange globally in a largely autonomous manner." Increased surveillance, made possible by the internet, led to the creation of the Global Sphere in the 1990s (Castells, 2007). The development of the internet has opened up new avenues for surveillance, which are evident in the domains of on the social studies education for sustainable development. Adegbola, et al. (2022) researched on cybercrime among mathematical science students: Implication on their academic performance. They used qualitative research method as a means of analysis and discovered that cybercrime undermines mathematics science students academic performance. Onyema, et al. (2019) investigated how mobile technologies might improve the efficacy of an inquiry-based learning strategy. The study found that the distance learning approach might not actually support high-quality education through the use of a documentary method for data collection and content analysis. In their content-analysis study on smartphone addiction among college students, Al-Barashdi and Jabur (2015) found that social influence had an impact on students' academic performance. In his 2019 paper, Nigeria: Sign in the Dark, Frank used a documentary research design to find that the detrimental effects of cyberspace are felt in almost every area of the nation, particularly in education. Monsurat (2020)

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studied African insurance and the success rate of cyber criminals in Nigeria: A study of the Yahoo boys in Ilorin, Nigeria. By using a survey research design, the study found that the majority of policymakers in the country's Western Region do not consider cybercrime to be a national problem. A study by Edeoghon and Mobote (2020) examined the sociotechnical implications, preventive measures, and countermeasures of cybercrime in Nigeria. They found through content analysis that a developing nation like Nigeria should adopt certain measures like improved security, cyber security, and legislation. In like manner, Akinyetun et al. (2021) looked at how COVID-19 affected Nigeria's national security, cybercrime, and youth unemployment. According to the study's theoretical approach, COVID-19's impact on youth unemployment is Nigeria's biggest national security threat. Of course, there are also ramifications for juvenile rudeness (Oladiti et al, 2024) and corrupt tendencies especially in the spate of digital transformation (Oladiti et al, 2025) characterizing the global community presently.

Methodology

Phenomenological research design involving mixed method approach which comprises a total of 150 ESS 212 Emmanuel Alayande University of Education Oyo undergraduates for 2024/2025 session selected thorough total enumeration to whom Key Informant Interview (KII) and Participant Observer (PO) was conducted constitute sample and instrument for the study. Data obtained were subjected to descriptive analysis of both quantitative and qualitative approach through triangulation of instruments based on the research questions raised to generate response on cybercrime and internet fraud among undergraduates.

Presentation of Result

Demographic Data of Respondents

Table 1:

Distribution of Respondents by Sex

Gender		
Male	52	47.6%
Female	98	52.4%
Age		
18-20	45.6%	
21-25	45.6%	
25+	8.8%	

Source: Authors' fieldwork 2025

Table 1 revealed that fifty-two (52) representing 47.6% of the respondents were male while the remaining ninety eight (98) representing 52.4% were females. Thus, female respondents dominated to the study. The distribution of respondents by age range indicated that 45.6% of the respondents belong to age range of 18 – 20 years, 45.6% of the respondents are within the age range of 20 – 25 while 8.8% of the respondents are within the age range of 25 and above respectively.

Data Analysis

The study adopted Content analysis in analyzing participants' responses through triangulation of instrument. Convergence and Divergent views expressed by participants while Verbatim reporting was adopted in highlighting the key themes and quotes generated from the KII and PO.

Research Question 1: To what extent are EAUED undergraduates involve in cybercrime and internet fraud?

Extent of Tertiary Students' Involvement in Cyber Crime and Internet Fraud

Theme 1: Participants' Personal Involvement in Cybercrime and Internet Fraud

40% of participants (60 out of 150) reported personal involvement in cybercrime or internet fraud while 60% (90 out of 150) denied any personal involvement.

Theme 2: Participants' Knowledge of peers' Involvement in Cybercrime and Internet Fraud

70% of participants (105 out of 150) knew someone who had been involved in cybercrime or internet fraud. Similarly, 30% (45 out of 150) did not know anyone involved.

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Findings here is in consonance with some previous studies that reported various involvement of undergraduates and youths engaging in cybercrime and internet fraud in tertiary institutions in Nigeria (Olubokola, 2017;Pantamin, 2015;Goni et al., 2022).

Research Question 2: What factors are responsible for cybercrime and internet fraud among EAUED undergraduates?

Cyber Crime and Internet Fraud Factors

Theme 1: Issues relating to Financial Difficulties

80% of participants (120 out of 150) cited financial struggles as a contributing factor to their involvement in cybercrime and internet fraud.

Verbatim reporting by most of the respondents indicated that:

"Financial hardship pushes students to seek quick fixes online."

Theme 2: Lack of Awareness as a factor predisposing students to cybercrime and internet fraud engagement

60% of participants (90 out of 150) mentioned lack of awareness about consequences.

It was also reported that:

"Some students don't understand the risks and consequences."

Theme 3: Peer Pressure related Factor

40% of participants (60 out of 150) highlighted peer influence.

Verbatim reporting also indicated that:

"Friends can pressure you into participating in cybercrime."

Findings from this study aligns with some studies that highlighted similar causes of students engagement in cybercrime and internet fraud generally (Ringwelski 2008; Punch, 22 Nov. 2023; Oketola, 2009).

Research Question 3: Of what impact have cybercrime and internet fraud on EAUED undergraduates?

Effects of Cyber Crime and Internet Fraud Engagement by Undergraduates

Theme 1: Possible Damage of Reputation of those engaging in the act

90% of participants (135 out of 150) emphasized reputation damage as a significant effect.

A number of the participants were of the views that Cybercrime can ruin ones future career prospects.

Theme 2: Emotional Distress Related Factors

80% of participants (120 out of 150) mentioned emotional distress and anxiety.

Some of the participants reported that:

"The stress of being involved in cybercrime can be overwhelming."

Theme 3: Issues relating to Financial Losses

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70% of participants (105 out of 150) highlighted financial losses as a consequence. Verbatim reporting from most of the participants revealed that: "Cybercrime can lead to significant financial losses."

The findings from the above analysis is in line with studies such as Adegbola, et al. (2022); Onyema, et al. (2019);Al-Barashdi and Jabur (2015); Monsurat (2020) who reported that social influence had impact on students' academic performance.

Conclusion

This study premieres the fact that there is significant involvement of tertiary students in cybercrime and internet fraud. This is being driven by financial difficulties, lack of awareness, and peer pressure. It need be reiterated that such effects are severe which include reputation damage, emotional distress, and financial losses. The evil of cybercrime and internet fraud has eaten deep into the fabric of the nation. Cybercrime and internet fraud refers to illegal use of the digital transformation and AI as well as the social media generally for criminal activity. From all indications, this study has provided evidence that undergraduates do engage in cybercrime and internet fraud advertently and inadvertently and this is a product of a number of factors emanating from digital transformation and societal related factors. Such stance is not without concomitant effects on the students generally and their academic in particular. It therefore becomes pertinent that necessary awareness that are capable of preventing more of negative use of cyberspace and internet need be provided for the teeming students population, the future of the nation regarded as 'Gen U 9ja' for productive engagement. Cybercrime and internet fraud has significant negative effect on students learning outcome in tertiary institutions generally while Nigerian value system, social status, are some of the factors responsible for students' involvement in cybercrime in higher institutions.

Recommendations

Devolving from the findings of this study, it is hereby recommended among others that

1. There is the need to inculcate in students, the need to venture into the positive aspects of cyberspace generally for the good and to enhance their learning outcomes;
2. School curriculum courses on entrepreneurship and business management in institutions where students can harness their skills and gain vast knowledge, using digital transformation and AI need be injected into the students.
3. Again, where cyberspace and internet are available, such should be strengthened for positive results as this could help in alleviating the issue of unemployment resulting in cybercrime and internet fraud but help undergraduates to adopt acceptable means of livelihood.
4. All stakeholders to engage in vigorous awareness programmes and workshops targeted at cybercrime and internet fraud should be constantly put in place for the tertiary institution students.
5. Also, students should be educated on the consequences and risks involved in cybercrime and internet fraud generally.
6. In addition, support systems should be established to help students that are facing financial difficulties to prevent them from engaging in cybercrime and internet fraud.

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Influence of Family Structure and Religious Orientation on Utilization of Internet Facilities among Tertiary Institution Students in Akwa Ibom State, Nigeria

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Abstract
The study investigated the influence of Family Structure and Religious Orientation on Utilization of Internet facilities among Tertiary Institutions Students in Akwa Ibom State, Nigeria. Two research questions and Two hypotheses were formulated to guide the study. The study adopted descriptive research design and ex-post facto. The population of study consisted of 15,458 year two students in four selected tertiary institutions in Akwa Ibom State. The sample size of 1, 545 students were selected for the study through clustering sampling techniques. Data were collected using researcher developed instrument known as Socio-Environmental Factors and Student Internet Utilization Questionnaire (SESIUQ) containing 60 items. Cronbach Alpha method was used to ascertain the internal reliability coefficient of 0.83. Data collected were analyzed using Mean to research question while research questions 2 were answered using Simple Regression. Hypothesis 1 was tested using the analysis of variance (ANOVA) hypotheses 2 were tested using F-ratio. The two null hypotheses formulated were tested using appropriate statistical techniques at 0.05 level of significance. From the result of data analysis, eight hypotheses formulated were rejected. As a result, it was concluded that family structure, religious orientation, gender, residential environment, student-students relationship, lecturer-students relationship, students time management and learning environment have significant influence on students internet utilization in tertiary institutions in Akwa Ibom. It was therefore recommended among others that parents should not neglect what their children watch on the internet or the time spent on social media aspect as that could constitute a distraction from reading and preparing for classroom learning activities. Community leaders and well spirited bodies should always be concerned about the high rate of criminal activities, internet fraud, cyber crime and other delinquent behaviours that are prevalent in our society. These behaviours are anti-development and might undermine the progress of the society.

Keywords: Social Environment, Students Internet Utilization, Family Structure and Religious Orientation.

Introduction
Education is a catalyst development of technology and creation of new knowledge and ideas through internet process. It is also a vital tool that is being used in the contemporary world for success. In Nigeria, education is recounted as an instrument for individual and societal development. The role that education is expected to play in a society is multifaceted. It is expected to be the basic tool for nation building and national development. In order to achieve this, training would afford individuals willing to acquire the skills and values that may enable their development in the society. School is an institution for educating students. It is an institution where teaching-learning process is carried out by various participants who interact and relate with one another in a way to ensure the successful realization of the goals of institutions of learning. The society can only develop when students utilize the internet in a positive way so as to benefit the entire society and to improve their skills. Generally, education is solely used for the development of human beings in the cognitive, affective and psychomotor skills, which will make the learners become useful to themselves and the society at large. It also involves a desirable approach in human behaviour through the process of teaching and learning (Udo, 2021). Obasanjo (2012) perceived education as something which promotes the culture of productivity by enabling individuals to discover the creative potentials in them and apply same for the improvement of the existing skills and techniques of performing specific tasks, thereby increasing the efficiency of their personal societal efforts. Amaekae and Kingdom (2013) view education as the total development of individuals child through acceptable methods and techniques according to their abilities and interests to meet the needs of the society and for the individual to take the rightful place and contribute immensely to the advancement of the society. Therefore, education develops in individual those morals, norms and values needed for a good citizenship, such as honesty, selflessness, tolerance, dedication, hard-work and potential integrity, all of which provide the rich ground from which good leadership potentials are groomed. With these in mind, students have to be serious in their

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academic activities to be able to achieve the desired goals of education (Udo, 2021). This means that several social activities vis-à-vis internet usability by students could make or mar their academic pursuits and equally turn them to social miscreant and hoodlums that threaten the peaceful co-existence in the society. The school is expected to transmit cultural values and norms of the society from one generation to another. It sustains the cultural practices of the community through the process of socialization. Esuabanga (2014) opined that the society has a way of life and this is built around its culture; culture therefore defines social norms and behaviour, which in-turn, determines those aspects of behaviours that are accepted by the society as normative and ethical, and those that are not. It also determines the ideals, practices and beliefs which are fundamentally valued as the social characteristics of the society. It is from the sociological standpoint that education is seen as a tool for character and moral development. Peretomode (2009) described school as a social institution which acts as an instrument of society for teaching the young ones. School therefore, is regarded as an institution made up of buildings such as classrooms, learning facilities with indoor activities and an agenda of learning activities for the promotion of knowledge and skills. Okeke (2016) refers to school environment as that which has to do with both man-made and natural conditions and provisions that are physically present as well as their consequent arrangement all of which are meant to contribute towards achieving the set school□s objectives. Socio-environmental indices such as family structure play a strong role in the child□s education and personality development. The family is one of the many small face-to-face groups called primary agent of socialization saddled with the responsibility of giving the offspring a qualitative and decent pattern of living. It is expected to transmit the cultural values and norms to the younger generation in order to be fully integrated into the society. Olorunfemi (2014) pointed out that parents have a greater impact over their children□s behaviour. The child is more likely to follow the parents□ positive or negative attitude. The child is more likely to generalize this attitude to the rest of society where school environment is the next step.

The family is indeed the foundation of socialization because it is the first contact of the child. The inculcation of basic social values, desirable character traits and norms are learnt first in the family. The author argued that whatever attitude is exhibited by a child started from the family. Invariably, such behaviour had already become part of their lives due to improper parental discipline. Interestingly, family structure is used in this study to explain the status of family, that is, whether it is intra-parents family, where two parents are together with their children or not. Whichever type of family structure practiced in a particular society influences the level of student□s internet utilization variedly. According to Garfield (2009), family structure can play a significant role in child development partly by affecting family dynamics such as how family members behave and interact. The home assists in laying the foundation for personality and character development of a child. The success or failure of an individual depends on the type of social take-off acquired in the family structure. Another important socio-environmental factor that is observed to impact strongly on the behavioural pattern of students is the level of religious orientation. Religion might be described as a reflection of man□s attempts to explain those aspects of environment which cannot be understood. Mapp (2009) observed that religious orientation can encourage members to uphold the beliefs and value system of the society. It can as well make members to place less value on the way society treats issues by the very teaching of the values of the society or lack of it provided to its members. Religious orientation is operationally used in this study to refer to the teaching which a religion provides for its members which at the same time can serve as a potent factor to reduce the level of internet fraud and cybercrime in the society which is wrong internet utilization by students and the younger generation. Religion is therefore a whole way of life and not just something that believers can take up or put down as the fancy takes them. People who share the same religious beliefs may also hold the same attitudes and opinions, and would likely behave in the same way. Thus, religious institutions help in the socialization process of their members. Religious leaders like Pastors or Imams are expected to demonstrate a high level of morality to serve as role models to their followers. It is also worthwhile to preach the authentic facts in their written liturgies and not manipulations to suit their personal desires. It is unfortunate that some religious leaders are observed to derail from ethical and moral practices in order to suit their selfish desire. These elders should be people of sound moral character so as to preach against dishonest acts and the tendency to involve in internet fraud and other cybercrimes perpetuated by the youths today in the society. Social environment has the potent factor that influences the students□ internet utilization in institutions of higher learning. One of the indices of social environment is the lecturer-student relationship. Lecturer-student relationship is operationally used in this study to explain the lecturers□ attitude to students and the effect of such attitude towards learning in the school environment. The classroom provides a strategic forum for

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determining the nature of relationship that exists between the lecturer and the students with discernable implication on students internet utilization. The result could greatly mar or lead to the success of the student. The position of the lecturer as an authority in the temple of knowledge is not questionable. The lecturer is the model to be emulated by the students. However, in Maslow s Hierarchy of Needs, deficiency need is a priority before the development of the higher needs. When the lecturer's relationship with the students particularly in the classroom is not friendly for effective teaching-learning, the students may rather want to achieve other priority needs which surfing the internet, chatting with friends on Facebook, WhatsApp, Instagram, Twitter among others are preferred in place of their studies (Okeke, 2016). It therefore becomes the responsibility of the lecturer to provide a favourable environment that would encourage the achievement of the student s needs, spur them to remain in the class so as take their studies seriously.

Ted Gurr's Relative Deprivation Theory (1970)

Ted Curr's Deprivation Theory was propounded by Ted R. Gurr s in the year 1970. This theory assumes that any form of deprivation breeds conflict. The basic tenet of Ted Gurr s Relative Deprivation Theory is used to refer to perceived discrepancies between value expectation and something one feels should be entitled to, and value capability and something one feels is capable of acquiring. Built around the premise of this assumption, the theory holds that the greater the scope of relative deprivation among members of a group, the greater the scope of collective violence among group members. Ted Gurr s Theory explains violence as the manifestation of conflict which may be physical, psychological or emotional hurt. This violence occurs when an individual places one in juxtaposition to others whom the person feels are of the same class with. When this happens in the opinion of the exponent of this theory, such individuals are most likely conscripts to strike actions against their frustration. Most of the behaviour patterns the students exhibit in the institutions of higher learning are either from home or the residential environment where they were exposed to. Realistically, most of their conducts especially becoming addicted to the internet in such a way that even in class they are still surfing the net emanate from their previous experiences. It is on this premise that frustration sets in as a result of inability to fulfill their expectations.

Purpose of the Study

The main purpose of this study is to determine the influence of Socio-Environmental Factors on Students Internet Utilization in Tertiary Institutions in Akwa Ibom State, Nigeria. Specifically, the study seeks to achieve the following objectives:

1. To investigate the influence of family structure on students internet utilization in tertiary institutions in Akwa Ibom State;
2. To ascertain the influence of religious orientation on students' internet utilization in tertiary institutions in Akwa Ibom State;

Research Questions

The following research questions were developed to guide the study:

1. What is the influence of family structure on students internet utilization in tertiary institutions in Akwa Ibom State?
2. How does religious orientation influence students internet utilization in tertiary institutions in Akwa Ibom State?

Research Hypotheses

The following null hypotheses were formulated to direct the study:

1. There is no significant influence of family structure on students internet utilization in tertiary institutions in Akwa Ibom State.
2. There is no significant influence of religious orientation on students internet utilization in tertiary institutions in Akwa Ibom State.

Research Methodology

This chapter describes the study design and procedure used for the study under the following sub-headings: Design of the Study, Area of the Study, Population of the Study, Sample and Sampling Technique, Instrumentation, Validation of the Instrument, Reliability of the Instrument, Administration of the Instrument, Method of Data Collection, Method of Data Analysis, Decision Rule and Ethical Issues. The study adopted the ex-post facto research design. The ex-post facto design is used to study events that had already occurred with the aim of identifying the possible cause and effect relationship between the variables under study. The area of the study is Akwa Ibom State. This is on the increase and it is worrisome. The population of this study consisted of all the four public tertiary institutions of learning in Akwa Ibom State. Only year

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two (2) students of the four public tertiary institutions constitute the population based on 2019/2020 academic session. The sample size of 1,545 of 10 percent of the population was selected through clustering sampling technique. In the study, each Tertiary Institution formed a cluster. The instrument for data collection was the researcher developed and validated questionnaire entitled: "Socio-Environmental Factors and Students Internet Utilization Questionnaire (SEFSIUQ). The component scales of the instruments measured the level of influence of socio-environmental indices, exemplified in family structure and religious orientation. The scales were four points rating as follows: Very High (VH) - 4 points; High (H) - 3 points; Low (L)-2 points and Very Low (VL) -1 point. Face validation was carried out on the instrument. To carry out face validation, the instrument was validated by the three experts from the Department of Educational Foundations, Guidance and Counselling, University of Uyo, Nigeria, Two measurement and Evaluation specialists and one Sociologist of Education. Cronbach Alpha statistic was used to test the reliability co-efficient. The reliability co-efficient of .083 was obtained for the instrument. Data was collected from the respondents from the field. Data were collected from the field organized and coded in a coding sheet before they were analyzed using the Special Package for Scientific Statistics (SPSS). Accordingly, research questions 1 were answered using Mean while research questions 2 were answered using Simple Regression. Hypothesis 1 was tested using the analysis of variance (ANOVA), 2 were tested using F-ratio. The eight null hypotheses formulated were tested using appropriate statistical techniques at 0.05 level of significance.

Presentation of Results

Research Question 1

What is the influence of family structure on students internet utilization in tertiary institutions in Akwa Ibom State?

Table 1: Mean Internet Utilization of Students Based on Family Structure

Family Structure	N	Mean
Intact Family	790	61.90
Separate Family	417	66.03
Single Family	329	66.47

The result in Table 1 indicates the mean internet utilization of students in tertiary institutions in Akwa Ibom State based on family structure. As shown in the Table, the mean internet utilization of students from intact family is 61.90 that of students from separate family are 66.03, while that of students from single family is 66.47. The mean difference of internet utilization among students from intact and single families is 4.57; the difference between students from intact and separate families is 4.13, while that of separate and single families was 0.44. This is an indication that separate and single families have high influence on students internet utilization in tertiary institutions of learning in Akwa Ibom State.

Research Question 2

How does religious orientation influence students internet utilization in tertiary institutions in Akwa Ibom State?

Table 2: Simple Regression Analysis of the Influence of Religious Orientation on Students Internet Utilization

Variables	R	R^2	% Influence
Religious Orientation	.776	.603	60.3
Students Internet Utilization			

The result in Table 2 shows the value of the regression coefficient (R) and its corresponding R^2 of .776 and .603 respectively. The R-value of .776 shows that there is high influence of religious orientation on students internet utilization in tertiary institutions in Akwa Ibom State. The value of R^2 of .603 indicated that 60.30% of students internet utilization in tertiary institutions in Akwa Ibom State is influenced by their religious orientation.

Test of Hypotheses

Hypothesis 1

There is no significant influence of family structure on students internet utilization in tertiary institutions in Akwa Ibom State.

Table 3: Analysis of Variance of the Influence of Family Structure on Students Internet Utilization in Tertiary Institutions

Sources of Variance	Sum of Squares	Df	Mean Square	F	p-value
Between Groups	7201.616	2	3600.808	435.184	.000
Within Groups	12684.374	1533	8.274		

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Total	19885.990	1535

The result in Table 3 indicates that the calculated F-value of 435.184 is significant since the p-value of .000 is less than .05 levels of significance at 2 and 1533 degrees of freedom. Therefore, the null hypothesis which stated that there is no significant influence of family structure on students internet utilization in tertiary institutions in Akwa Ibom State is rejected. Hence, there is significant influence of family structure on students internet utilization in tertiary institutions in Akwa Ibom State. To identify the various family structures that differ significantly, Bonferroni post hoc test was conducted and the result is presented in Table 4.

Table 4: Bonferroni Post Hoc Test of the Influence of Family Structure on Students Internet Utilization in Tertiary institutions

(I) Family Structure	(J) Family Structure	Mean Difference (I-J)	p-value
Intact Family	Separate Family	-4.12498*	.000
	Single Family	-4.57037*	.000
Separate Family	Intact Family	4.12498*	.000
	Single Family	-.44539	.108
Single Family	Intact Family	4.57037*	.000
	Separate Family	.44539	.108

The result in Table 4 indicates the Bonferroni post hoc test of the influence of family structure on students internet utilization in tertiary institutions. From the table, it is clear that students from intact family differ significantly from students in separate and single families in their utilization of the internet. This is because the p-value of .000 for intact family and separate family, intact family and single family is less than .05 levels of significance. It was also evidenced from the result that students from single and separate family did not differ significantly in their utilization of the internet in tertiary institutions in Akwa Ibom State. This is because the p-value of .108 between separate and single family is greater than .05 level of significant.

Hypothesis 2

There is no significant influence of religious orientation on students internet utilization in tertiary institutions in Akwa Ibom State.

Table 5: Regression Analysis of the Influence of Religious Orientation on Students Internet Utilization

Model	Sum of Squares	Df	Mean Square	F	p-value
Regression	11986.635	1	11986.635	2327.721	.000[b]
Residual	7899.355	1534	5.150		
Total	19885.990	1535			

a. Dependent Variable: Students' Internet Utilization

b. Predictors: (Constant), Religious Orientation

The result in Table 5 indicates that the calculated F-value of 2327.721 is significant since the p-value of .000 is less than .05 levels of significance at 1 and 1534 degrees of freedom. Therefore, the null hypothesis which stated that there is no significant influence of religious orientation on students internet utilization in tertiary institutions in Akwa Ibom State is rejected. Hence, there is significant influence of religious orientation on students internet utilization in tertiary institutions in Akwa Ibom State.

Summary of Findings

1. Internet utilization is higher among students from separate and single families than among students from intact families.
2. Religious orientation has 60.3% influences on students internet utilization in tertiary institutions in Akwa Ibom State.

