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Editorial

This edition of *NIU Journal of Educational Research* touches on Emotional Intelligence Education, Multimodal Digital Semiotics and Artificial Intelligence, Artificial Intelligence in French Language Education, Classroom Management and Students' Discipline and so on.

One of the papers, in this issue, reveals that Emotional Intelligence Education enhances adaptive emotion regulation, strengthens social connectedness, improves stress appraisal and coping, and reduces psychological distress. Whilst methodological limitations and questions of cultural generalisation counsel caution, the weight of evidence supports the systematic integration of EI education into school curricula, higher education provision, workplace training, and community mental health programmes. It is, therefore, suggested that Continued investment in high-quality research — particularly longitudinal studies, cultural adaptation studies, and implementation science — will be essential to realise the full potential of Emotional Intelligence in Education.

Another paper also reveals that while culturally responsive practices improve classroom organisation and teacher–student interactions, they may not independently determine students' disciplinary behaviour. The paper therefore, recommends integrating culturally responsive teaching with broader behavioural management strategies and strengthening teacher professional development in inclusive classroom practices.

On the whole, this issue of *NIU Journal of Educational Research* features many empirical and theoretical based articles which can be of great benefit to every reader.

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Learning Spaces and Instructional Facilities on Students Learning Outcomes in Technology Education in Universities of Education in Southwest, Nigeria

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Abstract. This study investigated the learning spaces and instructional facilities on students' learning outcomes in Technology Education in universities of education in Southwest Nigeria. A descriptive survey research design was used for the study. Three research questions and Three hypotheses were developed and tested at the 0.05 level of significance to guide the study. The study population consisted of 170 respondents, comprising 20 Technology Education lecturers and 150 Part Three students from Ekiti State University, Ado Ekiti, and Bamidele Olumilua University of Education, Science and Technology, Ikere Ekiti. No sampling technique was applied, as the entire population was considered manageable. Data were collected using a self-constructed questionnaire titled Learning Spaces and Instructional Facilities on Students' Learning Outcomes in Technology Education (LSIIFTE), structured on a 4-point rating scale. The instrument underwent face validation by three experts and was pilot-tested to ensure clarity and suitability. Reliability was established using the Cronbach-Alpha and test-retest methods, yielding a reliability coefficient of 0.81. Data analysis involved mean and standard deviation for research questions and t-test for hypotheses. Findings indicated that learning spaces were largely perceived as inadequate in quality, safety, and functionality, while instructional facilities were relatively available and utilized. However, neither variable showed a strong direct influence on learning outcomes, suggesting the importance of mediating factors such as teaching strategies and lecturer competence. The study recommends upgrading learning environments, improving facilities, and strengthening lecturer capacity for enhanced student outcomes.

Keywords: Learning Spaces Instructional Facilities, Learning Outcomes, Technology Education.

1. Introduction

Technical and Vocational Education and Training (TVET) in the universities of education in Nigeria are at the heart of preparing individuals for gainful work, equipping students with the practical skills and knowledge they need to be productive and employable, and contributing meaningfully to technological development and economic growth. In technology education, learning goes beyond understanding ideas in theory; students are expected to put knowledge into practice and perform real tasks that mirror what happens in the workplace. As a result, where and how learning takes place whether in classrooms, workshops, laboratories, maker spaces, or through digital platforms plays a crucial role in shaping how well students learn and how effectively they develop practical skills.

Technology Education occupies a unique position in contemporary education because it bridges theoretical knowledge with practical and hands-on skill development. Unlike purely theoretical disciplines, effective learning in technology education depends largely on students' direct interaction with tools, machines, equipment, and digital technologies within well-designed learning environments such as classrooms, workshops, laboratories, studios and virtual platforms. These learning spaces provide the setting in which abstract concepts of technology education are transformed into practical competencies,

creativity is nurtured, and problem-solving skills are developed.

Learning spaces whether physical, virtual, or hybrid, it plays a crucial role in shaping how students engage with instructional contents and with one another. Well-organized workshops, flexible classrooms, and technology-enabled learning environments encourage collaboration, experimentation, and active participation, all of which are essential for meaningful learning in technology education programmes. Ogunbote, Dawodu, Adegunle and Adenuga (2025) noted that merging technologies will directly impact students learning outcomes across all areas; cognitive, psycho-motor and affective in Nigeria Universities of Education. Similarly, instructional facilities such as modern tools, functional machines, adequate consumables, and reliable information and communication technology (ICT) infrastructure support the effective delivery of the curriculum and enhance students' opportunities for deliberate practice and skill mastery (Hanaysha, 2023; UNESCO, 2023).

Despite the recognized importance of learning spaces and instructional facilities, many universities of education particularly in developing countries such as Nigeria, Ghana, Togo among others continue to face significant challenges in providing and maintaining these resources. In several contexts, technology education curricula are ambitious and aligned with global industry standards, yet the physical and digital infrastructure required to implement them effectively is often inadequate, outdated, or poorly maintained. This mismatch between curriculum expectations and available facilities limits students' exposure to practical experiences, weakens instructional delivery, and ultimately compromises graduates' preparedness for the workplace (Andrade, 2024; Raheef, 2024).

Against this backdrop, it has become increasingly important to examine how learning spaces and instructional facilities influence students' learning outcomes in Technology Education in universities of education. Understanding the extent to which the design, availability, and quality of these facilities affect academic achievement and practical skill development will provide valuable insights for technology educators, administrators, curriculum developers and policymakers both at the Federal and State ministries of education seeking to improve teaching and learning in technology education programmes in the universities of education.

1.1 Statement of the Problem

Technology Education is designed to equip learners with both theoretical understanding and practical skills necessary for technological innovation and workforce participation. However, in many educational institutions, the realization of these objectives is constrained by inadequate learning spaces and insufficient instructional facilities. Common challenges include obsolete or insufficient workshop equipment, overcrowded or poorly organized learning spaces, unsafe laboratory conditions, limited ICT infrastructure for simulations and blended learning, and inadequate teacher training in the effective use of available resources.

These deficiencies have been linked to reduced opportunities for hands-on practice, lower levels of student engagement, poor performance in skills-based assessments, and weak outcomes during industrial training or workplace attachments (Raheef, 2024; Nja, 2023; UNESCO, 2023). Despite these concerns, there is limited empirical evidence that clearly explains how different aspects of learning spaces and instructional facilities individually and collectively affect students' cognitive and practical learning outcomes, particularly within developing-country contexts.

As a result, educational policymakers and institutional administrators often lack reliable, context-specific evidence to guide decisions regarding infrastructure investment, facility improvement, and pedagogical reform in Technology Education. This study seeks to address this gap by systematically examining the relationship between the quality and availability of learning spaces and instructional facilities and students' learning outcomes in Technology Education, with the aim of providing evidence-based recommendations for improving teaching, learning, and graduate competence.

1.2 Purpose of the Study

The main purpose of this study was to investigate the learning spaces and instructional facilities on students learning outcomes in technology education in universities of education in southwest, Nigeria. Specifically, the study sought to find out:

- the influence of the quality, adequacy, safety and functionality of learning spaces influence Technology Education in universities of education in southwest, Nigeria.
- the extent to which instructional facilities are available and adequately utilized in Technology Education classrooms and workshops in universities of education in southwest, Nigeria.

- the level of students' learning outcomes in Technology Education in universities of education in southwest, Nigeria.

1.3 Research Questions

The following questions guided the study:

- To what do the quality, adequacy, safety and functionality of learning spaces influence Technology Education in universities of education in southwest, Nigeria?
- To what extent are instructional facilities available and adequately utilized in Technology Education classrooms and workshops in universities of education in southwest, Nigeria.
- What is the level of students' learning outcomes in Technology Education in universities of education in southwest, Nigeria.?

1.4 Hypotheses

The following null hypotheses will be tested at the 0.05 level of significance:

H₀₁: There is no significant relationship between learning spaces and students' learning outcomes in Technology Education in universities of education in South West Nigeria.

H₀₂: There is no significant relationship between instructional facilities and students' learning outcomes in Technology Education in universities of education in South West Nigeria.

H₀₃: There is no significant difference in the influence of learning spaces on students learning outcomes in technology education in universities of education in southwest Nigeria.

2. Literature Review

This review examines recent empirical and theoretical studies on the relationship between learning spaces, instructional facilities, and students' learning outcomes in Technology Education. The discussion is organized around four key themes: learning spaces, instructional facilities and equipment, technology-enhanced learning and teacher competence, and gaps in existing research.

2.1 Learning Spaces

This can be Physical, Virtual, and Hybrid. Contemporary literature emphasizes that learning spaces extend beyond traditional classrooms and

workshops to include virtual and hybrid environments that support flexible and student-centered learning. Learning spaces are now understood as deliberately designed environments that influence how students interact with content, instructors, peers, and technology (Elkington, 2025). Studies suggest that flexible classroom arrangements, properly zoned workshops, and safe laboratory layouts promote collaboration, active learning, and efficient supervision during practical sessions.

In technology and STEM education, hybrid learning spaces that combine physical practice with digital simulations and online resources have been shown to enhance conceptual understanding and practical competence. When learning spaces are thoughtfully designed and aligned with instructional goals, students demonstrate higher levels of engagement, improved coordination during group tasks, and deeper understanding of technological concepts.

2.2 Instructional Facilities, Equipment, and Practical Outcomes

Instructional facilities are central to the effectiveness of Technology Education because they provide the tools and materials required for skill acquisition. Empirical studies in technical and vocational education consistently report a positive relationship between the availability and condition of instructional facilities and students' performance in skills-based assessments and workplace practicums (Raheef, 2024; Nja, 2023). Adequate equipment enables repeated practice, experimentation, and error correction—processes that are essential for mastering technical skills.

Conversely, poorly equipped or obsolete workshops limit students' hands-on experience and reduce opportunities for meaningful practice. In such environments, students often rely heavily on theoretical instruction, resulting in lower assessment scores and weaker performance during industrial attachments or internships. Recent regional studies, including those conducted in Nigerian technical and technology education institutions, identify shortages of tools, consumables, and routine maintenance as persistent barriers to achieving curriculum objectives (Raheef, 2024).

2.3 Technology-Enhanced Learning, ICT Resources, and Teacher Competence

The integration of ICT and technology-enhanced learning (TEL) has become increasingly prominent in technology education. Large-scale reviews and meta-

analyses indicate that ICT can positively influence learning outcomes when it is purposefully integrated into teaching and supported by competent instructors (UNESCO, 2023; Hanaysha, 2023). Digital tools, simulations, and virtual laboratories can complement physical facilities, especially where resources are limited.

However, the literature also cautions that the mere presence of ICT infrastructure does not guarantee improved learning outcomes. Without appropriate pedagogical strategies, classroom management, and teacher competence, technology use may distract students and reduce learning effectiveness. As such, teacher expertise and the instructional use of facilities emerge as critical mediating factors that determine whether learning spaces and facilities translate into improved student outcomes.

2.4 Gaps and Limitations in Existing Research

Although existing studies establish clear associations between learning spaces, instructional facilities, and learning outcomes, several limitations remain. Many studies rely on cross-sectional designs, self-reported data, and relatively small samples, making it difficult to draw strong causal conclusions. Recent reviews also highlight a shortage of longitudinal and experimental research that examines how specific facility-related factors influence learning processes over time in technology education contexts.

Additionally, much of the high-quality research originates from high-income countries, while empirical studies from developing contexts—where infrastructure challenges are often more pronounced—remain limited in scope and scale (Andrade, 2024; Elkington & Dickinson, 2025). These gaps underscore the need for context-specific research that examines how deficiencies in learning spaces and instructional facilities contribute to skill gaps and reduced learning outcomes in Technology Education.

3. Methodology

This study examined the learning spaces and instructional facilities influence students' learning outcomes in Technology Education in (TVET)

4. Results

Research Question 1: To what extent do the quality, adequacy, safety and functionality of learning spaces influence in Technology Education in universities of education in southwest, Nigeria?

institutions. The study was carried out in three Universities of Education in Southwestern Nigeria, adopting a descriptive survey research design. This design was considered appropriate because it allows for the systematic collection of data on respondents' perceptions and experiences without manipulating study variables, thereby providing an accurate description of existing conditions and practices (Manjunatha, 2019). The study population consisted of 170 respondents, comprising 150 TVET students and 20 Technology Education teachers from the selected institutions. Given the relatively small and manageable population size, a census approach was adopted, and all identified respondents participated in the study. Data were collected using a self-developed questionnaire titled "Learning Spaces and Instructional Facilities on Students' Learning Outcomes in Technology Education in TVET Institutions (LSIIFTE)." The questionnaire contained 45 items measured on a four-point rating scale ranging from: Strongly Agree (SA) – 4, Agree (A) – 3, Disagree (D) – 2, Strongly Disagree (SD) – 1. The questionnaire items were aligned with the study's research questions and subjected to face validation by three experts in department of industrial technical education, Ekiti State University, the reliability of the instrument was established using Cronbach's Alpha, yielding a coefficient of 0.82, which indicates a high level of internal consistency. The copies of questionnaire were personally administered by the researchers to ensure proper clarification of items where necessary and were retrieved immediately after completion to achieve a 100% response rate. This approach enhanced the credibility and completeness of the data collected. Three research questions and three corresponding null hypotheses guided the study. Descriptive statistics, including mean and standard deviation, were used to answer the research questions, while the hypotheses were tested using the independent samples t-test at the 0.05 level of significance. A mean score of 2.50 and above was interpreted as acceptable, whereas mean scores below 2.50 were considered unacceptable. For hypothesis testing, a null hypothesis was retained when the calculated t-value was less than the critical t-value and rejected when the calculated t-value exceeded the critical t-value.

Table 1: Mean and Standard Deviation Responses on Quality, Adequacy, Safety and Functionality of Learning Spaces influence in Technology Education in Universities of Education in Southwest, Nigeria.

| S/N | Statements | Technology Education Lecturers | | Students | | | |
|-----|--|--------------------------------|------|----------|------|------|----------|
| | | Mean | SD | Decision | Mean | SD | Decision |
| | Classrooms provide enough space for Technology Education activities. | 1.80 | 0.98 | Disagree | 1.43 | 0.71 | Disagree |
| | Workshops are well designed to support practical learning. | 2.10 | 0.89 | Disagree | 1.30 | 0.69 | Disagree |
| | Learning spaces are comfortable and well-ventilated. | 1.85 | 0.72 | Disagree | 1.37 | 0.69 | Disagree |
| | Seating arrangements promote interaction and collaboration among students. | 1.40 | 0.80 | Disagree | 1.53 | 0.88 | Disagree |
| | There are enough classrooms and workshops to accommodate all students. | 1.45 | 0.86 | Disagree | 1.47 | 0.88 | Disagree |
| | Learning spaces are flexible and adaptable for different teaching methods. | 1.30 | 0.78 | Disagree | 1.20 | 0.40 | Disagree |
| | Safety measures in workshops are sufficient to protect students. | 2.00 | 0.63 | Disagree | 1.47 | 0.88 | Disagree |
| | Classrooms are equipped to support group and collaborative activities. | 1.35 | 0.79 | Disagree | 1.23 | 0.67 | Disagree |
| | Practical areas are organized to allow smooth workflow. | 2.10 | 0.62 | Disagree | 1.30 | 0.69 | Disagree |
| | Learning spaces encourage creativity and problem-solving. | 1.30 | 0.78 | Disagree | 1.37 | 0.71 | Disagree |
| | Cluster mean/SD | 1.67 | 0.79 | | 1.37 | 0.71 | |

Table 1 shows the results of the Quality, Adequacy, Safety and Functionality of Learning Spaces influence in Technology Education in Universities of Education in South West Nigeria, from the results all the items has mean scores below the criterion mean of 2.5, indicating that all the items 1-10 listed to answer the research question 1 were rejected by the respondents. The standard deviation values of 0.40 -0.98 indicates that the respondents are homogeneous in their responses to the items raised. This implies that both technology education Lecturers and students unanimously disagreed on all the items listed.

Research Question 2: To what extent are instructional facilities available and adequately utilized in Technology Education classrooms and workshops in universities of education in southwest, Nigeria?

Table 2: Mean and Standard Deviation Responses on instructional facilities available and adequately utilized in Technology Education classrooms and workshops in universities of education in southwest, Nigeria.

| S/N | Statements | Technology Education Lecturers | | Students | | | |
|-----|--|--------------------------------|------|----------|------|------|----------|
| | | Mean | SD | Decision | Mean | SD | Decision |
| | Instructional facilities are sufficient to cover all topics in Technology Education. | 2.10 | 0.89 | Disagree | 2.17 | 0.78 | Disagree |
| | Practical equipment and tools are available in adequate quantity. | 2.10 | 0.88 | Disagree | 2.13 | 0.62 | Disagree |
| | Machines and equipment in workshops are in good working condition. | 2.15 | 0.85 | Disagree | 2.00 | 0.73 | Disagree |
| | Teachers make effective use of the available instructional facilities. | 1.55 | 0.80 | Disagree | 1.20 | 0.40 | Disagree |
| | Students have regular access to instructional facilities during lessons. | 1.50 | 1.81 | Disagree | 1.30 | 0.69 | Disagree |
| | Technological aids (computers, projectors, smart boards) are available when needed. | 1.70 | 1.00 | Disagree | 1.23 | 0.67 | Disagree |
| | Laboratories and workshops are Well-equipped for practical exercises. | 1.96 | 1.15 | Disagree | 1.83 | 0.64 | Disagree |
| | There are enough resources to support both individual and group work. | 1.70 | 1.00 | Disagree | 1.97 | 0.55 | Disagree |
| | Instructional facilities are updated to reflect current technology trends and practices. | 1.50 | 0.80 | Disagree | 1.83 | 0.64 | Disagree |
| | Materials and consumables for practical lessons are readily available. | 1.45 | 0.80 | Disagree | 1.93 | 0.25 | Disagree |
| | Cluster mean/SD | 1.87 | 0.89 | | 1.76 | 0.60 | |

Table 2 revealed that all the items on the instructional facilities available and adequately utilized in Technology Education classrooms and workshops in universities of education in southwest, Nigeria as perceived by technology education lecturers and students had their mean scores above the real limits of 2.50. it depicts that all the items were disagreed. The standard deviation values of 0.25 – 1.81 indicates that the respondents are homogeneous in their responses to the items raised. This implies that both technology education lecturers and students unanimously agreed on all the items listed.

Research Question 3: What is the level of students’ learning outcomes in Technology Education in universities of education in southwest, Nigeria.?

Table 3: Mean and Standard Deviation Responses on the level of students’ learning outcomes in Technology Education in universities of education in southwest, Nigeria.

| S/N | Statements | Technology Education Lecturers | | Students | | | |
|-----------------|---|--------------------------------|------|----------|------|------|----------|
| | | Mean | SD | Decision | Mean | SD | Decision |
| | Students can apply the practical skills they have learned effectively. | 1.85 | 0.72 | Disagree | 1.97 | 0.55 | Disagree |
| | Students perform well in theoretical assessments. | 1.40 | 0.80 | Disagree | 1.90 | 0.66 | Disagree |
| | Students perform well in practical assessments. | 2.10 | 0.89 | Disagree | 1.20 | 1.20 | Disagree |
| | Students understand Technology Education concepts clearly. | 1.30 | 0.78 | Disagree | 1.97 | 0.55 | Disagree |
| | Learning spaces and instructional facilities help improve understanding of the subject. | 1.35 | 0.79 | Disagree | 1.30 | 0.63 | Disagree |
| | Students can complete tasks independently using their learned skills. | 2.40 | 0.97 | Disagree | 1.63 | 1.02 | Disagree |
| | Students collaborate effectively during practical sessions. | 2.00 | 0.62 | Disagree | 1.87 | 0.55 | Disagree |
| | Students are confident when performing technical tasks taught in class. | 2.30 | 0.70 | Disagree | 1.37 | 0.71 | Disagree |
| | Students are motivated to learn more because of the available facilities. | 1.47 | 0.88 | Disagree | 1.97 | 0.55 | Disagree |
| | Technology Education lessons help improve students’ problem-solving skills. | 1.37 | 0.71 | Disagree | 1.83 | 0.64 | Disagree |
| Cluster mean/SD | | 1.75 | 0.79 | 1.71 | 0.63 | | |

Table 3 showed that Technology Education lecturers generally viewed level of students’ learning outcomes in Technology Education in universities of education in southwest, Nigeria negatively, disagreeing with all the items (21–30). From the results all the items have mean scores below the criterion mean of 2.5, indicating that all the items 21-30 listed to answer the research question 3 were rejected. This implies that both technology education Lecturers and students unanimously disagreed on all the items listed. The standard deviation values of 0.55 -0.97 indicates that the respondents are homogeneous in their responses.

Hypotheses

H₀₁: There is no significant relationship between learning spaces and students’ learning outcomes in Technology Education in universities of education in South West Nigeria.

Table 4 t-test analysis on mean responses of students and lecturers on between learning spaces and students’ learning outcomes in Technology Education in universities of education in Southwest, Nigeria

| Group | N | Mean | SD | Df | t-cal | t-crit | Decision |
|----------|----|------|------|-----|-------|--------|----------------|
| Lecturer | 20 | 1.67 | 0.79 | 168 | 1.75 | 1.87 | Fail to reject |
| Students | 15 | 1.37 | 0.71 | | | | |

Table 4 indicated that learning spaces did not have a statistically significant influence on students’ learning outcomes in Technology Education. The independent samples t-test showed that the calculated t-value (t = 1.75) was lower than the critical t-value (t = 1.97) at the 0.05 level of significance, leading to the acceptance of the null hypothesis. This finding suggests that both lecturers and students generally perceived that the quality, adequacy, safety, and functionality of learning spaces were not major determinants of students’ learning outcomes in Technology Education.

H₀₂: There is no significant relationship between instructional facilities and students’ learning outcomes in Technology Education in universities of education in South West Nigeria.

Table 5 t-test analysis on mean responses of students and lecturers on instructional facilities and students’ learning outcomes in Technology Education in universities of education in South West Nigeria.

| Group | N | Mean | SD | Df | t-cal | t-crit | Decision |
|----------|-----|------|------|-----|-------|--------|----------------|
| Lecturer | 20 | 1.87 | 0.89 | 168 | 0.72 | 1.97 | Fail to reject |
| Students | 150 | 1.76 | 0.60 | | | | |

Table 5 revealed that the t-test conducted to examine the relationship between instructional facilities and students’ learning outcomes in Technology Education revealed that there was no statistically significant difference between lecturers’ and students’ perceptions at the 0.05 significance level (t = 0.72, df = 168, p > 0.05). This indicates that both groups perceived those instructional facilities, such as teaching aids, laboratory equipment, and other learning resources, did not have a strong or direct impact on students’ learning outcomes.

H₀₃: There is no significant difference in the influence of learning spaces on students learning outcomes in technology education in universities of education in southwest Nigeria.

Table 6 t-test analysis on mean responses of students and lecturers on influence of learning spaces on students learning outcomes in technology education in universities of education in Southwest Nigeria

| Group | N | Mean | SD | Df | t-cal | t-crit | Decision |
|----------|-----|------|------|-----|-------|--------|----------------|
| Lecturer | 20 | 1.75 | 0.79 | 168 | 0.26 | 1.97 | Fail to reject |
| Students | 150 | 1.71 | 0.63 | | | | |

Table 6 showed that the t-test conducted to examine the influence of learning spaces on students’ academic performance in Technology Education revealed a statistically significant difference between lecturers’ and students’ perceptions ($t = 4.15$, $df = 168$, $p < 0.05$). This finding indicates that learning spaces comprising the quality, adequacy, safety, and functionality of classrooms and laboratories have a significant impact on students’ academic outcomes.

5. Discussion of Findings

This study investigated how learning spaces and instructional facilities relate to students’ learning outcomes in Technology Education in universities of education in Southwest, Nigeria. The discussion draws directly from the major findings of the study and connects them with existing empirical and theoretical literature.