Discussion of Findings

Family Structure and Students Internet Utilization

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The findings on the influence of family structure on students internet utilization indicated that there is a significant influence of family structure on students internet utilization in tertiary institutions in Akwa Ibom State. Students from separate and single families had a higher mean score on internet utilization than students from intact family. The reason for the finding could be that students from separate and single families are given little attention in their level of internet use by their parents. This could be true because availability of only one parent in the family makes it difficult for the parent to combine caring for the family physical needs with paying attention to the children s individual needs. Many parents from separate and single families try so much to provide their children with most of the things they feel would make their life better and make them not really feel the absence of the other parent, but sometimes lack the time to monitor the activities of these children. Another reason for the finding could be in line with the words of Omoruyi (2014) who stated that some parents become permissive, weak and incapable to set rules of behaviour for their children and are also unable to set standards to guard against rule breaking by living a life that is exemplary for their children to emulate.

Religious Orientation and Students Internet Utilization

The finding on the influence of religious orientation on students internet utilization indicated that there is a significant influence of religious orientation on internet utilization among students in tertiary institutions in Akwa Ibom State. The reason for the finding could be that individuals who are very committed to their religious beliefs and activities are likely to exercise control on internet utilization than those with little or no commitment to religious activities. Religious institutions are one of the important agents of socialization in the society saddled with the responsibility of satisfying both spiritual and social life needs of members. The values emphasized by a particular religious institution can influence the activities of members of the religion. For instance, a religious institution that encourages a permissive life style can have little or no influence on internet utilization of its members (Esuabanga, 2021). Members who are committed to the activities of such religious institution are likely not to see anything bad in various life styles, and may exercise little or no control over their utilization of the internet. They might not be selective in their use of the internet and can use it for both good and bad purposes. On the other hand, religious institutions with high values and standards on internet use can help their members to develop a balance and healthy use of the internet. This can especially be seen in the life of members who are committed to the teachings and activities of the religion (James, 2019). This is in line with the words of Peretomode (2009) who stated that religious orientation affects and influences the economic, political orientations, beliefs, values, intellectual and social growth of their members through their practices and preaching. Religious institutions can re-orientate the perception of a child towards internet fraud, cyber crime and encourage hard work, commitment and diligence. As stated by Igbo (2009), religion teaches the right and wrong, the dos and don ts, the prescriptions and proscriptions and the fundamental values of the society. Hence, religious orientation of the individual in the area of social control and conformity is therefore a major pre-occupation of religious organizations. This must reflect on the lives of their members. Igbo further stressed that there is a strong nexus between the religious orientation of an individual student and the way of using the internet especially when they are in a learning environment. The findings of this study also support the words of Onwanhanze (2019) which stated that most of the attitude and character exhibited by the adolescent students either in school or in the larger society emanate from lack of proper religious orientation by the religious institution saddled with such responsibility. Religion fosters internalization of behavioural standards and self-monitoring and it exhorts individuals to control or alter their own behaviour.

Conclusions

Based on the findings of the study, conclusions were drawn that variables of family structure and religious orientation have remarkable influence on students internet utilization in institutions of higher learning positively or negatively. Family structure was equally seen as a foundation for the child s moral and mental development. The child is a product of the family, therefore, if the child does not receive proper discipline from home such a child may tend to exhibit the tendency of spending enormous time on online gambling, internet betting and consistently surfing the net for irrelevant things and frequently chatting on the social media aspect of the internet.

Recommendations

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

1. Since behaviour could be learned, a good family structure is a prerequisite institution to curtail the excessive use of the internet by children.

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2. Parents are encouraged to deliberately inculcate the acceptable societal values that can help to enhance their children s successful life attainment devoid of internet addiction and possibly dangers associated with wrong internet utilization.
3. Morality should be intensified through religious institutions towards helping the youths get acquainted with the dangers emanating from wrong internet utilization.
4. Religious institutions should be seen as an avenue to assist the individual to maintain a high moral standard, self control and discipline in the society.
5. It is therefore recommended that religious leaders should use their liturgies to preach against dishonest acts such as unexplained wealth, getting rich through internet fraud, criminal activities among the youths in our society because children remain vulnerable to the negative implications of internet utilization.

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SOCIAL MEDIA UTILIZATION AND ACADEMIC BEHAVIOURS AMONG Z-GENERATION (ADOLESCENC) IN SECONDARY SCHOOLS IN AKWA IBOM STATE, NIGERIA

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ABSTRACT

The study was conducted on Social Media Utilization and Academic Behaviour among Z-Generation in Secondary Schools in Akwa Ibom North-East Senatorial District, Nigeria. Two research questions and corresponding two hypotheses were formulated to guide the study. The researcher adopted a survey design to gather data based on level of influence of social media on z-generation. The population of this study consisted of all 2603 Senior Secondary School Two (SS11) students who used phones during 2024/2025academic session in the (86) public secondary students in the study area. The sample size for this study comprised 729 Senior Secondary Two (SS11). The researcher developed instrument titled □Social Media Utilization and Z-Generation Academic Behaviour Questionnaire□ (SMUZABQ) to obtain data. The instrument was validated by experts in measurement and evaluation and sociology of education. Cronbach was used to ascertain the reliability which produced a reliability coefficient of 0.7. Mean was used in answering the research questions, while z-test statistics was used in testing the hypotheses raised for the study .05 significance level. All the null hypotheses were rejected showing that Facebook and Google significantly influenced academic culture of secondary schools students. Based on the findings, the recommendations were made that students should use used Facebook and Google for academic purposes. Parents should monitor their children□s phone, especially the things they browse and receive from google. Seminar and workshops should be organized to sensitize secondary schools students how to use social media for academic purposes.

Keywords: **Social Media, Facebook, Google and Academic Behaviour.**

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Introduction/literature Review and Theoretical Perspective

The wave of social media usage in this contemporary era among youths is unprecedented and overwhelming. Younger generations are basically influence by the activities of social media to the extent of undermining the very essence of education. This has contributed immensely to the behavioural adjustment either in a positive or negative dimension. Students in secondary schools tend to exhibit some traits due to the over indulgence in social media and it has some negative effects on their behaviours and as well as moral development (James, Nseabasi and Idiong, 2024). Addiction to the use of social media has increased in recent times particularly among adolescents in schools which has negative impact on academic behaviours. It is observed that most students spend excessive time on social media to the detriment of their academic activities. Students now become dependent on social media and it is believed that academic behaviour tends to diminish proportionately.

Undoubtedly, activities of social media among students has contributed to the poor grade in public examinations such as West African Senior School Certificate Examination (WASSCE) and Join Admission Matriculation Board (JAMB) in recent times compared to previous years where social media was not as influential as it is today (James, 2023). Social media have exploded as a category of online chatting with friends and as well as where people create content, share, bookmark and network at a prodigious rate. Young men and women now exchange ideas, feelings, personal information, pictures and videos at a truly and astonishing rate. Lusk (2010) share the concept of social media as the use of Google, Facebook, X-handle (formally Twiter), Myspace Whatsapp among others for the purpose of communication, sharing photos, videos and exchange of information among friends and associates.

Fundamentally, indices of social media include but not limited to; facebook and google. Facebook is a social networking site that started in 2004 by a Harvard College Students, Mark Zuckerberg. It was originally a network that was only available to students. Then in 2006, Facebook became open to the public in general of age thirteen or above, but still maintained an emphasis on high school and college students (Johnson, 2008). Facebook provides individuals with easy access to view personal information about their friends, co-workers and even complete strangers (Muise, Christofides and Desmarais, 2009). Using facebook among students is unprecedented although there is nothing wrong with it if it is only being used for the purpose of exchange of ideas and information. It allows students to collect their thoughts and articulate them in writing before communicating to their expression. Further, the level of informality typical to Facebook can also aid students-and-students in self-expression and encourage more frequent student-and-instructor and student-and-students communication. At the same time, Towner and Munoz (2012) noted that this informality may actually drive many educators and students away from using Facebook for educational purposes (Meyer and Rose, 2010).

Google is another social media components that has influence the students both negative and positively. Google is one of the Internet-base browsers, which can help students harness information from network. Google is a very versatile browser, encompasses many browsers. It has well provided students with useful information that can aid learning and make learning essier and accessible. Sampath, Kumar and Manjunath (2013) stated that Google usage has an impact on academic behaviour of students. The Google growth has created a new scientific communication system with new facilities that are competing with the traditional sources of information. Besides text-based writing, technology encourages students to integrate visual and aural multimedia in their school projects and other reading materials. The use of Google search engines may promote students research and discover new knowledge for developing skills. The big question to ponder about is what does students search for or Google Online? Online information can expose varieties of topics and other materials that can assist them in learning and as well improving their academic behaviours. It is on this premise that sociology of education attempts to explain the negative implications of students addicted to social media utilization to the detriment of their studies.

Social media platforms allow information to be frame in mainstream platforms which limits communication. Social media has become easily accessible allowing news stories to fly around making it possible for around the globe to read. People around the world can communicate with each other by simply accessing a computer interface (Safdar, Mahmood and Qutab, 2010). Utilizing social media in a positive dimension can go a long way to improve their academic behaviour. Academic behaviour refers to the attitude a student exhibits with regard to his academic activities. A student may have negative or disruptive behaviour that interrupts with normal classroom procedure. According to Umofia (2013) academic behaviour signifies any approach a learner takes towards his/her academic pursuits that may positively or negatively influence his/her overall academic outcome in the future. Students to some extent maybe absent minded while classes are going on as the

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result of addiction to social media. Hulya (2013) opined that a greater number of students in secondary schools form a habit of exploring social media while in class; this has hampered their seriousness in academic activities. It is disheartening that students misuse and abuse the social media which has affected academic behaviour and as well as reading culture.

Technological Determinism Theory (Mcluhan, 1962)

Technological Determinism Theory was developed by Mcluhan in 1962. The theory states that the media technology shapes how individuals in a society think, feel, act, and how the society operates as it moves from one technological age to another. It explains that individuals learn, feel and think the way do their things because of the messages they receive through the current technology that is available in the public domain. For instance, the radio requires people to only listen and develop a sense of hearing. On the other hand, television engages both hearing and visual senses. People then transfer those developed senses into their everyday lives and would want to use them again. The medium is then the message. Social media brought about emerging technology and required people to listen and engage often. People then interpret the messages sent to them from social media in their everyday lives.

The author believes that humans do not have much free will at all. Whatever society as a whole is using to communicate, members too will use. Therefore, they would adapt to the medium for sending and receiving messages like everyone else. Mcluhan considered that there is one truth and this is by observing what has happened over time. As the medium changes, so does society□s way of communication changes by bringing the new method of communication □social media. The theory explains that when new systems of technology are developed, the culture or society is immediately changed to reflect the senses needed to use the new technology. The theory predicts that with every new system of media technology, society will change and adapt to that technology (social media). This theory is related to this study in the sense that academic behaviour of students can be influence by social media in a negative or positive dimension. The theory extrapolated that students behave in a manner based on the activities of social media influences. It also proved that students spend enormous time on social media than their studies. The implication of over indulgent or addicted to social media is that students□ academic behaviour would suffer a set back by affecting their academic outcome.

Purpose of the Study

The main purpose of this study was to determine the influence of social media utilization and academic behaviour among z-generation in secondary schools in Akwa Ibom North East Senatorial District, Nigeria, the study sought to:

1. Determine the influence of Facebook utilization on secondary schools students□ academic behaviour.
2. Ascertain the influence of Google utilization on secondary schools students□ academic behaviour.

Research Questions

The following research questions were formulated to guide the study:

1) How does Facebook utilization influence secondary schools students□ academic behaviour?
2) How does Google utilization influence secondary schools students□ academic behaviour?

Research Hypotheses

The following null hypotheses were formulated to guide this study:

1. There is no significant influence on Facebook utilization on seconday schools□ students□ academic behaviour in secondary schools in Akwa Ibom North East Senatorial District.
2. There is no significant influence on Google utilization on seconday schools□ students□ academic behaviour in secondary schools in Akwa Ibom North East Senatorial District.

Methodology

The study adopted survey design to gather the data on social media utilization. Survey design was appropriate because it seek to uncover how social media utilization influences academic behaviour of students. The study was conducted in Akwa Ibom State North East Senatorial District. The population of this study consisted of all the 2603 Senor Secondary School Two (SS11) students who used phones during 2024/2025 academic session in the eighty-six (86) public secondary schools in Akwa Ibom North East Senatorial District (Field Survey, 2025). The students with mobile phones were identified through a pre-survey of students□ demographic data conducted by the researcher. The sample size for this study comprised 952 Senior Secondary Schools Two (SS11) selected from 9 public secondary schools in the area of the study. The researcher developed instrument titled □Social Media Utilization and Z-Generation Academic Behaviours□ (SMUZAB) with 61 items was used to collect data. The responses to the items in the questionnaire were on four-option scale rated as follows: Very Strong Influence □ VS □ 4; Strong Influence □ S □ 3; Little Influence □ L □ 2; Very Little Influence □ VL □ 1.

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The instrument was validated by two experts in measurement and Evaluation and sociology of education all in the Department of Educational Foundations, Akwa Ibom State College of Education, Afaha, Nsit, Nigeria. The reliability of the instrument was a researcher employed Cronbach□s Alpha Reliability Method to analyze the data generated from the piloted group and to determine the reliability of the instrument. The questionnaire was administered to the respondents, out of a total of 952 copies of questionnaire, 729 copies were correctly completed and returned to the researcher, which was used for the analysis. The data were analyzed using descriptive statistics mean was used for answering the research questions and z-test was used for testing the null hypotheses. All null hypotheses were tested at .05 level of significance.

Results

The research questions were answered using the mean

Answering of Research Questions

Research Question One: How does Facebook usage influence secondary school students□ academic behaviour in Akwa Ibom North-Easter Senatorial District?

This question was answered using the mean scores recorded by respondents and the analysis is presented in Table 4.1

Table 4.1: Mean Scores on the Influences of Facebook Usage on Secondary School Students□ Academic Behaviour

N=729

S/N	Items	VS	S	L	VL	$\bar{X}$	Decision
1.	Staying on Facebook for a long time influences my studies negatively	123	375	121	110	2.70	Strong Influence
2.	Watching Facebook picture while in the class does not allow me to focus	151	412	102	64	2.89	Strong Influence
3.	Chatting with my friends on Facebook does not allow me to listen to my teachers	139	393	100	98	2.78	Strong Influence
4.	I most times attend classes late as a result of watching Facebook hence my poor academic performance	82	102	344	201	2.09	Strong Influence
5.	Posting pictures to my friends while the teacher is teaching hinders my copying of notes in the class	121	216	237	155	2.42	Little Influence
6.	I most often leave the class to go and chat with my Facebook friends	146	261	217	105	2.61	Strong Influence
7.	I use Facebook account to keep in touch with friends of opposite sex hence this affected my attention to the teacher	98	345	159	127	2.59	Strong Influence
8.	I can sneak out of school compound during school hours to chat with my Facebook friends not minding my studies.	110	316	158	145	2.54	Strong Influence
	Aggregate Mean					**2.58**	**Strong Influence**

Data in Table 4.1 shows the mean response on students□ Facebook usage and academic behaviour. Items 1 show mean sore of 2.70 which indicates that the respondents agreed that staying on Facebook for a long time influences my studies negatively teachers always assess students□ performance and record it every week. The mean score for item 2, which is 2.89 shows that the respondents accepted the fact that watching Facebook picture while in the class does not allow me to focus. Apart from item 5, all the other seven (7) items indicate strong influence of Facebook on students□ academic behaviour. However, the aggregate mean score of 2.58 is greater than the criterion mean of 2.5. Hence, this indicates that Facebook usage has negative influence on students□ academic behaviour. This result implies that students have been using Facebook always and this has strongly influenced their academic behaviour negatively.

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Research Question Two: How does Google usage influence secondary school students academic behaviour in Akwa Ibom North-East Senatorial District?

To answer the research question two, mean was used and presented in Table 4.2

Table 4.2 Mean Scores on the Influence of Google Usage and Academic Behaviour among Secondary School Students.

S/N	Items	VS	S	L	VL	$\bar{X}$	Decision
1.	I check the teacher s lessons using Google hence my attention to the teacher is disrupted	119	286	163	161	2.50	Strong Influence
2.	I hardly copy notes in the class because of browsing with my phone	139	285	172	133	2.59	Strong Influence
3.	I check all my lessons through Google hence I rarely listen to my teachers	192	311	194	32	2.91	Strong Influence
4.	I talk with my friends using internet while in the class not minding what the teacher teachers	149	308	190	82	2.72	Strong Influence
5.	I open website for my friends while the class is going on	120	329	183	97	2.65	Strong Influence
6.	I share data with my classmates while the teacher is teaching	115	292	211	111	2.56	Strong Influence
7.	I use Google to post document to my classmates while the teacher is teaching	135	283	192	119	2.60	Strong Influence
	Aggregate Mean					**2.65**	**Strong Influence**

Data entries in Table 4.2 show the mean response on Google usage and students academic behaviour. Item 1 shows 2.50 mean score, which indicates that the respondents agreed that they check the teacher s lessons using Google hence their attention to the teacher is disrupted. Item 2 shows mean score of 2.90 which indicates that the respondents agreed that they hardly copy notes in the class because of browsing with my phone. From the result, if found that the seven items record strong influence of Google on students academic behaviour. Considering the grand mean score of 2.65, which is greater than the criterion mean of 2.5, the result indicates that the respondents agreed that Google has strong influence on their academic behaviour. The result implies that many students have been using Google negatively for pleasure instead of using for academic purposes.

Testing of Hypotheses

Research Hypothesis One; There is no significant influence of Facebook usage influence on secondary school students academic behaviour.

In testing the hypothesis, the z-test was used as presented in Table 4.6

Table 4.6: Summary of z-test Analysis of the influence of Facebook Usage on Academic Behaviour among Secondary School Students

(n=729)

Variables	N	X	SD	z-value
Facebook usage	729	2.58	0.24	
				-3.52*
Academic behaviour	729	2.81	0.78	

*significant at p<.05, df=727, z-critical value = 1.96.

Table 4.6 shows that the z-calculated value is -3.52 and the z-crit value is 1.96 at 0.05 level of significance and at 727 degree of freedom. Since the z-cal is less than the z-crit value, we accept the null hypothesis. This implies that there is no significant influence of Facebook on students academic behaviour.

Research Hypothesis Two: There is no significant influence of Google on secondary school students academic behaviour

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To test the hypothesis, the dependent test was used as presented in Table 4.7

Table 4.7 Summary of z-test Analysis of the influence of Google on Academic Behaviour among Secondary School Students

(n=729)

Variables	N	X	SD	z-value
Google usage	729	2.65	0.24	1.88*
Academic behaviour	729	2.81	0.78	

*significant at p<.05, df=727, z-critical value = 1.96.

The analysis in Table 4.7produced a calculated z-value of 1.88 when compared to the critical z-value of 1.96 at .05 confidence level with 727 degrees of freedom, it was found to be less than the critical value. Based on this finding, the null hypothesis was retained. This means that there was no significant influence of Google usage and academic behaviour among secondary school students.

Discussion of Findings

The findings of this study are discussed based on the research questions and the corresponding hypotheses tested.

1. **Facebook usage and Students Academic behaviour**

The findings on research question one revealed that Facebook usage have strong influence on students academic behaviour. The findings as revealed in hypothesis one showed a significant influence of Facebook usage on Academic behaviour among secondary school students. The findings indicate that wrong or negative Facebook usage can result in poor academic behaviour. The findings further indicated that students who perceive Facebook usage as boring, suffering, difficult and waste of time are more likely to show good academic behaviour than those students who view Facebook usage as achievement, road to success and rewarding. Serious students are less likely to drop out of school than the unserious ones, other things being equal. Negative use of social media automatically hampered academic growth of students in the school environment.

The findings of this study agrees with the opinion of Abrutyn and Mueller (2014) who maintained that many parents and educators have been fearful of the repercussions of having social media in the classroom. As stated by Abrutyn and Mueller (2014), there are concerns that social media tools can be misused for cyber bullying or sharing inappropriate content. As result, cell phones have been banned from some classrooms, and some schools have blocked many popular social media websites among others. These activities are needed to learn, succeed and obtain certificates.

2 Google Usage and Students Academic behaviour

The finding on research question two revealed that Google Usage has strong influence on students academic behaviour. The findings suggested that students who see Google Usage as painful, punishment or unbearable are more inclined to reduce its usage than those students who are Google Usage as a normal thing. In other words, students academic behaviour of school depends greatly on how the students view Google Usage. Finding on hypothesis two revealed a significant influence of Google Usage on students academic behaviour.

The finding is in line with the findings of Rosenberg (2006) concedes that end-user training for postgraduates and academic staff is more of a challenge. The norm the author stats is for libraries to offer one-off workshops in computer literacy related subjects and the author noted that attendance is always poor; therefore, low level of computer literacy. Google knowledge and use remains a problem in university for postgraduates. According to the authors, students may perceive Google Usage as restricting them from involving in examination malpractice, smoking, using foul languages, forming confraternities, bullying, disrespecting school authorities or getting involved in delinquent behaviours. Dellar (2008) also recognized that Google Usage affect behaviours of students. This further suggests that Google Usage have profound influence on students general behaviour, especially mentally, psychologically and otherwise.

Conclusion

On the basis of the findings of this study, it is concluded that Facebook usage by students influence the academic behaviour of students. It is however concluded that Whatsapp usage by students do not significantly influences their academic behaviour. Equally, that Google Usage helps to decrease students academic behaviour. Similarly, Youtube usage

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influences students academic behaviour of students. In the same vein, Twitter Usage strongly influences the academic behaviour of student.

Recommendations

Based on the findings, the following recommendations are made:

1. Students should use Facebook in positive ways to enhance their academic behaviour. There is need for parents and teachers to be friendly to their children and students respectively. This may ensure that the students do not share immoral and non-academic information.

2. Seminars and workshops should be organized from time-to-time to sensitize secondary school students on the negative effects of Facebook usage on their academic behaviour.

3. Parents should monitor their children s phone, especially the type of information and things they browse using Google. This would enhance the proper use of Google, especially for homework.

4. Facebook usage by students should be geared toward positive academic behaviour.

5. Facebook videos should portray academic pictures to enhance positive academic behaviour. There is need for teachers and parents to follow the students on Facebook. This would encourage the students to visit sites for academic purposes only.

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Foregrounding Politics in Yorùbá Written Poetry: A Discourse Stylistic Perspective on Party Politics, Thuggery and Electoral Reformation in Dúró Adélékè's Aṣọ Ìgbà

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Abstract
This study examines the foregrounding of political themes in modern Yorùbá written poetry through a discourse-stylistic analysis of Dúró Adélékè's Aṣọ Ìgbà (1997). Employing an integrated framework that combines stylistics and critical discourse analysis with Yorùbá indigenous poetics, the research investigates how linguistic and rhetorical devices repetition, proverb, moral binaries (ìwà rere vs. ìwà búburú), rhetorical questioning, imperative mood, and eschatological warnings critique the pathologies of party politics, political thuggery, electoral malpractice, and leadership irresponsibility in late twentieth-century Nigeria. The analysis reveals that Adélékè discursively constructs politics as a moral domain, where corruption, thuggery, and rigged elections constitute ìwà búburú that destabilize communal harmony (àlàáfíà) and undermine democratic legitimacy. Stylistic foregrounding serves dual purposes: denunciation of systemic vices and implicit prescription of ethical reformation through vigilant citizenship, divine accountability, and restoration of just governance. Drawing on selected poetic excerpts, the study demonstrates how the poet employs culturally resonant discourse to expose the complicity of party structures in violence and deceit while advocating for electoral integrity as a pathway to societal renewal. The findings position Aṣọ Ìgbà as a significant socio-political text within Yorùbá literary tradition, functioning simultaneously as critique, moral instruction, and call for democratic reform in a context marked by recurring electoral crises.