The results presented in Table 1 showed that all items assessing the quality, adequacy, safety, and functionality of learning spaces had mean scores below the benchmark of 2.50. This suggests that both lecturers and students generally viewed the available learning spaces as inadequate for effective teaching and learning in Technology Education. The relatively low standard deviation values indicate that these views were widely shared among respondents. In practical terms, this points to concerns that classrooms, laboratories, and workshops may not be sufficiently designed or equipped to support hands-on, interactive, and collaborative learning activities.

These findings are consistent with contemporary views on learning environments. Modern literature emphasizes that learning spaces are not simply physical locations but intentionally designed settings that shape how students engage with content, instructors, peers, and learning tools (Elkington, 2025). In technology-focused disciplines especially, the design and usability of workshops and laboratories play a vital role because they determine the extent to which students can actively participate in practical tasks. Previous studies have demonstrated that flexible classroom arrangements and well-organized practical environments can enhance collaboration, improve task

coordination, and deepen conceptual understanding (Andrade, 2024).

Interestingly, despite respondents’ concerns about the adequacy of learning spaces, the hypothesis testing results in Table 4 indicated that learning spaces did not have a statistically significant influence on students’ learning outcomes. Since the calculated t-value ($t = 1.75$) was lower than the critical value ($t = 1.97$), variations in learning spaces were not strong predictors of learning outcomes. This finding can be interpreted in several ways. It is possible that both lecturers and students have adapted to existing spatial limitations, thereby reducing the measurable impact of these conditions. It is also plausible that other factors—such as teaching methods, curriculum structure, or student motivation—may exert a stronger influence on learning outcomes than physical environments alone.

Nevertheless, the lack of statistical significance does not diminish the conceptual importance of learning spaces. Prior research continues to highlight the role of learning environments in shaping student engagement and instructional effectiveness, particularly in skill-based fields (Elkington & Dickinson, 2025). The observed result may therefore reflect contextual realities rather than suggesting that learning spaces are unimportant.

Table 2 further revealed that respondents generally agreed that instructional facilities were either insufficient or not adequately utilized. The consistency in responses indicates a shared concern regarding the availability and use of instructional resources. In Technology Education, facilities such as laboratory equipment, tools, and teaching aids are fundamental because they support experimentation, repeated practice, and skill development.

This observation supports earlier studies that emphasize the strong connection between instructional facilities and students’ performance in technical and vocational education. Adequate facilities allow learners to practice repeatedly, test ideas, and learn from mistakes—processes that are essential for developing technical competence (Raheef, 2024; Nja,

2023). In contrast, poorly equipped workshops tend to restrict practical experiences and encourage overreliance on theoretical instruction, which can negatively affect students' confidence and performance in practical assessments.

Despite these concerns, the t-test results in Table 5 showed no statistically significant difference between lecturers' and students' perceptions of the influence of instructional facilities on learning outcomes. This suggests that both groups shared similar views about the relatively limited direct impact of facilities on outcomes. One possible explanation is that while facilities are undoubtedly important, their effectiveness depends greatly on how they are used during instruction. As Hanaysha (2023) notes, educational resources contribute meaningfully to learning only when they are purposefully integrated into teaching and learning activities.

Although this study focused mainly on physical learning spaces and facilities, the findings can also be considered in light of technology-enhanced learning (TEL). The literature indicates that digital tools, simulations, and virtual laboratories can help address some of the challenges posed by limited physical infrastructure (UNESCO, 2023). However, the benefits of such technologies depend heavily on teacher competence and appropriate pedagogical approaches. Simply providing technological tools does not automatically lead to improved learning outcomes.

In situations where learning spaces and facilities are perceived as inadequate, effective use of ICT can serve as a valuable supplement. Yet, without sufficient training and instructional alignment, technology integration may yield only marginal benefits or even introduce distractions (Hanaysha, 2023). This highlights the critical role of teacher expertise and instructional design as mediating factors.

The results in Table 3 showed that respondents generally rated students' learning outcomes negatively, with all items falling below the criterion mean. This reflects dissatisfaction with aspects such as practical skills, conceptual understanding, or overall academic performance. Such perceptions are in line with studies linking infrastructural and resource limitations to weaker learning outcomes in technical disciplines (Raheef, 2024).

Notably, while Tables 4 and 5 indicated no statistically significant influence of learning spaces and instructional facilities on learning outcomes, Table 6 revealed a statistically significant influence of learning

spaces on academic performance. This suggests that even if learning spaces do not strongly shape perceived learning outcomes, they may still have measurable effects on academic achievement. This distinction is important, as learning outcomes extend beyond examination results to include skills, attitudes, and practical competencies.

The significant finding supports theoretical arguments that environmental conditions influence academic engagement and performance. Well-designed and functional learning environments can improve concentration, minimize distractions, and facilitate effective supervision during practical activities (Andrade, 2024).

6. Implications and Research Gaps

The important implications for educational practice and policy were highlighted below:

Policy and Planning: School leaders and policymakers should focus on improving and investing in learning spaces and instructional facilities, as these play a key role in keeping students engaged and helping them achieve better learning outcomes.

Teacher Practice: Teachers need not only strong pedagogical skills but also the ability to make the best use of available physical and instructional resources to support a variety of learning activities.

Resource Allocation: Decisions about funding should be guided by evidence showing how the quality of school infrastructure affects student learning, so resources are directed where they will have the greatest impact.

Curriculum Integration: Technology Education programmes should intentionally incorporate the effective use of spaces and facilities into lesson planning to ensure students gain the most from their learning experiences.

7. Conclusion

The findings of this study highlight that learning spaces and instructional facilities have a crucial impact on students' learning outcomes in Technology Education. Classrooms and workshops that are well-designed, adequately equipped, and conducive to practical activities not only foster greater student engagement but also support higher academic achievement and the development of essential technical skills. This study confirms that the physical and instructional environment is a key factor in the learning process, providing the tools and context necessary for students to effectively understand and apply concepts. Well-organized spaces and properly

utilized facilities create opportunities for collaboration, creativity, and hands-on practice, all of which enhance overall learning outcomes. However, it is important to note that the influence of learning spaces and facilities is intertwined with other educational factors, including teaching methods, curriculum design, student motivation, and institutional support. This means that while improving physical and instructional environments is essential, it should be complemented by effective pedagogy and continuous professional development for teachers to achieve the best possible outcomes in Technology Education. Overall, investing in quality learning spaces and instructional facilities is not just about infrastructure; it is a vital step toward creating an enabling environment where students can thrive academically, develop practical skills, and be better prepared for future careers.

8. Recommendations

Based on the findings, the following recommendations are offered:

Improve Learning Spaces: Universities should prioritize upgrading and reorganizing classrooms, workshops, and laboratories to ensure safety, functionality, and support for practical learning.

Maintain and Update Facilities: Institutions should implement routine maintenance and ensure that instructional equipment reflects contemporary technological and industry standards.

Expand Practical Learning Opportunities: Technology Education programmes should increase hands-on activities, simulations, and project-based learning experiences.

Support Lecturer Development: Continuous professional development should be encouraged, particularly in technology-enhanced teaching methods and learner-centered strategies.

Strengthen Feedback Mechanisms: Universities should establish systems that regularly capture students' learning experiences to inform improvements.

Encourage Further Research: Future studies should adopt longitudinal and experimental designs to better understand causal relationships, especially within developing educational contexts.

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Effects Social Skills Training on Interpersonal Relationship of Senior Secondary School Students in Lagos State, Nigeria

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Abstract. The study investigated the effects of social skills training on the interpersonal relationship of senior secondary school students in Lagos state. This study aimed at using social skill trainings to strengthen interpersonal relationship among senior secondary students in Lagos State. A pretest-posttest, control group, quasi-experimental design was used for this study. There are three Senatorial Districts in Lagos State out of which two public secondary schools used for the study were randomly selected. One hundred and twenty participants consisting of sixty male and sixty female, who had low interpersonal relationship were assigned to one treatment group and a control group. The instrument- Multidimensional Relationship Questionnaire (MRQ), was used to elicit responses from the participants. Two hypotheses tested at 0.05 level of significance. Data collected were analysed using analysis of covariance (ANCOVA). The results showed that there was a significant main effect of treatment on interpersonal relationship of adolescents in public Senior Secondary Schools. Family type had no significant effect on the interpersonal relationship of the adolescents. Findings demonstrated that the package could be used as veritable tool in equipping adolescents with necessary skills that can enhance good relationship with others in the society. Social skills' training was recommended for use by teachers, counsellors, psychologists, parents and others.

Keywords: Interpersonal relationship, Social Skills Training, Adolescence, Family type.

1. Introduction

When a person grows from childhood to adulthood, they unavoidably go through the transitional stage of adolescence. It is a time of transition and turning a

child into an adult. It terminates childhood and marks the commencement of adulthood. It is the pubescence stage between the ages of 13-19 years. Adolescents always feel on top of the world and develop a larger-than-life attitude towards events around them. They often mismanage difficult challenges because of their wrong perceptions of themselves coupled with their inappropriate interpersonal skills and lack of prosocial behaviours. As a result, adolescents have always been involved in a number of anti-social behaviours that arise from their different interpersonal relationships deficiencies (Adepegba, 2023)

There are numerous negative behaviours that have been found to exist as a result of deficiencies in interpersonal relationship among adolescents especially in senior secondary schools. This is the case because, according to Adegoke (2011), interpersonal relationships are a process that focuses on social skills, self-analysis, successful interaction techniques, and conflict resolution. The adolescents in senior secondary schools who do not possess these social skills cannot engage in self-analysis for effective interaction and are not able to find solution to interpersonal issues. They often find themselves in police net, charged to juvenile courts and at times sent to correctional homes.

Human relationships heavily rely on interpersonal ties. These are the actions and behaviors that are fundamental to human interactions and are a part of both spoken and nonverbal communication. It is an established relationship in which the thoughts, feelings, and emotions of its members are interconnected. Positive relationships are characterized by closeness, trust, devotion, and concern. However, when it is negative, it shows defensiveness, disdain, criticism, and a lack of trust.

Jokes, storytelling, body language or facial expressions, and other such behaviours are also examples of interpersonal connections. It also has a deep relationship that occurs between two or more persons of a length ranging from temporary to permanent.

Pitan (2017) defines interpersonal relationship as a procedure that involves the non-stop related thoughts and behaviours of persons in a partnership or group where they use social skills and engage actively. It is also the nature of interaction that occurs between two or more people who fill one another's open or close, physical or emotional needs in some ways. Sadovnikova (2016) states that the word 'personal' centers on the closeness between two people, and the behaviour being exhibited between these two individuals will depend on the circumstance of their relationship. It is a strong bond between two or more people, a feeling of being understood or appreciated. Adolescents are in a crucial developmental stage, and the way their interpersonal interactions develop has a significant impact on society's overall harmony and advancement in addition to their own mental health. adolescents' interpersonal relationships offer a vast and varied terrain, encompassing both pleasant encounters and overcoming many obstacles and problems, from home to school, from reality to virtual space (Yongmei, 2026).

There have been a number of studies that have been carried out on the behavioural outcomes of adolescents who do not possess the required interpersonal skills relationship. Literature is replete with several examples of these behavioural deficiencies. They include sadistic attacks by adolescents like car stealing, vandalism, rape, drug abuse, cigarette smoking, fighting, rudeness, sexual offences/harassment, lateness to school, disobedience, alcoholism, bullying and emotional distress among others (Adedokun, 2013; Abdullahi, Dembe and Kura, 2014; Widle and Widle, 2014, Adeshina, Beckley and Shittu, 2012; Amadi-Ali and Anokwuru, 2024).

It has been reported that a lot of efforts have been made towards curbing adolescents' negative interpersonal relationship through various psychological interventions and treatments. For example, Amadi and Anokwuru (2024) made use of social skills and behaviours among students. Aderanti and Hassan (2011) use cognitive restructuring and self-management to treat adolescents' rebellious behaviour, Busari (2012) employed the cognitive behavioural therapy to manage adolescent conduct disorders. Ayodele (2014) used Rational Behavioural Therapy, thinking skills and social skills training as

means of fostering adolescents' inter and intra-personal relationship, among others. However, with the number of various forms of crimes and brigandage being witnessed daily, particularly in secondary schools, colleges of education, polytechnics and universities, it is clear that a lot still needs to be done to curb adolescent's related crimes arising from deficiencies in their interpersonal relationship.

Social skills are skills that can help individuals to easily attach, socialize with people and survive better. These skills help pupils to accomplish tasks and collaborate with peers to achieve shared or set goals. Possessing good social skills helps pupils not only to relate well and accomplish tasks, it also helps them to relate well with peer groups and maintain good relationship with teachers (Gould, 2022) Social Skill training is a method that is used in developing good social relationship among people. For example, Social Skills Training programme can increase the quality of adolescents' interpersonal relationship and prosocial behaviour by addressing the aspect of the relationship that is most problematic. Various researchers have used social skills training to treat different problematic behaviours, which range from social withdrawal (Akintunde, 2017); competence of female adolescents with deafness (Naini, Arshadi, & Hatamizadeh,, 2013): to foster interpersonal relationship (Ayodele, 2011); and to help a group of teens develop healthy social skills and relationships (Amadi and Anokwuru, 2024) among others.

Social skills training as a therapy has been used to enhance interpersonal relationships and prosocial behaviours among adolescents and the results have been far-reaching. For example, Ayodele (2011) in a study conducted on adolescents in Nigeria, came out with the findings that social skill training leads to positive improvement in interpersonal relationship among adolescents. Olanrewaju and Aliyu (2017) also affirm that there is a significant effect of social skills training on prosocial behaviour of adolescents. Also, in a study carried out by Schippers, Merillas and Marker, (2015) on social skill training, prosocial behaviour and aggression on incarcerated offenders, it was discovered that there is a significant rise in size of social understanding and social interaction of the participants. Thus, social skills training will give an adolescent the understanding of himself, others and his society at large (Ayodele, 2014).The present study established the effectiveness of social skills training on interpersonal relationship among senior secondary school students in Lagos State, Nigeria with family type as moderating variable.

1.1 Statement of the Problem

One of the stages of human development that affect later stages is the adolescence. Adolescent stage has been associated with turbulence and as a result of this, many of the adolescents' relationships have displayed maladaptive behaviours and disorders that always require psychological interventions. Such behaviours include vandalism, assault, examination malpractice, riots, unruly behaviours, bullying, fighting, disrespect for elders, lack of care for others, among others.

In today's society, adolescents are unable to manage interpersonal relationship among themselves in homes, schools and the community. They display lack of consideration and positive outcomes for others everywhere they are in all nations of the world, including Nigeria. One of the reasons most adolescents especially in secondary schools, find themselves in messy situations according to literature is their inability to manage their interpersonal relationship and their lack of prosocial behaviour.

A number of studies have been carried out using different therapies to enhance interpersonal relationship and prosocial behaviour among adolescents resulting in varying degrees of success. Yet the cases of negative interpersonal relationship and antisocial behaviour among adolescents remain endemic indicating that there is need for efforts towards providing necessary treatments.

Against this background, this study examined the effectiveness of social skills in strengthening senior secondary school students' interpersonal relationship. It also aimed to establish which of the two independent variables (transactional analysis and social skills training) is more potent in enhancing interpersonal relationship and prosocial behaviour among senior secondary school students in Lagos State. The study also examined the interaction effects of the moderating variables (family type) on senior secondary student's interpersonal relationships.

1.2 Objectives of the Study

This study aimed at using social skill trainings to strengthen or enhance positive interpersonal relationship among senior secondary students in Lagos State, Nigeria. The study set out to achieve two cardinal objectives:

- Investigate the effectiveness of social skill training on senior secondary school student's interpersonal relationship

- Determine whether the moderating role of family type would have effects on the experimental conditions.

1.3 Statement of Hypotheses

- There is no significant main effect of social skills (treatment) on interpersonal relationship among senior secondary school students in Lagos State.
- There is no significant main effect of family type on interpersonal relationship of senior secondary school students in Lagos State.

2. Methodology

2.1 Research Design

The study adopted a pretest-posttest control group experimental design. There were two rows consisting of one-treatment strategy of Social Skills Training (SST) and the control group. The researcher adopted a factorial design because of the fact that the design accomplishes in one experiment what otherwise might require two or more separate studies (Aron, Coups and Aron, 2013)

2.2 Population and Sample

The population for the study comprised all the adolescents in senior secondary 2 in Lagos State. The sample consisted of one hundred and twenty (120) senior secondary year two (SS 2) students who were selected by simple random sampling from two randomly selected public secondary schools in the three senatorial districts of the state. A sample of 120 students was chosen through the multi-stage random sampling technique. The first stage involved the use of stratified random sampling technique to select two local government areas from the twenty (20) local government areas in the three senatorial districts. This was done by writing the names of the LGAs on pieces of paper of equal size. They were folded equally and dropped into the three bowls tagged with the names of the senatorial districts. After thorough reshuffling of the contents of the bowls, the researcher picked one Local Government Area from each bowl. The local government areas picked from this process were Ifako-ijaye local government from Lagos West Senatorial District, and Ikorodu Local Government from Lagos East Senatorial District.

The second stage involved selecting a secondary school from each of the selected local government areas using simple random sampling technique. The same procedure employed in selecting the local

government areas was also followed in selecting the two secondary schools.

After obtaining permission from the school authority of each of the selected schools, the researcher, thereafter administered the prosocial behaviour questionnaires to all the senior secondary school (SS2) students. Only respondents who had low means scores in each of the selected school were selected as participants in the study. One school constituted the experimental group while the other school constituted the control school. The population of the study comprised of entire Senior Secondary School 2 in the public secondary schools in Lagos State. A total of one hundred and twenty (120) students were randomly selected from two co-educational schools. Their age ranged between fourteen (14) and nineteen (19) years. They were randomly assigned to SST and control. The alphabets A and B were written on separate slips, which were used in assigning the participants to the two the treatment group and the control group.

2.3 Instruments for Data Collection

The Multidimensional Relationship Questionnaire (MRQ), developed by Snell (1997) as a measure of psychological tendencies associated with interpersonal relationship, was adopted by the researcher. The MRQ contains 60 items rated on a five- point Likert-type scale with responses ranging from 1= not at all characteristic of me to 5 = very characteristic of me. Sample items on the scale include: “*I think about my relationships all the time*” and “*I feel nervous when I interact with others*”. The developer established the internal consistency reliability of the scale and reported a Cronbach’s alpha of .79. The construct validity of the MRQ has been demonstrated through significant positive relationship

with measures of social association (Adenuga & Ayodele, 2010) and psychological well-being (Fasasi & Oledikwa, 2007).

2.4 Procedure for Data Collection

The study was carried out in three stages as follows:

- (a): Pre-treatment stage involved a familiarization visit to the three selected schools, which focused on general introduction, establishment of rapport as well as administration of Multidimensional Relationship Questionnaire (MRQ) to all the SS2 students and also pretest to determine the baseline score. Also, a simple random sampling procedure was used to select 120 participants.
- (b) The treatment Session: The participants in the experimental group were subjected to eight (8) weeks of treatment programmes. The control group participated in pre and post-test sessions but was given placebo training on English language. The subjects in experimental group were subjected to Social Skills Training. The treatment has eight sessions of the therapy.
- (c) Post-treatment Session: This is the evaluation stage. At the end of the eight (8) weeks training, both the experimental and control groups were subjected to post-test using the same MRQ to see result arising from training.

2.5 Method of Data Analysis

Analysis of covariance (ANCOVA) was adopted to analyze data generated and to test the hypothesis at 0.05 significant level. The statistical tool was used to investigate the effect of the independent variable on the dependent variable and the control group.

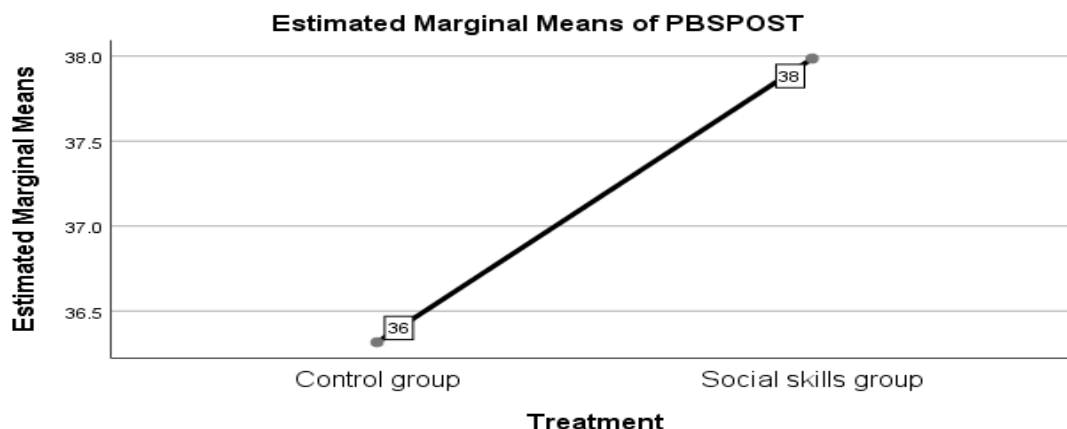
3. Results

There is no significant main effect of d social skills (treatments) on interpersonal relationship among senior secondary school students in Lagos State.

Table 1: Main effect of treatment

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared |
|-----------------|-------------------------|----|-------------|--------|------|---------------------|
| Corrected Model | 435.421 ^a | 6 | 72.570 | 1.824 | .101 | .092 |
| Intercept | 1386.100 | 1 | 1385.100 | 34.811 | .000 | .244 |
| PBSPRE | 125.406 | 1 | 125.406 | 3.152 | .079 | .028 |
| Treatment | 56.224 | 1 | 58.224 | 8.991 | .000 | 0.013 |

Table 1 reveals the F-value (5.386) for treatment which is significant at 0.05. It follows that there is a significant main effect of d social skills (treatments) on interpersonal relationship among senior secondary school students in Lagos State., The chart below shows the treatment that is better.



Covariates appearing in the model are evaluated at the following values: PBSPRE = 36.37

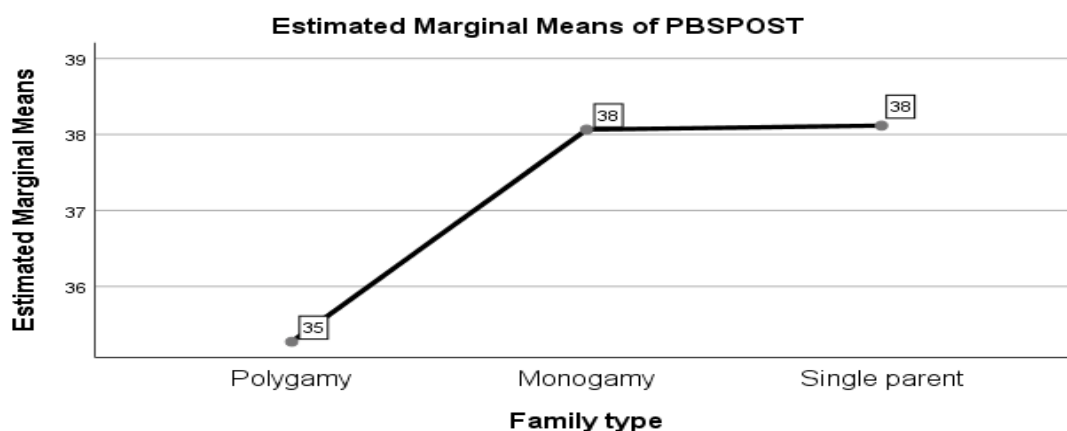
The chart shows that social skills group has better effect on interpersonal relationship with marginal mean (38.0) than the family type with marginal mean (36.0).

There is no significant main effect of family type on interpersonal relationship of senior secondary school students in Lagos State.