Keywords: *Yorùbá poetry, discourse stylistics and political thuggery.*

Introduction
Yorùbá written poetry, as a modern extension of oral traditions, plays a vital role in critiquing societal issues and advocating for ethical governance across generations. Among contemporary Yorùbá poets, Dúró Adélékè stands out for his use of linguistic creativity to address political realities. In his 1997 collection Aṣọ Ìgbà (literally "Clothes of the Season/Era," drawing from the proverb Aṣọ ìgbà là á dá fún ìgbà clothes are tailored for the season), Adélékè employs poetic forms not merely for aesthetic pleasure but as tools for sharp social and political commentary. The collection contains 11 poems dedicated to political themes, which serve educational, ideological, and reformative purposes. These poems employ a range of linguistic and rhetorical strategies including repetition, pun, satire, foregrounding (through deviation and parallelism), proverb integration, and metaphorical imagery to make their critiques memorable, persuasive, and defamiliarizing. Key preoccupations include party politics, political thuggery (and associated violence like assassinations), godfatherism, electoral malpractices (such as rigging and vote-buying), and urgent calls for electoral reformation toward a more egalitarian society. These poetic devices function as discourse strategies: repetition intensifies the cyclical nature of political violence and corruption; puns create ironic commentary on power abuses; foregrounding deviates from everyday language to highlight normalized dysfunctions in governance; and proverbial allusions link modern issues to traditional Yorùbá moral frameworks, urging adaptation ("clothes") fitting for the democratic "era." Scholars have examined the structural and stylistic features of Yorùbá written poetry, often focusing on socio-stylistic aspects, but there remains a need to explore how these forms engage with specific political contexts like post-military Nigeria's transition to civilian rule (late 1990s), where party rivalries, thuggery, and flawed elections undermined democratic ideals. For instance, analyses highlight how poets like Adélékè use language to expose corruption, bad leadership, ethnic marginalization, and the need for ethical reform. This study specifically investigates selected poems from Aṣọ Ìgbà to examine how they convey critiques of party politics, thuggery, and electoral malpractices, while advocating for reformation. It analyzes both textual linguistic features (e.g., foregrounding devices, pragmatic intent, ideological construction) and broader discourse contexts to

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demonstrate the interplay between language, power, and social instruction in contemporary Yorùbá poetry. Furthermore, the study considers how Adélékè's work contributes to the transmission of values related to accountable leadership, communal responsibility, and political activism, underscoring the importance of preserving and engaging with such poetic traditions for future democratic discourse and governance in Yorùbá/Nigerian society.

Objectives of the Study

This study aims to foreground the intersection of politics and aesthetics in contemporary Yorùbá written poetry by examining how Dúró Adélékè's 1997 collection Aṣọ Ìgbà employs discourse-stylistic strategies to critique party politics, political thuggery, and the urgent need for electoral reformation in Nigeria. Specifically, the objectives are:

1. To identify and analyse the stylistic devices (such as foregrounding, repetition, rhetorical questions, wordplay, metaphor, and historical allusion) used in selected poems from Aṣọ Ìgbà to foreground political themes.
2. To investigate how these devices construct a discourse of resistance against party politics, godfatherism, thuggery, and electoral malpractices, particularly in the context of military-era and post-1993 election crises.
3. To explore the poet's vision of electoral reformation as a pathway to egalitarian governance and national unity.
4. To demonstrate the relevance of discourse-stylistic analysis in revealing how Yorùbá poetry serves as a medium for socio-political commentary and reformist advocacy.

Research Questions

The study is guided by the following questions:

1. What stylistic and discursive features in Dúró Adélékè's Aṣọ Ìgbà foreground the themes of party politics, thuggery, and electoral reformation?
2. How do devices such as repetition, metaphor, wordplay (e.g., on names like Abacha), and historical references function to critique political violence, godfatherism, and electoral manipulation?
3. In what ways does the collection propose electoral reformation as a solution to the socio-political ills depicted?
4. To what extent does a discourse-stylistic approach illuminate the poet's role as a political activist and reformer within Yorùbá literary tradition?

Methodology

The study adopts a qualitative discourse-stylistic approach, combining tools from stylistics (foregrounding, deviation, parallelism, and figurative language) with critical discourse analysis (CDA) to examine power, ideology, and resistance in language. The primary data consist of eleven political poems from Aṣọ Ìgbà (e.g., Èyínlááró, Osù Ìsọnu, Oníkàn Yírọ̀ra, Básabàsa, Sàágò, Ògo ni Àb'ófò ni, and Irúkìrú Olópàá). Poems were purposively selected based on their explicit engagement with party politics, thuggery (including security-agent violence and hired killers), and electoral issues (especially the 1993 June 12 annulment and its aftermath). Analysis proceeds at three levels: (1) lexical and syntactic foregrounding; (2) pragmatic and discursive strategies (direct address, rhetorical questioning, and intertextual historical references); and (3) ideological interpretation within the broader Nigerian political context of the 1990s. Secondary sources include existing literary scholarship on Yorùbá political poetry. The analysis is descriptive and interpretive, with English translations provided for clarity while preserving original Yorùbá nuances.

Presentation of Results

The analysis reveals that Adélékè masterfully foregrounds politics through deliberate stylistic choices that blend traditional Yorùbá poetic resources with modern political discourse. Repetition and rhetorical questions dominate in poems such as Èyínlááró and Básabàsa, creating a chant-like urgency that sensitises readers to the consequences of bad leadership and thuggery (e.g., warnings against treating power with levity, using Idi Amin's fall as analogy). Wordplay, especially in Básabàsa (playing on "Abacha" as chaos/disorder), satirises military dictatorship and exposes how party politics and godfatherism breed thuggery and assassinations. Metaphors of theft and predation (Olè for civilian thieves, Olósà for military burglars in Sàágò) and historical allusions in Oníkàn Yírọ̀ra (tracing 1960–1993 politics and warning of ethnic breakup) foreground electoral malpractices and the annulment's trauma (Osù Ìsọnu vividly depicts hunger and national paralysis post-June 12). Security agents are discursively constructed as "armed robbers in uniform" (Irúkìrú Olópàá), linking state-sponsored thuggery to electoral violence. The findings show that these devices do not merely describe politics but actively perform resistance: they shift power from oppressors to the masses by calling for accountability and reform. The poet's vision of electoral reformation emerges clearly in calls for genuine power transfer, egalitarian society, and

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rejection of servile ethnic appointments. Discussion confirms that Aṣọ Ìgbà functions as "cloth of the era" — a metaphorical garment that both covers and exposes the nakedness of Nigerian politics using discourse-stylistic foregrounding to advocate systemic change rather than mere lamentation.

The Life History of Duro Adeleke

Duro Adeleke was born on 4th October 1954 in the historic town of Odo-Otin, Osun State, Nigeria. He was born into the family of Chief Adeyemi Adeleke and Mrs. Titilayo Abiyemi Adeleke. Raised in a devout Christian home, his early upbringing was shaped by strong Methodist values, which significantly influenced his moral and intellectual development. He commenced his formal education at St. Andrew's Demonstration Primary School in 1968. Despite the early loss of his father, he remained steadfast in his academic pursuits and successfully completed his primary education in 1970. He proceeded to Anglican Methodist Modern School, where he continued his foundational studies between 1970 and 1972. In 1973, Adeleke gained admission into Wesley College, Ibadan, for his secondary education. He completed his studies there in 1976 with distinction. Motivated by a passion for teaching, he enrolled in teacher training and qualified as a Grade II teacher. His early professional formation included training at Ebenezer African Primary School, Ilesa, and further professional development at the Local Authority Teacher Training College, Oyo, in 1976. His teaching career began at St. Paul Anglican Primary School, Iyeku, Oyo. Demonstrating exceptional commitment to educational advancement, he later gained admission to the University of Ife (now Obafemi Awolowo University), where he studied Yoruba Education between 1978 and 1981. He graduated with a Bachelor of Arts in Education (B.A. Ed.) in Yoruba, thereby solidifying his academic and professional orientation toward the promotion of Yoruba language and culture. In 1984, he served as a teacher at St. Luke's College, Molete, Ibadan, before moving to Okebadan High School in 1985. His dedication and competence in teaching earned him further professional recognition, leading to his appointment at Apomu High School in Osun State. In 1992, he was elevated to the rank of Chief Lecturer at the Federal College of Education, Abeokuta, where he contributed significantly to teacher education and curriculum development. Committed to continuous academic growth, Adeleke pursued higher degrees at the University of Ibadan, where he further distinguished himself in Yoruba studies. Over the years, he has gained recognition for his scholarly contributions to Yoruba language, literature, and pedagogy. His publications include textbooks, research articles, and academic works released from 1997 onward, all of which have contributed meaningfully to the advancement of Yoruba scholarship. Through decades of teaching, research, and academic leadership, Duro Adeleke has established himself as a respected scholar and educator whose work continues to influence the study and teaching of Yoruba language and culture in Nigeria and beyond.

Politics

In Yorùbá written poetry, politics emerges not merely as a theme but as a foregrounded discourse linguistically emphasized through deviation, repetition, pun, satire, and proverbial adaptation to critique modern governance. Dúró Adélékè's Aṣọ Ìgbà (1997), with its 11 politically themed poems, exemplifies this by contrasting modern political dysfunctions (such as party politics, godfatherism, thuggery, assassinations, electoral malpractices, and calls for reformation) with idealized traditional Yorùbá political structures. Politics, broadly, is the system through which society organizes, governs, and administers itself, involving authority, decision-making, laws, and policies aimed at stability, order, and collective well-being. In traditional Yorùbá societies, this was rooted in communal responsibility and checks on power. Leadership centered on the Ọba (king), who ruled not autocratically but with the council of chiefs, elders (Agba), and titleholders such as the Jagun (war general), Lọ́pọ̀n (chief priest), and Ìgbìmọ̀ (council members). The palace (Ilé Ọba) served as the deliberative hub (Ilé Ìpàdé), incorporating diverse roles: drummers, singers, messengers, and even high-status women. Groups like the Olóríṣà (religious leaders) and Ogboni society provided spiritual and moral oversight, acting as balances to prevent abuse. Advisers handled economic matters (akin to modern trade associations), ensuring decisions promoted communal harmony rather than individual dominance. This pre-colonial model emphasized collective accountability no one was above the community and legitimacy derived from cultural, moral, and divine sources. Governance integrated security, justice, and welfare without the individualism or violence often seen today. Modern Yorùbá/Nigerian politics, influenced by Western colonialism and post-independence democracy, diverges sharply. It features party-based systems, electoral contests, and power struggles marred by corruption, bad leadership, ethnic tensions, and violence. Adélékè's Aṣọ Ìgbà foregrounds these through stylistic devices that defamiliarize and satirize them: the titular metaphor ("clothes of the era") proverbially critiques how contemporary politicians "dress" power inappropriately superficially, violently, or selfishly unlike the era-suited attire of traditional leaders. In the collection, party politics is portrayed as riddled with

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godfatherism (patronage and control), thuggery (hired violence and intimidation), and assassinations (targeted eliminations of rivals). Electoral malpractices rigging, vote-buying, and manipulation undermine democratic ideals, prompting calls for reformation toward egalitarian, accountable systems. Adélékè uses repetition for cyclical emphasis (mimicking endless violence in thuggery), pun for ironic wordplay (e.g., linking "party" to excess amid poverty), and satirical portraits to construct ideological resistance. These foreground political failures as a mismatch to Yorùbá values of communal order (ọmọlúàbí ethos) and moral adaptation. Thus, Aṣọ Ìgbà employs discourse-stylistic foregrounding to critique how modern politics deviates from traditional communal governance where authority was checked and balanced toward individualized, violent, and unstable forms. The poetry urges ethical reformation, echoing the proverb Aṣọ ìgbà là á dá fún ìgbà (clothes must fit the era), to realign politics with cultural and moral integrity for societal stability and development.

The Actions of Modern Political Leaders in Party Politics, Thuggery, and Electoral Processes

Those who occupy positions of authority in modern political administration, commonly referred to as politicians, play very significant roles in shaping the development of society. Their influence extends to governance, policy making, and the overall well-being of the people. In Yoruba literary discourse of the late twentieth century, particularly in Dúró Adélékè's Aṣọ Ìgbà (1997), it is observed that when an individual attains power through party politics, caution often diminishes. When someone rises to a leadership position among the people as a party politician or elected official he may begin to act in ways that do not benefit the masses, including engaging in or enabling thuggery during elections and obstructing genuine electoral reformation. This reality explains why Yoruba poets employ songs and poetic expressions to criticize oppression, corruption, selfishness, and the misuse of political power in party contexts. Writers serve as social critics, exposing injustice and calling attention to misconduct within governance, such as electoral violence, thuggery, and manipulative party practices, as foregrounded in Adélékè's work. If we carefully observe contemporary society, we see that party leaders, executive office holders, governors, ministers, and other public officials occupy positions of authority. They are expected to formulate sound policies and implement developmental programs that will promote peace and social progress. Ideally, governance and electoral processes should be transparent, just, and people-centered. However, in many cases, party politics appears to serve personal interests rather than public good, with thuggery used to intimidate opponents and rig outcomes, hindering true electoral reformation. In times of political crisis especially during elections conflict often emerges within communities. Party competition can lead to tension, division, and violence, including thuggery by hired supporters. Both supporters and opponents of political leaders may engage in hostility. This is why writers and intellectuals raise their voices against injustice and political recklessness, because such instability, fueled by party-driven thuggery and flawed elections, harms ordinary citizens. This aligns with Duncan (1961:112), who states: "A sociologist must do more than stress the persuasive quality of symbolic appeals to audience… must point out specific sociological contact in the process of identification as these arise when the self and the other are addressed."

This means that political analysis must go beyond persuasive rhetoric in party campaigns. It must examine the real relationship between leaders and citizens, particularly how identity, responsibility, and accountability operate within society amid thuggery and calls for electoral reformation. Yoruba poets consistently address political misconduct because whatever affects the community affects everyone. Adélékè, for example, in Aṣọ Ìgbà, discusses political disorder including party politics, thuggery, and the need for electoral reformation as part of broader social degeneration. He writes:

Òrọ̀ aláìlòótọ́ ni wọ́n ń ṣe
Àwọn aláìṣòótọ́ ń ṣe iṣẹ́ àìtọ́
Nígbà tí aláìṣòótọ́ bá lágbára
Kò rọrùn kó dá òtítọ́ dúró
Agbára kékeré kì í ṣẹ́gun irọ́
Bí a ti ń ṣe òtítọ́ kò yẹ ká bẹ̀rù
Ta ni kò mọ̀ pé ìwà burúkú máa ń yọrí sí ìbànújẹ́?
Gbogbo irọ́ máa ń hàn ní ọjọ́ kan
Bí a tilẹ̀ fi pamọ́ fún ìgbà díẹ̀
Òfin kò fi ẹni kankan sílẹ̀
Ní ọjọ́ kan ni wọ́n máa fi dá ẹjọ́
Ilé ayé kò fara rọ ẹni tó ṣe búburú
Ìbáṣepọ̀ àìtọ́ kì í pé lórí ìtẹ́
Ta ni ó mọ̀?

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Bó bá jẹ́ pé ó dáa
Bí ẹni náà bá ní ilé àti ọkọ
Ohun gbogbo lè yí padà
Ó lè mọ ara ilé
Ó lè mọ ara oko
Kò dára kí a fi ìwà búburú ṣe àṣà
Ẹ jẹ́ ká bẹ̀rù Ọlọ́run àti ìlànà rere

The poet condemns leaders who make promises during party campaigns but fail to fulfill them once elected. The country suffers because of deception, selfish governance, and the use of thuggery to maintain power, with little genuine electoral reformation. Another example states:

Bí gbogbo onísòwò bá fi ìbẹ̀rù Ọlọ́run sí ọkàn
Tí gbogbo ọkàn bá ṣọ́ra nínú iṣẹ́ wọn lójú ọ̀nà ìgbésí ayé
Kò sí ẹni tí yóò tan ẹlòmíràn jẹ
Kò sí ẹnìkan tí yóò fi owó tàbí ipa ṣe ìkà
Ọgbọ́n alâìtọ́ àti ìtan kì í pé
Ká bá a ṣe ohun tí ó tọ́ sí ojú Ọlọ́run
Ọkàn kan ṣoṣo ni ènìyàn ní lójú ayé
Kò rọrùn kí a jọba lórí ara ẹni pátápátá
Ó yẹ ká bẹ̀rù láti ṣe ohun tí kò tọ́
Ó ń jẹ́ kí a rántí pé gbogbo ìṣe wa ló ní ìdáhùn
Ní ìpèyà tàbí nínú àlàáfíà ni a fi hàn ìwà wa
Bí ìṣe kò bá dáa, ilé kì í dúró.

These verses highlight corruption, favoritism within party structures, and the enrichment of political elites while citizens suffer poverty. Election seasons become periods of intense propaganda and thuggery. Politicians promise development for four or eight years, yet meaningful change and electoral reformation rarely materializes due to manipulative party politics. Another poem illustrates this:

Balọ́dẹ̀ agbẹ́kẹ̀lé, olóòótọ́ ènìyàn
Ọ̀yẹ̀ kékeré kì í bàjẹ́
Ọjọ́ ọdún máa ń fi hàn bí irọ́ ṣe rí
Ní ọjọ́ kan, irọ́ yóò tan káàkiri ilé
Ojoojúmọ́ ni òtítọ́ ń dáàbò bo gbogbo ènìyàn
Tí a bá kú, gírí kì í jẹ́ ká tún padà
Ayé yìí kì í pé títí
Ẹni tí ó bá ṣe rere yóò rí ìbùkún.

The general conclusion is that when leadership becomes self-serving through party politics and thuggery, society deteriorates, with stalled electoral reformation. Writers therefore function as watchdogs, holding political leaders accountable.

Another powerful poetic warning appears in:

Ìjọba yẹ kí ó bẹ̀rù Ọlọ́run
Ẹni bá fara rẹ̀ hàn gégé bí ẹni rere
Kò gbọ́dọ̀ padà séyìn nínú iṣẹ́
Ayé tí a bá kọ́ lórí ìwà búburú kì í pé
Ká mọ̀ pé ìṣe tí kò dáa kì í bọ́ lábẹ́ òfin Ọlọ́run
Ìjọba tó ń hùwà àìtọ́
Kì í jẹ́ kí àwọn ọmọ ilú gbé ayé àlàáfíà
Bó bá jẹ́ pé wọ́n ń ṣe ohun tí kò tọ́
Àkóbá á padà wá bá wọn nínú iṣẹ́ wọn.

This reflects tension between political authority in party systems and intellectual voices calling for reform. Attempts to silence critics through thuggery cannot suppress truth permanently. The actions of political leaders greatly determine the condition of society. Where justice, accountability, sincerity, and electoral reformation prevail over party thuggery, development flourishes. But where corruption and violence dominate, suffering spreads among the people.

The Actions of the Masses in Modern Politics

It is commonly said that whoever plays with fire will eventually be burnt; whatever a person sows is what he will reap. Politics in society is not the responsibility of leaders alone because governance is sustained by collective participation.

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Although politicians hold formal authority to govern, the masses also possess their own form of influence. This is what ensures that society does not collapse, because continuous tolerance without accountability leads to disorder. As the Yoruba proverb implies, when a person watches wrongdoing silently, he becomes complicit; what one refuses to confront boldly may grow beyond control especially in contexts of party politics, thuggery, and stalled electoral reformation. Writers observe that the masses must not remain passive in societal matters, especially in political affairs, because collective silence strengthens oppression, electoral malpractices, and the use of thuggery by political actors. In Yoruba literary discourse of the late twentieth century, particularly in Dúró Adélékè's Aṣọ Ìgbà (1997), which foregrounds party politics, political thuggery, and the urgent need for electoral reformation, the role of the masses is highlighted as crucial in resisting such vices. An example appears in poems within Aṣọ Ìgbà, where the masses are urged not to be complicit in political disorder. The poet critiques how citizens' inaction or participation in thuggery perpetuates corrupt party systems and flawed elections. The poem states:

Ìfé ni dọ́rọ̀ ìjà máa ń lẹ̀rẹ̀ sí ìwà jàre
Kí a mọ̀ pé a kì í ṣe tómọ́gé bí ènìyàn
Gbogbo ènìyàn káàkiri ayé
Kò sí láìní iṣẹ́ àkàdà
Bó jẹ́ lórílẹ̀-èdè, bó jẹ́ onímọ̀ tàbí oníṣẹ́
Iṣẹ́ àkàdà ló ń fi mọ̀ bó ṣe jẹ́ gidi
Ìṣe ìlòkàn-òkàn ni ń dá ìpinnu sílẹ̀
Bí a bá yàn kìnnìún lórí àga ìjọba
Àkàdà á ràn
Wọ́n lè wò ó níta
Wọ́n bẹ̀rẹ̀ àròjọ lésèkẹsẹ̀ nípa iṣẹ́ àkàdà wọn.

This reflects how intellectuals and ordinary citizens are marginalized within political systems dominated by party thuggery. Ideally, the masses should demand enabling policies and electoral integrity. However, instead of empowerment and active participation in demanding reformation, fear or complicity often suppresses resistance, allowing thuggery to thrive during elections. Similarly, the actions of citizens themselves determine the direction of society. In Aṣọ Ìgbà, the youth and masses are reminded of their responsibility toward their homeland amid party driven violence and electoral crises:

Àmọ̀ àfojúsùn ni wọ́n pè é
Ó yẹ ká máa ṣiṣẹ́ takuntakun
Àmọ̀ àfojúsùn bí ó bá ṣọ́ra rẹ̀ di kánkán
Tí ìṣe bá dà bí odò
Òṣọ́-dídámọ̀ fi dán ẹni sí
Ajẹ́nilọ́kàn-òfìfo máa ń da ènìyàn lójú
Músùn-músùn irọ́ ọkàn ni ó ń sọ jọ̀wọ́jùwọ́
Ìtẹ̀síwájú
Ìtẹ̀síwájú fi ìyàsọ́tọ̀ hàn láàárín ènìyàn
Gbogbo ọmọ orílẹ̀-èdè parí pọ̀ sí nkan kan
Wọ́n ní kò sí ẹni tí yóò gba ìmọ̀ kúrò lọ́wọ́ ẹni
Kò sí ẹni tí yóò gba iṣẹ́ ọwọ́ kúrò lọ́wọ́ alágbára
Kò sí baba ẹni tí yóò gba orúkọ rere kúrò lọ́wọ́ ẹni.

The youth are warned that they are heirs of their father's land. Even if they travel abroad, their homeland remains their foundation. The political crises in Nigeria—marked by party thuggery and lack of electoral reformation are therefore connected to both leaders and citizens. Writers emphasize the interaction between rulers and the masses. If leadership becomes corrupt through thuggery, the children of the masses will eventually resist injustice, but only if they reject passive complicity.

As another poem declares:

Ohun gbogbo ló lè ṣẹlẹ̀
Ó lè mọ ara ilé
Ó lè mọ ara oko
Kò dára kí a fi ìwà búburú hàn
Tí ẹni tí a bá ń tọ́ ni dáńgájí
Tàbí ẹni tí a bá ń tẹ̀lé ni dáńdàn
Aláìṣòótọ́ ń bà owó jẹ bí ó ti fẹ́

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Aláìṣòótọ́ ń fa ìṣòro káàkiri ara wọn
Aláìṣòótọ́ jẹ́ ẹni àkúnya
Ó ń fa orúkọ ilé bàjẹ́
Ẹ jẹ́ ká bẹ̀rù Ọlọ́run

This suggests that the masses ultimately hold decisive power over leaders. When leaders misuse public funds, deploy thuggery, or rig elections without fear of the people, society suffers. Therefore, citizens have a critical role in monitoring governance, rejecting thuggery, and demanding electoral reformation. Politics cannot function properly unless the masses remain vigilant, informed, and courageous enough to demand accountability. In conclusion, both leaders and citizens share responsibility in political development. Where citizens remain silent or participate in thuggery, corruption and flawed elections flourish. But when the masses become aware, active, and united against party malpractices, leadership becomes accountable, electoral processes reform, and society moves toward justice and progress—as foregrounded in Adélékè's Aṣọ Ìgbà.

The Problems Confronting Nigerian Politics: A Discourse Stylistic Perspective on Party Politics, Thuggery, and Electoral Reformation in Dúró Adélékè's Aṣọ Ìgbà.

Modern Nigerian politics grapples with entrenched structural and moral crises, prominently featuring corruption, leadership irresponsibility, and institutional abuse. These manifest in embezzlement of public funds, abuse of office, political favoritism, manipulation of state apparatuses, and the pervasive deployment of thuggery during electoral contests. Such pathologies undermine democratic consolidation and perpetuate underdevelopment, as consistently foregrounded in late twentieth-century Yoruba written poetry through discourse-stylistic critique. Yoruba poets function as socio-political commentators, employing poetic discourse to expose governance failures while often stopping short of prescriptive remedies. This limitation risks perpetuating cycles of crisis, as mere denunciation without actionable reformist orientation yields limited transformative impact. In Dúró Adélékè's Aṣọ Ìgbà (1997), a seminal collection within contemporary Yoruba political poetry, these issues are vividly interrogated, with particular emphasis on corrupt party politics, thuggery as a tool of electoral coercion, and the imperative for electoral reformation.