Table 2: Main effect of family type

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared |
|-----------------|-------------------------|----|-------------|--------|------|---------------------|
| Corrected Model | 435.421 ^a | 6 | 72.570 | 1.824 | .101 | .092 |
| Intercept | 1385.100 | 1 | 1385.100 | 34.811 | .000 | .244 |
| PBSPRE | 125.406 | 1 | 125.406 | 3.152 | .079 | .028 |
| FAMILY TYPE | 138.331 | 2 | 69.165 | 1.738 | .181 | .031 |

Table 1 reveals the F-value (1.738) for family type which is not significant at 0.05. It follows that there is no significant main effect of family type on interpersonal relationship of senior secondary school students in Lagos State. The partial eta square (0.031) which determines the effect size is very small, confirming the insignificant effect. Despite the insignificant effect, the chart below shows the family type that is better.



Covariates appearing in the model are evaluated at the following values: PBSPRE = 36.37

The chart shows that the marginal means increases from polygamy to monogamy and to single parent. It follows that the effect is more from single parents, followed by monogamy and polygamy the least.

4. Discussion

The result of the first hypothesis shows that there was a significant main effect of social skills training

(treatment) on interpersonal relationship of adolescents. From the result of the analysis and presented in table 1, this hypothesis could not be upheld. It was found that the treatment package, which

was social skills training, had significant effects on the participants' interpersonal relationship. The experimental groups outperformed the control group in terms of participant performance. This is mostly because the intervention program was introduced to the participants in the experimental group. In contrast, the members of the control group received no therapy at all and instead took part in activities that were unrelated to the exposures of the other participants. This means that social skills training had significant effect on the adolescents as evident in the post-test scores of interpersonal relationships of the experimental groups. This finding can be plausibly explained by the fact that the SST intervention helped the participants better understand themselves, express concern about their relationships with others, set realistic goals for themselves, and manage their lives, which improved interpersonal relationships and prosocial behaviors. This outcome also aligned with the findings of Akintunde (2017), who discovered that social skills training and transactional analysis significantly improve social withdrawal behavior in Nigerian adolescents. It is also concordant with Ayodele (2011) who reported that social skills training fostered interpersonal relationship of adolescents. This finding also corroborates the results of the work of Amadi & Anokwuru (2024) found out that social skills have significant effects on interpersonal relationship of pupils.

The result of the second hypothesis indicates there was no significant main effect of family type on interpersonal relationship of senior secondary school students in Lagos State. Table 2 revealed that since the hypothesis that there is no significant main effect of family type on interpersonal relationship of senior secondary school students in Lagos State. The hypothesis was confirmed. This means that family type status of adolescents did not influence the post experimental observation of their interpersonal relationship. Ugoji and Ebebuwa (2015) also revealed in a study that family type had no significant effect on the behavioural outcome of the adolescents.

The result is in agreement with the findings of Ella, et al (2015) and Onogeha (2015) in their separate studies, that the family type of the adolescents either, polygamy, monogamy or single parents, had no effects on the adolescents' relationships and behaviours. Nonetheless, the result negates the opinion of Ekechukwu (2018) Omoruyi (2014) who revealed that the environment of a child has a way of determining the future of such a child; that it lays the foundation for the moral, psychological and spiritual development of the child.

5. Conclusion

This study investigated the effectiveness of social skills training (SST) on interpersonal relationship of adolescents in Lagos State, Nigeria. The goal of the study was to determine how much social skills training techniques would help senior secondary school adolescents maintain positive relationships, develop sound personalities, and receive sound social support in their daily lives. It also went further to examine if family type would have moderating effects on the outcome of the study. The findings have demonstrated that the treatment plans can be effective in equipping adolescents with the necessary abilities to foster positive social interactions with other members of the community. As a result, these have the potential to improve and peacefully coexist with people around the world; however, interpersonal relationship was improved through the development of suitable social and communication skills.

6. Recommendations

As a result of these findings and conclusion reached, the following recommendations are made:

- Social skills training should begin in later childhood In order to help adolescents grow with it, become knowledgeable about it, and acquire the necessary skills for productive relationships.
- In accordance with the National Policy on Education, the government should immediately mandate that all public and private schools have access to professional school counsellors.
- Since social skills are the cornerstone of all other talents that young people need to succeed in life, the government should make them available. Therefore, it is necessary to support and encourage further scientific research in order to help adolescents succeed academically and socially.
- Experts in the field of Educational Psychology ought to step up its efforts to host conferences and seminars on the implications of this intervention as a successful strategy for improving interpersonal relationship in secondary school-aged adolescents.
- Establishing and/or participating in school volunteer service groups should be encouraged for students.

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Attitude and Level of Satisfaction of Student Teachers with the Teaching Practice Exercise in Nigerian Universities

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Abstract. Teaching practice is the backbone of training in teacher education. It provides the opportunity for would-be teachers to put into practice theoretical knowledge in real life teaching situations. The attitude of student teachers to teaching practice determines their behaviour and how teaching is considered as enjoyable or not. Likewise, their level of satisfaction with the teaching practice exercise serves as feedback for all stakeholders of the teaching practice committee and the teaching profession. This study investigated the attitude and level of satisfaction of student teachers with the teaching practice exercise in Nigerian Universities. This is a mixed-method research design, combining quantitative research of descriptive survey and qualitative research of thematic analysis. The population of the study consisted all final year education students in 2024/2025 session in three universities in Nigeria. Convenience sampling procedure was used to select a total sample of 348 respondents. Three research questions were answered, and three hypotheses were tested in this study. A researcher developed questionnaire administered through google forms was used in collection of data. The research questions were analyzed using descriptive statistics of mean and simple percentages, while the hypotheses were tested using inferential statistics of chi-square and independent t-test at 0.05 level of significance. The result revealed that most respondents have a positive attitude towards teaching practice. However, a majority of respondents have low level of satisfaction with respect to their level of preparedness, supervision expectation and institutional support during teaching practice. Also,

there seems to be no gender difference in attitude and level of satisfaction of student teachers with the teaching practice exercise. The study recommended among others, that teaching practice exercise orientation should be organized for student teachers for at least one month before the exercise in order to have ample time for preparation.

Keywords: Attitude, Level of Satisfaction, Student Teachers, Teaching Practice.

1. Introduction

Teaching practice is the backbone of training in teacher education. It is to teachers-trainee as industrial training is to the engineers, quantity surveyors, bankers and other practical oriented disciplines. It is a compulsory 6-unit course, that provides the opportunity for would-be teachers to put into practice knowledge gained in the classroom to real life teaching situations. It is a period where would-be teachers display and sharpen their pedagogy skills and imbibe the qualities and culture of the teaching profession. Student teachers are deployed or posted to schools for a significant period, a minimum of 12 weeks or more, to teach and be actively involved in all school and pedagogically related activities. These activities include but not limited to writing lesson notes and plan, morning assembly coordination, examination invigilation, open day, Parent-Teacher Forum meetings, extracurricular activities, developing teaching-aids, and class management.

Aiyedun (2020), submits that teaching practice is a practical oriented course where a student teacher is given the opportunity to take part in actual teaching and learning experience through guidance from qualified and experience teachers so as to prepare them for the real world of the teaching profession. They have the privilege to be mentored by on-site professional teachers called cooperating teachers. They are also assessed and given feedback in the following areas; lesson plan, classroom teaching, use of instructional resource, classroom management or control, teacher-trainee's personality and teaching evaluation procedure.

Teachers-trainee are not only recipient of pedagogical knowledge and skills. They are key stakeholders when policies and laws are to be considered with respect to their training and the future of the educational system of any country. The 4th goal in the SDGs on quality of education cannot be fully accomplished without due consideration on teachers and the training process. Hence, the attitude of student-teachers towards teaching practice, a compulsory component of their training must be studied. This is necessary because it serves as feedback in formulating and implementing policies that affects the posterity of the teaching profession.

Attitude determines behaviour. It determines a person's reaction towards an event, person, object, experience, idea or stimuli. This reaction may be favourable or otherwise. Favourable attitudes are associated with positive reactions as revealed by feelings and corresponding behaviour of satisfaction, happiness and enjoyment. Unfavourable attitude is associated with negative feelings and reactions like dislike, sadness, pessimism, anger and resentment towards the stimuli. Attitudes are important to be studied because it has a profound effect on school learning (Okoli, 2014). A student's attitude plays a role in how learning is perceived as pleasant or unpleasant (Okoli, 2014). Thus, studying student-teachers attitude teaching practice provides information as to whether teaching practice is considered pleasant or unpleasant.

Aiyedun (2020) opined that positive attitude helps teachers to develop an all-inclusive learners' friendly environment not just in the four walls of the classroom but in outdoor learning experiences. Individual's attitudes toward their profession appears to have effect on their performance and affect competencies and achievement. Student teachers' attitudes and level of satisfactions seem to depend on their experiences in the course of teaching practice. Some of the student teachers seem to exhibit negative attitude in various

ways like lateness to place of assignment, absenteeism, missing of periods, unattended classes, undated lesson note, interpersonal relationship challenge with cooperating teacher, and disappearance from school after supervision.

Many studies report that student-teachers generally hold positive attitudes toward teaching practice and consider it essential for professional development (Asiyai, 2016; Farauta & Amuche, 2013; Wanekezi, Okoli, & Mezieobi, 2011; Msangya, Mkoma, & Yihuan, 2016). Positive attitudes are often linked to stronger motivation and professional commitment, with teaching beliefs and self-efficacy serving as significant predictors of motivation to teach (Bas, 2021). However, findings are not entirely consistent, as some studies reveal negative attitudes among student-teachers depending on context and experiences (Ikitde & Ado, 2016). This suggests that attitudes toward teaching practice are shaped by situational and institutional factors rather than being inherently stable.

There seems to be an interconnection with students' attitude to teaching practice and level of satisfaction. It is easy to believe that positive attitudes to teaching practice exercise will translate to increased level of satisfaction with the exercise and vice versa. Research on student-teacher satisfaction indicates that it is a key indicator of practicum quality and programme effectiveness. Satisfaction has been associated with supervision quality, communication, and institutional support (Sađi, 2013). Studies also show that factors such as ICT competence, collaborative experience, and teacher-student relational dynamics influence satisfaction (Shonfeld, 2021; Rezaei et al., 2023). Despite these insights, much of the satisfaction in literature focuses on isolated predictors rather than examining how satisfaction interacts with attitudes and lived practicum experiences simultaneously.

A substantial portion of the literature highlights persistent challenges in teaching practice, including inadequate supervision, financial difficulties, poor placement processes, and limited instructional resources (Ekundayo, 2014; Mayowa, 2019; Msangya et al., 2016). Classroom management difficulties are repeatedly emphasized, often linked to the mismatch between theoretical preparation and real classroom demands (Mayowa, 2019). While Annan-Brew and Arhin (2022) present a more optimistic picture with minimal reported challenges, the broader consensus points to systemic issues in practicum organization. However, many of these studies rely heavily on quantitative surveys, offering limited insight into the nuanced personal experiences of student-teachers.

Another recurring recommendation in the literature is the need for microteaching, simulation, and structured orientation prior to practicum (Ekundayo, 2014; Wanekezi et al., 2011; Ikitde & Ado, 2016). While these recommendations are well documented, empirical studies evaluating student-teachers' perceptions of preparedness alongside their satisfaction and attitudes remain limited. Importantly, the literature shows inconsistencies regarding gender differences. Some studies report gender-based variations in attitudes and satisfaction, while others find none (Ikitde & Ado, 2016; Farauta & Amuche, 2013). This indicates the need for further context-specific investigation. Additionally, broader discussions on declining teacher prestige and retention (Kraft & Lyon, 2024; Westphal et al., 2024) suggest that early practicum experiences may play a role in shaping long-term career commitment, yet few studies explicitly link practicum satisfaction and attitudes to these broader professional concerns.

This study addresses several gaps in the literature. First, it integrates attitude, satisfaction, and lived experiences within a single framework, rather than examining them in isolation. Second, by adopting a mixed-methods approach, it captures both statistical trends and rich experiential data, thereby providing a more holistic understanding of teaching practice. Third, it offers context-specific evidence from Nigerian universities, where updated empirical data remain relatively limited. Fourth, it empirically examines the relationship between attitude and satisfaction, contributing evidence to an area that previous studies have often implied but rarely tested directly. Finally, the study clarifies the issue of gender differences within this context, adding to the ongoing debate in the literature.

Overall, this study extends existing knowledge by providing a more integrated, contextually grounded, and empirically tested perspective on student-teachers' teaching practice experiences in Nigeria.

1.1 Statement of Problem

Teaching practice is an important part of teacher training in Nigerian universities. It allows student teachers to gain real-life experience by applying what they have learned in class to actual teaching in schools. However, many student teachers face challenges during teaching practice, such as poor preparation, lack of support from their universities, limited teaching materials, and poor supervision. These issues can affect how they feel about the experience and whether they are satisfied with it.

Some student teachers develop a positive attitude and feel satisfied with the teaching practice, while others feel frustrated and unsupported. This can affect how well they perform and even their interest in becoming teachers. Although teaching practice is a key part of becoming a good teacher, there is still not enough information about how student teachers in Nigerian universities truly feel about it.

It is important to study their attitudes and level of satisfaction so that universities can improve the way teaching practice is organized and supported. This will help ensure that student teachers are better prepared and more confident when they enter the teaching profession.

1.2 Purpose of the Study

The main purpose of the study was to investigate the attitude and level of satisfaction of student teacher to the teaching practice exercise in Nigeria. Specifically, the study sought to:

- determine the attitude of student teachers towards the teaching practice exercise in Nigeria.
- investigate student teachers' satisfaction towards the teaching practice exercise in Nigeria
- explore students' positive and negative experiences during the teaching practice exercise
- examine the association between attitude and level of satisfaction of student teachers to the teaching practices exercise in Nigeria.
- examine gender difference in the satisfaction of student's teacher to the teaching practice exercise in Nigeria.
- examine gender difference in attitude of student's teacher to the teaching practice exercise in Nigeria.

1.3 Research Questions

- What is the attitude of student's teachers towards the teaching practice exercise in Nigeria?
- Are student teachers satisfied with the teaching practice exercise in Nigeria?
- What were students' positive and negative experiences during the teaching practice exercise?

1.4 Research Hypotheses

- There is no significant association between the attitude and level of satisfaction of student teachers to the teaching practice exercise in Nigeria.
- There is no significant gender difference in the satisfaction of student’s teacher to the teaching practice exercise in Nigeria.
- There is no significant gender difference in attitude of student’s teacher to the teaching practice exercise in Nigeria.

2. Methodology

2.1 Research Design

This study employed a mixed-methods approach to investigate the attitude and level of satisfaction of student teachers to the teaching practice exercise in Nigeria. Thematic analysis was used as a qualitative approach to investigate students’ positive and negative experiences during the teaching practice exercise in an open-ended response format, while descriptive survey research design was used as a quantitative approach to investigate the attitude and satisfaction to the teaching practice exercise, as well as to determine the association between their attitude and level of satisfaction.

2.2 Sample and Sampling Technique

The sample for this study consisted 348 students, comprising 132 males and 216 females gotten through convenience sampling technique from three Nigerian

universities. This entails collecting data from respondents based on their availability and willingness to participate in the study.

2.3 Research Instrument

Data for this study were collected using a questionnaire titled Attitude and Level of Satisfaction of Student Teachers to Teaching Practice Questionnaire (ALSSTTPQ) administered via Google Forms. The questionnaire was designed to capture the demographic information, attitude and satisfaction of students to teaching practice exercise. Two Open ended statements related to students' positive and negative experiences during teaching practice were also included in the instrument to gather qualitative responses regarding their experiences. Students were able to openly express themselves in words, which helped to foster a better understanding of their viewpoints and experiences.

2.4 Data Analysis

Research question 1 was analysed using simple percentage and frequency counts portrayed in bar chart. Research question 2 was analysed using simple percentage and frequency counts. The response to each statement on students’ satisfaction with respect to their preparedness, institutional support and ability to meet their supervisors’ expectation was presented in a table using frequency counts and simple percentage. Research question 3 was analysed using thematic analysis. Hypothesis 1 was analysed using chi-square, while hypotheses 2 and 3 was analysed using independent samples t-test

3. Result

Research Question 1: What is the attitude of student’s teachers towards teaching practice in Nigeria?

Figure 1: Attitude of student’s teachers towards teaching practice in Nigeria

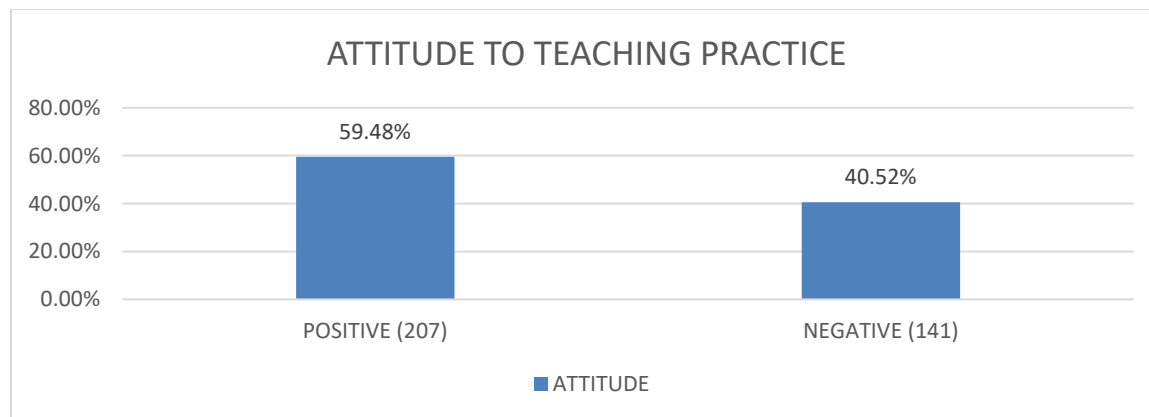


Figure 1 reveals that a preponderance of respondents (59.48%) has a positive attitude to the teaching practice exercise, while 40.52% have a negative attitude towards teaching practice.

Research Question 2: Are student teachers satisfied with the teaching practice exercise in Nigeria?

Table 1: Student’s Satisfaction with Teaching Practice

| Statement | | Very Satisfied | Satisfied | Dissatisfied | Very Dissatisfied |
|---|--------|----------------|--------------|--------------|-------------------|
| Students’ Satisfaction with Preparedness Teaching Practice | 348 | | | | |
| How satisfied are you with your financial readiness for teaching practice? | N % | 103 29.60 | 162 46.55 | 60 17.24 | 23 6.61 |
| How satisfied are you with your readiness to teach? | N % | 152 43.68 | 171 49.14 | 24 6.89 | 1 0.29 |
| How satisfied are you with your readiness to use instructional materials and teaching aid? | N % | 161 46.27 | 172 49.42 | 12 3.45 | 3 0.86 |
| How satisfied are you with your mental readiness for teaching practice? | N % | 132 37.93 | 177 50.86 | 34 9.77 | 5 1.44 |
| How satisfied are you with your readiness to assess student’s learning? | N % | 161 46.27 | 172 49.42 | 11 3.16 | 4 1.15 |
| How satisfied are you with your readiness to write lesson plan? | N % | 136 39.08 | 176 50.57 | 26 7.47 | 10 2.87 |
| How satisfied are you with your preparedness for classroom management? | N % | 156 44.82 | 171 49.14 | 16 4.60 | 5 1.44 |
| Satisfaction with Institutional Support | | | | | |
| I’m satisfied with the orientation organised by my university before the teaching practice | N % | 155 44.54 | 164 47.13 | 19 5.46 | 10 2.87 |
| I’m satisfied with the organization of the placement process into schools | N % | 126 36.21 | 184 52.87 | 29 8.33 | 9 2.59 |
| I’m satisfied with the school I was posted for teaching practice. | N % | 155 44.54 | 161 46.26 | 21 6.03 | 11 3.16 |
| I’m satisfied that my university communicated effectively with the host school concerning my placement | N % | 120 34.48 | 189 54.31 | 27 7.76 | 12 3.45 |
| I’m satisfied with the emotional support by my institution during the teaching practice | N % | 116 33.33 | 171 49.14 | 46 13.22 | 15 4.31 |
| My institution provided financial support during my teaching practice | N % | 50 14.37 | 82 23.56 | 99 28.45 | 117 33.62 |
| I’m satisfied with the overall support provided by my institution during teaching practice | N % | 78 22.41 | 178 51.15 | 62 17.82 | 30 8.62 |
| Satisfaction with Supervisor’s Expectation | | | | | |
| I am satisfied that I met my supervisor’s expectation in my Lesson Plan. | N % | 144 41.38 | 176 50.57 | 23 6.61 | 5 1.44 |
| I am satisfied that I met my supervisor’s expectation in Classroom Management | N % | 137 39.37 | 191 54.89 | 15 4.31 | 5 1.44 |
| I am satisfied that I met my supervisor’s expectation in classroom teaching | N % | 132 37.93 | 196 56.32 | 16 4.60 | 4 1.15 |
| I am satisfied that I met my supervisor’s expectation in Mastery of subject content. | N % | 127 36.49 | 192 55.17 | 26 7.47 | 3 0.86 |
| I am satisfied that I met my supervisor’s expectation with the integration of instructional resources | N % | 132 37.93 | 192 55.17 | 20 5.75 | 4 1.15 |
| I am satisfied that I met my supervisor’s expectation Professional appearance and demeanor | N % | 131 37.64 | 192 55.17 | 22 6.32 | 3 0.86 |
| I am satisfied that I met my supervisor’s expectation with respect to evaluation of students’ learning in the classroom | N % | 143 41.09 | 194 55.75 | 10 2.87 | 1 0.29 |

The satisfaction of student teachers was examined in three areas; readiness or preparedness for teaching practice, institutional support, and supervisors' expectations. The result in table 1 reveals that students reported high levels of satisfaction with their readiness for teaching practice. A large number of respondents were either satisfied or very satisfied with their readiness to teach (92.82%), use instructional materials and teaching aids (95.69%), assess students' learning (95.69%), and write lesson plans (89.65%). Mental readiness also attracted a high level of satisfaction with 88.79% of respondents indicating satisfaction. However, financial readiness had comparatively lower satisfaction rates, with only 76.15% satisfied or very satisfied, and 23.85% expressing dissatisfaction or strong dissatisfaction. This suggests that financial constraints posed a significant challenge to student teachers.

Regarding institutional support, students expressed moderate to high satisfaction in areas such as pre-practice orientation (91.67%), the school placement process (89.08%), and the university's communication with host schools (88.79%). Nevertheless, satisfaction was lower concerning emotional and financial support. Only 56.90% were satisfied with emotional support from their institutions, while a larger portion (62.07%) expressed dissatisfaction with the financial support received. This indicates a perceived lack of adequate institutional support in emotional and monetary aspects during the teaching practice.

The majority of students reported being satisfied with how well they met their supervisors' expectations in various teaching competencies. For example, more than 90% of students felt they met expectations in classroom teaching (94.25%), lesson planning (91.95%), classroom management (94.26%), subject mastery (91.66%), use of instructional resources (93.10%), professional appearance and conduct (92.81%), and evaluating students' learning (96.84%). These findings point to a strong sense of preparedness and achievement among the student teachers in fulfilling supervisor expectations.

Research Question 3: What were students' positive and negative experiences during the teaching practice exercise?

Positive experiences

Thematic analysis was used to categorize students' positive experiences in to seven themes; professional growth and skill development, building relationships, confidence and personal development, positive teaching environment, engagement in extracurricular

activities, application of theoretical knowledge and inspiration for future career. This is presented below:

Professional Growth and Skill Development

Student teachers reported gaining practical or hands-on experience in lesson planning, classroom management, and using instructional materials. Many mentioned that they learned a lot from mentors (cooperating teachers and other staffs) and developed skills like multitasking, public speaking, and time management. Here are some statements by the students:

"I gained more knowledge on how to manage a class effectively..."