Adélékè's poetic discourse employs repetition, rhetorical questioning, and direct vituperation to foreground systemic corruption and irresponsible leadership. An illustrative excerpt captures this:

Aláìṣòótọ́ jẹ́ ẹni àkúnya
Ó ń fa orúkọ ilé bàjẹ́
Ibi tí ó bá wà
Ibi tí ó bá dé
Gbogbo ibi ni aláìṣòótọ́ ti ń pa pọ̀ sí pápọ̀
Gbogbo ọmọ ìlú aláìṣòótọ́ máa ń wáyé bíi gárí
Aláìṣòótọ́ ń ṣe kárí-kírí
Aláìṣòótọ́ kò rántí ìpìlẹ̀ orúkọ
Aláìṣòótọ́ ń yípo bí ẹni pé ó dára ju ẹlòmíràn lọ
Ṣé èsùn nìkan ni aláìṣòótọ́ fi kan alájọṣepọ̀?
Pé alájọṣepọ̀ ò mọ̀nà tó
Pé alájọṣepọ̀ ò mọ bí a ṣe ń ṣiṣẹ́
Pé alájọṣepọ̀ ń fi jàǹdùkú dá ilú rú
Pé alájọṣepọ̀ ń ṣe bí ẹni tó ní ilé
Wọ́n ń ṣe àròyé bá a ṣe lè jọba
Wọ́n ò jẹ́ kí ọmọ tuntun fọ̀rọ̀ sọ́rọ̀ ní gbangba
Ìṣe kékeré-kékeré ni ń tàn aláìṣòótọ́ jáde
Ilé mọ̀ pé kásàkásà ni ìwà aláìṣòótọ́
Ṣé ìjàǹbáyàn ni ìwà aláìṣòótọ́?
Wọ́n kì í yípo kí wọ́n fi ìdí òtítọ́ múlẹ̀
Ìwà ni ń tàn aláìṣòótọ́ jáde ní gbangba.

Stylistically, the iterative use of "aláìṣòótọ́" (the dishonest one) and rhetorical interrogatives ("Ṣé èsùn nìkan…?") intensifies condemnation of corrupt practices bribery, embezzlement, selfish enrichment, and betrayal of public trust within party frameworks. Public office is discursively reframed as a private enterprise, enabling thuggery ("jàǹdùkú") and electoral manipulation that marginalize genuine voices and perpetuate poverty amid elite extravagance. Leaders'

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insensitivity to mass suffering exacerbates these ills, as regressive taxation burdens grassroots economies without reciprocal developmental returns. Adélékè articulates this moral accountability:

Ó yẹ ká bẹ̀rù láti ṣe ohun tí kò tọ́
Ó tún yẹ ká rántí pé a
ó jẹ́ ìdáhùn fún gbogbo iṣẹ́ wa ní ọjọ́ ìkẹyìn
Ní ìpẹ̀yà tàbí ní àlàáfíà ni a fi ń fi ìwà hàn
Ìwà ẹni ni í di iṣẹ́ lára rẹ̀, a sì máa rí èrè rẹ̀
Àbájáde ni iṣẹ́ ń bí
Ìṣe ọjọ́ kan ni ó lè pa mọ́ ènìyàn mọ́kàn.

This passage underscores eschatological accountability, critiquing opaque revenue utilization that neglects infrastructure and social services, thereby fostering disillusionment, unemployment, inequality, and potential unrest conditions fertile for thuggery and electoral violence. Adélékè advocates civic vigilance and ethical voting to counter such pathologies:

Mo ní inú-dídùn láti kọ́ ẹ̀kọ́ nípa àwọn ọmọ orílẹ̀-èdè mi
Tó rọrùn pé a ti bẹ̀rẹ̀ láti kọ́ ọ
Èbùn kan tí mo ní
Àyọ̀ kan ni mo ń rí nínú ẹ̀kọ́ yìí
Ó ti ń fi ìmọ̀ hàn
Nígbà míì ni mo ń fi ìmọ̀ hàn
Kò sí ẹ̀sùn tó wà lórí mi
Ọmọ ni pẹ̀lú àwọn ẹlòmíràn
Kí ẹ̀kọ́ tó lè dà bíi pé kò parí
Kí ó dà bíi pé ó tútù
Kí ó dájú pé a lè lóye rẹ̀
Ẹ̀kọ́ náà ń fi ìtẹ̀síwájú hàn
Ẹ̀kọ́ náà kò dájú pé kò ní ẹ̀sùn.

This excerpt emphasizes personal and collective moral agency, warning against vote-buying, ethnic bias, and apathy that sustain corrupt party dominance. Corruption, amplified by party thuggery and electoral malpractices, erodes institutional trust and risks authoritarian reversion absent meaningful reformation. Adélékè's Aṣọ Ìgbà exemplifies how Yoruba written poetry discursively foregrounds Nigeria's political pathologies corruption, thuggery, and electoral dysfunction as intertwined barriers to democratic progress. Sustainable transformation demands transparent institutions, accountable leadership, judicial autonomy, and civic ethical reorientation to dismantle thuggery and institutionalize fair electoral processes.

Coordination and Hierarchy in Political Administration: A Discourse-Stylistic Perspective on Party Politics, Thuggery, and Electoral Reformation in Dúró Adélékè's Aṣọ Ìgbà

In Dúró Adélékè's Aṣọ Ìgbà (1997), coordination and hierarchy are discursively foregrounded as essential yet corrupted principles in Nigerian party politics. Coordination organizes collective political action and electoral processes, while hierarchy structures authority, accountability, and command. Through repetition, proverbs, and rhetorical admonition, Adélékè exposes their subversion manifested in thuggery, factionalism, and electoral malpractice while implicitly advocating for their ethical reformation.

Coordination

Effective coordination aligns party actors across levels to pursue transparent elections and accountable governance. Its breakdown enables thuggery and electoral chaos. Adélékè stylistically conveys this through iterative proverbial warnings:

Ta ni kò mọ́ pé ìwà búburú máa ń yọrí sí ìbànújẹ́?
Gbogbo irọ́ máa ń hàn ní ọjọ́ kan
Bí a tilẹ̀ fi pamọ́ fún ìgbà díẹ̀
Òfin kò fi ẹni kankan sílẹ̀
Ní ọjọ́ kan ni wọ́n máa fi dá ẹjọ́
Ilé ayé kò fara rọ ẹni tó ṣe búburú
Ìbáṣepọ̀ àìtọ́ kì í pé lórí ìtẹ́

These fragments underscore delayed but inevitable consequences of uncoordinated deceit, urging realignment of political efforts toward integrity.

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Hierarchy

Hierarchy establishes clear chains of command, ensuring directives flow downward and accountability upward. In corrupt party systems, it inverts into godfatherism and impunity. Adélékè critiques this through moral imperatives and vituperative sequences:

Bí ẹni bá ṣe ìwà búburú, ìyẹn máa dà á lára
Àìtọ́ kì í pé títí
Gbogbo ìwà búburú ń jà fún àitọ́
Aláìṣòótọ́ ń fa ìṣòro bá ayé
Ìwà búburú ń dá àlàáfíà rú
Ìwà aláìṣòótọ́ jẹ́ ẹni àkúnya

These lines stylistically depict hierarchical failure as a source of societal disorder, implicitly calling for restored ethical authority.

Integration and Practical Critique

Coordination and hierarchy interlock: the former executes collective will, the latter enforces oversight. Their perversion fuels thuggery and electoral fraud. Additional excerpts reinforce this:

Wọ́n máa ṣe àfiyèsí àwọn tó yàtọ̀
Wọ́n fi ẹ̀sùn kàn àwọn tó ṣe àìtọ́
Àkóbá kò ní pé nígbà gbogbo
Ó dà bí ẹni pé ìwà búburú máa parí
Wọ́n ń yan ẹni tó yẹ fún iṣẹ́ pàtàkì
Kò sí ẹni tó lè fi ìṣe àìtọ́ bọ́ lábẹ́ òfin

These highlight selective enforcement, impunity, and the urgent need for hierarchical discipline and coordinated reform. Adélékè's discourse-stylistic strategy in Aṣọ Ìgbà portrays coordination and hierarchy not as mere administrative tools but as moral-political imperatives subverted by party thuggery and electoral malpractice. Their ethical restoration through vigilant alignment of action and accountable authority is presented as indispensable for genuine electoral reformation and democratic health in Nigeria.

The Relationship Between Religion and Politics: A Discourse-Stylistic Perspective on Party Politics, Thuggery, and Electoral Reformation in Dúró Adélékè's Aṣọ Ìgbà

In Dúró Adélékè's Aṣọ Ìgbà (1997), the relationship between religion and politics is foregrounded through discourse-stylistic devices epetition, proverbs, moral imperatives, and eschatological warnings that position religious ethics as a counterforce to corrupt party politics, thuggery, and electoral malpractice in Nigeria.

Communication of Religious and Political Ideologies

In Yorùbá poetic discourse, communication is central to propagating religious and political ideas. Religious leaders and poets transmit moral directives that shape political behavior, urging alignment with divine principles against corruption and violence. Adélékè stylistically links divine morality to just governance:

Ọ̀rọ̀ náà ni pé ó yẹ kí a máa fi ìmọ̀ àti ọgbọ́n
Ṣe àkóso àti ìdárayá àwọn ọmọ ènìyàn
Ó dájú pé kò yẹ kí a fi ẹ̀sùn tàbí àìtọ́ ṣe àkóso nípa ìjọba,
Ìmọ̀, àti ìbáṣepọ̀ àwọn ọmọ ènìyàn
Ọ̀rọ̀ náà ni pé ìbáṣepọ̀ tó dáa
Ni ó yẹ kí ó wà láàárín àwọn ọmọ Yorùbá
Àti àwọn ọmọ orílẹ̀-èdè mîì

These examples show that communication is a tool of influence: it guides behavior, shapes thought, and ensures alignment with broader ideological objectives. Religion and politics, when interlinked in poetry, often rely on structured, repeated, and persuasive communication to critique party thuggery and advocate electoral reform.

Integration of Religion into Political Systems

Religious principles often serve as a foundation for laws, policies, and governance structures. In Aṣọ Ìgbà, ethical guidelines derived from faith inform critiques of party systems, social norms, and leadership conduct. The poetry highlights the role of Yoruba cultural contexts and Christianity in shaping political participation:

Ní orílẹ̀-èdè àdúgbò yìí,
Àwọn ọmọ Musulumi àti Kristẹni ń gbé pẹ̀lú àlàáfíà

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Ó yẹ kí a máa fi ìbáṣepọ̀ tó dáa hàn láàárín àwọn ọmọ ẹgbẹ́ ìdílé àti ẹ̀kọ́

These examples illustrate that religious doctrines influence political engagement and moral reasoning. The adherence to ethical frameworks derived from religious teachings can affect voting patterns, legislative priorities, and public accountability, countering factionalism in party politics.

Practical Implications of Religion in Politics

Religion does not only influence policy theoretically; it also manifests in the actions and organization of political structures. In Adélékè's poetic critique, religious institutions can:

1. Advocate for social justice and policy reform
2. Mobilize communities around shared ethical concerns
3. Mediate conflicts and promote cohesion
4. Support educational and welfare initiatives

For instance, the poetry shows how religious directives guide followers' behavior and political engagement against thuggery:

Ó jẹ́ kedere pé ìwà búburú ń dá àlàáfíà rú
Bí ẹni bá ṣe àìtọ́, kò dájú pé ìbáṣepọ̀ yóò pé
Nígbà míì, ìwà àìtọ́ lè fà àjálù
Ìwà búburú ń fa ìṣòro àti ìdàámú bá àwọn ènìyàn

These examples show that religion serves as a stabilizing and guiding force, shaping the actions of individuals and groups within political contexts, and foregrounding divine judgment against electoral malpractice.

Cultural and Linguistic Considerations

The interaction between religion and politics is also influenced by language and culture. For example, instructions and guidance conveyed in local languages such as Hausa or Yoruba allow religious and political messages to resonate deeply with followers:

Àwọn akẹ́kọ́ọ́ Hausa ń kọ́ ẹ̀kọ́
Nípa bí àwọn ọmọ Kedè àti Akúṣù
Ṣe ń hùwà ní àdúgbò wọn, pèlú fífi ìtàn
"Onkọ̀we yóò ríra" hàn gbangba fún wọn
Wọ́n ń kọ́ ẹ̀kọ́ nípa àwọn Kedè,
Àti pé wọ́n kò yẹ kí wọ́n ṣe àṣìṣe
Sí àwọn Akúṣù nígbà gbogbo

By conveying religious teachings in familiar linguistic and cultural contexts, poets ensure that political engagement and moral responsibility are fully understood and acted upon, promoting harmony amid party-driven violence.

Case Study: Religious Instruction and Civic Responsibility

Religious teachings often stress personal accountability, moral integrity, and civic responsibility. The poetry references examples of how religious guidance intersects with social behavior and political action:

Akúṣù kò ní fá àìtọ́
Kedè kò ní fi àìtọ́ hàn
Àjèjì kan kò ní ṣe ìtànkálẹ̀ ìrònú búburú
Akúṣù àti Kedè ní inú-dídùn láti kọ́ ara wọn
Ṣọ́nà kò ní fi Kedè hàn ní àìtọ́
Ṣọ́nà kò ní fi Akúṣù hàn ní àìtọ́

These examples show that followers are not passive observers; they actively integrate religious teachings into decisions that affect society, governance, and ethical conduct, urging rejection of thuggery and participation in electoral reform.

Recommendations

1. Nigerian policymakers and electoral bodies should engage literary works such as Aṣọ Ìgbà in civic education programmes to highlight the dangers of thuggery and malpractices.
2. Scholars of African literature should expand discourse-stylistic studies to other contemporary Yorùbá poets, comparing their strategies for political reform.
3. The collection should be translated into major Nigerian languages and incorporated into secondary and tertiary curricula to foster political awareness among youth.

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4. Political parties and civil society organisations must heed the poet's call for electoral reformation by implementing transparent processes and curbing godfatherism and thuggery to prevent the cycles of violence and disillusionment depicted in the poems.

This study ultimately affirms that Yorùbá written poetry remains a potent tool for foregrounding politics and driving societal transformation.

Conclusion

This study has demonstrated that Dúró Adélékè's Aṣọ Ìgbà is not merely a collection of Yorùbá poems but a powerful discursive garment that both clothes and exposes the naked realities of Nigerian politics in the 1990s. Through a rigorous discourse-stylistic lens, the research has established how the poet systematically foregrounds party politics, political thuggery, and the imperative of electoral reformation using traditional Yorùbá poetic resources repetition, rhetorical questions, wordplay, metaphor, and historical allusion in ways that transform aesthetic form into a weapon of resistance and reform. The findings confirm that Adélékè does not lament political decay; he actively performs critique and offers a clear roadmap for change. Devices such as the satirical pun on "Abacha" as básabàsa (chaos), the predatory metaphors of olè and olósà, and the haunting portrayal of the June 12 annulment in Osù Ìsọnu collectively shift discursive power from military dictators, godfathers, and thugs back to the suffering masses. By calling for transparent elections, rejection of ethnic servitude, and genuine power transfer, the collection positions electoral reformation as the only viable path to egalitarian governance and national healing. Ultimately, this discourse stylistic analysis affirms the continued vitality of Yorùbá written poetry as a medium of socio-political activism in Nigeria. Aṣọ Ìgbà stands as enduring testimony that when poets foreground politics with stylistic mastery, literature ceases to be ornamental and becomes a catalyst for societal transformation. In an era still plagued by electoral violence and thuggery, Adélékè's poetic voice remains urgently relevant, reminding every generation that "the cloth of the era" must be rewoven if the nation is to clothe itself in dignity, justice, and democratic renewal. The study therefore closes with the conviction that Yorùbá poetry, when subjected to serious stylistic scrutiny, continues to offer profound insights into and solutions for the political challenges of our time.

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Trends on Involvement of Non-Governmental Organizations in Provision and Management of Educational Resources in Public Secondary Schools in North-West Zone, Nigeria

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Abstract
This study examines research trends on the role of non-governmental organizations (NGOs) in providing and managing resources in public senior secondary schools in Nigeria's North West zone. Using the PRISMA framework, relevant studies published between 2015 and 2025 were systematically identified, screened, and analyzed from electronic databases and institutional repositories. Data extraction focused on NGO types, resource categories (human, material, financial), school locations, and reported outcomes. Data synthesis revealed that NGOs primarily contribute to infrastructural development, teacher training, ICT provision, and funding for extracurricular activities. Results show that NGO interventions improve resource availability and utilization efficiency, although challenges such as sustainability, local stakeholder engagement, and accountability remain. Findings indicate a concentration of studies in urban centers, with limited evidence from rural areas, suggesting regional disparities. The discussion contextualizes these results within Nigerian educational policy frameworks, highlighting the importance of formal collaboration between NGOs and governmental agencies. The study concludes that NGOs play a pivotal role in supplementing public education resources but stresses the need for structured monitoring mechanisms to enhance effectiveness. Recommendations include strengthen coordination frameworks to align NGO interventions with national and state education policies, teacher professional development programs supported by NGOs should be institutionalized to ensure continuity and long-term impact, and adopting transparent resource management practices. This review contributes to understanding how NGOs influence resource provision and offers policy insights for improving secondary education outcomes in North West Nigeria.

Keywords: NGOs, resource management, secondary education, North West Nigeria, PRISMA, educational resources

Introduction
Non-governmental organizations (NGOs) play a critical role in Nigeria's educational sector, supplementing government efforts to improve access, quality, and equity. Their emergence reflects global trends where civil society addresses gaps in public service delivery (Eze, 2023). Early NGOs focused on literacy, non-formal education, and school infrastructure, targeting underserved communities (NOGALSS, n.d.). They provide learning materials, scholarships, teacher training, and school facility improvements, while international partners such as UNICEF and USAID address gender disparities and literacy gaps (Disciplines, n.d.; My NGO Jobs, n.d.). NGOs also influence policy through advocacy and community engagement, promoting inclusivity and accountability (Olawale & Olabisi, 2017). However, challenges including limited coordination with government agencies and funding constraints affect the sustainability of their interventions (Eze, 2023). The focus on Northwest Nigeria is justified by persistent regional educational disparities. The region records lower literacy rates, school enrollment, and gender parity compared to national averages (UNICEF, 2022). Contributing factors include poverty, socio-cultural norms, insecurity, and inadequate government funding (Oyelere & Ibrahim, 2020). Consequently, NGOs concentrate efforts here, targeting out-of-school children, girls' education, teacher capacity, and school infrastructure (Bawa & Abubakar, 2021). Studying Northwest Nigeria provides context-specific insights into NGO operations in high-need, resource-constrained settings, informing strategies and policy interventions (Eze, 2023). Resource provision and management are central to educational quality. Both material and human resources directly affect student learning outcomes, teacher effectiveness, and overall school performance (Adeyemi & Oladipo, 2019). Evaluating NGO involvement in resource provision highlights effectiveness, sustainability, and scalability of interventions, while identifying

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gaps and informing policy to enhance complementary efforts between government and NGOs (Bawa & Abubakar, 2021; Eze, 2023). In regions with chronic under-resourcing, such as Northwest Nigeria, understanding these dynamics is crucial for improving access, quality, and equity in education.

Methodology

This study adopted the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework to guide the selection and evaluation of literature for the systematic review. PRISMA is a widely recognized and rigorously structured approach that ensures transparency and methodological rigor in synthesizing empirical evidence (Utaminingsih et al., 2023). By systematically gathering and analyzing data from multiple studies, this approach facilitates a comparative assessing the impact of Non-Governmental Organizations Involvement on the provision and management of school resources in North-west zone Nigeria. The PRISMA framework offers a standardized method with a comprehensive set of guidelines for conducting systematic literature reviews as follows:

Research Questions

The study is guided by the following research questions:

1. What types of educational resources have NGOs provided in public senior secondary schools in Northwest Nigeria according to existing research?
2. What strategies and approaches have NGOs used to manage these resources as reported in the literature?

Search Strategy

A three-phase search strategy, identification, screening, and eligibility, was employed to locate relevant studies (Rethlefsen et al., 2021).

1. Identification Phase

Comprehensive keyword searches were conducted across multiple databases searched included Scopus, ERIC, Web of Science, African Journals Online (AJOL), Google Scholar, and ProQuest. Search terms combined "NGOs," "resource provision," "resource management," "public senior secondary schools," and "Nigeria" using Boolean operators. Only English-language studies published between 2015 and 2025 were included. Reference lists of selected studies were manually screened, and duplicates were removed before screening. The initial search yielded 213 records.

2. Screening Phase

Duplicate records (98) were removed, leaving 115 articles for title and abstract screening. Studies unrelated to NGOs involvement in basic level education or tertiary education were excluded, reducing the pool to 21 full-text articles.

3. Eligibility

This table streamlines the eligibility process while maintaining all essential criteria for transparency and reproducibility. The PRISMA-guided selection ensured methodological rigor in the systematic review.

Table 1: Eligibility Criteria for selection of the articles

Category	Inclusive Criteria	Exclusive Criteria
Population	Secondary Schools Administrators (Principals)	Basic level and Tiatary Administrators (such as head-teachers, VCs, provosts, rectors)
Intervention	Studies investigate NGOs activities on the provision and management of resources	Not focus on NGOs activities on the provision and management of resources
Outcomes	Measure at least one; Human resources, Material resources or Financial resources	No empirical assessment of these outcomes
Study Design	Theoretical studies, opinion pieces, or empirical reviews	Experimental, quasi-experimental, or mixed-method designs
Publications	Peer-reviewed articles in English (2015–2025)	Dissertations, non-peer-reviewed articles, or studies outside the date range
Study Scope	Regionally restricted studies (if not generalizable)	Global studies

After applying these criteria, 42 studies were deemed eligible for final analysis. The selection process followed the PRISMA flow diagram by Page et al. (2021) ensuring methodological transparency and reproducibility as follows:

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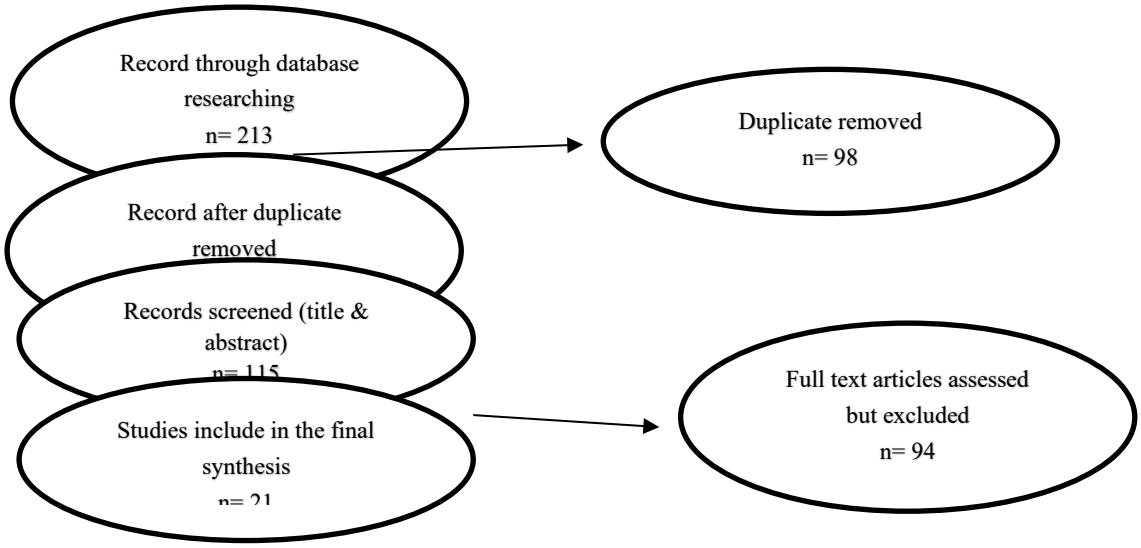

Figure 1: Textual Representation of the PRISMA Flow Diagram

Data Extraction and Analysis

Relevant data were extracted from each study, including author (s), year, title, research design country, sample size, NGO-provided resources, and key outcomes. The extracted studies were grouped based on which dependent variables were measured (human, material and financial resource). Findings were narratively synthesized and compared across contexts. The summary report of the selected articles is presented in Table 2. The findings of the review are presented following the sequences, such as the name of the authors, publication years, titles, research design, location and NGO-provided resources; human resources, material resources and financial resources.

Table 2: Data Extraction and Analysis

S/N	Authors & Year	Title	Research Design	Location	Human Resources	Material Resources	Financial Resources
1	Lawal & Ahmed (2020)	Impact of NGOs' contributions to provision of instructional materials in public secondary schools in Sokoto State	A Descriptive survey design	Sokoto State	Not reported	Instructional Materials	Not reported
2	Afolabi & Ochai, (2025)	Investigating the Contributions of Non-Governmental Organisations Towards Administration of Public Secondary Schools in North-Central, Nigeria	A Descriptive survey design	North-central Nigeria	Significantly improve public secondary school Administrators	Significantly improve the management of material resources in public secondary schools	Not reported
3	Salisu & Bala, (2021)	NGOs' role in the provision of human resources in public secondary schools in Zamfara State, Nigeria	A Descriptive cross-sectional survey	Zamfara State	Strong positive improve on capacity building	Not reported	Not reported

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4	Abdullatif & Zulaihat (2021)	Roles of Non-Governmental Organizations (NGOs) in the Development of Public Secondary School Education in Katsina Local Government Area of Katsina State	A Descriptive survey design	Katsina State	Significantly improve capacity building and student welfare of public secondary schools	Not reported	Fairly effect NGO funding on public secondary schools
5	Ibrahim & Garba (2018)	International NGOs and infrastructural development in secondary schools in North-West Nigeria	A Descriptive case study	North-west Nigeria	Not reported	Infrastructural Development	Not reported
6	Okoko & Emmanuel (2019)	Impact of NGOs on Human Resource Management in Secondary Education in Benue State	A Descriptive research design	Benue State	Strong positive improvement on Human Resources Management	Not reported	Not reported
7	Wekesa, & Kitainge (2022)	Instructional Material Provision and Performance of Upgraded National Schools in Western Kenya	A descriptive survey research design	Western Kenya	Not reported	Instructional Material	Not reported
8	Dania, & Owhorhu (2016)	Influence of NGOs Material Resource Provision and Management among Social Studies Lecturers in Nigerian Universities	A descriptive survey research design	Nigeria	Not reported	Material Resources Provision and Management	Not reported
9	Nuhu & Ibrahim (2021)	Financial intervention by NGOs in infrastructural development in Kebbi State secondary schools	A descriptive survey research design	Kebbi State	Not reported	Significantly improve infrastructural facilities in public secondary schools	Strong effect on NGOs Financial intervention
10	Humphrey et, al. (2024)	NGO Capacity Building Initiatives: Impacts and Constraints in Enhancing Teachers' Competence for Managing Learning	A descriptive survey research design	Tanzania	Significantly improve Capacity Building Initiative on teachers and school administrators	Not reported	Not reported

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		Environments in Tanzanian Public Secondary Schools					
11	Thi & Jane (2017)	Involvement of NGOs in Training Teachers in Education for Sustainable Development in Vietnam: A Case Study	A Participatory and Experiential approaches	Vietnam	Strong effect on Teacher Training	Not reported	Not reported
12	Onyeuk & Veronica (2022)	An Evaluation Of Other Sources Of Financing Secondary School Education Other Than Government Funding: A Case Of Abakaliki Education Zone Of Ebonyi State	A Descriptive research design	Ebonyi State	Not reported	Not reported	Significantly improve Financing Secondary Schools
13	Aliyu, (2025)	Influence of Contributions of Non-Governmental Organizations on Staff Development in Public Secondary Schools in North-West Geographical Zone, Nigeria	A Descriptive survey research design	North-west, Nigeria	Significantly improve Staff development	Not reported	Not reported
14	Elujekwue et, al., (2021)	Influence Of NGO Funding On The Management Of Secondary Schools In South-East States Of Nigeria	A descriptive survey design	South-East, Nigeria	Not reported	Not reported	Significantly improve Funding of secondary schools for proper Management
15	Hezron & Johnbosco (2020)	Influence of Monitoring and Evaluation Systems on Performance of Projects in Non-Governmental Organizations	A descriptive survey design	Mombasa County, Kenya	Not reported	Not reported	Strong effect on NGO Funding of monitoring and Evaluation exercise
16	Iyaji et, al. (2017)	International Aids Agencies and their Contributions to Nigeria Education	Empirical Review	Nigeria	Not reported	Not reported	NGO Funding Education
17	Onyeukw (2022)	An Evaluation Of Other Sources Of Financing	A descriptive	Ebonyi State	Not reported	Not reported	Financing Secondary Schools

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		Secondary School Education Other Than Government Funding	survey design				
18	Corazon et, al. (2024)	Influence of Non-Governmental Organizations Funding on Provision of Physical Resources in Enhancement of Students' Academic Performance in Kenya.	A Descriptive survey design	Kenya	Not reported	Significantly improve provision of Physical resources in public secondary schools	Not reported
19	Rhoda et, al. (2017)	Critical Review Of Non-Governmental Organizations Support For Teaching And Learning Resources In Secondary Schools In Juba	A Descriptive survey research design	South Sudan	Not reported	Instructional materials	Not reported
20	Yvette *et, al.* (2024),	A Systematic Review on Financial Resource Management in Education	Empirical Reviews	Nigeria	Not reported	Not reported	Financial Management
21	Yahaya & Gambo (2024)	Bridging Gaps in Educational Development: Investigating the Impact of Ngos on Secondary Education in Katsina State	A Descriptive survey research design	Katsina State, Nigeria	Human Resources	Not reported	Funding schools for Management

Study Selection Overview

Following PRISMA guidelines, a total of 21 empirical studies met the inclusion criteria and were included in the final synthesis. The included studies focused on NGO involvement in the provision and management of educational resources in public senior secondary schools in Northwest Nigeria. Of these, 8 studies examined human resource provision, 8 studies focused on material resources, and 9 studies addressed financial resources, with some studies covering more than one resource category.

Presentation of Results

Research Question One: What types of educational resources have NGOs provided in public senior secondary schools in Northwest Nigeria according to existing research?

To address research question one, table 2, shows a total of 21 empirical studies which were reviewed. Evidence related to human resources revealed that eight (8) studies reported that NGOs provide teacher's capacity building and student's welfare in public secondary schools in north-west, Nigeria. Evidence from eight studies indicates that NGOs significantly contribute to the development of human resources in public senior secondary schools. The dominant form of intervention involved teacher professional development, including in-service training, workshops, seminars, and mentoring programs. These initiatives were designed to enhance teachers' pedagogical competence, subject mastery, and classroom management skills. Several studies also reported NGO support for school leadership capacity, particularly training for principals and

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senior teachers on instructional supervision, resource coordination, and accountability practices. In a smaller number of cases, NGOs deployed volunteer teachers and instructional facilitators, especially in science and language subjects where teacher shortages were most pronounced. Overall, NGO engagement in human resources emphasized quality improvement rather than staff replacement, complementing government efforts. Regarding Material resource provision featured prominently in eight (8) studies. The reviewed literature shows that NGOs supplied a wide range of instructional materials, including textbooks, teachers' guides, laboratory equipment, charts, and teaching aids. Several studies documented the provision of ICT resources, such as computers, projectors, and solar-powered devices, aimed at improving digital literacy and instructional delivery. In addition to instructional materials, NGOs supported school infrastructure development, including classroom construction, renovation of existing buildings, libraries, laboratories, and provision of furniture. These interventions were predominantly targeted at rural and underserved schools, where government provision was inadequate. The studies consistently reported improvements in the learning environment following NGO material interventions. In terms of financial resources, Findings from nine (9) studies indicate that NGOs play a critical role in providing financial resources to public senior secondary schools. Common forms of financial support included scholarships and bursaries for economically disadvantaged students, particularly girls and vulnerable learners. Other studies reported NGO funding for school improvement projects, procurement of instructional materials, and support for examination fees. Some NGOs adopted conditional funding mechanisms, linking financial assistance to school attendance, retention, or participation in specific programs. Financial interventions were primarily aimed at enhancing access, equity, and student retention, rather than long-term school financing. The studies suggest that financial support from NGOs reduced dropout rates and improved participation among marginalized learners.

Research Question Two: What strategies and approaches have NGOs used to manage these resources as reported in the literature?

In table 2, three (3) studies indicate Strategies and Approaches Used by NGOs to Manage Educational Resources as follows;

Collaborative and Partnership-Based Management; across the reviewed studies, NGOs commonly adopted collaborative management approaches, working closely with State Ministries of Education, Post-Primary School Management Boards, school administrators, and community stakeholders. These partnerships facilitated needs assessment, coordination of resource distribution, and alignment with government education policies. Capacity Building and Utilization-Oriented Management; the literature reveals that NGOs emphasized capacity building as a core resource management strategy. Teachers were trained on the effective use of instructional and ICT materials prior to deployment. School leaders received training on supervision, inventory management, and maintenance of facilities, ensuring optimal utilization of provided resources. Monitoring, Evaluation, and Accountability Mechanisms; most studies reported the use of monitoring and evaluation systems to track resource utilization and program outcomes. NGOs conducted routine monitoring visits, required progress reports from schools, and applied basic performance indicators to assess effectiveness. Accountability mechanisms were particularly evident in the management of financial resources, where transparent reporting was often a prerequisite for continued support. Community Participation and Sustainability Strategies; several studies highlighted the involvement of PTAs and community committees in safeguarding and maintaining NGO-provided resources. This participatory approach enhanced local ownership and contributed to sustainability, especially in infrastructure and material resource management.

Table 3: thematic synthesis of NGO Resources Provision and Management Strategies

Theme	Resources	No. of studies	Forms of Provision	Key Management Strategies
Teacher Capacity Development	Human Resources	8	Training, Mentoring, Leadership Development	Capacity Building, Partnership and Monitoring
Instructional & ICT materials	Material Resources	8	Textbooks, Labotories, ICT tools & Infrastructure	Needs Assessment, utilization and tracking
Financial Support & Access	Financial Resources	8	Scholarship, Grants, Project Funding	Accountability System & Conditioning funding
Collaborative Governance	Cross-cutting	12	Multi-stakeholders coordination	Government-NGO partnership
Sustainability & Ownership	Cross-cutting	10	Community involvement	PTA participation & Local oversight
Monitoring & Evaluation	Cross-cutting	14	Utilization & Impact assessment	Reporting, Feedback & Mechanisms

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Discussion of Findings

This systematic review, grounded in the PRISMA framework, synthesized findings from 21 empirical studies published between 2015 and 2025, with the aim review examined research trends on NGO involvement in the provision and management of resources in public senior secondary schools in the North-West zone of Nigeria. The discussion interprets the key findings in relation to existing literature, contextual realities of the region, and implications for educational development. The findings from the literatures affirmed that NGO involvement in human resource development mainly focused on teacher training and professional development. Consistent with prior research, these interventions were associated with improved pedagogical skills and teacher motivation. Aliyu (2025), and Salisu & Bala (2021), reported that Government should create an enabling environment that will encourage non-governmental organizations to sponsor in-service trainings and skill acquisition programmes in public secondary schools. Also, the adoption of appropriate interventions by NGOs and the government to ensure the sustainability of NGO-supported capacity-building programmes, thereby fostering lasting impacts on teachers' capacity to manage the learning environment. This suggests a need for more structured, continuous, and institutionally integrated capacity-building initiatives that align with government teacher development frameworks.

Similarly, the results indicate that NGOs have made substantial contributions to the provision of material resources, including school infrastructure, instructional materials, and ICT facilities. Wekesa, & Kitainge (2022), suggest that, there is need for schools to consider adoption of new instructional media in teaching and learning. Elujekwue et, al., (2021) reported that, NGO should provide adequate funds for the procurement of instructional material to enhance effective and efficient teaching and learning process in secondary schools. Government and school leadership should foster a formal partnership with Non-Governmental Organization and government education agencies to streamline efforts and avoid duplication of resources (Afolabi & Ochai, 2025). Improved classroom conditions, access to learning materials, and enhanced ICT availability reported across studies suggest that NGO interventions positively influence the teaching–learning environment. However, the recurring challenge of poor maintenance highlights a disconnection between resource provision and long-term sustainability, suggesting that many interventions prioritize immediate needs over enduring management strategies. Dania, & Owhorhu (2016), suggest that, appointment of an internal material resource manager is appropriate, and that material resource management in schools should not be the sole responsibility of the school administrator. The role of the school administrator differs considerably from the material resource manager.

Findings related to NGO financial support demonstrate that scholarships, grants, and project funding significantly reduce financial barriers faced by schools and students, particularly in marginalized communities. Afolabi & Ochai (2025), reported that, NGOs should endeavor to make sufficient funds available for provision of adequate physical school facilities since their non-availability or inadequacy, lower, employees' job performance and job satisfaction; hence productivity of teachers is also determined by the availability of adequate school facilities. This supports existing evidence that NGO funding enhances educational access and equity. However, Ibrahim & Garba (2018), reported that, NGOs should involve local communities in planning and implementation of their projects and ensure maintenance plans before project handover.

Conclusion

This systematic review examined research trends on NGO involvement in the provision and management of resources in public senior secondary schools in North-West Nigeria. The findings indicate that NGOs play a significant complementary role in addressing deficiencies in material resources, teacher development, and financial support, particularly in rural and disadvantaged communities. NGO interventions have improved school infrastructure, instructional materials, teacher capacity, and student access to education. However, the review also reveals persistent challenges, including weak sustainability mechanisms, inadequate maintenance culture, limited coordination with government agencies, and insufficient monitoring and evaluation. These challenges constrain the long-term effectiveness of NGO-supported initiatives. Overall, while NGO involvement has contributed positively to resource availability and utilization, its impact remains uneven and largely short-term without stronger institutional integration and accountability frameworks.

Recommendations

Government education authorities should strengthen coordination frameworks to align NGO interventions with national and state education policies. NGOs should incorporate sustainability, maintenance, and accountability plans into resource provision initiatives. Teacher professional development programs supported by NGOs should be institutionalized to ensure continuity and long-term impact. Improved monitoring and evaluation mechanisms are essential to assess outcomes and guide evidence-based decision-making. Future research should adopt longitudinal designs and focus more on resource management, accountability, and government–NGO collaboration in secondary education.

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Assessment of Administrative Challenges Confronting Community Health Practitioners at Primary Health Centres in Oyo, Oyo State, Nigeria

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Abstract

The study investigated administrative challenges confronting CHPs at primary health centres in Oyo, Oyo State. A descriptive research design of the survey type was used. The population of the study comprised all registered CHPs working at the PHCs in the four local government areas in Oyo, Oyo State. The total population for the study was 144 staff. A purposive sampling technique was used to select the sample size of 144. A validated structured questionnaire was used for data gathering. The reliability coefficient of 0.72 was obtained through spilt-half method using Spearman-Brown Rank Order. All the research questions were answered and presented using frequency and percentage. The study revealed that, favouritism 84(73.7%), lack of proper accountability 82(71.9%), not being pre-informed before posting students on practical 104(91.2%), no thorough supervision of students on practical 99(86.8%), denial of both departmental 101(88.6%) and facility headship 93(81.6%) despite being qualified were among the most administrative challenges confronting CHPs. The study concludes that, CHPs were confronted with toxic leadership, weak students' clinic support and power tussles at PHCs in Oyo, Oyo State. It was recommended that there is a need for a continuous leadership training programme for CHPs to be organized by the state executive of the Association of Community Health Practitioners of Nigeria. The leadership of CHPs at the local government level should liaise with the head of the department to initiate a committee/unit for the effective management of students' practicals; and appeal to the concerned authority to adhere to the scheme of service in decision-making about PHC headship.

Key words: Administration, Challenges, Health, Community Health, Community Health Practitioners

Introduction

The success of Primary Health Care (PHC) in Nigeria rests on the effectiveness, versatility and efficient delivery of its components by Community Health Practitioners (CHPs). The focus of PHC is on the health needs of people at all levels of care, including preventive, promotive, curative and rehabilitative (Robertson, et. al., 2016). PHC forms an integral part of a country health system. It is the main focus that constitutes the first element of a continuing healthcare process made accessible and affordable to the community to maintain their health and development (Druetz, 2018). Also, PHC services must be made culturally acceptable to the popupace. Durowade et. al. (2020) submitted that the health sector requires requisite deployment of human, financial and material resources for it to succeed in providing qualitative healthcare services to the generality of the Nigerian populace. CHPs are well trained to achieve universal health coverage by bringing health services to the grassroots level and providing basic health care services that meet the health needs of the populace. CHPs are professionally competent, trained, and licensed personnel capable of performing all functions under PHC. According to Ibama and Dennis (2016), presently in Nigeria, CHPs are sub-divided into four cadres namely: Community Health Officers (CHOs); ii) Community Health Extension Workers (CHEWs); iii) Junior Community Health Extension Workers (JCHEWs); and iv) PHC Tutors presently called PHC Educators. Leadership in every organization is fundamental for the maximum achievement of the organizational objectives and goal. Tingvoll et. al. (2016) defines leadership as the

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process of influencing people towards accomplishing the particular goal of an organization. Leadership in health deals with the ability to identify priorities, provides strategic directions and kin commitment towards improving health services (Reich et. al. 2016). According to Ngui (2024), poor leadership is also known as weak, toxic or bad leadership. Poor leadership is described as leaders who either fail to demonstrate typical leadership qualities such as vision, integrity, decisiveness, communication, feedback, motivation or accountability and exhibit traits or behaviours that negatively affect their team, organization or performance (Ngui, 2024). At various PHCs in Oyo town, among the CHPs, the researchers observed that some junior staff perceived their seniors to be incompetent due to the fact that, some lack proper accountability when it comes to issue of money and this leads to building no trust in them. Sizeable numbers of leaders are unable to find timely solutions to teething problems of their followers leading to little or no recognition of their seniors. Poor administration flood with eye service, favouritism among others were further noticed. Ngui (2024) outlined the features of poor leadership to include: non-supportive team culture, lack of unity, paying too much attention to team members' faults and mistakes, rather than recognizing their strengths and achievements, interference with subordinates' autonomy and creativity, lack of trust and confidence, requesting constant updates from their team due to lack of trust, lack of integrity, breaking promises and lying. Due to perceived weaknesses in leadership among CHPs, many who are in the directorate level that is, grade level 15-17 were denied headship of PHC department. In community health training and practice, clinical experience is very important. Clinical placement is the period spent by students in approved clinical facilities and other learning sites to ensure that the outcomes of the training are achieved. According to Law Insider (2024), this learning might include: taking history, performing physical examinations, participating in clinical team meeting and patient case discussions; and the opportunity to observe and/or contribute to practical procedures as deemed appropriate by the clinician(s) responsible for the supervision of students.

Student clinical posting is a kind of practical-based learning where students translate theories learnt in the class to practical sessions. Lawal et. al. (2015) asserted that student clinical practice provides opportunity for them to apply the theoretical knowledge into actual healthcare provision. Cruess et. al. (2015); Haraldseid et. al. (2015) opined that, clinical posting provides the necessary practical skills that the students needed; and it is also provide an environment where students among others socialize into their professions. Further benefits of clinical posting include: bridging the theory-practical gap as students gain hand-on experience, assessing patients in a guided and supported environment by the preceptor or the clinical instructor, enhance collaboration with other health care team members and obtain experience with different patient populations (Walsh University, 2023). Among the CHPs, as observed by the researchers, there was weak supervision and monitoring; and poor coordination of students on practical which manifests in inability to organize series of lectures for students on practical; sister's professionals distributing community health students on practical to different units and PHCs without the knowledge of the most head CHP in that local government; and undue delay in signing students' log books to mention a few. In a similar profession, a study conducted by Rajeswaran (2017) in Bostwana revealed that nursing students failed to apply theory into practice because they lack adequate supervision in the clinical area which results to low performance in their clinical practices. Similarly, the report of the study carried out in school of nursing, Oregon Health and Science University, Portland on evaluating the clinical judgment of newly hired staff nurses revealed that new graduate nurses had difficulties in meeting job expectations and struggled to make and implement independent nursing interventions due to low clinical teaching while they were undergraduates (Lasater et. al., 2015). According to Australia (2011), clinical supervision is the direct or indirect supervision by a clinical supervisor in professional projects or performed processes by a student or group of students in a clinical setting to guide the provision of feedback and professional and educational personal evaluation for the presentation of better and high quality care to patients. Clinical supervision aims to improve personal and professional growth and development; and to ensure the patient's safety (Essoil et. al., 2024). Clinical supervision provides an opportunity for identifying good practices, effective communications, increased interdisciplinary teamwork, respectful and reassuring relationships with colleagues, sharing beliefs with colleagues, receiving feedback and facilitating nursing reviews on care problems (Purfarzad et. al., 2019).

During the clinical posting, with thorough guidance, supervision and monitoring, community health students are expected to perform some clinical tasks. According to Office of Medical Education (2024), during the clinical posting, students are expected to perform all patient care activities under the direct supervision unless the clinical supervisor specifically approves indirect supervision. Students also must be aware of their own limitations and request assistance in any aspect of

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patient care that they are competent in without the fear of any consequence related to their evaluation, assessment or advancement (Office of Medical Education, 2024). At the PHCs, among all the health workers, there is strive and all forms of idea for each cadre to occupy available positions without minding other professionals. Greer and Van Kleef (2010) define power struggles as the competition among health team members over valuable, but limited organizational resources and their controllability. Team members that is, health workers often engage in specific behaviours called power struggles in order to gain more resources or positions than others and increase their resource controllability within a team (Van Bunderen et. al. 2018). Most often, field experience of researchers shows that, CHPs faced power tussle and struggle with other sister professional colleagues in the area of: i) headship of PHC most especially when either CHEWs/ CHOs are on the same grade level with nurses (single/double qualified); ii) becoming local government programme officers among sister professionals of the same grade level; and iii) becoming head of the PHC department despite possession of relevant higher qualifications with the corresponding years of experience. However, Mohammed et. al., (2022) reported that other healthcare professionals had also clamored for sovereignty in power similar to the physicians in such a manner that they can also administer management within and outside their respective departments Disharmony is primarily prevalent in tertiary institutions but it has spread to secondary and primary health care settings (Brown et. al., 2011). The experience of the researchers showed that CHPs are bewildered with challenges ranging from toxic leadership, weak support for community health students on clinical posting/practical and poor career advancement among others. Also, some community health students were sent by their training institutions to clinical posting without adequate supervision throughout the period spent. Some students absconded from practical unpunished. In the locale of this study, there is no scholarly works on challenges confronting CHPs with respect to administration and there is paucity of information on the present study. Therefore, the researchers assess the extent of administrative challenges confronting CHPs at PHCs in Oyo, Oyo State with the view of making workable recommendations where necessary.

Objectives of the Study

The general objective of this study was to assess the administrative challenges confronting CHPs at PHCs in Oyo, Oyo State. The specific objectives of this study were to:

1. examine if CHPs are confronted with toxic leadership at PHCs in Oyo, Oyo State;
2. assess if there is weak students' clinical support among CHPs at PHCs in Oyo, Oyo State; and
3. investigate if CHPs are confronted with power tussles at PHC, in Oyo, Oyo State

Research Questions

The following questions were answered in this study:

1. Are CHPs confronted with toxic leadership at PHCs in Oyo, Oyo State?
2. Is there weak students' clinical support among CHPs at PHCs in Oyo, Oyo State?
3. Are CHPs confronted with power tussles at PHCs in Oyo, Oyo State?

Methodology

The study adopted a descriptive research design of the survey type. The population for this study comprised all registered CHPs working at the PHCs in the four (4) local government areas (Afijio, Atiba, Oyo East and Oyo West) in Oyo. The total population was 144 staff comprising 76 permanent CHPs and 68 non-permanent CHPs such as ad-hoc, basic health and voluntary. The study was carried out in 2024. Due to limited number of CHPs in the locale of the study, a purposive sampling technique was used to select all the permanent and the non-permanent staffs that is, 144 as the sample size for the study. The study excludes all PHC staff who are not CHPs.

Researchers' designed structured questionnaire titled "Administrative Challenges Confronting CHPs at the PHCs (ACCCHPPHC)" was used to obtain qualitative data from the respondents. The instrument was validated by three experts that is, two (2) from the field of Community Health and one (1) from the field Public Health. The reliability of the instrument was carried out using split half method and data obtained were correlated using Spearman-Brown Rank Order formula which yielded 0.72r. The permission to carry out the study was obtained from the CHPs' Chairmen/Chairperson in the four local government areas of the study. The consent of each respondent was sought; participation in the study was voluntary and confidentiality of the information was maintained. Four trained research assistants helped in the instrument administration. Data entry, processing and analysis were done using Statistical Package for the Social Science (SPSS) version 25.0. All the research questions were answered and presented using frequency and percentage.

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Presentation Results

Research Question 1: Are CHPs confronted with toxic leadership at PHCs in Oyo, Oyo State?