"I am pleased with my mentor... he helped me build more confidence about teaching."

Building Relationships

A prominent theme across responses was building relationship with students, staff, and other student teachers. Many saw these relationships as sources of joy and support. Here are some statements by the students:

"I created strong relationships with my students..."

"I loved the school activities and teachers. Also, it was fun interacting with the students."

Confidence and Personal Development

Teaching practice boosted students' self-esteem and courage. Students who feared public speaking or teaching crowds said they became bolder and more self-assured. Comments like;

"Before my teaching practice, I had phobia... but now I'm bold and encouraged."

"It boosted the confidence in me." was expressed by some students.

Positive Teaching Environment

Many described the school environments as welcoming and conducive to teaching. Staff cooperation, availability of resources, and overall support enhanced their experiences. Here are some statements by the students:

"The school was well organized... the students and staff were accommodating."

"The environment was conducive for teaching and learning to take place."

Engagement in Extracurricular Activities

Some students expressed that participation in non-academic roles like organizing debates, sporting events, and morning assemblies helped them feel integrated and capable.

"I was entrusted with organizing inter-house sports... it boosted my confidence."

"It gave me an opportunity to participate in extracurricular activities like sports."

Application of Theoretical Knowledge

Several respondents highlighted how teaching practice helped in applying knowledge gained from university coursework in real-life teaching situations:

"I was able to put everything I learnt in class into practice."

"It really helps put my theoretical knowledge into well attainable practice."

Inspiration for Future Career

Few students expressed that teaching practice strengthened their desire to pursue teaching or counselling as a profession. Here are some statements by the students:

"It increases my motivation to be a teen counsellor."

"It inspired me to become a lecturer someday."

Negative experiences

Thematic analysis was used to categorize students' negative experiences in to eight themes; financial and logistical challenges, placement and institutional support issues, supervision and assessment concerns, student behaviour and classroom management, inadequate facilities and resources, lack of orientation and preparation, psychological and physical stress and equity and fairness in policy implementation. These themes are briefly explained below:

1. Financial and Logistical Challenges

A dominant theme in the responses is the lack of financial support, long commuting distances, and accommodation issues. These caused stress, especially for students posted far from home or who had to relocate. Here are some statements by the students:

"We were not even getting paid... how are we supposed to pay for transportation?"

"Posting me to a very distant school from Ago (Ijebu Igbo)"

"Cost of transportation is expensive."

2. Placement and Institutional Support Issues

Many respondents criticized the school placement process, claiming it lacked transparency, fairness, or student input. Some schools were unprepared or unwelcoming. Here are some statements by the students:

"The school I was posted to just used us... most of the teachers weren't willing to communicate or work with

us."

"Students were not considered in the school selection process."

3. Supervision and Assessment Concerns

There were many complaints about late, infrequent, or biased supervision, as well as unfair grading practices. Here are some statements by the students:

"Late supervisor."

"Some students bribed at the point of presentation while others didn't undergo thorough assessment."

"Supervisors don't give good marks."

4. Student Behaviour and Classroom Management

Some student teachers faced difficult or undisciplined students, which made teaching frustrating. Here are some statements by the students:

"The students are very rude and stubborn."

"Some classes are over-crowded which might hinder effectiveness of learning."

5. Inadequate Facilities and Resources

Respondents noted shortage of teaching materials, uncondusive classrooms, and lack of space or furniture. Here are some statements by the students:

"Limited availability of teaching materials and resources."

"Not enough places for the teaching practice students to sit down."

6. Lack of Orientation and Preparation

Some participants felt underprepared due to poor communication or lack of training, especially in using psychological assessment tools or writing lesson plans. Here are some statements by the students:

"We were not taught how to use some of the psychological test materials."

"Proper orientation was not given before posting."

7. Psychological and Physical Stress

The teaching practice was reported to be physically exhausting, mentally draining, and emotionally taxing, especially with combined academic workload. Here are some statements by the students:

"Balancing teaching practice with academic responsibilities can be stressful."

"I was so stressed I had to borrow money to go to my teaching school."

8. Equity and Fairness in Policy Implementation

Some students questioned unequal treatment in grading, expectations, and location assignments. Here are some statements by the students:

"Students that got rejected from their posted schools had to undergo a very stressful process for reposting."

"Some students bribed at the point of presentation."

Hypotheses Testing

Hypothesis 1: There is no significant association between the attitude and level of satisfaction of student teachers to the teaching practice exercise in Nigeria.

Table 2: Cross-tabulation of Attitude and Satisfaction

| | High Satisfaction | Low Satisfaction | Total |
|-------------------|-------------------|------------------|------------|
| Negative attitude | 120 | 21 | 141 |
| Positive attitude | 198 | 9 | 207 |
| Total | 318 | 30 | 348 |

Table 2 is a cross-tabulation between students' attitudes (positive or negative) and their satisfaction levels (high or low).

Table 3: Chi-square analysis on attitude and satisfaction about teaching practice

| | N | Mean | SD | df | χ^2_{cal} | χ^2_{tab} |
|-------------------------------|-----|-------|------|----|----------------|----------------|
| Attitude to teaching Practice | 348 | 25.92 | 3.24 | 1 | 10.54 | 3.84 |
| Level of Satisfaction | | 30.38 | 3.91 | | | |

Table 3 reveals that a χ^2 value of 10.54 resulted as the association between students' attitude and level of satisfaction to teaching practice. This value is greater than the critical tabled value of 3.84 given 1 degree of freedom at 0.05 level of significance. Thus, the null hypothesis that states that there is no significant association between the attitude and level of satisfaction of student teachers to the teaching practice exercise in Nigeria is rejected. This implies that the chi-square test result was statistically significant, indicating that students' attitudes are significantly associated with their satisfaction levels. Students with positive attitudes were more likely to report high satisfaction.

Hypothesis 2: There is no significant gender difference in the satisfaction of student's teacher to the teaching practice exercise in Nigeria.

Table 4: Independent samples t-test analysis on satisfaction scores between male and female students

| | N | Mean | SD | Df | t-cal | p-value |
|--------|-----|-------|------|-----|-------|---------|
| Male | 132 | 30.64 | 4.04 | 346 | 0.96 | 0.33 |
| Female | 216 | 30.22 | 3.81 | | | |

An independent samples t-test was conducted to determine whether there was a significant difference in satisfaction scores. The t-test showed no statistically significant difference in satisfaction levels between male and female students, $t(df) = 0.95, p = .342$. Thus, gender does not appear to influence satisfaction.

Hypothesis 3: There is no significant gender difference in attitude of student's teacher to the teaching practice exercise in Nigeria.

Table 5: Independent samples t-test analysis on attitude scores between male and female students

| | N | Mean | SD | Df | t-cal | p-value |
|--------|-----|-------|------|-----|--------|---------|
| Male | 132 | 25.63 | 3.33 | 346 | -1.309 | 0.817 |
| Female | 216 | 26.10 | 3.20 | | | |

An independent samples t-test was conducted to examine gender differences in attitude scores.

The result indicated no significant gender difference in attitude scores.

4. Discussion of Findings

The present study examined the attitude and level of satisfaction of student-teachers with the teaching practice exercise in Nigerian universities. The findings provide important insights into how student-teachers perceive and experience teaching practice, and how these perceptions align with existing literature.

The study revealed that a majority of student-teachers exhibited a positive attitude toward teaching practice. This suggests that most student-teachers value teaching practice as a meaningful component of their professional preparation. This finding aligns with earlier studies which reported generally positive attitudes toward teaching practice among pre-service

teachers (Asiyai, 2016; Farauta & Amuche, 2013). These studies similarly observed that student-teachers recognize teaching practice as an opportunity to gain real-life classroom experience and develop professional skills. However, the existence of a considerable proportion of student-teachers with negative attitudes indicates that not all trainees experience teaching practice positively. This supports Ikitde and Ado (2016), who found that some student-teachers hold negative attitudes toward teaching practice, often influenced by the conditions under which the exercise is conducted.

Regarding satisfaction, the findings showed that while student-teachers reported high satisfaction with their personal preparedness (readiness to teach, lesson planning, use of instructional materials, and assessment skills), their satisfaction was lower in areas related to financial readiness, emotional support, and institutional financial support. This implies that although universities may be preparing student-teachers academically and pedagogically, the welfare and support structures surrounding teaching practice may be inadequate. This finding is consistent with Msangya, Mkoma, and Yihuan (2016), who highlighted funding constraints and logistical challenges as major concerns during teaching practice. Similarly, Ekundayo (2014) emphasized that inadequate preparation and lack of structured support reduce the quality of teaching practice experiences.

The dissatisfaction with financial support is particularly noteworthy. Teaching practice often requires transportation, accommodation, and procurement of teaching materials, which may impose financial strain on student-teachers. When these costs are borne largely by students, it can create stress and reduce overall satisfaction. This may explain why some student-teachers develop less favorable perceptions of the exercise despite its professional value.

The findings also showed high satisfaction with meeting supervisors' expectations. Most student-teachers believed they performed well in lesson planning, classroom teaching, classroom management, and subject mastery. This reflects a sense of competence and self-efficacy among the trainees. Bas (2021) found that self-efficacy and positive teaching beliefs significantly predict motivation to teach, suggesting that when student-teachers feel capable, their professional commitment increases. However, qualitative responses in the present study revealed complaints about inconsistent supervision, lateness, and perceived bias in grading. This mirrors Mayowa (2019), who found that

supervisory problems significantly affect student-teachers' performance. The dual finding high perceived competence but concerns about supervision suggests that while student-teachers may feel capable, the supervisory process itself may not always be perceived as fair or supportive.

The qualitative findings further enrich the discussion. Positive experiences such as professional growth, confidence development, relationship building, and application of theoretical knowledge confirm that teaching practice fulfills its core purpose as a bridge between theory and practice. These outcomes support experiential learning principles and echo Wanekezi, Okoli, and Mezieobi (2011), who advocated for practical exposure and microteaching to strengthen teaching competence.

On the other hand, negative experiences such as financial hardship, poor placement processes, inadequate facilities, student misbehavior, and psychological stress highlight systemic issues in the organization of teaching practice. These findings align strongly with Mayowa (2019) and Ekundayo (2014), who both identified classroom management difficulties, inadequate facilities, and insufficient preparation as major challenges. The reported gap between theoretical preparation and real classroom realities further supports the argument for more simulated teaching experiences before actual school placement.

The hypothesis testing revealed a significant association between attitude and satisfaction. This indicates that student-teachers with positive attitudes are more likely to report higher satisfaction levels. This finding is theoretically meaningful because attitude influences perception and engagement. Tang and Hu (2022) noted that negative educational experiences and poor teacher attitudes can lead to demotivation. By extension, positive attitudes may enhance satisfaction and resilience during teaching practice.

The study also found no significant gender differences in attitude and satisfaction. This aligns with Ikitde and Ado (2016), who similarly found no gender-based attitudinal differences. This suggests that teaching practice experiences and perceptions may be shaped more by institutional and contextual factors than by gender.

Overall, the findings suggest that teaching practice in Nigerian universities is valued by student-teachers and contributes significantly to their professional growth. However, structural issues particularly financial

support, supervision quality, and placement logistics reduce satisfaction. These gaps indicate that improving the support system surrounding teaching practice may enhance both attitude and satisfaction, ultimately leading to better teacher preparation outcomes.

5. Conclusion

This study examined the attitude of student teachers toward teaching practice in Nigeria, their level of satisfaction with various aspects of the teaching practice experience, and the influence of gender and attitude on satisfaction. The findings revealed that student teachers generally possessed positive attitudes toward teaching practice and reported high levels of satisfaction across multiple domains, particularly in preparedness, institutional support, and supervisor expectations. However, financial support from institutions emerged as a significant area of dissatisfaction.

Statistical analysis confirmed a significant association between students' positive attitudes and their satisfaction with the teaching practice, indicating that fostering a positive mindset among student teachers could enhance the overall practicum experience. Meanwhile, gender did not significantly influence either satisfaction or attitude, suggesting equitable experiences among male and female student teachers.

The implications of these findings underscore the importance of maintaining quality teacher education programs that not only build pedagogical competencies but also provide strong institutional and emotional support. However, the persistent issue of inadequate financial support must be addressed, as it can negatively affect students' engagement and overall experience.

6. Implications for Counselling

The study shows that counselling services are very important in Nigerian universities, especially in faculties of education. Counselling units should support student teachers before, during, and after teaching practice, as real classroom teaching can be stressful. Counsellors should be involved in planning and running the teaching practice orientation programme. Before teaching practice, counsellors can help student teachers develop a positive mindset by preparing them for what to expect, reducing stress, and building self-confidence through activities such as group discussions and role-playing. Counselling also supports students' personal and professional growth by helping them manage emotions, behave

professionally, relate well with others, understand learners' needs, and handle classroom challenges.

During the orientation period, counsellors can collaborate with experienced teachers, principals, and supervisors to provide mentorship and career guidance, helping student teachers remain motivated and view teaching as a meaningful career. After teaching practice, counselling can help student teachers reflect on their experiences, address challenges, and improve future performance. Overall, counselling plays a key role in making teaching practice orientation successful by supporting student teachers emotionally, mentally, and professionally, and by producing confident, responsible, and well-prepared teachers.

7. Recommendations

Based on the findings, the following recommendations are offered:

Enhance Financial Support for Student Teachers: Institutions and education policymakers should prioritize financial assistance schemes or stipends for student teachers during teaching practice. This will not only alleviate financial stress but also improve students' focus, morale, and engagement in the field.

Strengthen Pre-Practicum Orientation and Mentorship Programs: While orientation programs were rated positively, they should be further enhanced to include realistic simulations, hands-on workshops, and emotional readiness sessions. Experienced mentors should be assigned to provide consistent guidance throughout the practicum.

Sustain and Improve Supervisor-Student Communication: High satisfaction with supervisors' expectations suggests a strong support system. Institutions should continue to train supervisors on how to provide constructive feedback and maintain professional but supportive relationships with student teachers.

Encourage Positive Attitude Formation through Counselling and Motivation: Given the significant association between attitude and satisfaction, universities should offer regular motivational talks, counselling support, and reflective learning sessions that promote confidence, adaptability, and a growth mindset among student teachers.

Policy Enforcement for Equitable Placement and Institutional Involvement: Universities should ensure equitable, transparent, and well-organized school placements and follow-up visits. Stronger collaboration between institutions and host schools is essential for reinforcing the value of the teaching practice experience.

Further Research on Teaching Practice

Challenges: It is recommended that future studies investigate other possible barriers to satisfaction during teaching practice, such as workload, peer collaboration, school environment, or regional differences, in order to further refine practicum frameworks.

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Multimodal Digital Semiotics and Artificial Intelligence in Technology-Enhanced Teacher Education: Implications for Meaning-Making, Communication, and Educational Management among Undergraduates in Oyo State Universities

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Abstract. The rapid convergence of multimodal digital environments and Artificial Intelligence (AI) technologies is reshaping teacher education globally. This study examines how multimodal digital semiotics and AI-driven tools influence meaning-making processes, communication patterns, and educational management practices among undergraduate teacher trainees in universities in Oyo State, Nigeria. The study adopted the survey research design of the correlational type. Simple random sampling was used to select 150 200 Level students of Educational Management of Faculty of Education from University of Ibadan and Lead City University. In all, a total of 150 students of Educational Management participated in the study. Two research instruments were used for data collection. They are Students' Perception of AI-Enhanced Multimodal Digital Platforms, Questionnaire ($r=.78$) Questionnaire on Students' Attitude to AI-Enhanced Multimodal Digital Platforms, Questionnaire ($r=.76$). Data collected were analysed using descriptive statistics of percentage, mean, standard deviation and inferential statistics of t-test was used to test the hypotheses at 0.05 level of significance. Findings of the study revealed a weighted mean of 2.67 which is greater than the threshold set at 2.50. Also, the result indicated a weighted mean of 2.56 which is greater than the threshold set at 2.50. The result indicates that there was no significant difference between male and female undergraduates' perception about AI-enhanced multimodal digital platforms ($t = -.411$; $df=148$; $p>0.05$). It showed that there was no significant difference between male and female undergraduates' attitude to AI-enhanced multimodal digital platforms

($t = .414$; $df=148$; $p>0.05$). Based on the findings of this study, it was recommended that universities should make significant investments in strong digital infrastructure and consistently update AI-enhanced multimodal platforms. Also, to improve pedagogical competency in the use of AI-driven learning technologies and digital literacy, regular training sessions and workshops should be planned.

Keywords: Multimodal digital semiotics, Artificial Intelligence, teacher education, meaning-making, educational management, technology-enhanced learning, Nigeria

1. Introduction

Global academic systems are redefining their pedagogical architectures, communicative ecologies, epistemological orientations, and institutional governance structures as a result of the higher education sector's rapid digital revolution. Teaching and learning at modern universities are being redesigned as dynamic, data-driven, multimodal processes embedded in intricate technological ecosystems, going much beyond the simple digitisation of pre-existing instructional resources. Interactive environments that coordinate language, visual, audio, spatial, and computational resources into integrated meaning-making systems are gradually replacing the conventional paradigm of text-dominant knowledge transmission. The quick integration of artificial intelligence (AI), such as conversational agents, generative AI systems, automated assessment engines, intelligent tutoring systems, adaptive learning

platforms, and predictive learning analytics, exacerbates these environments even more (Holmes et al., 2022; Zawacki-Richter et al., 2019; UNESCO, 2023).

This shift represents a significant shift in higher education's epistemology as well as technological innovation. Algorithms, platforms, and data infrastructures actively shape educational experiences in increasingly co-constructed socio-technical assemblages, where knowledge production, dissemination, validation, and governance are no longer solely the domain of human players. According to Selwyn (2022), digital education needs to be viewed as a reorganisation of power, agency, and knowledge authority inside institutional systems as well as a change in pedagogy. AI systems have a growing impact on the selection, sequencing, filtering, and personalisation of these semiotic resources in digitally mediated learning settings. Content paths are curated by recommendation algorithms, evaluative discourse is produced by automated feedback engines, explanatory texts and visualizations are created by generative AI tools, and patterns that influence instructional decisions are found by predictive analytics. In this way, AI becomes a semiotic actor that contributes to the creation and dissemination of meaning rather than only aiding in learning. Thus, algorithmic agency, where computational systems impact discourse production and interpretative paths, becomes a part of the semiotic landscape of higher education.

This viewpoint is supported by recent research on digital epistemology and algorithmic governance. Datafication, according to Williamson and Eynon (2020), turns instructional communication into measurable patterns that allow for new kinds of institutional monitoring and decision-making. In a similar vein, Perrotta and Selwyn (2020) argue that AI-driven personalisation imperceptibly transfers control from teachers to computer systems, redefining pedagogical authority. Therefore, it is necessary to analyse multimodal digital semiotics in AI-enhanced contexts as a site of power negotiation and institutional reconfiguration in addition to being a communication phenomenon. Recent studies, however, indicate that scaffolding mediated by AI adds new complexity to human-machine interaction. According to Holmes et al. (2022), intelligent tutoring systems can improve student performance and engagement, but they can also change the ways in which students and teachers communicate. Communicative norms and interpretive techniques are altered as the locus of feedback moves from interpersonal speech to algorithmic reaction. This shift has significant ramifications for teacher

education since it socializes aspiring teachers to both electronically mediated communication cultures and pedagogical theories, in which artificial intelligence functions as a co-educator.

In this digital revolution, teacher education holds a special strategic place. Universities, who are in charge of training future teachers, must simultaneously incorporate new technology and consider their pedagogical, ethical, and administrative ramifications. Competencies in multimodal literacy, digital pedagogy, data literacy, and AI awareness are essential for modern teacher preparation (Tondeur et al., 2021; Redecker, 2022). In addition to using AI-enhanced technologies, pre-service teachers need to be able to assess their sociocultural ramifications, ethical constraints, and semiotic affordances. This requirement has become much more pressing after 2022 with the advent of generative AI systems. Academic integrity, authorship, and assessment authenticity are all challenged by tools that may create essays, lesson plans, feedback reports, and multimedia content. Assessment methods must therefore be rethought in teacher education programs to emphasise ethical reasoning, reflective practice, and critical AI literacy in addition to technical proficiency. Through this reorientation, teacher education is positioned as a transformative space where new governance models, communication techniques, and epistemologies are discussed and formalised.

In Nigeria, post-pandemic technical demands, national policy changes, and pressures from globalization have all contributed to an acceleration of the digital transformation of higher education. Learning management systems, virtual classrooms, and digital collaboration platforms were widely adopted by universities as a result of the COVID-19 disruption. Universities like Lead City University and the University of Ibadan in Oyo State have increased their investments in multimedia teaching technology, AI-supported evaluation systems, and blended learning infrastructures. These changes are part of larger continental initiatives to bring African higher education into line with international digital trends (UNESCO, 2023). Nevertheless, pedagogical change is not always the result of infrastructure integration. Research conducted in sub-Saharan Africa reveals enduring issues such as unequal access to devices, uneven digital literacy, intermittent internet connectivity, and insufficient institutional support (Czerniewicz et al., 2021). Therefore, despite the growing visibility of AI-enabled multimodal platforms, little is known about how they affect semiotic practices, communication ecologies, and

educational administration structures in teacher education programmes.

AI-powered technologies are changing institutional governance in ways that go beyond classroom interaction. Data-driven insights that guide policy implementation and resource allocation are produced by learning analytics dashboards, automated admission systems, predictive retention models, and performance monitoring tools. This change is conceptualized by Williamson (2017) as the rise of "algorithmic governance" in education, as data infrastructures increasingly mediate decision-making processes. Complex ethical and equity issues are also brought about by the combination of AI with multimodality. Stories of technological advancement are complicated by algorithmic prejudice, data privacy difficulties, intellectual property issues, and inequities in digital literacy (Holmes et al., 2022; Selwyn, 2022). AI-enhanced learning may both increase access and perpetuate exclusion in environments marked by infrastructural inequality. Existing educational disparities may be widened if students with poor digital skills or poor connectivity find it difficult to interact with multimodal AI systems.

Furthermore, issues with accountability and openness in educational administration are brought up by the opacity of algorithmic decision-making. In order to minimize technological determinism and protect learner rights, UNESCO's 2023 guidance on generative AI in education highlights the necessity of human oversight, ethical frameworks, and inclusive design principles. In order to ensure that the deployment of AI is consistent with democratic educational norms and social justice commitments, teacher education institutions must strike a balance between innovation and critical governance. There is still a substantial contextual gap regarding the semiotic and managerial aspects of AI integration in Nigerian institutions, especially in teacher education, despite the growing body of international study on AI in higher education. Previous research frequently focuses on adoption rates, technological efficiency, or academic performance outcomes, paying little attention to how multimodal digital environments alter governance structures, interpretive practices, and communication exchanges. Furthermore, there aren't many empirical studies that explore how algorithmic systems affect discourse practices in African higher education environments or challenge AI as a semiotic actor in meaning-making processes. In addition to advancing digital semiotics theory, closing this gap is crucial for guiding practice and policy in quickly digitising educational systems. In light of this, the current study examines how multimodal digital

semiotics and artificial intelligence connect with technology-enhanced teacher education, with a particular emphasis on undergraduate programs at Oyo State universities.

1.1 Statement of the Problem

The quick development of multimodal digital platforms and artificial intelligence (AI) in higher education has had a profound impact on institutional management structures, meaning-making processes, and instructional communication. To assist instruction, evaluation, and administrative decision-making, universities are rapidly implementing AI-enhanced learning management systems (LMS), adaptive platforms, generative tools, and learning analytics dashboards. These systems alter how knowledge is created, interpreted, conveyed, and managed in academic settings; they do more than just digitise conventional methods. Although AI integration in higher education has been the subject of significant global scholarship, the majority of the work that is now available focuses on automation, performance outcomes, or technological efficiency.