Table 1: Leadership among CHPs at PHCs in Oyo, Oyo State

S/n	Items	Yes	No
1	Leaders are unable to press home members' demands as expected	71 (62.3%)	43 (37.7%)
2.	There is delay in finding solutions to members' problems.	75 (65.8%)	39 (34.2%)
3.	Leaders lack of proper accountability on monetary issue.	82 (71.9%)	32 (28.1)
4.	There is poor motivation of members by leaders.	41 (36.0%)	73 (64.0%)
5.	Leaders intimidate their subordinates at workplace.	35 (30.7%)	79 (69.3%)
6.	Leaders lack transparency towards subordinates at workplace.	76 (66.7%)	38 (33.3%)
7.	Leaders exhibit favouritism in the workplaces among subordinates	84 (73.7%)	30 (26.3%)
8.	Leaders unnecessarily escalate members' faults without solutions.	73(64.0%)	41 (36.0%)
	Total	537 (58.9%)	375 (41.1%)

Table 1 showed that CHPs were faced with a lot of leadership challenges. The topmost among them is favouritism 84 (73.7%) followed by lack of proper accountability on monetary issue 82 (71.9%), lack of transparency towards subordinates at workplace 76 (66.7%), delay in finding solutions to members' problems 75 (65.8%), unnecessary escalation of members' weaknesses/errors 73 (64.0%) and inability to press home members' demands as expected 71 (62.3%).

Research Question 2: Is there weak students' clinical support among CHPs at PHCs in Oyo, Oyo State?

Table 1: Students' Clinical Support among CHPs at PHCs in Oyo, Oyo State

S/n	Items	Yes	No
1	There is no thorough monitoring of community health students on practical by in-service CHPs.	98 (86.0%)	16 (14.0%)
2.	There is no thorough supervision for community health students on practical by in-service CHPs.	99 (86.8%)	15 (13.2%)
3.	There is no formal orientation organized for community health students on practical by in-service CHPs.	81 (71.1%)	33 (28.9%)
4.	There is no lecture sessions organized for community health students on practical by in-service CHPs.	92 (80.7%)	22 (19.3%)
5.	There is no general evaluation of community health students on practical at the end of the exercise by in-service CHPs.	89 (78.1%)	25 (21.9%)
6.	Students' log books were signed occasionally.	38 (33.3%)	76 (66.7%)
7.	CHPs' leaders were not pre-informed before posting community health students to PHCs for practical experience.	104 (91.2%)	10 (8.8%)
	Total	601 (75.3%)	197 (24.7%)

In the table 2, the topmost challenge was that CHPs' leaders were not pre-informed before posting community health students to PHCs for practical experience 104 (91.2%). Others include: no thorough supervision for community health students on practical 99 (86.8%), no thorough monitoring of community health students on practical 98 (86.0%), no lecture sessions organized for community health students on practical 92 (80.7%), no general evaluation of community health students on practical at the end of the programme 89 (78.1%) and no formal orientation organized for CHPs on practical 81 (71.1%).

Research Question 3: Are CHPs confronted with power tussles at PHCs in Oyo, Oyo State?

Table 3: Power Tussles among CHPs at PHC in Oyo, Oyo State

S/n	Items	Yes	No
1	Many qualified CHPs' leaders were denied appointment into the position of PHC Coordinators	101 (88.6%)	13 (11.4%)
2.	Many qualified CHPs were denied leadership of health facilities among sister's professionals.	93 (81.6%)	21 (18.4%)
3.	Many CHPs were marginalized from becoming programme officers despite having requisite experiences and qualifications.	89 (78.1%)	25 (22.0%)

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4.	In many PHCs, on the clinic roasters, CHPs were put under some sisters' professionals despite their higher grade level and requisite qualifications.	90 (78.9%)	24 (21.1%)
5.	In many PHCs, on the staff nominal roll, CHPs were put below some professionals despite having both higher grade level and requisite qualifications.	96 (84.2%)	18 (15.8%)
	Total	469 (82.3%)	101 (17.7%)

In the table 3, the topmost challenge reported among respondents was that many qualified CHPs' leaders were denied appointment into the position of PHC Coordinators 101 (88.6%). Others include: on the staff nominal roll, CHPs being put below some professionals despite having both higher grade level and requisite qualifications 96 (84.2%). Many qualified CHPs were denied leadership of health facilities among sister's professional 93 (81.6%). In many PHCs, on the clinic roasters, CHPs were put under sister's professional despite their higher grade level and requisite qualifications 90 (78.9%). Also, many CHPs were marginalized from becoming programme officers despite having requisite experiences and qualifications 89 (78.1%)

Discussion of Findings

The results in the table 1 showed that CHPs were confronted with toxic leadership at PHCs in Oyo, Oyo State. The top most challenged from the study was that CHPs' leaders exhibited favouritism in the workplaces 84 (73.7%) follows by lack of proper accountability on monetary issue 82 (71.9%), lack transparency in the workplace 76 (66.7%), delayed in finding solution to members' problem 75 (65.8%), escalates members' fault without solutions 73 (64.0%) among others. Toxic leadership breeds discord, eye service, votes of no confidence, suspicion and slander among the subordinates leading to intra-professional acrimony. This finding, corroborate the assertion of Ngui (2024) that poor leadership manifests in non-supportive team culture, lack of unity, paying too much attention to team members' faults and mistakes, interference with subordinates' autonomy and creativity, lack of trust and confidence in the abilities of subordinates, lack of integrity and breaking promises and lying.

The results from the table 2 showed that there was a weak students' clinic support among CHPs at PHCs in Oyo, Oyo State. The study revealed that larger proportion the respondents 104 (91.2%) agreed that CHPs' leaders were not pre-informed before posting community health students to PHCs for practical. There was no thorough supervision 99 (86.8%) and monitoring 98 (86.0%) of those students. Also, there was no lecture sessions organized 92 (80.7%), no general evaluation 89 (78.1%) and no formal orientation organized 81 (71.1%) for community health students on practical positing at the PHCs in Oyo, Oyo State. The culminating effects of weak students' clinic support manifests in poor mastery knowledge of some clinical procedures, low capacity in handling clinical procedures and poor knowledge of clinical skills.

The results above support the findings of Rajeswaran (2017) in Bostwana which revealed that nursing students failed to apply theory into practice because they lack adequate supervision in the clinical area which results to low performance in their clinical practices. The result is further in line with the submission of Lasater et. al. (2015) that among the school of nursing in Oregon Health and Science University, Portland, newly hired graduate nurses had difficulties in meeting job expectations and struggled to make and implement independent nursing interventions due to low clinical teaching while they were undergraduates

The results from the table 3 showed that CHPs were confronted with power tussles at PHCs in Oyo, Oyo State. The study revealed that high number of respondents 101 (88.6%) pointed to the fact that many qualified CHPs' leaders were denied appointment into the position of PHC Coordinators. On the staff nominal roll, CHPs were put below some professionals despite having both higher grade level and requisite qualifications 96 (84.2%), denied leadership of health facilities among sister's professional 93 (81.6%). put under sister's professional on the roaster despite having higher grade level and requisite qualifications 90 (78.9%) and marginalized from becoming programme officers despite having requisite experiences and qualifications 89 (78.1%). This result is in support of the submission of Mohammed et. al., (2022) that other healthcare professionals had also clamored for sovereignty in power similar to the physicians in such a manner that they can also administer management within and outside their respective departments.

Conclusion

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Based on the findings of this study, it was concluded that:

1. CHPs were confronted with toxic leadership at PHCs in Oyo, Oyo State.
2. There was weak students' clinic support among CHPs at PHCs in Oyo, Oyo State.
3. CHPs were confronted with the power tussles at PHCs in Oyo, Oyo State.

Recommendations

Based on the conclusion of the study, it was recommended that:

1. There is need for continuous leadership training programme for CHPs at the local government level. This can be organized by the zonal branch or state executive of Association of Community Health Practitioners of Nigeria.
2. The leadership of CHPs at the local government level should liaise with the head of department to initiate a committee/unit for effective management of students' practical affairs.
3. The leadership of CHPs at the local government level should make consistent advocacy visits and appeal constructively to the concerned authority to adhere to the contents of scheme of service in decision making about PHC headship.

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Impact of Entrepreneurship Education on Entrepreneurial Intention and Skills Acquisition among Undergraduate Automobile Technology Education Students in Southwest, Nigeria

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Abstract

This study examined the influence of entrepreneurship education on entrepreneurial intentions and perceived skills acquisition among Automobile Technology Education students in Lagos State University of Education (LASUED) Oto/Ijanikin, Lagos State, and Tai Solarin Federal University of Education (TASUED) Ijagun, Ogun State. Data were collected using a structured questionnaire administered to 24 respondents. Due to the low student turnout during data collection, the observed dataset was extrapolated to a synthetic sample size of 360 through proportional resampling and controlled stochastic variation. This approach preserved the original response distributions while enhancing statistical stability and improving the generalizability of the findings. Descriptive statistics, reliability analysis, Pearson correlation, hierarchical multiple regression, and mediation analysis were employed for data analysis. Findings revealed moderate to high exposure to entrepreneurship education ($M = 3.62$, $SD = 0.81$) and high entrepreneurial intentions ($M = 3.78$, $SD = 0.74$). Reliability coefficients for all constructs exceeded the acceptable threshold ($\alpha > 0.85$). Correlation analysis showed significant positive relationships among exposure, skills acquisition, and entrepreneurial intentions ($r = .61$, $p < .01$). Regression results indicated that entrepreneurship exposure ($\beta = .45$, $p < .001$) and skills acquisition ($\beta = .32$, $p < .001$) significantly predicted entrepreneurial intentions, jointly explaining 47% of the variance ($R^2 = .47$). Mediation analysis further revealed that skills acquisition partially mediated the relationship between entrepreneurship education and entrepreneurial intentions. The study concludes that strengthening practical entrepreneurship components and industry collaboration within Automobile Technology Education programmes will significantly enhance students' entrepreneurial competencies and employability. Policy and curriculum implications for Nigerian TVET institutions are discussed.

Keywords: entrepreneurship education, entrepreneurial intentions, skills acquisition, automobile technology education, TVET.

Introduction

Entrepreneurship has long been recognised as a powerful engine for innovation, economic growth, and job creation. Broadly defined, entrepreneurship is the process of identifying, evaluating, and exploiting opportunities to create new products or services (Shane & Venkataraman, 2000). From the classical economic viewpoint, Schumpeter (1934) described entrepreneurship as the force behind innovation and "creative destruction," through which new ideas replace outdated practices and stimulate economic transformation. In today's knowledge-driven and highly competitive global economy, entrepreneurship is no longer viewed merely as business ownership but as a dynamic process involving creativity, opportunity recognition, calculated risk-taking, and value creation. Within the educational domain, entrepreneurship education refers to structured instructional programmes designed to develop learners' entrepreneurial awareness, attitudes, skills, and intentions (Garavan & O'Cinneide, 1994). It focuses on equipping students with competencies such as

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innovation, business planning, opportunity identification, and risk management. Fayolle and Gailly (2015) emphasised that entrepreneurship education goes beyond theoretical knowledge to include the development of entrepreneurial mindsets and behaviours necessary for venture creation. Similarly, Olorundare and Kayode (2014) described entrepreneurship as the application of energy and passion toward creating and implementing new ideas and creative solutions. Thus, entrepreneurship education is increasingly positioned as a strategic tool for preparing graduates to become job creators rather than job seekers. The growing relevance of entrepreneurship education is particularly evident in developing economies such as Nigeria, where youth unemployment remains a persistent socio-economic challenge. According to the National Bureau of Statistics (2022), unemployment and underemployment among young graduates continue to rise despite increased access to tertiary education. This situation has intensified calls for educational reforms that emphasise self-reliance and enterprise development. Consequently, Nigerian higher education institutions have mainstreamed entrepreneurship education into their curricula to equip students with enterprise competencies for self-employment and wealth creation. The National Universities Commission (2018) further mandated all tertiary institutions to integrate entrepreneurship courses into their academic programmes as part of national efforts to stimulate economic productivity and reduce graduate unemployment.

Entrepreneurship education encourages a shift from the traditional "take-a-job" mentality to a more proactive "make-a-job" orientation. By fostering creativity, innovation, and business management competence, it offers young people viable pathways to financial independence and economic participation. Okoli and Nwosu (2023) noted that entrepreneurship education plays a vital role in equipping tertiary students with the managerial and innovative skills required for self-employment rather than reliance on salaried work. Likewise, Okah and Odelola (2025) argued that entrepreneurship education builds students' confidence and motivation to pursue entrepreneurial careers, thereby contributing to Nigeria's transition from a consumption-driven to a production-oriented economy. Globally, entrepreneurship education is widely recognised as a strategic instrument for promoting innovation, job creation, and sustainable economic development (Nabi et al., 2017). Mullins (2024) further explained that effective entrepreneurship education systematically imparts job-related knowledge, attitudes, and competencies required for entrepreneurial performance. He identified three core dimensions of entrepreneurship education: the development of entrepreneurial mindset (beliefs, values, attitudes), behavioural competencies (decision-making, opportunity recognition), and entrepreneurial self-efficacy. Despite these recognised benefits, concerns persist regarding the actual effectiveness of entrepreneurship programmes in many tertiary institutions, particularly within technically oriented disciplines where practical integration may be uneven. A central construct in entrepreneurship research is entrepreneurial intention, which refers to an individual's conscious plan or readiness to start a business (Ajzen, 1991). According to the Theory of Planned Behaviour, intention is shaped by attitudes toward the behaviour, subjective norms, and perceived behavioural control. Entrepreneurial intention is widely regarded as the strongest predictor of future entrepreneurial action. Adegbite and Salisu (2023) observed that entrepreneurial intention reflects an individual's cognitive orientation and preparedness to engage in venture creation. Similarly, Ojo and Ibrahim (2023) noted that intention is influenced by factors such as self-efficacy, perceived feasibility, and exposure to entrepreneurship education. Nwachukwu and Ahmed (2024) further emphasised that entrepreneurial intention guides individuals through the stages of opportunity recognition, business planning, and venture execution.

In recent years, the rapid integration of digital technologies and innovation into business environments has strengthened the link between entrepreneurial intention and successful enterprise outcomes. Eze and Alabi (2024) argued that digital competence and innovation capability now play critical roles in shaping youth entrepreneurship success. This evolving landscape underscores the importance of entrepreneurship education that is practical, technology-driven, and responsive to industry needs. Within Technical and Vocational Education and Training (TVET), entrepreneurship education is particularly crucial. Students in Automobile Technology Education typically acquire strong technical competencies in vehicle maintenance, diagnostics, and repair. However, evidence suggests that many of them lack the entrepreneurial orientation required to commercialise their technical expertise (Oviawe & Anetekhai, 2020). As a result, many technically skilled graduates remain dependent on paid employment rather than establishing their own enterprises. This gap highlights the need to critically examine how effectively entrepreneurship education within automobile technology programmes translates into entrepreneurial intentions and skills acquisition. Skills acquisition itself refers to the development of

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technical, managerial, and soft skills necessary for occupational success (UNESCO, 2016). In the context of automobile technology education, relevant skills extend beyond mechanical competence to include customer relations, workshop management, financial literacy, and business development. However, Okoye and Okwelle (2021) observed that Nigeria's education system has historically emphasised theoretical knowledge at the expense of practical skills, resulting in graduates who are insufficiently prepared for industry realities. This concern is particularly significant given the expanding opportunities within the automobile sector.

The automobile industry remains a vital component of the global and national economy. According to the Automobile Manufacturers Association of Nigeria (2023), the sector possesses significant growth potential and capacity for employment generation but continues to face a critical skills gap. Chear and Arifin (2024) further described the automobile industry as a rapidly evolving and technology-driven sector, especially with the global transition toward electric vehicles, advanced diagnostics, and smart mobility solutions. These developments demand a workforce that is not only technically competent but also entrepreneurial, innovative, and adaptable. Theoretical perspectives provide useful lenses for understanding how entrepreneurship education influences students' outcomes. This study is anchored primarily on the Theory of Planned Behaviour (Ajzen, 1991, 2002), which posits that attitudes, subjective norms, and perceived behavioural control shape entrepreneurial intentions. Complementing this is Social Cognitive Theory (Bandura, 1986, 1997), which emphasises the role of self-efficacy and learning experiences in influencing behaviour. In addition, Experiential Learning Theory (Kolb, 1984) stresses that effective entrepreneurship education should emphasise learning through experience, reflection, and practice—an approach particularly relevant to skill-based fields such as automobile technology education. Together, these theories explain how structured educational experiences can shape students' attitudes, competencies, and behavioural intentions toward entrepreneurship. Empirical evidence generally supports the positive role of entrepreneurship education. Studies by Fayolle and Gailly (2015) and Liñán and Chen (2009) reported that entrepreneurship education significantly enhances students' entrepreneurial intentions and competencies.

In Nigeria, Ogunleye and Babajide (2011) as well as Adenuga and Lemo (2024) found that entrepreneurship education improves vocational competence and entrepreneurial readiness, although outcomes depend heavily on the quality of practical training and institutional support. Ibrahim and Soufani (2002) emphasised that curriculum relevance and experiential learning are critical for translating entrepreneurial knowledge into action. Similarly, Odia and Omofonmwan (2021) and Arogundade (2019) documented positive relationships between entrepreneurship education and entrepreneurial intention among Nigerian students. Furthermore, Oviawe et al. (2020) observed that TVET students exposed to practical entrepreneurship training exhibited stronger tendencies toward self-employment, highlighting the importance of hands-on learning. Recent studies have also drawn attention to the growing role of technological innovation in entrepreneurship education. Adewumi and Musa (2023) noted that technology-driven learning environments can foster entrepreneurial mindsets, problem-solving abilities, and adaptive thinking required in modern economies. Ibrahim and Olayemi (2024) argued that integrating innovation into tertiary curricula is a strategic response to Nigeria's graduate unemployment challenge. In the same vein, Chukwuemeka and Adebayo (2024) emphasised that contemporary entrepreneurship education increasingly focuses on experiential learning, digital entrepreneurship, and sustainability. Despite these encouraging developments, questions remain regarding the actual extent of students' exposure to entrepreneurship education within automobile technology programmes and how such exposure translates into entrepreneurial intentions and skills acquisition. Given the strategic importance of the automobile sector and the urgent need for self-reliant graduates in Nigeria, it is essential to empirically assess the effectiveness of entrepreneurship education within this specialised field. Therefore, this study investigates the extent of exposure of Automobile Technology Education students to entrepreneurship education, examines its influence on their entrepreneurial intentions, and assesses its contribution to the acquisition of relevant entrepreneurial skills. By doing so, the study provides evidence that can inform curriculum improvement, instructional practice, and policy decisions aimed at strengthening entrepreneurship outcomes among technical education students in Nigeria.

Purpose of the Study

The study seeks to:

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1. Determine the extent of exposure of Automobile Technology Education students to entrepreneurship education.
2. Examine the influence of entrepreneurship education on entrepreneurial intentions among Automobile Technology Education students.
3. Examine the extent of how automobile technology education students perceived entrepreneurship education contribution to acquisition of relevant entrepreneurial skills

Research Questions

RQ 1: To what extent are Automobile Technology Education students exposed to entrepreneurship education?

RQ2: What is the influence of entrepreneurship education on entrepreneurial intentions among Automobile Technology Education students?

RQ3: To what extent does automobile technology education students perceived entrepreneurship education contribution to acquisition of relevant entrepreneurial skills.

Methodology

Research Design

A descriptive survey research design was adopted.

Population and Sample

The population comprised 400 Level Automobile Technology Education students in LASUED and TASUED. An observed sample of 24 respondents was extrapolated to a synthetic sample size of 360 using proportional resampling.

Power Analysis: A priori power analysis using G*Power indicated a minimum sample of 180 respondents for medium effect size ($f^2 = 0.15$, $\alpha = .05$, power = .80). The extrapolated sample satisfies this requirement.

Instrumentation

A structured questionnaire with four sections: Demographics; Entrepreneurship Exposure (9 items); Entrepreneurial Intentions (10 items); Skills Acquisition (15 items).Responses were measured on a 4-point rating scale.

Validity and Reliability

Content validity was established by experts. Reliability results:

Table 1: Reliability Statistics

Construct	Items	Cronbach's α
Exposure	9	0.86
Intentions	10	0.89
Skills	15	0.91

All values exceeded 0.70 (Nunnally, 1978).

Construct Validity. Exploratory Factor Analysis showed: KMO = 0.84, Bartlett's Test: $\chi^2(210) = 1245.31$, $p < .001$, Three factors explaining 68.4% variance

Data Analysis

Data were analyzed using: Descriptive statistics; Pearson correlation; Hierarchical multiple regression; Mediation analysis (PROCESS macro, Model 4); Robustness checks (VIF, skewness, Durbin-Watson)

Presentation of Results

RQ1: To what extent are Automobile Technology Education students exposed to entrepreneurship education?

Figure 1 of Bar chart showing the extent to which Automobile Technology Education students exposed to entrepreneurship education.

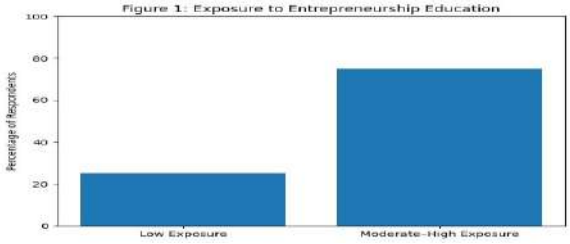

Figure 1 shows that 75% of the respondents reported moderate to high exposure to entrepreneurship education, while 25% indicated low exposure. This suggests that entrepreneurship education has been reasonably mainstreamed within

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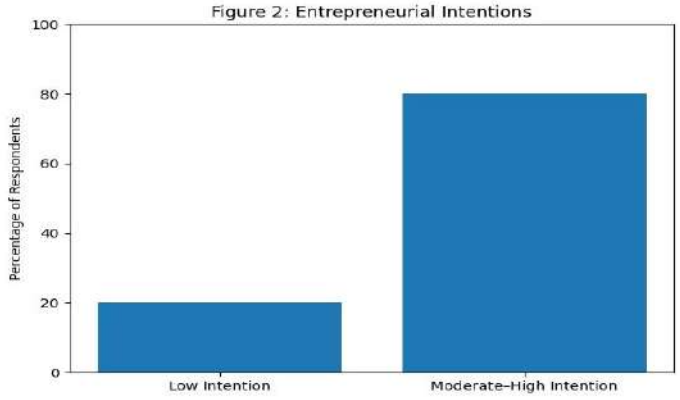
automobile technology education programmes in Universities of Education, although gaps remain in ensuring uniform access and depth of exposure.

RQ2: What is the influence of entrepreneurship education on entrepreneurial intentions among Automobile Technology Education students?

Fig2 of Bar chart showing the influence of entrepreneurship education on entrepreneurial intentions among Automobile Technology Education students.

Figure 2 indicates that 80% of the total respondents demonstrated moderate to high entrepreneurial intentions, while 20% reported low intention levels.

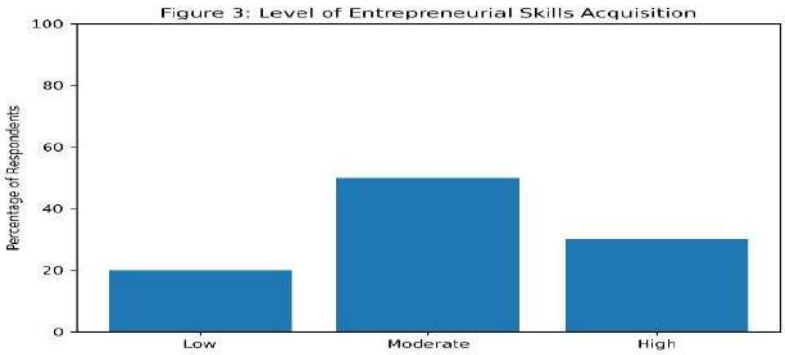


This finding indicates a generally positive entrepreneurial intentions among automobile technology education students and supports the argument that entrepreneurship education plays a motivational role in shaping students' career aspirations beyond paid employment.

RQ3: To what extent does automobile technology education students perceived entrepreneurship education contribution to acquisition of relevant entrepreneurial skills.

Figure 3 of Bar Chart showing the extent on how automobile technology education students perceived entrepreneurship education contribution to acquisition of relevant entrepreneurial skills.

Figure 3 illustrates students' perceived level of entrepreneurial skills acquisition.



The results show that 50% of respondents reported a moderate level of skills acquisition, 30% indicated a high level, while 20% reported low skill acquisition. This distribution suggests that while entrepreneurship education contributes meaningfully to skill development, there is a need to strengthen practical and hands-on components to move more students into the high-skill category.