As semiotic places where linguistic, visual, auditory, and algorithmic resources converge, undergraduate teacher candidates' perceptions of these AI-mediated multimodal settings have received less study, especially in Nigerian universities. For teacher education programs that emphasize interpretive awareness, communicative competence, and pedagogical reflexivity, it is especially important to understand how students interact with AI-driven multimodal systems. Investments in AI-supported platforms and blended learning infrastructures have increased at Oyo State universities in the wake of the COVID-19 epidemic and larger digital transformation projects. Deploying infrastructure by itself, however, does not guarantee significant pedagogical change. The way that students view, feel, and are prepared to engage with digitally mediated communication ecologies greatly influences how effective AI-enhanced multimodal settings are.

AI-enabled LMS platforms have the potential to improve engagement, collaborative communication, and academic growth if undergraduates view them as helpful, dynamic, and cognitively stimulating. On the other hand, the anticipated advantages of technology integration may be undermined by unfavorable opinions, a lack of digital literacy, or skepticism regarding algorithmic mediation. Concerns over fair participation in AI-mediated learning settings are also raised by the gender differences in digital involvement that have been reported in a variety of educational

situations. Institutional strategies run the danger of ignoring possible equity disparities in the absence of empirical data investigating whether male and female undergraduates have different attitudes and perceptions regarding AI-enhanced multimodal systems. There is still a dearth of context-specific research examining how undergraduate teacher candidates at Oyo State universities view and react to AI-enabled learning management systems, despite the theoretical acceptance of AI as a semiotic and governance actor within digital education. This disparity hinders the creation of well-informed policies, redesigned curricula, and sustainable educational management techniques. Thus, this study aims to investigate the attitudes and views of undergraduate students at particular Oyo State universities about AI-enhanced multimodal learning management systems, as well as any gender-based variations in these attitudes and perceptions. In doing so, the study adds actual data to current discussions on equitable educational management, AI-mediated communication, and multimodal digital semiotics in African higher education contexts.

1.2 Research Questions

The following research questions guided the study:

- What is the perception of undergraduates about AI-enhanced multimodal digital platforms?
- What is the attitude of undergraduates to AI-enhanced multimodal digital platforms?

1.3 Hypotheses

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

H₀₁: There is no significant difference between male and female undergraduates' perception about AI-enhanced multimodal digital platforms

H₀₂: There is significant difference between male and female undergraduates' attitude to AI-enhanced multimodal digital platforms

2. Literature Review

2.1 Artificial Intelligence in Educational Management

In higher education, artificial intelligence (AI) technologies are changing institutional governance, administrative coordination, and strategic decision-making in ways that go beyond classroom instruction. More recent research highlights AI's systemic role in transforming educational management through

datafication, automation, and predictive governance, in contrast to early conceptualisations of AI in education that focused on intelligent tutoring and personalised learning (Luckin et al., 2016) (Williamson, 2017; Holmes et al., 2022). Routine administrative tasks including grading, tracking attendance, assigning courses, screening applicants, scheduling time, and allocating resources are automated by AI-driven management systems. Universities can improve operational efficiency, decrease human error, and streamline workflows via robotic process automation and machine learning techniques. By integrating algorithmic decision-making into institutional procedures, these systems do more than just save labor; they transform organizational processes.

To track student involvement, estimate academic success, identify attrition concerns, and predict enrollment trends, more sophisticated apps use machine learning models and predictive analytics (Siemens, 2013; Williamson & Eynon, 2020). Learning analytics dashboards give visualized indicators that impact policy decisions by aggregating massive datasets from student information systems, assessment platforms, and learning management systems (LMS). Strategic resource allocation, evidence-based curriculum reform, and early-warning interventions for at-risk students are made possible by such technologies. AI is positioned as a strategic infrastructure rather than a supplementary tool in teacher education because of its simultaneous pedagogical and management function. AI-enabled governance produces a hybrid ecosystem that combines administrative planning, performance monitoring, and instructional activities. According to Selwyn (2019), this convergence results in new types of "algorithmic governance," where data metrics are used more frequently to gauge institutional performance and educational accountability. Although this improves responsiveness and openness, it also brings up issues with data determinism, autonomy erosion, and surveillance culture.

AI-driven governance requires ethical frameworks to be regulated, according to recent policy discourse. The significance of explainability, transparency, human oversight, and data protection in educational AI systems is emphasised by UNESCO (2023). Algorithmic systems run the potential of perpetuating bias, solidifying injustices, and giving priority to measurable results over comprehensive educational ideals in the absence of such protections. This challenge is especially important for teacher education institutions because they have to train future teachers to critically analyse the ethical and social

consequences of data-informed systems in addition to being able to operate within them.

2.2 Multimodal Digital Learning in Teacher Education

Text, audio, video, graphics, animation, simulation, and interactive interfaces are all included into multimodal digital learning environments to create unified instructional designs. By engaging numerous representational channels, these settings improve engagement, comprehension, and long-term retention. They are based on the multimodality theory (Kress, 2010) and the cognitive theory of multimedia learning (Mayer, 2009). Instead of depending solely on linguistic text, meaning-making in these circumstances arises through the orchestration of semiotic resources. Multimodal platforms are used in teacher education for professional modeling as well as instruction. Digital storytelling tools, multimedia case studies, simulation-based pedagogy, virtual classrooms, collaborative whiteboards, and immersive settings are all used by pre-service teachers. Multimodal literacy, or the ability to understand and create communication across several representational forms, is fostered by these encounters (Jewitt, 2008).

Tondeur et al. (2017; 2021) emphasize that rather than being viewed as technical add-ons, technology integration in teacher education works best when it is integrated into pedagogical frameworks. Teacher candidates' Technological Pedagogical Content Knowledge (TPACK) is improved by exposure to multimodal digital tools, which helps them match digital affordances with curriculum goals and student requirements. Additionally, reflective interaction with multimodal environments develops adaptive knowledge, equipping graduates for rapidly innovative technology-mediated classrooms. The use

of immersive technologies like virtual reality (VR), augmented reality (AR), and simulation-based platforms in teacher training has grown, according to recent research. Pre-service teachers can use these tools to practice making decisions, model classroom scenarios, and try out different teaching methods in low-risk virtual environments. Simulations can produce performance statistics that facilitate professional development and reflective practice when combined with AI-driven feedback systems. However, creative instructional design, digital fluency, and fair access are necessary for multimodal learning to be pedagogically effective. Cognitive overload can result from an excessive amount of multimedia that is not coherent (Mayer, 2009). In order to ensure that multimodality helps rather than detracts from conceptual understanding, teacher education programs must strike a balance between innovation and pedagogical intentionality.

3. Methodology

The study adopted the survey research design of the correlational type. Simple random sampling was used to select 150 200 Level students of Educational Management of Faculty of Education from University of Ibadan and Lead City University. In all, a total of 150 students of English Language participated in the study. Two research instruments were used for data collection. They are Students' Perception of AI-Enhanced Multimodal Digital Platforms, Questionnaire ($r=.78$) Questionnaire on Students' Attitude to AI-Enhanced Multimodal Digital Platforms, Questionnaire ($r=.76$). Data collected were analysed using descriptive statistics of percentage, mean, standard deviation and inferential statistics of t-test was used to test the hypotheses at 0.05 level of significance.

4. Results

Research Question 1: What is the perception of undergraduates about AI-enhanced multimodal digital platforms?

Table 1: The perception of undergraduates about AI-enhanced multimodal digital platforms

| S/N | AI-enhanced multimodal digital platforms: | SA | A | D | SD | Mean | St. D |
|-----|--|------------|------------|-----------|-----------|------|-------|
| 1 | Promotes learning among undergraduate students. | 83 (55.3%) | 46 (30.7%) | 14 (9.3%) | 7 (4.7%) | 3.36 | .838 |
| 2 | Makes students hard working. | 62 (41.3%) | 80 (53.3%) | 6 (4.0%) | 2 (1.3%) | 3.34 | .623 |
| 3 | Makes students have good impression about learning. | 81 (54%) | 62 (41.3%) | 6 (4.0%) | 1 (0.7%) | 3.48 | .610 |
| 4 | Increases students' interest in learning. | 56 (37.3%) | 74 (49.3%) | 10 (6.7%) | 10 (6.7%) | 3.17 | .825 |
| 5 | Stimulates students' ability to think very fast. | 77 (51.3%) | 64 (42.7%) | 9 (6%) | - | 3.45 | .608 |
| 6 | Should be banned due to poor network. | 90 (60%) | 39 (26%) | 12 (8%) | 9 (6%) | 1.60 | .874 |
| 7 | Changes students' perception of learning. | 79 (52.7%) | 64 (42.7%) | 7 (4.7%) | - | 3.48 | .587 |
| 8 | Can be a challenging activity. | 70 (46.7%) | 72 (48%) | 7 (4.7%) | 1 (0.7%) | 1.59 | .614 |
| 9 | Facilitates the development of students' competency. | 80 (53.3%) | 55 (36.7%) | 9 (6%) | 6 (4%) | 3.39 | .776 |
| 10 | Does not develop students' ability to learn. | 68 (45.3%) | 65 (43.3%) | 8 (5.3%) | 9 (6%) | 1.72 | .820 |

| | | | | | | | |
|--|--|------------|------------|-----------|----------|------|------|
| 11 | Makes students passive recipient of knowledge. | 81 (54%) | 55 (36.7%) | 11 (7.3%) | 3 (2%) | 1.52 | .717 |
| 12 | Makes students to have positive attitude towards learning. | 64 (42.7%) | 69 (46%) | 12 (8%) | 5 (3.3%) | 3.28 | .751 |
| 13 | Changes students' wrong impression about learning. | 77 (51.3%) | 59 (39.3%) | 13 (8.7%) | 1 (0.7%) | 3.41 | 6.77 |
| 14 | Consumes money. | 83 (55.3%) | 57 (38%) | 8 (5.3%) | 2 (1.3%) | 1.52 | .662 |
| 15 | Makes students attend class regularly. | 108 (72%) | 35 (23.3%) | 4 (2.7%) | 3 (2%) | 3.65 | .634 |
| 16 | Makes students to be lazy. | 77 (51.3%) | 58 (38.7%) | 10 (6.7%) | 5 (3.3%) | 1.62 | .756 |
| 17 | Is not a reliable platform of assessing students. | 74 (49.3%) | 59 (39.3%) | 16(10.7%) | 1 (0.7%) | 3.37 | .700 |
| 18 | Does not give students the opportunity to ask questions where necessary. | 78 (52%) | 59 (39.3%) | 10 (6.7%) | 3 (2%) | 1.58 | .706 |
| 19 | Does not give students the opportunity to interact like physical class. | 41 (27.3%) | 92 (61.3%) | 13 (8.7%) | 4 (2.7%) | 3.13 | .672 |
| 20 | Is not good for academic activities. | 46 (30.7%) | 99 (66%) | 4 (2.7%) | 1 (0.7%) | 1.73 | .539 |
| Weighted Mean = 2.67; Threshold = 2.50 | | | | | | | |

Table 1 shows the perception of undergraduates about AI-enhanced multimodal digital platforms. The result indicates a weighted mean of 2.67 which is greater than the threshold set at 2.50. This result implies that majority of the selected undergraduates had a positive perception of AI-enhanced multimodal digital platforms.

Question 2: What is the attitude of undergraduates to AI-enhanced multimodal digital platforms?

Table 2: The attitude of undergraduates to AI-enhanced multimodal digital platforms

| S/N | ITEMS | SA | A | D | SD | Mean | St. D. |
|--|--|------------|------------|------------|----------|------|--------|
| 1 | I have a favourable attitude to AI-enhanced multimodal digital platforms. | 87 (58%) | 43 (28.7%) | 14 (9.3%) | 6 (4%) | 3.40 | .820 |
| 2 | I prefer AI-enhanced multimodal digital platforms to any other platform. | 65 (43.3%) | 60 (40%) | 21 (14%) | 4 (2.7%) | 3.24 | .791 |
| 3 | I am favourable disclosed to learn through the AI-enhanced multimodal digital platforms. | 72 (48%) | 61 (40.7%) | 15 (10%) | 2 (1.3%) | 3.35 | .715 |
| 4 | Interacting with AI-enhanced multimodal digital platforms does not require a lot of mental effort. | 70 (46.7%) | 68 (45.3%) | 9 (6%) | 3 (2%) | 1.63 | .689 |
| 5 | I revert to AI-enhanced multimodal digital platforms each time I need materials on | 52 (34.7%) | 92 (61.3%) | 4 (2.7%) | 2 (1.3%) | 3.29 | .585 |
| 6 | I like AI-enhanced multimodal digital platforms. | 66 (44%) | 63 (42%) | 19 (12.7%) | 2 (1.3%) | 3.28 | .735 |
| 7 | If I have my way, I will not learn on the AI-enhanced multimodal digital platforms. | 72 (48%) | 61 (40.7%) | 17 (11.3%) | - | 1.63 | .679 |
| 8 | AI-enhanced multimodal digital platforms allow easy return to previous display page. | 77 (51.3%) | 55 (36.7%) | 16 (10.7%) | 2 (1.3%) | 3.38 | .729 |
| 9 | Learning through the AI-enhanced multimodal digital platforms is burdensome. | 62 (41.3%) | 82 (54.7%) | 5 (3.3%) | 1 (0.7%) | 1.63 | .584 |
| 10 | I am not comfortable with AI-enhanced multimodal digital platforms. | 57 (38%) | 89 (59.3%) | 4 (2.7%) | - | 1.64 | .532 |
| 11 | I always enjoy learning on AI-enhanced multimodal digital platforms. | 76 (50.7%) | 71 (47.3%) | 3 (2%) | - | 3.48 | .540 |
| 12 | If I have my way, I wish AI-enhanced multimodal digital platforms is used forever. | 68 (45.3%) | 79 (52.7%) | 3 (2%) | - | 3.43 | .536 |
| 13 | Using AI-enhanced multimodal digital platforms would increase my productivity in my coursework. | 59 (39.3%) | 83 (55.3%) | 8 (5.3%) | - | 3.34 | .577 |
| 14 | AI-enhanced multimodal digital platforms are not beneficial. | 76 (50.7%) | 66 (44%) | 8 (5.3%) | - | 1.54 | .597 |
| 15 | Learning through the use of AI-enhanced multimodal digital platforms is a waste of time. | 86 (57.3%) | 60 (40%) | 4 (2.7%) | - | 1.45 | .550 |
| 16 | Learning through AI-enhanced multimodal digital platforms consumes money. | 69 (46%) | 74 (49.3%) | 7 (4.7%) | - | 1.58 | .581 |
| 17 | I am not encouraged to learn from AI-enhanced multimodal digital platforms. | 78 (52%) | 67 (44.7%) | 5 (3.3%) | - | 1.51 | .564 |
| 18 | AI-enhanced multimodal digital platforms are convenient to use. | 60 (40%) | 82 (54.7%) | 8 (5.3%) | - | 3.34 | .579 |
| 19 | Using AI-enhanced multimodal digital platforms enables me to have more accurate information. | 70 (46.7%) | 74 (49.3%) | 4 (2.7%) | 2 (1.3%) | 3.41 | .615 |
| 20 | AI-enhanced multimodal digital platforms do not promote effective learning. | 48 (32%) | 90 (60%) | 8 (5.3%) | 4 (2.7%) | 1.78 | .661 |
| Weighted Mean = 2.56; Threshold = 2.50 | | | | | | | |

Table 2 shows the attitude of undergraduates to AI-enhanced multimodal digital platforms. The result indicates a weighted mean of 2.56 which is greater than the threshold set at 2.50. This result implies that majority of the selected undergraduates had a positive attitude to AI-enhanced multimodal digital platforms.

Testing of Hypotheses

H₀₁: There is no significant difference between male and female undergraduates' perception about AI-enhanced multimodal digital platforms

Table 3: Difference between male and female undergraduates' perception about AI-enhanced multimodal digital platforms

| Group | N | Mean | Standard Deviation | Mean Difference | t | Df | p-value | Remarks |
|--------|-----|---------|--------------------|-----------------|-------|-----|---------|----------|
| Male | 46 | 53.3696 | 2.49763 | -.19774 | -.411 | 148 | .668 | Not sig. |
| Female | 104 | 53.5673 | 2.80348 | | | | | |

Table 3 shows the difference between male and female undergraduates' perception about AI-enhanced multimodal digital platforms using the independent samples t-test analysis. The result indicates that there was no significant difference between male and female undergraduates' perception about AI-enhanced multimodal digital platforms ($t = -.411$; $df=148$; $p>0.05$). This implies that gender did not cause a variance in the undergraduates' perception about AI-enhanced multimodal digital platforms.

H₀₂: There is significant difference between male and female undergraduates' attitude to AI-enhanced multimodal digital platforms

Table 4: Difference between male and female undergraduates' attitude to AI-enhanced multimodal digital platforms

| Group | N | Mean | Standard Deviation | Mean Difference | T | df | p-value | Remarks |
|--------|-----|---------|--------------------|-----------------|------|-----|---------|----------|
| Male | 46 | 51.5652 | 2.72969 | .21906 | .414 | 148 | .680 | Not sig. |
| Female | 104 | 51.3462 | 3.09641 | | | | | |

Table 4 shows the difference between male and female undergraduates' attitude to AI-enhanced multimodal digital platforms using the independent samples t-test analysis. The result indicates that there was no significant difference between male and female undergraduates' attitude to AI-enhanced multimodal digital platforms ($t = .414$; $df=148$; $p>0.05$). This implies that gender did not cause a variance in the undergraduates' attitude to AI-enhanced multimodal digital platforms.

5. Discussion of Findings

Undergraduates had a favourable opinion of AI-enhanced multimodal digital platforms, according to Table 1. This shows that students are aware of the potential, value, and relevance of AI-driven learning environments in assisting them in their academic endeavours. Any digital learning system must have a positive perception in order to be implemented successfully, since students' opinions about its value and usability frequently influence their degree of engagement and continued participation. Increased exposure to digital tools, institutional support for e-learning, and the incorporation of user-friendly AI elements that improve interaction, feedback, and accessibility could all be responsible for the favorable view shown in this study. This result is consistent with research by Armstrong (2011) and Rollinson (2008), who found that when learning management systems

(LMS) are used well, students typically have positive opinions of them. By placing perception within AI-enhanced multimodal environments, the current study builds on these past researches and raises the possibility that integrating AI could increase students' trust in digital learning systems.

Undergraduates had a favourable opinion of AI-enhanced multimodal digital platforms, according to Table 2. Positivity indicates that one is open to technology-mediated learning experiences, keen to explore platform features, and prepared to participate. Students' perceptions that AI-supported platforms make learning more flexible, personalised, engaging, and productive may be connected to this result. Particularly in skill-based courses like English language studies, where interaction and feedback are crucial, positive attitudes are frequently linked to higher motivation and better academic achievement. The results support the research of Eiriemiokhale and Idiede (2020), who discovered that students had positive opinions of learning management systems. It, however, runs counter to Adeniyi's (2007) findings that teachers had unfavorable opinions about using ICT to teach English. Generational differences, the rise in digital literacy among today's undergraduates, and the development of technology from simple ICT tools to more intelligent and adaptable AI-enhanced systems could all account for the gap.

The perceptions of male and female undergraduates about AI-enhanced multimodal digital platforms did not differ significantly, according to Table 3. This suggests that students' perceptions of the value and efficacy of these platforms were not much impacted by gender. It suggests that conventional gender inequalities in technology perception are closing, with both male and female undergraduates finding AI-driven multimodal learning environments equally acceptable and accessible. Although the current result shows neutrality across gender lines, the former assertion that gender could impact perception is in contrast to this result, which partially fits with Dingwall (1998). Additionally, it runs counter to Roberts' (2000) assertion that women often have more unfavorable opinions of specific academic assignments. According to the current study, gender-based perceptual differences may be reducing in modern AI-supported digital situations.

The opinions of male and female undergraduates about AI-enhanced multimodal digital platforms did not differ significantly, as shown in Table 4. This suggests that both sexes showed comparable degrees of acceptance, zeal, and preparedness to use AI-assisted learning resources. The lack of gender differences in attitude serves as more evidence of the inclusiveness and allure of AI-enhanced digital learning environments in higher education. This finding is in line with the findings of Adebisi (2012) and Eweniyi (1995), who found no discernible gender differences in attitudes toward learning management systems. It runs counter to Coates (1986) and Tannen (1990), who discovered that views regarding communication and learning technology varied by gender. According to the current study, these gender-based attitudes may have decreased as a result of improvements in digital access, exposure, and technology integration within academic institutions.

6. Conclusion

Undergraduates' attitudes and perceptions of AI-enhanced multimodal digital platforms were investigated in this study, along with the impact of gender on these factors. According to the results, undergraduates have favorable attitudes and favorable impressions of AI-driven multimodal learning environments. This implies that students are aware of these platforms' instructional value, applicability, and accessibility in promoting academic engagement, teaching, and learning.

The study also found that undergraduates' attitudes and perceptions of AI-enhanced multimodal digital platforms were not significantly influenced by gender.

Students of both sexes showed similar degrees of acceptance and preparedness to use digital technologies aided by artificial intelligence. This suggests that the gender gap in university technology usage is closing. The study's overall findings indicate that undergraduates generally embrace AI-enhanced multimodal digital platforms, which have a great deal of promise to increase communication, meaning-making, and learning outcomes in higher education. Students' favorable attitudes offer a solid basis for the successful integration of AI into educational management and instructional delivery.

7. Recommendations

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

1. To guarantee easy access, usefulness, and sustainability, universities should make significant investments in strong digital infrastructure and consistently update AI-enhanced multimodal platforms.
2. To improve pedagogical competency in the use of AI-driven learning technologies and digital literacy, regular training sessions and workshops should be planned.
3. To encourage interactive, learner-centered, and adaptive learning experiences, curriculum designers should methodically incorporate AI-enhanced multimodal platforms.
4. Clear regulations pertaining to data protection, academic integrity, and responsible AI practices should be developed by university administration to guide the ethical use of AI in teaching and learning.
5. Institutions should regularly evaluate students' experiences, opinions, and learning results to make sure AI-enhanced platforms continue to be useful and in line with learning objectives.
6. Universities should keep encouraging inclusive access to digital resources to maintain fairness across all demographic groups, even though gender differences were not statistically significant in our study.

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Flipped Classroom Model Approach and its Impact on Mathematics Achievement among Adolescents in Education District IV of Lagos State, Nigeria

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Abstract. The flipped classroom model has emerged as a learner-centered instructional strategy that reverses the traditional approach to teaching by shifting direct instruction outside the classroom and prioritizing active learning during class time. This study investigates the impact of the flipped classroom on students' academic achievement, critical thinking, and engagement in mathematics among adolescents. Using a descriptive survey design, data were collected from a sample of secondary school students and analyzed to determine the effectiveness of the approach. *The population for this study was drawn from three secondary schools in education district IV. A total of 210 (two hundred and ten) respondents (students) were selected for the entire study. A simple random sampling technique was employed in selecting the sample. The data for the study were collected using titled "Impact of Flipped Classroom Model Approach on Achievement in Mathematics Questionnaire (IFCMAAMQ). Three null hypotheses were raised and tested at 0.05 level of significance. At the end of the data analysis. Findings revealed that the flipped classroom significantly improved students' problem-solving skills, enhanced their participation, and fostered deeper conceptual understanding compared to conventional lecture-based methods. The model also promoted collaboration, self-regulation, and motivation, enabling learners to take greater responsibility for their learning. The study concludes that the flipped classroom is an effective pedagogical strategy for promoting higher-order thinking and improving learning outcomes in mathematics. Based on the findings, it was recommended among other things that educators should adopt blended learning technologies and learner-centered instructional practices to maximize the benefits of the flipped classroom model Educators should be equipped with the necessary skills to design effective flipped lessons*

and moreover, workshops or informational sessions can be organized to familiarize teachers and parents with the flipped model and its benefits, ensuring a holistic and well-supported learning experience for adolescent students in mathematics.