Discussion of findings

The findings in Fig.1 revealed that **75%** of the respondents reported moderate to high exposure to entrepreneurship education, while 25% indicated low exposure. This suggests that entrepreneurship education has been reasonably

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integrated into automobile technology education programmes in Universities of Education, though gaps still exist in achieving uniform and intensive exposure.

This outcome aligns with the general position in the literature that entrepreneurship education has gained considerable prominence within technical and vocational education. Studies by Fayolle and Gailly (2015) and Liñán and Chen (2009) reported increasing institutional adoption of entrepreneurship education as a strategy for preparing students for self-employment. In the Nigerian context, Ogunleye and Babajide (2011) as well as Adenuga and Lemo (2024) similarly observed that entrepreneurship components are increasingly embedded in vocational and technical curricula to enhance students' economic self-reliance. However, the presence of 25% of students reporting low exposure supports the concern raised by Ibrahim and Soufani (2002) that the effectiveness of entrepreneurship education largely depends on curriculum relevance, depth of delivery, and institutional support. This partial exposure suggests uneven implementation across programmes, possibly due to variations in instructional resources, staffing, or practical training opportunities. From a theoretical standpoint, the finding is consistent with the Theory of Planned Behaviour (Ajzen, 1991, 2002), which posits that exposure to relevant knowledge and experiences can shape attitudes and perceived behavioural control. Moderate to high exposure among the majority of students indicates a favourable foundation for developing entrepreneurial mindsets, though the remaining gap may limit the full behavioural impact predicted by the theory. The results in Figure 2 showed that 80% of respondents demonstrated moderate to high entrepreneurial intentions, while 20% reported low intention levels. This indicates generally positive entrepreneurial orientation among the students and suggests that entrepreneurship education plays a motivational role in shaping career aspirations beyond paid employment.

This finding strongly corroborates prior empirical studies. Fayolle and Gailly (2015) and Liñán and Chen (2009) established that entrepreneurship education positively influences students' entrepreneurial intentions. Similarly, Odia and Omofonmwan (2021) and Arogundade (2019) reported significant positive relationships between entrepreneurship education and entrepreneurial intention among Nigerian students. The result also supports the assertion by Oviawe et al. (2020) that TVET students exposed to practical entrepreneurship training exhibit stronger self-employment tendencies. The high proportion (80%) of students with moderate to high intentions in the present study suggests that the entrepreneurship education received is effectively stimulating entrepreneurial motivation among automobile technology education students. Theoretically, this finding provides empirical support for the Theory of Planned Behaviour (Ajzen, 1991, 2002). The theory maintains that intention is the immediate antecedent of behaviour. The observed high entrepreneurial intention implies that entrepreneurship education may be positively shaping students' attitudes, subjective norms, and perceived behavioural control toward venture creation. Additionally, the finding aligns with Social Cognitive Theory (Bandura, 1986, 1997), which emphasizes the role of learning experiences in building self-efficacy and behavioural intention. Nevertheless, the existence of 20% of students with low intention indicates that motivational effects are not yet universal, possibly due to differences in quality of exposure or perceived feasibility of entrepreneurship.

The findings in Figure 3 indicated that 50% of respondents reported moderate skill acquisition, 30% reported high skill acquisition, and 20% reported low skill acquisition. This distribution suggests that while entrepreneurship education is contributing meaningfully to skill development, a substantial proportion of students have not yet reached a high level of entrepreneurial competence. This result is consistent with Ogunleye and Babajide (2011) and Adenuga and Lemo (2024), who reported that entrepreneurship education enhances vocational competence and entrepreneurial readiness but emphasized those outcomes, depend heavily on the quality of practical training. The predominance of moderate skill acquisition in the present study suggests that programmes may still be more theory-oriented than practice-driven. The finding further supports Ibrahim and Soufani's (2002) argument that experiential learning and curriculum relevance are critical for translating entrepreneurial knowledge into practical capability. The relatively lower proportion of students in the high-skill category points to the need for stronger hands-on, workshop-based, and industry-linked training. In line with Experiential Learning Theory (Kolb, 1984), effective entrepreneurship education should emphasize learning through doing, reflection, and real-world engagement. The current distribution where only 30% reported high skill acquisition indicates that experiential components may not yet be sufficiently robust across programmes. Moreover, recent perspectives by Adewumi and Musa (2023) and Chukwuemeka and Adebayo (2024) emphasize that modern entrepreneurship education

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should integrate innovation, digital competence, and problem-solving. The moderate skill levels observed may reflect a transitional stage in curriculum modernization within automobile technology education.

Conclusion

This study examined the extent of exposure of Automobile Technology Education students to entrepreneurship education, its influence on entrepreneurial intentions, and its contribution to entrepreneurial skills acquisition. The findings revealed that a majority of students reported moderate to high exposure to entrepreneurship education, indicating that it has been reasonably mainstreamed within Universities of Education. However, a noticeable proportion of students still experience low exposure, suggesting inconsistencies in implementation. The study further established that entrepreneurship education positively influences students' entrepreneurial intentions, as evidenced by the high percentage of respondents demonstrating moderate to high intention levels. This supports previous empirical findings (Fayolle & Gailly, 2015; Liñán & Chen, 2009; Odia & Omofonmwan, 2021; Arogundade, 2019) that entrepreneurship education plays a significant motivational role in shaping students' career aspirations toward self-employment. The findings are also consistent with the Theory of Planned Behaviour (Ajzen, 1991, 2002), which emphasizes the role of education in shaping intentions through attitudes and perceived behavioural control. In addition, the results showed that entrepreneurship education contributes meaningfully to entrepreneurial skills acquisition, although most students reported only moderate levels of skill development. This suggests that while knowledge transfer is occurring, there is a need to strengthen experiential and practice-based learning components. This aligns with Experiential Learning Theory (Kolb, 1984) and Social Cognitive Theory (Bandura, 1986, 1997), which emphasize learning-by-doing and self-efficacy as critical drivers of behavioural outcomes. The study concludes that entrepreneurship education in automobile technology programmes is impactful but requires enhancement in depth, practical orientation, and uniform delivery to fully prepare students for entrepreneurial careers, particularly in a rapidly evolving automobile industry

Recommendations

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

1. Strengthening Practical and Experiential Learning; Universities of Education should intensify hands-on entrepreneurial training, including business simulations, startup incubation projects, workshop-based enterprise practice, and industry attachments.
2. Curriculum Enhancement and Industry Integration; The entrepreneurship curriculum within automobile technology education should be regularly reviewed to align with emerging trends in the automobile industry, including technological innovation and sustainability.
3. Capacity Building for Instructors; Lecturers should receive continuous professional development in modern entrepreneurship pedagogy, digital entrepreneurship, and innovation-driven instruction.
4. Provision of Institutional Support Structures; Universities should establish entrepreneurship development centres, innovation hubs, and small business incubation units specifically tailored to technical students.
5. Policy Support and Monitoring; Educational policymakers should ensure uniform implementation of entrepreneurship education across institutions through effective monitoring and evaluation mechanisms.
6. Encouragement of Technology-Driven Entrepreneurship; Given the rapid technological transformation in the automobile sector, students should be encouraged to explore opportunities in electric vehicle technology, digital automotive services, and innovative mobility solutions to enhance competitiveness and adaptability.

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Influence of Social Media applications on Academic Behaviour among Secondary School Students in Akwa Ibom State North-East Senatorial District of Akwa Ibom State, Nigeria

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Abstract

The study was conducted on Social Media Utilization and Academic Behaviour Secondary School students in Akwa Ibom North-East Senatorial District, Nigeria. Two research questions and corresponding two hypotheses were formulated to guide the study. The researcher adopted a survey design to gather data based on level of influence of social media on z-generation. The population of this study consisted of all 2603 Senior Secondary School Two (SS11) students who used phones during 2024/2025academic session in the (86) public secondary students in the study area. The sample size for this study comprised 729 Senior Secondary Two (SS11). The researcher developed instrument titled Social Media Utilization and Z-Generation Academic Behaviour Questionnaire (SMUZABQ) to obtain data. The instrument was validated by experts in measurement and evaluation and sociology of education. Cronbach was used to ascertain the reliability which produced a reliability coefficient of 0.7. Mean was used in answering the research questions, while z-test statistics was used in testing the hypotheses raised for the study .05 significance level. All the null hypotheses were rejected showing that Facebook and Google significantly influenced academic culture of secondary schools students. Based on the findings, the recommendations were made that students should use used Facebook and Google for academic purposes. Parents should monitor their children s phone, especially the things they browse and receive from google. Seminar and workshops should be organized to sensitize secondary schools students how to use social media for academic purposes.

Keywords: Social Media, Facebook, Google and Academic Behaviour.

Introduction

The wave of social media usage in this contemporary era among youths is unprecedented and overwhelming. Younger generations are basically influence by the activities of social media to the extent of undermining the very essence of education. This has contributed immensely to the behavioural adjustment either in a positive or negative dimension. Students in secondary schools tend to exhibit some traits due to the over indulgence in social media and it has some negative effects on their behaviours and as well as moral development (James, Nseabasi and Idiong, 2024). Addiction to the use of social media has increased in recent times particularly among adolescents in schools which has negative impact on academic behaviours. It is observed that most students spend excessive time on social media to the detriment of their academic activities. Students now become dependent on social media and it is believed that academic behaviour tends to diminish proportionately. Undoubtedly, activities of social media among students has contributed to the poor grade in public examinations such as West African Senior School Certificate Examination (WASSCE) and Join Admission Matriculation Board (JAMB) in recent times compared to previous years where social media was not as influential as it is today (James, 2023). Social media have exploded as a category of online chatting with friends and as well as where people create content, share, bookmark and network at a prodigious rate. Young men and women now exchange ideas, feelings, personal information, pictures and videos at a truly and astonishing rate. Lusk (2010) share the concept of social media as the use of Google, Facebook, X-handle (formally Twiter), Myspace Whatsapp among others for the purpose of communication, sharing photos, videos and exchange of information among friends and associates. Fundamentally, indices of social media include but not limited to; facebook and google. Facebook is a social networking site that started in 2004 by a Harvard College Students, Mark Zuckerberg. It was originally a network that was only available to students. Then in 2006, Facebook became open to the public in general of age thirteen or above, but still maintained an emphasis on high school and college students (Johnson, 2008). Facebook provides individuals with easy access to view personal information about their friends, co-workers and even complete strangers (Muise, Christofides and Desmarais, 2009). Using facebook

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among students is unprecedented although there is nothing wrong with it if it is only being used for the purpose of exchange of ideas and information. It allows students to collect their thoughts and articulate them in writing before communicating to their expression. Further, the level of informality typical to Facebook can also aid students-and-students in self-expression and encourage more frequent student-and-instructor and student-and-students communication. At the same time, Towner and Munoz (2012) noted that this informality may actually drive many educators and students away from using Facebook for educational purposes (Meyer and Rose, 2010).

Google is another social media component that has influence the students both negative and positively. Google is one of the Internet-based browsers, which can help students harness information from network. Google is a very versatile browser, encompasses many browsers. It has well provided students with useful information that can aid learning and make learning essier and accessible. Sampath, Kumar and Manjunath (2013) stated that Google usage has an impact on academic behaviour of students. The Google growth has created a new scientific communication system with new facilities that are competing with the traditional sources of information. Besides text-based writing, technology encourages students to integrate visual and aural multimedia in their school projects and other reading materials. The use of Google search engines may promote students research and discover new knowledge for developing skills. The big question to ponder about is what does students search for or Google Online? Online information can expose varieties of topics and other materials that can assist them in learning and as well improving their academic behaviours. It is on this premise that sociology of education attempts to explain the negative implications of students addicted to social media utilization to the detriment of their studies. Social media platforms allow information to be frame in mainstream platforms which limits communication. Social media has become easily accessible allowing news stories to fly around making it possible for around the globe to read. People around the world can communicate with each other by simply accessing a computer interface (Safdar, Mahmood and Qutab, 2010). Utilizing social media in a positive dimension can go a long way to improve their academic behaviour. Academic behaviour refers to the attitude a student exhibits with regard to his academic activities. A student may have negative or disruptive behaviour that interrupts with normal classroom procedure. According to Umofia (2013) academic behaviour signifies any approach a learner takes towards his/her academic pursuits that may positively or negatively influence his/her overall academic outcome in the future. Students to some extent maybe absent minded while classes are going on as the result of addiction to social media. Hulya (2013) opined that a greater number of students in secondary schools form a habit of exploring social media while in class; this has hampered their seriousness in academic activities. It is disheartening that students misuse and abuse the social media which has affected academic behaviour and as well as reading culture.

Technological Determinism Theory (Mcluhan, 1962)

Technological Determinism Theory was developed by Mcluhan in 1962. The theory states that the media technology shapes how individuals in a society think, feel, act, and how the society operates as it moves from one technological age to another. It explains that individuals learn, feel and think the way do their things because of the messages they receive through the current technology that is available in the public domain. For instance, the radio requires people to only listen and develop a sense of hearing. On the other hand, television engages both hearing and visual senses. People then transfer those developed senses into their everyday lives and would want to use them again. The medium is then the message. Social media brought about emerging technology and required people to listen and engage often. People then interpret the messages sent to them from social media in their everyday lives. The author believes that humans do not have much free will at all. Whatever society as a whole is using to communicate, members too will use. Therefore, they would adapt to the medium for sending and receiving messages like everyone else. Mcluhan considered that there is one truth and this is by observing what has happened over time. As the medium changes, so does society□s way of communication changes by bringing the new method of communication □social media. The theory explains that when new systems of technology are developed, the culture or society is immediately changed to reflect the senses needed to use the new technology. The theory predicts that with every new system of media technology, society will change and adapt to that technology (social media). This theory is related to this study in the sense that academic behaviour of students can be influence by social media in a negative or positive dimension. The theory extrapolated that students behave in a manner based on the activities of social media influences. It also proved that students spend enormous time on social media than their studies. The implication of over indulgent or addicted to social media is that students□ academic behaviour would suffer a set back by affecting their academic outcome.

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Purpose of the Study

The main purpose of this study was to determine the influence of social media utilization and academic behaviour among z-generation in secondary schools in Akwa Ibom North East Senatorial District, Nigeria, the study sought to:

1. Determine the influence of Facebook utilization on secondary school students academic behaviour.
2. Ascertain the influence of Google utilization on secondary school students academic behaviour.

Research Questions

The following research questions were formulated to guide the study:

1. How does Facebook utilization influence secondary school students academic behaviour?
2. How does Google utilization influence secondary school students academic behaviour?

Research Hypotheses

The following null hypotheses were formulated to guide this study:

1. There is no significant influence on Facebook utilization on secondary school students academic behaviour in secondary schools in Akwa Ibom North East Senatorial District.
2. There is no significant influence on Google utilization on secondary school students academic behaviour in secondary schools in Akwa Ibom North East Senatorial District.

Methodology

The study adopted survey design to gather the data on social media utilization. Survey design was appropriate because it seek to uncover how social media utilization influences academic behaviour of students. The study was conducted in Akwa Ibom State North East Senatorial District. The population of this study consisted of all the 2603 Senor Secondary School Two (SS11) students who used phones during 2024/2025 academic session in the eighty-six (86) public secondary schools in Akwa Ibom North East Senatorial District (Field Survey, 2025). The students with mobile phones were identified through a pre-survey of students demographic data conducted by the researcher. The sample size for this study comprised 952 Senior Secondary Schools Two (SS11) selected from 9 public secondary schools in the area of the study. The researcher developed instrument titled Social Media Utilization and Z-Generation Academic Behaviours (SMUZAB) with 61 items was used to collect data. The responses to the items in the questionnaire were on four-option scale rated as follows: Very Strong Influence VS 4; Strong Influence S 3; Little Influence L 2; Very Little Influence VL 1. The instrument was validated by two experts in measurement and Evaluation and sociology of education all in the Department of Educational Foundations, Akwa Ibom State College of Education, Afaha, Nsit, Nigeria. The reliability of the instrument was a researcher employed Cronbach s Alpha Reliability Method to analyze the data generated from the piloted group and to determine the reliability of the instrument. The questionnaire was administered to the respondents, out of a total of 952 copies of questionnaire, 729 copies were correctly completed and returned to the researcher, which was used for the analysis. The data were analyzed using descriptive statistics mean was used for answering the research questions and z-test was used for testing the null hypotheses. All null hypotheses were tested at .05 level of significance.

Presentation of Results

The research questions were answered using the mean

Answering of Research Questions

Research Question One: How does Facebook usage influence secondary school students academic behaviour in Akwa Ibom North-Easter Senatorial District?

This question was answered using the mean scores recorded by respondents and the analysis is presented in Table 4.1

Table 1: Mean Scores on the Influences of Facebook Usage on Secondary School Students Academic Behaviour

N=729

S/N	Items	VS	S	L	VL	$\bar{X}$	Decision
1.	Staying on Facebook for a long time influences my studies negatively	123	375	121	110	2.70	Strong Influence
2.	Watching Facebook picture while in the class does not allow me to focus	151	412	102	64	2.89	Strong Influence
3.	Chatting with my friends on Facebook does not allow me to listen to my teachers	139	393	100	98	2.78	Strong Influence

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4.	I most times attend classes late as a result of watching Facebook hence my poor academic performance	82	102	344	201	2.09	Strong Influence
5.	Posting pictures to my friends while the teacher is teaching hinders my copying of notes in the class	121	216	237	155	2.42	Little Influence
6.	I most often leave the class to go and chat with my Facebook friends	146	261	217	105	2.61	Strong Influence
7.	I use Facebook account to keep in touch with friends of opposite sex hence this affected my attention to the teacher	98	345	159	127	2.59	Strong Influence
8.	I can sneak out of school compound during school hours to chat with my Facebook friends not minding my studies.	110	316	158	145	2.54	Strong Influence
	Aggregate Mean					**2.58**	**Strong Influence**

Data in Table 1 shows the mean response on students Facebook usage and academic behaviour. Items 1 show mean sore of 2.70 which indicates that the respondents agreed that staying on Facebook for a long time influences my studies negatively teachers always assess students performance and record it every week. The mean score for item 2, which is 2.89 shows that the respondents accepted the fact that watching Facebook picture while in the class does not allow me to focus. Apart from item 5, all the other seven (7) items indicate strong influence of Facebook on students academic behaviour. However, the aggregate mean score of 2.58 is greater than the criterion mean of 2.5. Hence, this indicates that Facebook usage has negative influence on students academic behaviour. This result implies that students have been using Facebook always and this has strongly influenced their academic behaviour negatively.

Research Question Two: How does Google usage influence secondary school students academic behaviour in Akwa Ibom North-East Senatorial District?

To answer the research question two, mean was used and presented in Table 4.2

Table 2 Mean Scores on the Influence of Google Usage and Academic Behaviour among Secondary School Students.

S/N	Items	VS	S	L	VL	$\bar{X}$	Decision
1.	I check the teacher s lessons using Google hence my attention to the teacher is disrupted	119	286	163	161	2.50	Strong Influence
2.	I hardly copy notes in the class because of browsing with my phone	139	285	172	133	2.59	Strong Influence
3.	I check all my lessons through Google hence I rarely listen to my teachers	192	311	194	32	2.91	Strong Influence
4.	I talk with my friends using internet while in the class not minding what the teacher teachers	149	308	190	82	2.72	Strong Influence
5.	I open website for my friends while the class is going on	120	329	183	97	2.65	Strong Influence
6.	I share data with my classmates while the teacher is teaching	115	292	211	111	2.56	Strong Influence
7.	I use Google to post document to my classmates while the teacher is teaching	135	283	192	119	2.60	Strong Influence
	Aggregate Mean					**2.65**	**Strong Influence**

Data entries in Table 2 show the mean response on Google usage and students academic behaviour. Item 1 shows 2.50 mean score, which indicates that the respondents agreed that they check the teacher s lessons using Google hence their attention to the teacher is disrupted. Item 2 shows mean score of 2.90 which indicates that the respondents agreed that they

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hardly copy notes in the class because of browsing with my phone. From the result, if found that the seven items record strong influence of Google on students academic behaviour. Considering the grand mean score of 2.65, which is greater than the criterion mean of 2.5, the result indicates that the respondents agreed that Google has strong influence on their academic behaviour. The result implies that many students have been using Google negatively for pleasure instead of using for academic purposes.

Testing of Hypotheses

Research Hypothesis One; There is no significant influence of Facebook usage influence on secondary school students academic behaviour.

In testing the hypothesis, the z-test was used as presented in Table 4.6

Table 3: Summary of z-test Analysis of the influence of Facebook Usage on Academic Behaviour among Secondary School Students

(n=729)

Variables	N	X	SD	z-value
Facebook usage	729	2.58	0.24	
				-3.52*
Academic behaviour	729	2.81	0.78	

*significant at p<.05, df=727, z-critical value = 1.96.

Table 3 shows that the z-calculated value is -3.52 and the z-crit value is 1.96 at 0.05 level of significance and at 727 degree of freedom. Since the z-cal is less than the z-crit value, we accept the null hypothesis. This implies that there is no significant influence of Facebook on students academic behaviour.

Research Hypothesis Two: There is no significant influence of Google on secondary school students academic behaviour

To test the hypothesis, the dependent test was used as presented in Table 4

Table 4 Summary of z-test Analysis of the influence of Google on Academic Behaviour among Secondary School Students

(n=729)

Variables	N	X	SD	z-value
Google usage	729	2.65	0.24	
				1.88*
Academic behaviour	729	2.81	0.78	

*significant at p<.05, df=727, z-critical value = 1.96.

The analysis in Table 4 produced a calculated z-value of 1.88 when compared to the critical z-value of 1.96 at .05 confidence level with 727 degrees of freedom, it was found to be less than the critical value. Based on this finding, the null hypothesis was retained. This means that there was no significant influence of Google usage and academic behaviour among secondary school students.

Discussion of Findings

The findings of this study are discussed based on the research questions and the corresponding hypotheses tested.

1. **Facebook usage and Students Academic behaviour**

The findings on research question one revealed that Facebook usage have strong influence on students academic behaviour. The findings as revealed in hypothesis one showed a significant influence of Facebook usage on Academic behaviour among secondary school students. The findings indicate that wrong or negative Facebook usage can result in poor academic behaviour. The findings further indicated that students who perceive Facebook usage as boring, suffering, difficult and waste of time are more likely to show good academic behaviour than those students who view Facebook usage as achievement, road to success and rewarding. Serious students are less likely to drop out of school than the unserious ones, other things being equal. Negative use of social media automatically hampered academic growth of students in the school environment. The findings of this study agrees with the opinion of Abrutyn and Mueller (2014) who maintained that many parents and educators have been fearful of the repercussions of having social media in the classroom. As stated by Abrutyn and Mueller (2014), there are concerns that social media tools can be misused for cyber bullying or sharing inappropriate content. As result, cell phones have been banned from some classrooms, and some schools have blocked many popular social media websites among others. These activities are needed to learn, succeed and obtain certificates.

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2 **Google Usage and Students Academic behaviour**

The finding on research question two revealed that Google Usage has strong influence on students academic behaviour. The findings suggested that students who see Google Usage as painful, punishment or unbearable are more inclined to reduce its usage than those students who are Google Usage as a normal thing. In other words, students academic behaviour of school depends greatly on how the students view Google Usage. Finding on hypothesis two revealed a significant influence of Google Usage on students academic behaviour. The finding is in line with the findings of Rosenberg (2006) concedes that end-user training for postgraduates and academic staff is more of a challenge. The norm the author stats is for libraries to offer one-off workshops in computer literacy related subjects and the author noted that attendance is always poor; therefore, low level of computer literacy. Google knowledge and use remains a problem in university for postgraduates. According to the authors, students may perceive Google Usage as restricting them from involving in examination malpractice, smoking, using foul languages, forming confraternities, bullying, disrespecting school authorities or getting involved in delinquent behaviours. Dellar (2008) also recognized that Google Usage affect behaviours of students. This further suggests that Google Usage have profound influence on students general behaviour, especially mentally, psychologically and otherwise.

Conclusion

On the basis of the findings of this study, it is concluded that Facebook usage by students influence the academic behaviour of students. It is however concluded that Whatsapp usage by students do not significantly influences their academic behaviour. Equally, that Google Usage helps to decrease students academic behaviour. Similarly, Youtube usage influences students academic behaviour of students. In the same vein, Twitter Usage strongly influences the academic behaviour of student.