Keywords: Academic Achievements, Adolescents, Flipped Classroom Model, Mathematics.

1. Introduction

Education is the process of acquiring knowledge, skills, values, and understanding through various methods such as teaching, training, research and experience, this helps individuals develop intellectually, socially and emotionally preparing them for various aspects of life and contributing to personal growth and societal progress. Education is also a process of developing the cognitive, affective and psychomotor domain of an individual in order to make him acquire skills and knowledge that are relevant to him and the society where he lives. Education is continually evolving to meet the needs and expectations of learners. Advances in technology have significantly influenced teaching and learning, reshaping the way knowledge is delivered and acquired. The ultimate goal of education is to foster higher-order learning, and to achieve this, teachers are expected to design lessons that are clear, engaging, and tailored to students' abilities. Today's learners thrive more through active participation than passive listening, making it necessary for educators to create dynamic learning environments supported by modern technological tools.

In this 21st century, the shift towards learner-centered pedagogies reflects a growing demand for approaches that stimulate critical thinking, problem-solving, and

creativity. Conventional teacher-led methods are increasingly seen as inadequate for addressing these needs, particularly in mathematics. As a core subject, mathematics plays a crucial role in developing logical reasoning and analytical skills among adolescents. However, persistent underachievement in mathematics remains a major challenge across various levels of education in Nigeria, especially within Lagos State. Advancement in information and communication technologies has changed the qualifications and abilities required from people in the present information age. Due to the changes encountered in science and technology in the 21st century, also known as the information age, people are expected to be active in creating and interpreting knowledge rather than directly obtaining information presented. With the widespread use of internet, computers and mobile devices, great improvements have been achieved in accessing and producing information. Teachers have been challenged by this modern era of internet and social media by pursuing new methods to integrate online resources and techniques into their curriculum. A response to this heightened digital migration has been the flipped classroom instruction model.

The flipped classroom is an approach to teaching and learning activities where students watch a video lesson outside the class through distance learning and have hands-on activities in the class. The flipped classroom or reverse classroom is an element of blended learning, integrating both face-to-face learning in the class through group discussion and distance learning outside the class by watching a synchronous video lessons and online collaboration (Halili and Zainuddin, 2025). Blended learning can be defined as the activity of teaching and learning which combined face-to-face physical activities with online learning (Heinerichs et al., 2016). Blended learning is the combination of face-to-face and distance teaching and learning or the integration of both distance and face-to-face modalities to deliver instruction.

The flipped classroom model approach is beneficial to learning in many ways. These benefits are: reading flexibility, availability of learning materials, active learning, technological utilization pertaining to reading flexibility, students are expected to complete learning outside the classroom, these learning resources are facilitated through technological tools such as management systems and video resources. These allow students to review material before in-class and also control pace and frequency. Regarding technological utilization, teachers learn to adapt and use online instructional videos and assessment systems. Flipped classroom is also found to be

advantageous because it allows active learning, which increases student engagement. Increased engagement helps students develop positive attitudes about the material (Herreid and Schiller, 2018). Instructors work more closely with students which allows for more immediate and better feedback.

Student motivation is one of the important factors that enhance learning processes using the flipped classroom approach. Motivation is defined as an internal state arouses, directs, propels and sustains behaviour. Motivation and learning are interconnected. Motivation is an inner power that rushes human to take an action or move toward a goal (Harmon-jones, 2013). Students' motivation is defined as a spirit, initiative and willingness of students to attend and learn materials. In education, motivation has been acknowledged as one of the important elements which support students' academic performance and achievement. The flipped classroom model approach helps students to manage and maintain motivation for learning mathematical concepts and enabling students to manage their own learning processes.

Student motivation is an important prerequisite for managing their learning process (Boevé et al., 2016). In the learning environment, motivation is a dimension that should be considered. Learning environments set students in motions in having adequate capabilities to reveal their own values. In recent years, it has been reported that student motivation is an important factor in terms of increasing achievement in educational environments which have been differentiated with technological developments (Deveci-Topal, 2025). Studies have concluded that web-based learning, online learning, and blended learning environments, which became part of the educational process along with technology, influence student motivation.

Mathematics is an essential part of STEM (Science, Technology, Engineering, and Mathematics) education and it has been shown to enhance the creativity of students (Lee, 2015). However, the traditional approach of teaching mathematics, where the majority of time is spent on lectures with minimal interaction between teacher and students, has not been found successful. Due to the shortcomings of this traditional approach, the flipped classroom approach has been found to improve student-teacher interaction in learning environment. Personalized interaction with teacher allows students to ask questions, seek clarification and receive immediate feedback on their understanding of mathematical concepts in flipped classroom model. This individualized attention helps to prevent misconceptions early preventing them from

becoming obstacles to learning. (Lee, 2025) found that the key to the flipped classroom is the active learning that takes place in the classroom. Engaging with teachers also provides students with the opportunity to receive guidance tailored to their learning styles and pace. Teachers can adapt their explanation and examples to suit each student's needs, making the material more accessible and comprehensible.

In the Flipped Classroom model, students take responsibility for their own learning and progress at their own speed (Davies, Dean, and Ball, 2023). Students fulfill independent and active learning by accessing the learning environments presented through the Internet whenever and wherever they want. Students' engagement with the fundamental concepts at their own pace before class enhances retention and comprehension in mathematics. The pre-class engagement with the learning materials prepares the students for in-class discussions, problem solving and collaboration activities which reinforce their understanding. This approach leads to a better grasp of mathematical concepts and better retention overtime.

In mathematics, constant practice and application are crucial for mastery. The flipped classroom model approach provides more in-class time for guided practice, application of theories and individualized support from instructors, which can contribute to improved comprehension and retention of mathematical principles. Student-teacher interaction fosters a supportive learning environment where students feel comfortable to ask questions and express their difficulties. This can boost their motivation in tackling challenging mathematical problems. Student-teacher interaction in a mathematical classroom using the flipped classroom approach contributes to better comprehension, retention and overall performance by offering personalized assistance and promoting a deeper understanding of the subject matter.

The key to the flipped classroom is the active learning that takes place in the classroom. The core idea of the flipped classroom is to flip the conventional instructional approach. The flipped classroom emphasizes the leverage of online self-regulated learning and physical classroom interaction by adopting various pedagogies, such as, inquiry-based learning, project-based learning, problem-based learning and learning by doing among collaborative team members (Cheng et al., 2019). Flipping the classroom not only enables teachers to utilize class time to teach using a variety of hands-on activities, but it also increases retention, comprehension, engagement and student-teacher interaction. Few studies have evaluated the effectiveness of classroom

flipping in mathematics on student academic achievement in higher institutions. There are no rigorous studies on the effect of flipped classroom on mathematics among adolescents in secondary schools

Student learning styles and preferences should be considered in a learning environment. Instructional content and activities should align with various learning styles such as visual, auditory, or kinesthetic, this enhance engagement and understanding of difficult concepts in mathematical class. Flipped classroom model approach can accommodate these different learning styles. The reason why flipped classroom is preferred is that teacher has the chance to spend more time on classroom activities and to correct the problems with classroom activities. In this way, even in crowded classes, success can be achieved. With more class time available for interaction, teachers have the opportunity to provide individualized support, guidance and feedback to students.

Many instructors have practiced flipped teaching in their classes, whereby students watch course videos at home and finish homework in school. For example, students at home watch prerecorded video lectures from teachers, take notes, and come to class with questions prepared prior to the physical class. Class then becomes a venue for students to work through advanced concepts and learning problems. In class, teachers can spend increased time on problem solving, advanced concepts, and high-level sense-making activities. Thus, teachers have time to work individually with students in a flipped classroom (Tucker, 2012) compared with a traditional classroom, in a flipped classroom teachers have more time to provide individualized learning feedback to students.

World Health Organization (WHO) defines adolescence as a phase of life between 10-19 years of age characterized by physical growth, emotional, psychosocial and behavioural changes, thus, bringing about transformation from childhood to adulthood. These changes usually occur a year or two earlier in girls than boys. Therefore, adolescent students spur between 10 to 17years in most secondary schools in Lagos state, Nigeria.

Mathematics is a subject concerned with number, shape, change and relation. Number has to do with quantity, measurement, and scale; Shape is about configuration and arrangement; Change considers time and variation; and relation has to do with association and comparison (similarity, difference, equality). Impact is the force of one object hitting another. Subtly put, it is the strong force of impression

of one thing on another. It is also a significant or major effect of somebody or something on another. Academic achievement refers to the measurable performance outcomes of a learner in educational settings, often expressed through grades, test scores, or other forms of assessment. It reflects the extent to which a student has attained specific learning objectives, skills, and competencies within a given subject or curriculum. Academic achievement is influenced by factors such as teaching methods, learning environment, student motivation, and socio-cultural background. Mathematics achievement is a specific aspect of academic achievement that relates to a learner's performance and proficiency in mathematics. It indicates the degree to which students understand mathematical concepts, apply problem-solving strategies, and demonstrate logical reasoning in mathematical tasks. Mathematics achievement is usually assessed through standardized tests, classroom examinations, or performance-based tasks, and it serves as a key indicator of students' ability to engage with quantitative reasoning and analytical skills. According to Anaduaka and Okafor (2023), *mathematics achievement refers to the demonstrated ability of learners to understand, interpret, and apply mathematical principles, facts, and operations as assessed through tests and examinations.*

In the context of Lagos State, particularly in Education District IV, the persistent struggle of adolescents in mathematics achievement calls for pedagogical reforms that move beyond conventional practices. The flipped classroom model approach provides a potential pathway for enhancing students' academic performance by integrating technology with interactive classroom engagement. By shifting the role of the teacher from a "knowledge dispenser" to a "facilitator of learning," the model aligns with global best practices in 21st-century education. Given the increasing demand for improved mathematics outcomes in Nigeria and the need to prepare adolescents for a competitive global economy, it becomes imperative to examine how the flipped classroom approach influences mathematics achievement among learners in this region. Such an investigation will provide empirical evidence that may guide teachers, policymakers, and curriculum developers in adopting innovative practices that promote both academic success and lifelong learning skills. It is against this backdrop that this study attempts to study the impact of the flipped classroom model approach on students' academic performance in mathematics among adolescents in Education District IV of Lagos state.

1.1 Statement of the Problem

STEM (Science, Technology, Engineering, and Mathematics) program have continued to suffer from low enrolments. High failure rates in mathematical courses have haunted students, teachers, and administrators for decades.

In recent years, despite the central role of mathematics in fostering logical reasoning, problem-solving, and analytical skills, students' performance in the subject has continued to be unsatisfactory at different levels of education in Nigeria. Reports from public examinations and classroom assessments reveal that many adolescents struggle with basic mathematical concepts, leading to low achievement and negative attitudes toward the subject. This persistent trend poses a serious concern, as weak performance in mathematics limits students' academic progression and reduces their competitiveness in a technology-driven global economy. Literature had exposed that mathematics has a reputation of being difficult to teach and understand. Some factors responsible for such difficulty and understanding are itemized as follows:

- Poor method of teaching mathematics and the technical language of mathematics.
- Financial factor can affect the teaching and learning of mathematics when students are not able to afford high cost of text books for the subject.
- The learning environment itself may affect the students' interest and motivation.
- Some of the students develop phobia for mathematics which also constitutes obstacles to effective teaching and learning of mathematics.
- The use of inappropriate instructional materials and inappropriate set induction for the students at the beginning of any mathematics lesson.
- Another problem facing the effective learning of mathematics is inadequate time allocated for the delivery of the lesson content.
- In some schools, unqualified and untrained teachers handle the teaching of Mathematics which also poses a threat to learning the subject.

One major factor contributing to this problem is the continued reliance on traditional teacher-centered instructional methods, which emphasize rote memorization and passive listening. Such approaches often fail to actively engage students, address individual learning needs, or promote higher-order thinking skills. Consequently, learners experience

difficulties in applying mathematical knowledge to real-life situations, which further widens the achievement gap.

The emergence of innovative pedagogies such as the flipped classroom model presents a possible solution to these challenges. By exposing students to instructional materials outside the classroom and dedicating class time to interactive, learner-centered activities, the flipped classroom has the potential to improve understanding, engagement, and achievement in mathematics. However, despite its growing popularity globally, limited research has been conducted on its effectiveness in Nigerian secondary schools, particularly within Education District IV of Lagos State.

This gap raises a critical question: *To what extent can the flipped classroom approach improve adolescents' mathematics achievement in Lagos State?* Addressing this question is essential in determining whether the flipped classroom can serve as a viable instructional strategy to enhance mathematics learning outcomes and provide evidence-based guidance for teachers, policymakers, and curriculum planners. Hence, the task the current study set itself was, therefore, to determine the efficacy of Flipped Classroom for teaching and learning of mathematics among adolescents in secondary schools in Education District IV of Lagos State, Nigeria.

1.2 Purpose of the Study

The purpose of this study is aimed to examine Flipped classroom model approach on students' academic performances in mathematics among adolescents in Education district IV of Lagos state.

The research objectives of the study are:

- To examine the effect of the flipped classroom approach on adolescents' achievement in mathematics compared to traditional teaching methods in Education District IV of Lagos State.
- To determine whether the flipped classroom approach enhances students' engagement and active participation in learning mathematics compared to traditional methods.
- To assess the extent to which the flipped classroom approach improves adolescents' critical thinking and problem-solving skills in mathematics.

1.3 Research Hypotheses

- There is no significant impact of the flipped classroom approach on adolescents'

achievement in Mathematics compared to traditional teaching methods in Education District IV of Lagos State.

- There is no Significant impact of the flipped classroom approach in enhancing students' engagement and active participation in learning mathematics compared to traditional methods.
- There is no significant impact of the flipped classroom approach in improving adolescents' critical thinking and problem-solving skills in Mathematics.

2. Research Design

This study adopted a **descriptive survey design** because it seeks to collect information from a sample of adolescents on how the **flipped classroom model** influences their **achievements in Mathematics**. The descriptive survey is appropriate here since the study intends to **describe the current situation** without manipulating variables. The researcher is interested in gathering data on students' experiences, perceptions, and performance outcomes in mathematics when taught using the flipped classroom approach.

2.1 Population of Study

The target population for this study are the Senior Secondary Two (S.S II) students from government schools in Education District IV of Lagos State. The estimated senior secondary students' population for the entire Education District II is 33,118 of which 11,827 are Senior Secondary Two (II) students (Education District IV, 2023).

2.2 Sample size and Sampling Techniques

A Simple random sampling technique was employed in selecting the sample for the study. Education district IV is made up of three zones namely Apapa, mainland and surulere. One school was selected randomly from secondary schools in each of the zones that made up the educational district. A sample size of 210 students will be used for the purpose of the study. Seventy (70) adolescent-Students will be randomly selected from each school. Cluster sampling was employed in selection so that the teachers and students are well represented for the study.

2.3 Research Instrument

Two research instruments were used in collecting data. The first is a constructed questionnaire titled "Impact of Flipped Classroom Model Approach on Achievement in Mathematics Questionnaire

“(IFCMAAMQ) and the second instrument is a Mathematics Achievement Test (MAT), both were used for this research study.

The questionnaire contains two sections “A” and “B” while section A contained the bio-data of the selected respondents, section ‘B’ contained 40 items that bothered on flipped classrooms, students’ engagements, active participation, critical thinking and problem-solving skills, while the second instrument was a Mathematics Achievement Test (MAT) prepared from WAEC/NECO (SSCE) past questions from Y (2019-2023).

2.4 Validity and Reliability of the Instrument

To ascertain the validity of the instrument, the questionnaire was given to experts in measurement and evaluation to assess its face expert and content validity and for approval before administered on the sample selected.

The pilot study was conducted on thirty (20) respondents comprised of 10 males and 10 females who did not form part of the original study. The scores at the end of the pilot study were collated and correlated using Cronbach alpha and Pearson Product Moment Correlation Coefficient to obtain the value of 0.72 for the questionnaire and 0.87 for the MAT which was used to determine the degree of relationship between the independent and dependent values as being positive and strong.

2.5 Data Analysis and Results

Table 1: Analysis of Demographic Data of respondents by frequencies and percentage

| Variable | N | % |
|--------------------|------------|--------------|
| Gender | | |
| Male | 108 | 51.5 |
| Female | 102 | 48.5 |
| Total | 210 | 100.0 |
| Age | | |
| 10-11 years | 52 | 24.5 |
| 12-13 years | 138 | 66.5 |
| 14 years and above | 20 | 9.0 |
| Total | 210 | 100.0 |
| Religion | | |
| Christianity | 175 | 85.5 |
| Islamic | 21 | 9.5 |
| Traditional | 11 | 4.5 |
| Others | 3 | 0.5 |
| Total | 210 | 100.0 |

Hypothesis One: There is no significant impact of the flipped classroom approach on adolescents’ achievement in Mathematics compared to traditional teaching methods in Education District IV of Lagos State

Table 2: Relationship between Flipped classroom model approach on Adolescent Achievement in Mathematics

| Variable | N | Mean | SD | df | r-cal. | p-value | Decision |
|-------------------------------------|-----|-------|-------|-----|--------|---------|------------|
| Flipped Classroom model | 200 | 15.07 | 2.996 | 198 | .154 | .012 | Reject Ho1 |
| Academic Achievement in Mathematics | | 17.01 | 3.341 | | | | |

*Significant at .05 alpha level

From table 2, indicated a calculated value of r-calculated (r-cal.=.154) which is significant at p-value=.012<0.05 level of significance. Therefore, the null hypothesis which says there is no significant relationship between flipped classroom model approach and adolescents’ achievement in mathematic compared to traditional teaching methods in Education district IV of Lagos state. of Lagos state was rejected. This implies that flipped classroom model approach significantly relate to adolescents’ achievement in mathematics.

Hypothesis Two: There is no Significant impact of the flipped classroom approach in enhancing students’ engagement and active participation in learning mathematics compared to traditional methods.

Table 3: Relationship between Flipped classroom model approach on Students’ Engagement and Active Participation

| Variable | N | Mean | SD | df | r-cal. | p-value | Decision |
|--|-----|-------|-------|-----|--------|---------|------------|
| Flipped Classroom model | 200 | 15.07 | 2.996 | 198 | .684 | .000 | Reject Ho2 |
| Students Engagement and Active Participation | | 16.13 | 2.460 | | | | |

*Significant at .05 alpha level

From table 3, indicated a calculated value of r-calculated (r-cal.=.684) which is significant at p-value=.000<0.05 level of significance. Therefore, the null hypothesis which says there is no significant relationship between flipped classroom model approach and **students’ engagement and active participation** towards learning mathematics in Education district IV of Lagos state. of Lagos state was rejected. This implies flipped classroom model approach significantly relates to **students’ engagement and active participation** towards learning mathematics.

Hypothesis Three: There is no significant impact of **the flipped classroom approach in improving adolescents’ critical thinking and problem-solving skills in Mathematics.**

Table 4: Relationship between Flipped classroom and Adolescent **critical thinking and problem-solving skills in mathematics.**

| Variable | N | Mean | SD | Df | r-cal. | p-value | Decision |
|--|-----|-------|-------|-----|--------|---------|------------|
| Engagement in Flipped Classroom | 200 | 15.07 | 2.996 | 198 | .574 | .000 | Reject Ho3 |
| Adolescents Critical Thinking and Problem Solving. | | 15.27 | 2.902 | | | | |

*Significant at .05 alpha level

From table 4, indicated a calculated value of r-calculated (r-cal.=.574) which is significant at p-value=.000<0.05 level of significance. Therefore, the null hypothesis which says there is no significant relationship between adolescent **critical thinking and problem-solving** in Education district IV of Lagos state was rejected. This implies that adolescent-students’ engagement with pre-recorded video lessons in a flipped Classroom significantly relates to their **critical thinking and problem-solving skills of mathematical concepts** in Education district IV of Lagos state.

3. Summary of Findings

The following are the Summary of Findings of this study:

There is a significant **impact of the flipped classroom approach on adolescents’ achievement in mathematics** compared to traditional teaching methods **in Education District IV of Lagos State.**

There is a significant impact of the **flipped classroom approach in enhancing students’ engagement and active participation in learning mathematics compared to traditional methods.**

There is a significant impact of the **flipped classroom approach in improving adolescents’ critical thinking and problem-solving skills in mathematics.**

4. Discussion of Findings

Based on the findings of this study, the researcher observed that flipped classroom model approach impact adolescent achievements in Mathematics.

Findings from hypothesis one revealed that there is a significant **impact of the flipped classroom approach on adolescents’ achievement in**

mathematics compared to traditional teaching methods **in Education District IV of Lagos State.** The Flipped Classroom model, where students engage with instructional content at home through pre-recorded videos and then participate in active learning activities during class, has shown notable impacts on adolescent achievements in mathematics compared to traditional teaching methods. By allowing students to review and learn foundational concepts independently, the Flipped classroom model approach fosters a more personalized and self-paced learning experience. By shifting the traditional lecture-based approach, this model empowers students to engage with instructional content independently at their own pace, fostering a sense of autonomy and ownership in the learning process. This is supporting the findings of Makinde, (2020) proved that the flipped classroom makes teaching and learning enjoyable, effective and satisfying. Studies show that flipped classroom learning has a positive impact on academic outcomes as compared to traditional learning models (Thai *et al.*, 2017).

Findings from Hypothesis two revealed that there is a significant impact of the **flipped classroom approach in enhancing students’ engagement and active participation in learning mathematics compared to traditional methods.**

Thus, the Flipped classroom model approach exerts a transformative impact on adolescents’ **students’ engagement and active participation in learning mathematics compared to traditional methods.** This result aligns with existing literature emphasizing that flipped learning transforms the role of students from passive listeners to active participants in the learning process. According to **Bishop and Verleger (2013)**, the flipped classroom model promotes active learning by shifting direct instruction outside the classroom through videos or online resources, while

class time is devoted to interactive problem-solving and collaborative activities. This structure creates more opportunities for student-centered learning, thereby improving engagement.

Similarly, **Abeysekera and Dawson (2015)** noted that the flipped classroom design provides students with autonomy to control the pace of their initial content exposure, which fosters self-regulated learning and deeper engagement during in-class activities. In mathematics, where active practice is crucial, this engagement translates into better understanding and skill acquisition. Research by **Chen, Wang, and Chen (2014)** found that flipped classroom strategies significantly increase students' motivation and willingness to participate in mathematics lessons because they come prepared to engage in discussions, group problem-solving, and practical applications. This finding reinforces the result of the present study where students' active involvement improved markedly under the flipped classroom approach. Furthermore, **Lo and Hew (2017)** observed that in mathematics education, flipped learning not only enhances cognitive outcomes but also promotes affective gains such as increased interest, confidence, and participation. By allocating classroom time for peer learning and teacher scaffolding, students become more active contributors rather than passive recipients. In line with the present finding, **Thai, De Wever, and Valcke (2017)** reported that flipped classrooms encourage deeper interaction among learners and between students and teachers, which strengthens classroom engagement. This interactive environment is often lacking in traditional lecture-based teaching, where students tend to be passive. Therefore, the result of this study is consistent with previous empirical evidence, showing that the flipped classroom approach is effective in fostering student engagement and active participation in mathematics learning. The approach not only shifts the focus from teacher-centered to learner-centered pedagogy but also creates an environment conducive for collaboration, critical thinking, and sustained motivation.

Also, findings from hypothesis three revealed that there is a significant impact of **the flipped classroom approach in improving adolescents' critical thinking and problem-solving skills in Mathematics**. This approach often leads to deeper understanding and retention of mathematical principles, as in-class time can be dedicated to collaborative problem-solving and individualized support for critical thinking. The observed significant improvement in adolescents' critical thinking and problem-solving skills aligns with recent meta-analyses and systematic reviews showing that flipped-classroom models produce moderate gains in

mathematics achievement and higher-order skills when in-class time is devoted to active problem solving (e.g., meta-analytic summaries). This effect is explained by the pedagogical logic of the FC: self-paced pre-class instruction frees classroom time for scaffolded, collaborative tasks that promote analysis and application core components of critical thinking. However, the literature also warns that effects vary with implementation quality and student access to pre-class materials; thus, successful replication requires careful design of pre-class content, structured in-class activities, and supports for students who lack resources.

5. Conclusions

The findings of this study have shown that the flipped classroom model exerts a significant positive impact on students' learning outcomes in mathematics. By shifting direct instruction outside the classroom and dedicating classroom time to active engagement, problem-solving, and collaborative learning, the model enhances students' critical thinking, participation, and overall academic performance. This approach empowers adolescents to take greater responsibility for their learning, promotes deeper conceptual understanding, and creates opportunities for meaningful teacher–student and peer interactions.

The study therefore concludes that the flipped classroom approach is a more effective instructional strategy than the traditional lecture method for improving adolescents' achievement and engagement in mathematics. Its integration into mathematics instruction not only addresses the challenges of passive learning but also prepares students with the problem-solving skills and reflective thinking abilities required in the 21st century. Teachers, curriculum developers, and policymakers are encouraged to adopt and support the flipped classroom model as a sustainable innovation for fostering academic success and lifelong learning among students.

6. Recommendations

Judging from the findings of the study the following recommendations were made:

- Educators should invest in creating high-quality and engaging pre-recorded materials. These resources should be clear, concise, and accessible to students, catering to diverse learning styles.
- Additionally, providing supplementary resources, such as interactive quizzes or practice problems, can further reinforce

- understanding and allow students to self-assess their progress outside the classroom.
- Schools should encourage mathematics teachers to adopt the flipped classroom model as a complement or alternative to traditional instruction, especially for topics requiring deep conceptual understanding.
- Professional development workshops and training should be organized to equip teachers with the necessary digital literacy skills, content creation abilities, and classroom management techniques for effective implementation.
- Educational stakeholders should ensure access to reliable internet, digital devices, and user-friendly platforms to support video lectures, online learning, and interactive classroom activities.
- Curriculum planners should integrate the flipped classroom model into mathematics curricula and other subjects where active learning can significantly improve comprehension and problem-solving skills.
- Awareness and sensitization programs should be carried out for parents and students to appreciate their roles in supporting pre-class learning activities and maximizing in-class engagement.
- Teachers should incorporate formative assessments, peer evaluations, and reflective practices within the flipped model to track students' progress and provide timely feedback.

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Prevalence of Depressive Disorders among Adolescent Students in Oshimili South Local Government Area of Delta State, Nigeria

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Abstract. This study investigated the prevalence of depressive disorders among the adolescent students in the selected area of the study. It also investigated the various types of depressive disorders among the adolescent students. Three research questions were raised and three corresponding hypotheses were formulated and tested at 0.05 alpha level of significant. One hundred and twenty-three (123) subjects were randomly selected for the study. Modified Beck Depression Inventory (MBDI) was adapted as the research instrument. The reliability of the instrument was 0.86 having used Cronbach's alpha statistics which suggested that the items have relatively high internal consistency; t-test and ANOVA statistics were used to test the hypotheses. The result of the analysis showed that two hypotheses were retained, while one hypothesis was not retained, an indication that depressive disorders rate among the adolescent students based on mode of separation of parents was high. Psychological techniques for reduction of the rate of severity among the adolescent students were proffered; recommendations and suggestions for further studies were also made.

Keywords: Prevalence, Depressive Disorders, Adolescent Students, Secondary School

1. Introduction

The fact that adolescence period falls into the transition era from childhood into adulthood often puts the youngsters in a dilemma of how to meet the society's expectations; many have turned armed raider and many have been associated with other social unexpected behaviours that have resulted into

depressive disorders. The World Health Organisation (WHO) has been issuing warnings about the pathology for years, given that it affects over 300 million people (children, adolescents and adults) all over the world and is characterized by high risk of suicide; the most common cause of death in these aged (15 and 29) WHO (2017). Prevalence is the widespread or occurrence of something that exists at a particular place among certain age bracket.

National Institute for Mental Health-NIMH (2012) defined depressive disorders as condition marked by feelings of worthlessness, dejection and worry; conditions that are generally associated with being "stuck" in the mood of sadness grief; that depressive disorders are not just weaknesses, character flaws or dizziness; they are serious psychological problems or conditions with strong biological components similar to that of heart disease or diabetes. NIMH (2012) revealed that depressed people may feel sad, empty, hopeless, worthless, guilty, irritable and restless. They may lose interest in activities that once were pleasurable, experience loss of appetite or overeating, or problems concentrating, remembering details or making decision and may contemplate suicide.

Adolescent students are those learners between the age of 12 and 21 years: most literatures suggest that this is the period when physical growth is nearly completed. The beginning of adolescent student has no specific age limit but in physical, social, and biological terms: a person is legally adolescent student at the aforementioned age. Meanwhile secondary school is the second tier in academic ladder therefore secondary school lies between the first tier (primary school) and

the third tier (tertiary education). Consequently, understanding the relationship between depressive disorders and well-being of adolescent students is not only of theoretical importance but may also have implication for devising psychotherapy interventions directed at the negative effects of the psychological disorder on their developmental outcomes.

National Institute for Mental Health-NIMH (2012) enumerated the educational implications of depressive disorders among adolescent students to include; negative school related outcomes, poor grades, lack of persistence in the face of academic challenges and decreased classroom participation. NIMH outlined various types of depressive disorders ranging from major depressive disorder, atypical disorder, chronic depressive disorder, bipolar I&II, seasonal depressive disorder, psychotic depressive disorder and substance induced depressive disorder among others. The concerned of this paper was on atypical depressive disorder, chronic depressive disorder; substance induced depressive disorder, and major depressive disorder. Atypical depressive disorder is a subtype of major depressive disorder that involves several specific symptoms such as restless that is noticeable, problem with concentration, depressed mood almost every day among others. It results from impaired function of the brain circuits that regulate another (Pariante, 2017). Chronic depressive disorder is cause by abnormal functioning in the brain circuits or nerve cell pathways that connect different brains region. The symptoms are same as atypical depressive disorder (Narbona, 2014). Substance induced depressive disorder is the form of depressive disorder caused by the use of or abuse of substance such as drugs, alcohol or exposure to toxins. The symptoms include; significant disturbance in mood, difficulty in functioning at home, school or other important areas (Siverton, 2014). Major depressive disorder is the severity of some depressive disorder that are normal such as breakup of a long-term relationship, death of a loved one, doing badly on a test among others; the depth of such behaviour and the length of time it lasts is the hallmark of major depressive disorder (Bowlby, 2010; Koul and Freud, 2009; Passer and Smith, 2007). The symptoms include impaired concentration, and indecisiveness, restlessness or feeling slowed down, feeling of worthlessness or guilt almost every day among others.

Throughout history there have been many different explanatory theories of depressive disorder; biological and psychological theories are the ones which have mainly tried to explain the origin of the mental disorder. Biological theories have from a variety of different perspectives, postulated that depressive disorder may occur due to noradrenalin deficit

(Narbona, 2014), endocrine disorders and sleep related disorder (Siverton, 2014; Pariante, 2017), alternative in brain structure (Whittle, 2014).

Psychological theories have attempted to explain depressive disorder on the basis of psychoanalysis and more specifically in terms of attachment theories (Begelow, 2018), interpersonal theory (Milord, 2014) and sociocultural models (Loreazo-Blanco, 2012; Chang, 2013; Reeves, 2014).

Passer and Smith (2007) upheld that depressive disorders happen when individuals imagine that bad measures will occur and that there is nothing, they can do to stop them or cope with them. Accordingly, they submitted that lingering and extreme depressive disorder occurs as a consequence of undesirable attribution of failure that are delicate (“It’s my entire fault”), constant (“I’ll always be this way”), and overall (“I ‘m a total loser”). Therefore, people who attribute undesirable events in their lives to issues such as low intelligence, physical repulsiveness or an unlovable personality tend to accept as true that their personal defects will render them helpless to avoid undesirable events in the future and sense of helplessness places them at significantly greater risk for depressive disorders.

Personality based vulnerability theorist such as psychoanalysts Koul and Freud (2009) held that early painful losses create defenselessness for later depressive disorders by way of prompting inconsolable anger process that becomes part of the person’s disposition. Persons who experienced the death of a loved one during childhood are prone to increased risk of later depressive disorder (Bowlby, 2010).

Kerbow (2012) upheld that school location refers to site of schools while some schools are located in urban areas others are located in the rural areas, and semi-urban zones. In urban centres, the distance between the schools and students’ home is much, some students change schools to reduce the distance that they always cover before getting to their schools which often a time place the students in a depressive grouse.

1.1 Statement of the Problem

Understanding the relationship between depressive disorders and academic enactment is not only of theoretical importance but may also have implication for devising counselling intervention directed at the negative effects of psychological distress such as depressive disorders on adolescent students learning outcomes. Investigation studies have established

significant difference in academic issues of adolescent students with depressive disorders as a result of these adolescent students' inability to read and comprehend what has been taught. Further evidence suggested that adolescent students' school performance can suffer due to poor concentration, low self-esteem and maladaptive attributions of academic occasioned by depressive disorders

Of much concern in this study is prevalence of depressive disorders among adolescent students which has not been analytically investigated properly in Nigeria; only skeletal work has been done in this area in this part of the world; consequently, this study seeks to fill the gap.

1.2 Purpose of the Study

The purpose of the study was to investigate the prevalence of depressive disorders among adolescent students.

Specifically, the paper:

- investigated the various types of prevalence of depressive disorders among adolescent students
- ascertained the proportion of prevalence of depressive disorders among adolescent students
- identified appropriate counselling techniques for handling depressive disorders among adolescent students.

1.3 Research Questions

Five research questions were raised to guide the study:

- Is there a prevalence of depressive disorders among adolescent students in SSII?
- Is there a difference in prevalence of depressive disorders among adolescent students in SSII by sex?
- Is there a difference in prevalence of depressive disorders among adolescent students in SSII by location?
- Is there a difference in prevalence of depressive disorders of adolescent students in SSII whose parents have separated due to divorce, death, or working at different places?

1.4 Hypotheses

Three hypotheses were formulated for the study:

- There is no significant difference in prevalence of depressive disorders among adolescent students in SSII by sex
- There is no significant difference in prevalence of depressive disorders among adolescent students in SSII by location.
- There is no significant difference in prevalence of depressive disorders of adolescent students whose parents have separated due to divorce, death or working at different location

2. Research Methodology

The study adopted survey research design in which a group of people is studied by collecting and analyzing data from representative of the entire group. The population for the study consists of all secondary school adolescent students SSII in Oshimili South Local Government Area. Asaba, in Delta North Senatorial District; there were 7 registered secondary schools at the time of this study. The sample of the study was 123 adolescent students selected from two co-educational secondary schools through stratified random sampling technique.

2.1 Instrument

The instrument of the study was a Modified Beck's Depression Inventory; it has two sections. Section A consists of questions eliciting personal information from the adolescent students. Section B was Modified Beck's Depression Inventory; it contained a 30-item statements which was designed to measure the presence and degree of depressive disorders among adolescent students. Each of the 30 items of the MBDI attempts to assess attitude which appears to be specific to the depressed and which are consistent with descriptions of the depressive syndrome contained in the psychiatric literature. The statement is rank ordered and weighted to reflect the range of severity of the symptoms from 0 to maximum of 3. The MBDI was in six (6) sub-sections designed to measure each of the hypotheses stated.

2.2 Validity and Reliability of Instrument

The instrument was validated by measurement and evaluation expert from the comments and recommendations, some of the items were modified and re-worded. Using the Cronbach's Alpha method of establishing reliability, the MBDI yielded a coefficient of 0.86.

2.3 Data Collection and Method of Data Analysis

Before administering the questionnaires, the researcher and the trained research assistants sought the permission of the school principals and thereafter met the respondents in their various classes and administered the questionnaires on the subject male

and female adolescent students. The trained research assistants ensured that the respondents filled the questionnaires and certified that they were returned. Descriptive statistics, t-test and ANOVA were used to analysis the data gathered.

3. Presentation of Results

The results of the study based on the raised research questions were presented below.

Research Question 1: Is there a prevalence of depressive disorders among adolescent students in SSII?

Table 1: Descriptive statistics of prevalence of depressive disorder among adolescent students in SSII

| Depressive disorders types | Frequency | Percentage frequency |
|---------------------------------------|-----------|----------------------|
| Atypical depressive disorder | 16 | 13.0% |
| Chronic depressive disorder | 18 | 14.6% |
| Substance induced depressive disorder | 38 | 30.9% |
| Major depressive disorder | 51 | 41.5% |

Source: Field work

The data in table 1 showed that out of one hundred and twenty-three respondents 16 accounted for 13.0% of atypical depressive disorder, 18 accounted for 14.6% of chronic depressive disorder, 38 accounted for 30.9% of substance induced depressive disorder and 51 accounted for 41.5% of major depressive disorder. In a sample of one hundred and twenty-three 30.9% and 41.9% showed cases of high depressive disorder among adolescent students in SSII.

Test of the hypotheses formulated were showed below:

Hypothesis I: There is no significance difference in prevalence of depressive disorder among adolescent students in SSII by sex

Table 2: t-test of prevalence of depressive disorders among adolescent students in SSII by sex

| Sex | N | Mean | Std. Dev. | t | Sig. |
|--------|----|-------|-----------|-------|------|
| Male | 62 | 30.24 | 12.77 | -.402 | .688 |
| Female | 61 | 31.26 | 15.28 | | |

$\alpha=.05$

The data in table II showed a t value of -.402 and a p value of .688 testing at an alpha level of .05: consequently, p value was greater than the alpha level; p value > t value. Thus, the null hypothesis which states that there is no significant difference in prevalence of depressive disorder among adolescent students in SSII by sex was retained.

Hypothesis II: There is no significant difference in prevalence of depressive disorders among adolescent students in SSII due to mode of separation of parents.

Table 3: t-test of prevalence of depressive disorders among adolescent students in SSII due to mode of separation of parents

| Mode of separation of parents | N | Mean | Std. Dev. | t | Sig |
|-------------------------------|----|-------|-----------|-------|------|
| Divorce | 61 | 38.27 | 13.64 | 7.355 | .000 |
| Death | 62 | 23.05 | 9.43 | | |

$\alpha=.05$

The data in table III showed a t value 7.355 and a p value of .000 testing at an alpha level of .05.

Consequently, p value was less than the alpha level, thus, the null hypothesis which states that there is no significant difference in prevalence of depressive disorders among adolescent students in SSII due to mode of separation of parents was rejected; therefore, there is a significant difference.

Hypothesis III: There is no significant difference in prevalence of depressive disorders of adolescent students in SSII by location (rural, semi-urban, and urban).

Table 4: ANOVA on prevalence of depressive disorders of adolescent students in SSII by location (rural, semi-urban, and urban)

| | Sum of Squares | df | Mean Square | F | Sig |
|----------------|----------------|----|-------------|------|------|
| Between Groups | 153.132 | 2 | 76.566 | | |
| Within Groups | 4473.168 | 27 | 165.673 | .462 | .635 |
| Total | 4626.300 | 29 | | | |

$\alpha=.05$

The data in table IV showed an F value of .462 and p value of .635 testing at an alpha level of .05; consequently, the p value was greater than the alpha level; thus, the null hypothesis which states that there is no significant difference in prevalence of depressive disorders of adolescent students in SSII by location was retained. The groups were adolescent students in rural location, adolescent students in semi-urban location, and adolescent students in urban location; since the variables were more than two Analysis of Variance (ANOVA) was used for the statistical calculation.

4. Discussion of Findings

The descriptive statistics of prevalence of depressive disorder among adolescent students in SSII showed that out of one hundred and twenty-three respondents 16 accounted for 13.0% atypical depressive disorder, 18 accounted for 14.6% of chronic depressive disorder, 38 accounted for 30.9% of substance induced depressive disorder and 51 accounted for 41.5% major depressive disorder. In a sample of one hundred and twenty-three 30.9% and 41.9% showed cases of high depressive disorder among adolescent students in SSII.

Table II of the t-test of prevalence of depressive disorders among adolescent students in SSII by sex, showed a t value of -.402 and a p value of .688 tested at an alpha level of .05; p value was greater than alpha level; therefore, null hypothesis was retained. Table III of the t-test of prevalence of depressive disorders among adolescent students in SSII due to mode of separation of parents showed a t value 7.355 and a p value of .000 tested at an alpha level of .05; p value was less than the alpha level; thus, the null hypothesis was rejected. This was supported by (Bowlby, 2010; Koul and Freud, 2009; Passer and Smith, 2007). Table iv showed an F value of .462 and p value of .635 tested at an alpha level of .05; p value was greater than the alpha level; thus, the null hypothesis was retained.

5. Conclusion

Based on the findings of the study, it is evident that prevalence of substance induced depressive disorder and major depressive disorder among the adolescent students were high; consequently, the purpose of the

study was justified and counselling intervention is paramount.

6. Recommendations

Based on the findings, we recommend the following:

- That interventions that are psychologically based should be design; such as self-management/ self-control technique, which are provision of information about depressive disorders and taught skills to help adolescent students reduce the severity so as to function very well in their academic and other life issues
- That most secondary schools do not have Counselling Psychologists; therefore, Counselling Services should be made available to help out students who are in need.
- That problem solving therapy should be adopted in counselling sessions; the aim of the therapy is to enhance clients' personal adjustment to their problems and stress using effective, cognitive, and behavioural strategies.

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Artificial Intelligence in French Language Education: Enhanced Effectiveness and Personalized Learning

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Abstract. This study explored the influence of AI-powered language learning tools and its implications on teacher training and professional development. The Sociocultural Theory was adopted to explain how language, culture, and interaction enhance language acquisition and learners' development. An exploratory research method was adopted for the relevant information. Insights from literature revealed that French learning is boosted through Chatbots for adaptive exercises, personalized paths, and instant feedback on pronunciation and grammar, which improves learners' outcomes with positive engagement. It further revealed prospect for teachers and professional development which also involves the use of AI by teachers in developing required methodologies for prompt speaking and writing, analyzing students' performance, and improving French learning skills in real-time. The key insights from this showed that the sustainability of AI and data-driven models should ensure that teachers are aligned with pedagogic trends that would revolutionize French language learning. Its implication for French language education includes the prospect of personalized education which would be enhanced through the use of chatbots for adaptive exercises and instant feedback on pronunciation and grammar to improve learners' outcomes with positive engagement. The use of AI by teachers would help develop methodologies for speaking, writing, and analyze students' performance, and ultimately improve French learning skills in real-time.

Keywords: Artificial Intelligence, French Language Education, Enhanced Effectiveness and Personalized Learning.

1. Introduction

Today, technology, especially, Artificial Intelligence (AI) has revolutionized French language education. In education, the emergence of artificial intelligence (AI) in French language learning has revolutionized and supported French language proficiency. The advancement of AI has continuously proffered potential learners the capability to effectively learn the French language. The capacity development and professional growth of educators in the digital era have influenced the use of AI for adaptive mentoring and customized learning experiences to enable teachers to align with pedagogy. As this creates diplomatic opportunities; the goals of adaptive and personalized learning have been a strategic factor that drives the need for AI to serve French language education (Osawaru & Unachukwu, 2024). (Blaz, 2022; Fakhar et al., 2024) Say that, professional development is continuously revolutionized through AI-based monitoring of teachers and AI-based intelligent system for French tutoring, this has not only enhanced teaching, it has also motivated teachers to effectively interact with the learners.

Sustainably, the service of French language education involves assessing AI-powered language learning tools and the influence of AI on teacher training and professional development. For instance, the use of AI-

powered language learning tools involves the use of tools such as AI-powered language tutors which involves conversational agents like ChatGPT and Chatbots permit dialogues with learners. The adaptive learning system involves the use of machine learning algorithms. Mondly, and Memrise help to analyze the performance of learners based on specific needs. The AI powered language speech recognition technology improves French language learning for learners to become fluent. The influence of AI on teacher training and professional development involve the use of real-time feedback, personalized learning, AI chatbots, and ethical considerations, which have influenced French language educators' training in developing skills for contemporary classroom lesson planning and management.

The prospects for effective and personalized education relates to learners' needs, and their progress on adaptive learning and personalized learning experience. Through Babble Duolingo platforms, the prospect for effective and personalized learning has contributed to the fast-changing landscape in French education. The use of these apps has exposed the use of technology in the classroom to address needs and tackle students' complex issues while enhancing their professional development. Teachers' professional development demands the provisions of opportunities for peer-to-peer learning and personalized learning experiences. Hence, the prospects for more effective and personalized education are by sustaining the data-driven teaching models to ensure that teachers are aligned with pedagogic trends that can revolutionize French language learning across the educational sector. With these realities, this study explored the extent to which the prospects for more effective and personalized education are influenced by artificial intelligence in the service of French language education

1.2 Statement of the Problem

Teachers' effective use of AI in French language education remains limited due to inadequate training, lack of access, and technical challenges. In particular, insufficient teachers' preparation affects the implementation of personalized French language learning preventing AI from achieving its full potentials in improving teaching quality and students' outcomes.

However, the impact of artificial intelligence in the service of French language education is undermined by the inability to adequately assess the effects of AI-powered language learning tools on French language learning outcomes, and the lack of commitment to explore the implications of AI on teacher training and

professional development. The challenges associated with AI's impact on French learning, despite AI capabilities for personalized practices such as vocabulary, and pronunciation, is because of the inability to replicate human interactions, which requires learning models that blend AI merits with teachers' authentication and guidance for true proficiency. Also, the issue of the lack of commitment to explore the influence of AI on teacher training and professional development could be attributed to ethical concerns facing teachers' training, readiness, data privacy, pedagogical shifts, and fear of job displacement, which affect critical thinking to blend technology with human teaching skills.

Based on these setbacks, this study is undertaken to explore the influence of artificial intelligence in the service of French Language Education. The specific objectives are:

- To explore the influence of AI-powered language learning tools on French Language learning outcomes.
- To explore the influence of AI on teacher training and professional development

2. Literature Review

This study is hinged on the Sociocultural Theory (SCT) propounded by Vygotsky, (1896-1934), the theory emphasizes how language, culture, and interaction enhance language acquisition and learners' language development. One of the tenets of the theory is Zone of Proximal Development and scaffolding to guide learning in French language education, based on self-regulation and shared speech (Lantolf, 1995). The Zone of Proximal Development (ZPD) represents the distance between what a learner can do independently and what they can achieve with support from a more knowledgeable other. Whether a teacher, peer, or digital tool- provides scaffolding to bridge the gap.