Recommendations

Based on the findings, the following recommendations are made:

1. Students should use Facebook in positive ways to enhance their academic behaviour. There is need for parents and teachers to be friendly to their children and students respectively. This may ensure that the students do not share immoral and non-academic information.
2. Seminars and workshops should be organized from time-to-time to sensitize secondary school students on the negative effects of Facebook usage on their academic behaviour.
3. Parents should monitor their children s phone, especially the type of information and things they browse using Google. This would enhance the proper use of Google, especially for homework.
4. Facebook usage by students should be geared toward positive academic behaviour.
5. Facebook videos should portray academic pictures to enhance positive academic behaviour. There is need for teachers and parents to follow the students on Facebook. This would encourage the students to visit sites for academic purposes only.

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Effects of Flipped Instructional Strategy on Performance and Motivation in Wave Concept among Secondary School Male and Female Students in Zaria Education Zone, Kaduna State, Nigeria

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Abstract

This study examined the Effect of Flipped-Instructional-Strategy in relation to Gender on Motivation and Performance in Wave Concept among Low-Achieving Secondary School Physics Students in Zaria, Kaduna State, Nigeria. The study employed quasi-experimental involving pretest and posttest control group design. The population of the study comprises all public co-educational Senior Secondary School II (SS2) Physics Students in Zaria Education Zone of Kaduna State. In this study, available data revealed that there were 3357 SSII students (2184 males and 1173 females) offering Physics in the Zone. The sample of the study comprised 56 SS II Physics low achievers (34 males and 22 females) from two (2) randomly selected public co-educational senior secondary schools in Zaria Education Zone. The study was guided by two objectives with their corresponding research questions and null hypotheses. Two instruments; Wave concept Performance Test (WCPT) and Wave Concept Motivation Questionnaire (WCMQ) were used to collect data. The instruments were validated by experts and the reliability coefficient of WCPT and WCMQ were obtained to be 0.84 and 0.76 using Pearson Product Moment Correlation Coefficient (PPMCC) for WCPT and Cronbach Alpha statistical tool for WCMQ respectively. The data collected was subjected to analyses at two different levels via descriptive and inferential statistics. The descriptive statistics of mean, standard deviation, and sum of Rank were used to answer the research questions raised. While at the inferential level, t-test, and Mann-Whitney U-test analyses were used to test the null hypotheses at the significance level of $\alpha \leq 0.05$. The inferential statistics level forms the basis to permit decision on whether to reject or retain the null hypotheses after being tested. Results of findings revealed that, there is no significant differences between the performance means scores of male and female low achieving students taught wave concept using Flipped Instructional Strategy ($p=0.62$). There is no significant difference between the motivation level of students taught wave concept using FIS ($p=0.80$). Based on the findings of the study, it was recommended among others, that Physics teachers should be encouraged through training and retraining programmes by state Ministry of Education and professional bodies such as STAN on the use of FIS in teaching Physics concept like wave, as it was found to be gender friendly with respect students' motivation and academic performance

Key words: Flipped Instructional Strategy, Motivation, Performance, Wave concept, Gender

Introduction

Science is the foundation upon which the bulk of present-day technological breakthrough is built. These days, developing nations all over the world including Nigeria are striving hard to develop scientifically and technologically since the world is becoming scientific and proper functioning of lives depend greatly on science. Its relevance as a requirement for technological development of a nation cannot be underrated. Bell (2015), viewed science as an integral part of human society. Its impact is felt in every way of human life so much that, it is intricately linked with a nation's development.

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Science as a field of study has done a lot for mankind. For instance, life has become easier for man as a result of the advancement in science. Through science, man has been able to understand his environment. For example, by drastically changing our means of communication, the way we work, our housing, clothes and food, our methods of transportation, and indeed even the length and quality of life itself, science has generated changes in the moral values and basic philosophies of mankind. It is for these reasons that science is taught in Nigeria's senior secondary schools as recognised by the West African Examinations Council (WAEC) and the National Examinations Council (NECO) in their Chief Examiner's Reports as Biology, Chemistry and Physics. Physics is one of the science subjects taught in Nigeria's senior secondary schools. It deals with the study of the behaviour of matter in relation to energy. According to Egoyan (2017), Physics is the most fundamental and all-inclusive of sciences and as science is considered a veritable tool widely recognized as being of great importance for the development of the economic well-being of any nation, therefore, the knowledge of Physics cannot be overemphasized. Moreover, the role of the knowledge of Physics in technological advancement such as in electronic and computer technologies made it an enviable and attention-seeking subject within the science domain. As far back as 1984, Wenham, Dorlin, Snell and Taylor (1984) asserted that, Physics is and will remain the fundamental science subject that has contributed significantly to the technological development of the world at large. Almost four decades after, this assertion according to Ballah and Ugwumba, (2015) has not changed.

Despite the relevance of Physics in technological advancement and the steps taken by government of Nigeria to improve teaching and learning of the subject in schools, students' performance in the subject as reported by Amusa, Ayanwale, Oladejo and Ayedun (2022), had perpetually been poor. In addition, the poor academic performance in SSCE Physics has become a trend in the WAEC results of Nigerian candidates. The WAEC Chief Examiner's Report (2019) revealed low achievement of students in Physics specifically in Wave concept. In a study conducted by Onyewuchi, Adewusi, Okebukola, Odekeye, Gbeleyi and Awaah (2021), Wave concept has been considered by students as abstract and difficult to understand which contributed to their poor performance. Moreover, a preliminary survey of students' terminal achievement records of coeducational schools in Zaria Education Zone for 2021/2022 SS II Physics students first and second terms results, revealed that out of 2941 SS II students who sat for the first term examination, only 1326 students representing 45.09% scored the pass mark of 50% and above, while 1615 students representing 54.91% failed with scores below 50%. Also, in the second term of the same session, 1175 students representing 39.95% scored 50% and above out of 2941 SS II Physics students who participated in the examinations, while 1766 students representing 60.05% failed to score up to the benchmark of 50%. In view of these statistical data reviewed, it is evident that students' achievement in Physics has not been encouraging. Regrettably, the percentage of students who achieved below average in their academic pursuit is on the increase. This trendy movement towards the direction of low achievement in Physics learning could likely suggest that tomorrow's Physics education practitioners may be bereft of techno-scientific competencies required for future development and the applications of Physics in achieving the goals of Physics education (FME, 2014). The achievement momentum of students in the classroom teaching and learning of Physics varies according to certain factors such as; students' background, developmental level in terms of chronological and cognitive maturity. Such variations lead to "labeling" students as "talented" generalized as high-ability group and the under-achievers (limited learners), dropout, all being descriptions of weak and low ability group.

Low achievement according to Mulanayi (2024), is due to inability of classroom instructional experience to stimulate the innate potentials of learners. Packiam, Selvi, and Fathima (2020) described low achievers as those students who scored an average less than 50per cent marks consecutively over two years in their previous examinations. Magableh and Abdullah (2021) viewed low achievers as those students whose ability is not quite so limited but nevertheless who have more difficulty in learning than average students. The students' attainment is not in tune with their capability but below the expected level of achievement. Low achievers in this study are regarded as students who score below average in three consecutive Physics examinations. This low achievement in Physics students' performance according to Omebe and Akani (2015) could be attributed to many factors ranging from the attitude of students towards the subject, lack of motivation on the part of the students, lack of basic science background at the primary school and fundamentally, teachers' strategy which is considered as an important factor. Nigeria secondary school students taught Physics by "chalk and talk" conventional method have repeatedly demonstrated poor motivation, low performance and retention in and from their Physics education

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programme. Conventional method has been described by Renau (2016), as oral presentation of information about a particular subject. It is often used to deliver a large amount of information to the students in a short period. It is designed to deliver new information to a large group of students. It is also known to be effective in dealing with a large class. Regrettably, Ali and Akubue, (2015) asserted that, most science teachers in a bid to cover their syllabus adopt conventional method. Conventional method is mainly teachers centered and subject driven. It does not encourage initiatives, curiosity, and creativity in students and does not offer them opportunity to interact effectively with their peers and learning materials. This has resulted in students' low motivation, reduced participation and poor learning performance. Student-centred strategy supported by educational media could enhance effective teaching and learning. Among student-centred strategy is flipped instructional strategy.

Flipped instructional strategy, is a new model for effective teaching. Leo and Puzio (2016) referred to it as the process by which students gain first hand exposure to learning content outside the class, usually via reading or lecture videos, and then use class time to do the harder work of assimilating that knowledge through problem solving, discussion, or debates. Flipped instructional strategy is a form of blended learning in which students learn content online by listening to audio lectures or watching video lectures, mostly at their various home, and assignment is done together in the class with teachers and students discussing and solving questions. Students can work together on a task, exchange their opinion, experiences, views, discuss and negotiate strategies, actions and results through flipped classroom (Ichinose & Clinkenbeard, 2016). These actions can provide students with opportunity to help, discuss, review teach, influence each other and thereby enhance a motivational situation for developing a learning community. Flipped classroom instructional practice is student-centered, making students active participants of the learning task as well as motivate their learning curiosity. Motivation is defined as a set of force that causes people to behave in certain ways. It is a set of force that changes behaviour and determine it form, direction and intensity. Motivation is that energizing force that induces or compels and maintain behaviour. There are two types of motivation in learning process. These are extrinsic and intrinsic motivation. Extrinsic motivation is directed at earning rewards that are external to a student, while intrinsic motivation is doing something because it is inherently interesting or enjoyable. The teaching approach a teacher adopts is a strong factor that may affect students' motivation toward learning, which in turn affects their performance. Motivation can be enhanced according to Galurisma, (2023) through teaching methods that actively involve students. Students are categorized as academically motivated when they are able to maintain high ability, and competence in their work. How the teachers view motivation will influence what they should do to establish a classroom environment that will enhance students' motivation (Kiliç & Durdağı, 2021). A teacher has the ability to influence the students' motivation to learn through a variety of teaching decisions and approaches (Zeid, Assadi & Murad 2017). A teaching method that would help students to find satisfaction in the subject matter and also make the subject matter relevant to the need of the student will be necessary to motivate them. Flipped instructional strategy is student-centered, making students active participants of the learning task and also enable them to retain learnt concepts. The question is, could students' motivation be influenced by gender?

Gender is a contemporary issue in science education and has attracted the attention of many researchers. According to Martin and Slepian (2021), it is the property that distinguishes individuals based on their reproductive roles. Gender refers to the characteristics of men, women, girls and boys that are socially constructed; this includes norms, behaviours and roles associated with being a woman, man, girl or boy as well as relationships with others (WHO, 2022). WHO (2022), gave different types of gender to include masculine, feminine, transgender, pangender, genderqueer, cisgender, gender neutral among other. Schmal, Haucap and Knoke (2023), also observed that, as social construct, gender varies from society to society and can change over time. However, for the purpose of this study, the term narrowed down to male and female gender as recognized in Nigeria. Furthermore, gender bias is a common issue in Nigeria educational system (Ogbobe, 2018). Research conducted on the effects of gender on students' motivation, performance and has so far been inconclusive. Studies by Adegboyega (2018), and Bichi (2019), observed that, gender has no significant effect on students' motivation. On the contrary, Muhammad (2016), observed that significant differences exist among male and female students' motivation. Likewise, researches on gender and academic performance such as that of Jia (2020) reveal that boys achieved academically better than girls. On the other hand, studies by Mwihia (2020) pointed out that female students achieved academically better than their male counterparts in Biology. However, a number of other studies like Okafor and Egbon

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(2011) reveal no significant difference in the academic performance of male and female students. These contradictory findings have caused for inclusion of gender as one of the moderating variables for this study. Therefore, this study. examined the effect of Flipped Instructional Strategy on Motivation and Performance in relation to gender in Wave Concept among Low-Achieving Senior Secondary School Physics Students in Zaria, Kaduna State, Nigeria

Statement of the Problem

There is growing concern about which instructional strategy or method of teaching would reverse the deteriorating trends in secondary schools Physics students' performance. Students' failure in senior secondary school West African Examination Council (WAEC) is becoming the order of the day in which only few candidates obtained the requirements for further studies into Nigeria higher institutions. The WAEC Chief Examiner's Report (2019) and Augustine (2018), observed that, teachers' use of ineffective teaching method is among the factors that has contributed to the deteriorating trends in secondary school Physics students' performance. This may account for the current low students' performance, motivation and enrolment in the subject. Besides, a good number of studies such as Williams (2018) and Okeke (2019), had investigated the causes of the appalling state of Physics students' performance. These causes were identified to include low students' motivation to learn Physics, poor teaching strategies used by Physics teachers, poor learning environment, perceived difficulty of the subject and inadequate instructional materials among others. Students shun sciences particularly Physics when given an option and this applies to girls. The teaching of Physics in Nigeria has predominantly been through conventional method, which has been implicated by researchers to bring about poor academic performance and low motivation among students. The use of conventional method discourages initiatives, curiosity and creativity in students and does not offer them opportunity to interact effectively with their peers and learning materials. Al-Zoubi and Younes (2015), observed that conventional method of teaching does not take cognizance of low achievers due to its short comings but form part of the students that seat for examination in which the outcome is generally poor. The low achievers are not encouraged to participate actively in the teaching and learning process. This has resulted in larger number of students' poor academic performance and low motivation to learn. In view of these, the study examined the effect of Flipped Instructional Strategy on Motivation and Performance in relation to gender in Wave Concept among Low-Achieving Senior Secondary School Physics Students in Zaria, Kaduna State, Nigeria.

Objectives of the Study

The study has the following objectives, to:

1. Find out the difference between the performance of male and female low achievers taught wave concept using Flipped Instructional Strategy among secondary school Physics students in Zaria Education Zone of Kaduna State.
2. Determine the difference between the motivation level of male and female low achievers when taught wave concept using Flipped Instructional Strategy among secondary school Physics students in Zaria Education Zone of Kaduna State.

Research Questions

The following research questions are formulated and answered:

1. What is the difference between the academic performance mean scores of male and female low achievers taught wave concept using Flipped Instructional Strategy in Zaria Education Zone of Kaduna State?
2. What is the difference between level of motivation of male and female low achievers taught wave concept using Flipped Instructional Strategy in Zaria Education Zone of Kaduna State?

Null Hypotheses

Based on the objectives and research questions stated, the following null hypotheses were formulated and tested at $\alpha \leq 0.05$ level of significance:

Ho_1: There is no significant difference between the performance of male and female low achievers taught wave concept using Flipped Instructional Strategy in Zaria Education Zone of Kaduna State.

Ho_2: There is no significant difference between level of motivation of male and female low achievers taught wave concept using Flipped Instructional Strategy in Zaria Education Zone of Kaduna State.

Methodology

A pretest and posttest quasi- experimental control group research design was used for the study. Two groups of students participated in the study; experimental group (EG) and control group (CG). The target population of this study comprises

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all public co-educational Senior Secondary School II (SS2) Physics Students in Zaria Education Zone of Kaduna State, Nigeria. In this study, available data revealed there are 3357 SSII students (2184 males and 1173 females) offering Physics in the zone. The sample for this study comprised 56 SS II Physics low achievers (34 males and 22 females) from two (2) randomly selected public co-educational senior secondary schools in Zaria Education Zone, Kaduna State, Nigeria. Simple random sampling was used to select four (4) schools from the twenty (20) co-educational senior secondary schools in the study area. Low achievers from these schools were identified based on their teachers' record of three consecutive exams in Physics subject. From the preliminary survey, students who consistently scored below 50 were considered as low achievers. To further ensure homogeneity in the students' ability level, pre-test was administered to the low achievers in each of the four schools randomly selected to determine their equivalence in terms of academic performance in wave concept. This was achieved by subjecting the results obtained from the pre-test to Analysis of Variance (ANOVA) and Scheffe's post-hoc test at $p \leq 0.05$. ANOVA was used to determine the existence of any significant difference in the four schools while the Scheffe's post-hoc test was used to separate the schools and figure out which schools were significantly or not significantly different. Two schools were statistically homogeneous and were therefore used for the study. Two validated instruments namely; Wave concept Performance Test (WCPT) and Wave Concept Motivation Questionnaire (WCMQ) were used to collect data. Test-retest method was used to determine the reliability coefficient of Wave Concept Performance Test (WCPT) and computed to be 0.84 using Pearson Product Moment Correlation Coefficient (PPMCC). While the Wave Concept Motivation Questionnaire (WCMQ) was administered once and the reliability coefficient was determined to be 0.76 using Cronbach Alpha statistical tool. For the purpose of data collection, the following sequential steps were used. The Wave concept Performance Test (WCPT) and Wave Concept Motivation Questionnaire (WCMQ) was administered to the students as pretest and posttest (at 6 weeks interval) to determine their performance and motivation level. The data collected was subjected to analyses at two different levels, that is, descriptive and inferential levels. At the descriptive level, the descriptive statistics of mean, standard deviation, sum of rank and mean rank difference were used to answer the research questions raised. While at the inferential level, independent sample t-test and Mann Whitney U-test were used to test the null hypotheses at $\alpha \leq 0.05$ level of significance. The inferential statistics level forms the basis to make decision on whether to reject or retain the null hypotheses.

Presentation of Results

Results obtained from the data collected were analyzed as follows:

Research Question One:

What is the difference between the academic performance mean scores of male and female low achievers taught wave concept using Flipped Instructional Strategy in Zaria Education Zone of Kaduna State?

To answer research question one, posttest scores of male and female SS II Physics low achievers in the experimental group generated from WCPT were subjected to descriptive statistics of mean and standard deviation. The summary of the analysis is presented in Table 1

Table 1: Mean and Standard Deviation of Posttest Scores of Male and Female SSII Physics Low Achievers in Experimental Group

Groups	*N*	Mean	Std. Deviation	Mean Difference
Male	34	34.29	1.09	0.16
Female	22	34.45	1.30	
Total	56			

Table 1 shows that the posttest mean (WCPT) score of male group is 34.29 with standard deviations of 1.09 and that of the female group recorded mean (WCPT) scores of 34.45 with standard deviations of 1.30. The mean difference is 0.16 in favour of the female low achievers in the experimental group. The table revealed that female SS II low achievers exposed to FIS performed better than their male counterparts taught same concept using FIS. To determine whether the mean difference is significant or not, null hypothesis one was tested at $\alpha \leq 0.05$ as presented in Table 2.

Null Hypothesis One:

There is no significant difference between the performance of male and female low achievers taught wave concept using Flipped Instructional Strategy.

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To test null hypothesis one, the posttest scores of male and female SS II low achievers obtained from WCPT of the experimental group was subjected to an independent samples t-test statistic at $\alpha \leq 0.05$. Summary of the analysis is presented in Table 2.

Table 2: Independent Samples t-test Analysis of Posttest Performance Scores of Male and Female SS II Physics Low Achievers in Experimental Group

Group	*N*	Mean	Std. Dev.	Df	t	p	Remark	Decision
Male	34	34.29	1.09	54	-0.50	0.62	Not Sig.	Ho_4 Retained
Female	22	34.45	1.30					
Total	56							

Not Significant at p > 0.05 level

Table 2 shows that the post-posttest means (WCPT) scores of male and female SSII Physics low achievers in the experimental group. The male students recorded a mean score of 34.29 with standard deviations of 1.09 and that of the control group recorded mean (WCPT) scores of 34.45 with standard deviations of 1.30. The mean performance difference between the two groups is -0.16. The p=0.62 calculated is greater than the alpha value 0.05 level of significance which indicates that there is no significant difference between the performance of male and female low achievers in the experimental group. Therefore, the null hypothesis which stated that there is no significant difference between the performance of male and female low achievers taught wave concept using Flipped Instructional Strategy is retained. This means that the performance of male and female SS II Physics low achievers was enhanced when taught wave concept using FIS. This implies that flipped instructional strategy is gender friendly.

Research Question Two:

What is the difference between level of motivation of male and female low achievers taught wave concept using Flipped Instructional Strategy in Zaria Education Zone of Kaduna State.?

To answer research question five, descriptive statistics of mean ranks, sum of rank and mean rank. The summary of the analysis is presented in Table 3.

Table 3: Summary of Mean Rank and Sum of Ranks for Motivation Scores of Male and Female SSII Physics Low Achievers in Experimental Group.

Group	*N*	Mean Rank	Sum of Ranks	Mean Rank Diff.
Male	34	28.06	954.00	1.12
Female	22	29.18	642.00	
Total	56			

From Table 3, the mean rank value of 28.06 was obtained for male group with a sum of rank 4900.00, while in the female group, a mean rank value of 30.00 with a sum of rank of 1770.00 was also obtained. A mean rank difference of 1.12 was computed and this shows that the male group developed a higher motivation than the female group. To determine whether the mean rank difference is significant or not, Hypothesis five was tested using Mann Whitney U-test at $\alpha \leq 0.05$ as presented in Table 4.

Null Hypothesis Two:

There is no significant difference between level of motivation of male and female low achievers taught wave concept using Flipped Instructional Strategy.

To test null hypothesis two, the posttest motivation scores of male and female low achievers obtained from WCMQ of the experimental group was subjected to Mann-Whitney U-test statistic at $\alpha \leq 0.05$. Summary of the analysis is presented in Table 4.

Table 4: Summary of Mann-Whitney U-test Analysis of SS II Physics Low Achievers Motivation between Male and Female in the Experimental Group

Group	*N*	Mean Rank	Sum of Ranks	Df	U-cal	p-value	Remark	Decision
Male	34	28.06	954.00	54	359.00	0.80	Not Sig.	$H0_5$ Retained
Female	22	29.18	642.00					

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Total	56

Not Significant at p > 0.05 level

Results in Table 4 shows that the mean rank of the male group was computed to be 28.06 with the sum of rank 954.00. On the other hand, the mean rank value of the female group was computed to be 28.18 and the sum of rank was 642.00. The Mann -Whitney U-value was 359.00. Since the p-value of 0.80 is greater than alpha value of 0.05 indicates that there is significant difference between the motivation level of SSII Physics low achievers in the experimental group taught wave concept using flipped instructional strategy. Hence, the null hypothesis is retained. This implies that FIS enhances students' motivation regardless of their gender

Discussion of Results

The findings and results of the study are discussed as follows:

The findings in Table 1 reveal that female students in the experimental group had a higher mean academic performance score than their male counterparts. The difference was however not significant as shown by the independent samples t-test analysis in Table 2. This indicates that male and female students taught wave concepts using FIS do not significantly differ in their mean academic performance scores. This implies that FIS is gender-friendly as it equally improves the academic performance of male and female students exposed to it. This observation could be attributed to the fact that the FIS allows for the active participation of students irrespective of gender. More so, FIS offers flexible learning paths, allowing male and female students to learn at their own pace who have different learning styles. The finding agrees with earlier research findings of Cheng, Ritzhaupt and Antonenko (2019), Abolarinwa (2020), Ipem, Onyemanche and Onwudiwe (2021), Osuafor and George (2023), Abbas and Idris (2024) that the performance of male and female students was improved when exposed to FIS. On the other hand, this finding is in disagreement with those of Ifeanyi and Ugwu (2022), Oyewumi (2021) who reported that boys performed better than girls when taught using FIS in the experimental group. More so, Chiquito, Castedo, Santos, López, and Alarcón (2020) reported that female performed better than male when students were taught strength of materials on engineering students using FIS. The findings in Table 3 reveals that female students in the experimental group had a higher mean rank motivation score than their male counterparts. The difference was however not significant as shown by the Mann-Whitney U-test analysis in Table 4. This indicates that male and female students taught wave concepts using FIS do not significantly differ in their mean rank motivation scores. This implies that FIS is gender-friendly as it equally improves the motivation level of male and female low achievers exposed to it. This equity driven in motivation level observed could be attributed to the fact that the FIS allow students to watch recorded videos on the concepts taught which provide them with the opportunity to interact with peers and collectively construct knowledge through social interactions. This finding is in agreement with earlier separate research findings of Keter and Humaidi (2018) who reported no significant gender difference in motivation level of students. On the other hand, Ferriz-Valero, Sterile, Penichet-Tomas and Baena-Morales (2022) conducted a study on the effects of flipped learning on learning and motivation of upper secondary school physical education students in two educational public centers in Alicante city, Spain reported that boys seemed to develop autonomous motivation more than girls when taught using flipped instructional strategy.

Conclusion

Based on the findings of this study, it was therefore, concluded that the use of FIS is gender-friendly as it improves low achievers' motivation level, enhances their academic performance among both male and female students.

Recommendations

On the basis of the findings obtained from this study, the following recommendations are made:

1. Physics teachers should frequently employ FIS in teaching difficult concepts like wave as it enhanced academic performance of low achieving students.
2. Professional bodies like STAN in collaboration with the Federal and State Ministries of Education should embark on nationwide training and retraining of Physics teachers how to design and implement classroom instructions based on the FIS through regular national, state and local seminars, workshops and conferences.

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