The key assumptions of SCT in language learning are that learning is socially mediated, implying that the acquisition of the French language is not a purely mental process, but rather one that occurs through collaboration with peers, teachers, and others, and through talking and negotiation (Lantolf, 1995). It assumes language as a key tool to shape thoughts and learning through visuals and gesture. The justification for this study's theory is that it supports the use of AI-powered language learning tools to achieve French language learning outcomes. It addresses the implications of AI on teacher training and professional development. Hence, the theory considers learning as a cultural process and a dynamic where French students are developed to become competent through interaction with the teachers

3. Conceptual Framework

The conceptual framework on artificial intelligence in the service of French language education consists of AI-powered language learning tools and the implications of AI on teacher training and professional development, as shown below:

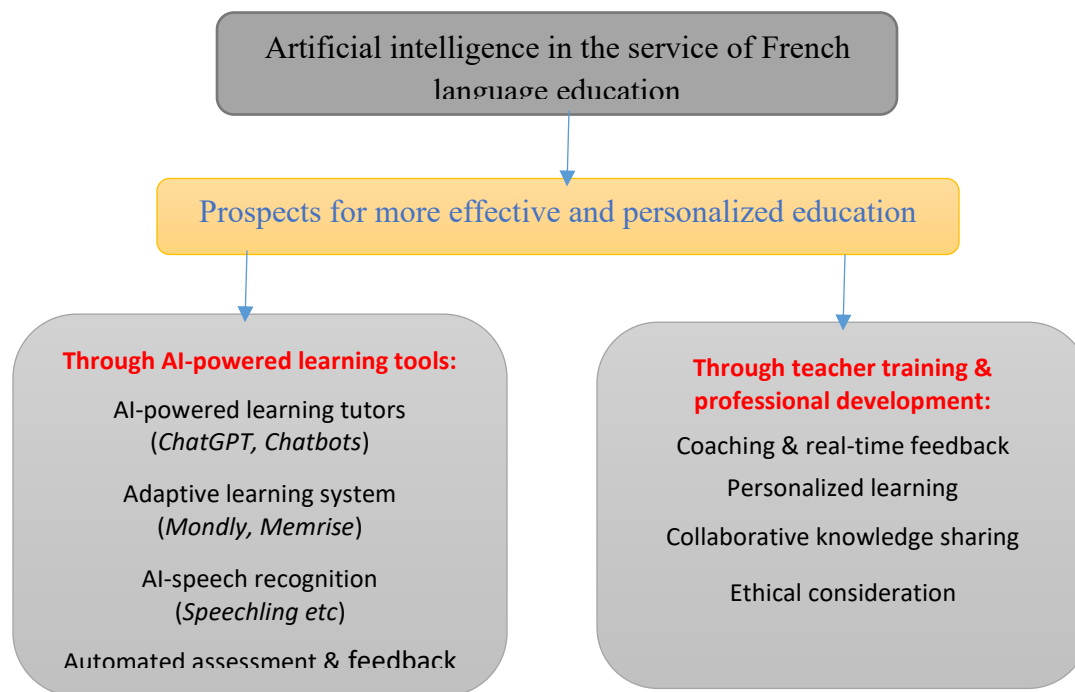


Fig. 1: Artificial intelligence in the service of French language education

Source: Author 2025

4. AI-powered language learning tools for French Language learning outcomes.

In French language education, artificial intelligence (AI) enhances customized practices by supporting writing, and oral skills through real-time feedback and correction. This support helps to reduce teachers' workload while ensuring that learners receive adequate and timely support. As learning becomes increasingly transformed through AI driven approaches, effective learning outcomes are promoted by providing opportunities for personalized and accessible learning experiences.

Effective French language learning is further enhanced through AI-powered tools, which provide instant feedback to improve learners' grammar, writing, and speaking skills (Jaja, 2025). These tools facilitate continuous learners' practices, learners' autonomy and engagements thereby contributing to improved proficiency in the French language. The use of AI Chatbots facilitates interactive dialogue with

learners. The use of AI-powered language tutors involves conversational agents such as ChatGPT and AI Chatbots, for language learning facilitate dialogues with learners.

Through AI-based tutors, learners receive immediate feedback on vocabulary, sentence's structure, and grammar which support the development of real-time language skills (Delgado et al., 2020). Learners with busy schedules are able to practice writing and speaking using AI-based tutors at their own pace. In one area of speaking and pronunciation, simulated practice through conversational chatbots and pronunciation tools has been shown to improve oral skills by providing real-time corrective feedback. The tools enable immediate feedback on errors for correction to enhance language learning efficiency.

The need to use AI to achieve an interactive and immersive experience has empowered effective learning in a tailored and unimaginable manner that enables learners to have autonomy and flexibility to

assess learning anywhere and anytime. Regular speaking and pronunciation also contribute to refinement of accents. Tools such as TurboScribe help learners to access accurate pronunciation through a text-to-speech feature delivered in native voices. In writing and grammar instruction, the use of ChatGPT promotes the evaluation of written work by providing feedback on spelling and grammatical accuracy, offering constructive suggestions, and encourages learners to engage in more confident language production. Hence, an effective classroom lesson is practiced by teachers through the use of virtual classrooms and AI-powered chatbots. The educators can address situations associated with students in an environment that supports students' learning.

Adaptive learning system involves the use of machine learning algorithms. Mondly, and Memrise are used to analyze the performance of learners based on specific needs. Through adaptive learning platforms, a learner can prioritize targeted exercises such as verb conjugation, thereby supporting personalized learning for building confidence and enabling learner progress at their own pace (Gligorea et al., 2023). These platforms are content-based and adjusted to suit learners' proficiency levels allowing individual learning and challenges to be effectively addressed (Osawaru & Gbenedio, 2020).

The AI-powered language learning tool, particularly speech recognition technology, improves French language learning by supporting the development of learning fluency. Speech recognition applications, such as Speechling and Elsa Speak provide AI-driven feedbacks that enable learners to refine their intonation, speaking skills, and listening comprehension (Kabudi et al., 2021). Continuous learner engagement in interactive exercises facilitate both active and passive communication, thereby improving overall comprehension of spoken language.

Automated assessment and feedback systems function as evaluative tool that support the assessment of spoken and written tasks while providing instant feedback to enhance vocabulary usage and accuracy. According to Amin (2023), these systems assess learner's strengths and weaknesses and offer appropriate insight into clarity, pronunciation, fluency, particularly in French language learning contexts. The use of automated systems help instructors to reduce their workload, reduces consistency, and also foster motivation and achievement of French learning with continuous improvement

These AI-powered language learning tools have increased access to language education, online platforms, and mobile applications that provide high-quality learning resources. These technologies have made French language learning more accessible to learners from diverse backgrounds. Notably, learners with disabilities are supported through speech-to-text and text-to-speech interfaces thereby promoting inclusive language education that meets diverse learning needs. (Fitrianto, 2024). Furthermore, Alshahrani and Qureshi (2024) identified the importance of scalability associated with AI-powered language learning tools particularly for institutions and French language programs on a large scale. Challenges such as instructor unavailability and limitation in physical learning spaces are significantly reduced through the use of AI-enhanced tools, which can accommodate large numbers of learners. Simultaneously, immersive experiences through rewards and progressive tracking features are motivating factors which endeavor learners' engagement in achieving academic goals. Kabudi et al. (2021) further demonstrate scenario-based activities and role-playing contribute to active participation of learners in French language education. This is largely driven environments that foster AI dynamic learning environment through instant feedback, allowing learners to receive the corrective input without fear of making mistakes. Supportive learning conditions further increase and improved interactions among learners (Ravshanovna, 2024).

5. Implications of AI on teacher training and professional development

The implications of AI on teacher training and professional development include the existence of real-time feedback, personalized learning pathways, AI chatbots, and ethical considerations that shape educators' professional practice. These developments have significantly influence French language teachers' education in the development of skills for contemporary classroom lesson planning and management. In recent times, students' learning outcomes have been improved through the ethical and pedagogically sound use of AI by teachers to support adaptive instruction and professional development. For example, tailored instructional modules can be developed using AI to analyze teachers' performance and instructional practices, thereby supporting personalized professional learning and improve the training methods.

A study by Shezad et al. (2025) supports the view that AI driven approaches enhance teacher training by promoting effective and continuous professional

learning. Traditional professional development programs often adopt a one-size-fits-all approach, which limits their ability to respond effectively to the diverse strengths and weaknesses of teachers. Skalka et al. (2024) argue that effective development of customized training plans is enhanced by AI-driven adaptive learning platforms for educators. These platforms allow the integration of machine learning techniques with best practices, targeted training modules, and instructional resources thereby improving the quality of teacher training. Similarly, Jenkins and Khanna (2025) reveal that educators' pedagogical strategies can be strengthened through virtual assistance and AI-powered chatbots. Technologies such as augmented reality (AR) and virtual reality (VR) further enhanced personalized learning, by enabling teachers to improve lesson delivery and classroom interactions (Yangyang, 2023). These developments indicate that well structure professional development initiatives sharpen teachers' skills and supported by AI enhance their engagement.

Despite the advantages of personalized learning, teacher development remains constrained by challenged such as disparities in digital literacy among educators. Consequently, inadequate training, the reluctance to adopt AI-based constructional practices, and the inability to learn new tools hinder the effective use of AI-powered tools in French language education (Metaverse, 2025). AI provides coaching, real-time feedback, and data-driven tools that aid teachers in decision-making; administrative tasks are automated through AI for teachers' training and mentoring.

The evaluation of teachers is successful through data-driven feedback, and these offsets limitations associated with subjective observation and testing based on the traditional method. In support of the real-time feedback, the use of classroom analytics, machine learning, and natural language processing is an AI-based system for effective assessment of teaching activities with accuracy and active student engagement (Meylani, 2024). Hence, precise and instructive feedback is obtained to improve French teaching, and data-driven adjustment helps in tracking the performance of French educators through the ethical application of AI in evaluating teaching performance. From the perspective of the analysis of classroom data, Fatima (2025) stressed that educators can refine pedagogical methods through AI-powered apps that improve interactions between teachers and students

Teachers are increasingly connected globally through AI platforms that facilitate collaborative knowledge sharing and peer learning. Prokopenko et al. (2024)

further stress that collaboration among teachers is possibly influenced by AI, as it improves professional learning and supports continuous development programs. Through the AI-powered peer review platforms, educators' recourse constructive feedback that informs instructional practices. AI-collaboration also promotes translation as educators with different linguistic backgrounds can learn without constraint.

However, there is also the need to address the issue of misinformation in AI networks caused by a lack of digital accessibility to ensure that inclusive French learning is effective and professional (Kayaalp et al., 2025). Alam (2021) stressed that cooperation between educators can be enhanced through a website known as AI-supported peer review. This enables educators to obtain relevant feedback through pedagogy, AI-enhanced assessment plans for lessons, and class recording. Novawan et al. (2024) observe that collaborative work is possible when barriers to the French language are removed to facilitate idea sharing and exchange of experiences. Consequently, the success of AI in collaborative professional learning among teachers lies in its capacity to address infrastructure accessibility challenges related to information sharing. This enhances professional learning services and ensures effective dissemination of French language pedagogy supported by AI networks for the professional development of teachers

Nevertheless, Tusquellas et al. (2025) caution, that ethical considerations particularly advancement in AI-supported teacher training raise important issue concerning data privacy and security of AI to process instructors' performance data, cloud-based databases to store classroom recordings, and records of instructional interactions has generated concerns regarding data and unauthorized access. Therefore, an unauthorized party can assess the sensitive data concerning educators, resulting in unwanted monitoring or intrusions on the assessment of teachers' performance.

This can be resolved through the culture of monitoring, where teachers' evaluation software that is AI-enabled is used to prevent the monitoring of teachers. Another ethical issue is the algorithmic bias arising from the use of biased data, which can lead to inequalities in the evaluation of educators' professional development. Hence, educators from unequaled backgrounds are faced with unequal assessment. (Taufikin et al., 2024).

6. Findings / Emerging Themes

Based on the literature explored, the following themes emerged:

- French learning is boosted through chatbots/ChatGPT for adaptive exercises, personalized paths, and instant feedback on pronunciation and grammar, which improves learners' outcomes with positive engagement
- The prospect for teachers and professional development involves the use of AI by teachers in developing required methodologies for prompt speaking and writing, analyzing student performance, and improving French learning skills in real-time

7. Conclusion

The sustainability of AI and data-driven teaching models ensures that teachers are aligned with pedagogic trends that have revolutionized French language learning. The study reviewed the prospects for effective and personalized education through AI-powered language learning tools and the implementation of AI-enabled platforms to promote the professional development of teachers. Hence, through the Babble Duolingo platforms, etc, the prospect for effective and personalized learning has contributed to the fast-changing landscape in French education. These have informed teachers about the implementation of technology in the classroom to address needs and tackle students' complex issues while enhancing their professional development. Also, the prospect of realizing the professional development demands opportunities for peer-to-peer learning and personalized learning experiences.

8. Recommendations

Based on the findings, the study recommended the following:

- The prospect of personalized education in French should be enhanced through the use of chatbots/ChatGPT for adaptive exercises, and instant feedback on pronunciation and grammar to improve learners' outcomes with positive engagement
- The prospect of personalized education in French should be sustained with the use of AI by teachers to develop methodologies for prompt speaking, writing, and analyze student performance, and improve French learning skills in real-time.

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An Assessment of the Effectiveness of Competency-Based Education Model in Enhancing the Employability of Technical Education Graduates in Lagos State, Nigeria

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Abstract. The persistent disconnect between technical education outcomes and industry expectations in Lagos State, Nigeria, continues to undermine graduate employability despite increasing adoption of Competency-Based Education (CBE) models. This study assessed the effectiveness of CBE in enhancing graduate employability, examining skill development outcomes and stakeholder satisfaction. A descriptive survey design involved 80 technical graduates and 20 industry stakeholders from manufacturing and service sectors across Ikeja, Oshodi, Isolo, and Apapa. A 30-item validated questionnaire (reliability = 0.85) was used. Data were analyzed using means, standard deviations, Pearson's correlation, and Chi-square at 0.05 significance level. Findings revealed that CBE significantly enhances problem-solving, workplace readiness, and skill acquisition, with a moderate positive correlation ($r = 0.65, p < 0.05$) between CBE exposure and employability. However, both graduates (mean = 3.80) and industry stakeholders (mean = 3.72) expressed substantial dissatisfaction with current implementation, citing inadequate resources, unprepared instructors, curriculum-industry misalignment, outdated equipment, and weak quality assurance. The study concludes that while CBE demonstrates significant potential for improving employability, its effectiveness is severely constrained by implementation challenges requiring urgent systemic intervention. Recommendations include policy reforms mandating industry-integrated curricula, public-private partnerships for resource mobilization, continuous professional development for educators, regular curriculum review aligned with labor market demands, and sustainable funding models for CBE infrastructure.

Keywords: Competency-Based Education; employability; technical education; skills gap; graduate unemployment; Lagos State; industry collaboration.

1. Introduction

In today's fast-changing global economy, the ability to gain and sustain meaningful employment has become a pressing concern, especially for young graduates and industries seeking skilled workers. In developing countries like Nigeria, technical education is increasingly recognized as a critical pathway for preparing youth with hands-on skills needed to succeed in a competitive labor market. However, traditional education systems in Nigeria often emphasize theoretical knowledge over practical skill acquisition, leaving many graduates ill-prepared for real-world job demands. This gap is particularly visible in Lagos State, the nation's commercial nerve center, where numerous technical education graduates struggle to find employment due to misalignment between their training and industry requirements (Okolie et al., 2020).

Competency-Based Education (CBE) has emerged as a promising solution to close this skills gap. Unlike conventional time-bound academic approaches, CBE focuses on mastery of job-relevant skills and measurable competencies, integrating theoretical knowledge with practical application in real-life contexts (UNESCO, 2022). Countries including the UK, Germany, South Africa, and Tanzania are increasingly adopting CBE to enhance workforce readiness and improve employment outcomes (Charles et al., 2022). CBE addresses the growing disconnect between education and the labor market by

empowering students with 21st-century skills such as adaptability, critical thinking, collaboration, and lifelong learning (Voinea, 2019; OECD, 2019).

A core strength of CBE lies in its integration of theory with practice through real-world scenarios and tasks. This is especially beneficial in technical fields where skills like machine operation and teamwork cannot be effectively taught through lectures alone (Holmes et al., 2021). Modern CBE programs utilize digital learning platforms that provide personalized learning paths, real-time feedback, and competency-based assessments, ensuring true mastery of content while aligning with individual learning styles and industry expectations (Rhoney & Meyer, 2024).

Economically, CBE reduces recruitment and training costs for employers while enhancing workforce productivity and supporting national development goals (McMullen et al., 2023). In technical education, skill development demands structured practice, mentorship, and an environment that nurtures mastery. Successful training must blend theoretical understanding with hands-on application (Olabiyi, Aiyelabowo, & Keshinro, 2013). Students gain real competence when they can apply knowledge practically and with confidence (Bodnar, 2020; Magbagbeola, 2020).

Employability today encompasses personal and professional competencies including adaptability, self-awareness, and the ability to navigate complex problems (Di Fabio, 2017). It has become a meta-competence—a framework of transferable skills needed across multiple job settings (Bach & Sulikova, 2019; Amadi, 2013). CBE aligns training with real-world demands, bridging the training-employment divide and enabling graduates to meet modern industry needs effectively (Eze et al., 2022).

Lagos State provides a valuable context for exploring CBE's impact. Despite being Nigeria's industrial heartbeat, many technical institutions operate under outdated educational models that limit graduates' work readiness. Although interest in CBE is growing, limited research assesses its actual effectiveness in the region. This study, therefore, examines the effectiveness of Competency-Based Education models in enhancing the employability of technical education graduates in Lagos State.

1.1 Statement of the Problem

Despite increased technical education graduates in Lagos State, employment opportunities have not kept pace. Many graduates remain unemployed or

underemployed despite holding qualifications, indicating mismatch between classroom learning and workplace expectations. Employers report that graduates possess theoretical knowledge but lack practical application skills (Adebayo, 2021). Outdated curricula, limited access to modern equipment, and inconsistent training standards hinder institutional responsiveness to labor market demands. While CBE offers promise, its actual effectiveness in bridging the education-employment gap in Lagos State requires investigation.

1.2 Purpose of the Study

This study investigates the effectiveness of CBE in enhancing employability of technical education graduates in Lagos State, specifically examining: (1) whether CBE enhances employability skills, and (2) stakeholder satisfaction with CBE implementation.

1.3 Research Questions

- To what extent does CBE enhance employability skills of technical education graduates in Lagos State?
- How satisfied are graduates and industry stakeholders with CBE in Lagos State?

1.4 Hypotheses

H₀₁: No significant relationship exists between CBE use and employability skills of technical graduates in Lagos State.

H₀₂: No significant difference exists in satisfaction levels between graduates and industry stakeholders with CBE in Lagos State.

2. Theoretical Framework

This study is grounded in two complementary theories: Human Capital Theory (Becker, 1962) and Social Constructivism (Vygotsky, 1978).

Human Capital Theory posits that education and training are strategic investments enhancing individual productivity and economic potential. When people acquire knowledge, skills, and attitudes aligned with labor market demands, they contribute more effectively to organizational success and national development. In technical education, this underscores aligning curricula with competencies employers seek. The more tailored and practical the training, the more employable and economically valuable the graduate becomes (Gillies, 2017).

Social Constructivism views learning as an active, social process where knowledge is constructed through interaction with peers, instructors, and the environment. The teacher facilitates engagement with real-world challenges. Learning is most effective when collaborative, contextual, and problem-oriented (Amineh & Asl, 2015). This supports CBE, where students take ownership of learning through hands-on practice and continuous feedback (Ogegbo et al., 2020).

Together, these theories illustrate how CBE supports both industry-relevant competency acquisition and development of lifelong learning habits essential for success in today's evolving job market.

3. Literature Review

CBE has emerged as a transformative model in technical education, advocating a shift from theory-heavy instruction toward performance-oriented frameworks aligned with 21st-century workforce demands (Schultz et al., 2022). Central to CBE is mastering clearly defined, job-relevant competencies through authentic, task-based evaluations. Students engaged in experiential learning develop technical expertise and confidence to navigate complex work environments (Ghezir et al., 2021; Ismail et al., 2022; Ayalew et al., 2024).

A key feature is learner-centered design. Student autonomy, critical thinking, and adaptability are central to successful learning (Hattie & Timperley, 2007; Schildkamp et al., 2020). CBE enables personalized learning pathways, fostering engagement and accountability (OECD, 2019; Bakker et al., 2022). Effective implementation requires sustained teacher training, as educator preparedness inconsistencies remain common. Performance-based assessments compel students to demonstrate actual competence, particularly in technical disciplines (McClarty & Gaertner, 2015). Effective CBE incorporates collaborative, inquiry-driven activities and diverse pedagogical strategies supporting both hard and soft skill development (Dilmore et al., 2011; Curry & Docherty, 2017).

CBE positively influences motivation and self-efficacy. Students exhibit higher engagement and

reflective thinking through formative assessment tools including peer evaluations, digital portfolios, and continuous feedback (Evans et al., 2020; Chen et al., 2022; Henri et al., 2017). Globally, Malaysia's Tun Hussein Onn University has integrated CBE into engineering curricula through strong industry linkages (Abdullah et al., 2021). European countries like Germany and Switzerland have long embraced competency-based vocational education, achieving high graduate employment rates.

In Africa, CBE is viewed as a strategy to cultivate technical expertise and social responsibility. Formative, process-oriented assessment proves more effective than high-stakes testing (Mokoro, 2020; Imana, 2020). However, Nigerian implementation faces challenges: limited teacher training, inadequate infrastructure, misalignment with industry standards (Ajayi & Adebayo, 2022; Ogunleye, 2020), large class sizes, scarce instructional materials, and minimal in-service training (Ogegbo et al., 2020). The National Board for Technical Education promotes CBE, but without deliberate institutional capacity building and industry collaboration, implementation remains inconsistent (Nwogu & Ezech, 2023). Robust partnerships between training institutions and employers are essential for graduate adaptability (Mwangi & Otieno, 2021). CBE's true strength lies in cultivating lifelong learning attributes—communication, resilience, and adaptability (Mulder, 2017).

4. Methodology

A descriptive survey design was employed with 80 technical graduates and 20 industry stakeholders from manufacturing and service sectors in Ikeja, Oshodi, Isolo, and Apapa. Stratified random sampling ensured balanced representation. A 30-item validated questionnaire (Cronbach Alpha = 0.85) used 4-point scales: Research Question 1 (Strongly Agree=4 to Strongly Disagree=1); Research Question 2 (Very Satisfied=4 to Very Dissatisfied=1). Mean scores ≥ 2.50 indicated agreement/satisfaction. Pearson's correlation tested Hypothesis 1; Chi-square tested Hypothesis 2 ($\alpha = 0.05$).

5. Results

Research Question 1: Extent CBE enhances employability skills

Table 1: Mean Scores on CBE Impact on Employability Skills

| Items | Graduates (n=80) | Industry (n=20) |
|---|------------------|-----------------|
| Hands-on training improves job readiness | 3.76 | 3.75 |
| Effective technical knowledge application | 3.88 | 3.60 |
| Curriculum aligns with industry needs | 3.71 | 3.45 |
| Improves problem-solving skills | 3.73 | 3.65 |
| Develops teamwork skills | 3.71 | 3.70 |
| Demonstrates strong communication | 3.83 | 3.70 |
| Uses modern industry tools | 3.81 | 3.90 |
| Quick adaptation to new environments | 3.78 | 3.60 |
| Practical assessments reflect job tasks | 3.90 | 3.80 |
| Improves soft skills | 3.81 | 3.80 |
| Enhances entrepreneurial capabilities | 3.84 | 3.65 |
| Increases technical confidence | 3.76 | 3.75 |
| Encourages lifelong learning | 3.85 | 3.70 |
| Improves independent work ability | 3.81 | 3.75 |
| Better job interview preparation | 3.80 | 3.85 |
| Grand Mean | 3.80 | 3.71 |

Field Survey, 2025

Table 1 reveals that both technical education graduates and industry stakeholders have high mean ratings (above 3.50) regarding the positive impact of CBE models on employability skills. Graduates have a slightly higher mean (3.80) compared to industry stakeholders (3.71), indicating that technical education graduates perceive the impact of CBE models on their employability skills slightly more positively. The standard deviations for both groups are relatively low (Graduates: 0.51; Industry Stakeholders: 0.56), indicating that the responses are consistent and reliable. The findings show that both technical education graduates and industry stakeholders agreed that Competency-Based Education models significantly enhance the employability skills of technical education graduates in Lagos State. This is supported by the fact that their mean scores are above the decision rule of 2.50, and their standard deviations are low, indicating consistent opinions.

Research Question 2: Satisfaction with CBE programme

Table 2: Mean Satisfaction Scores

| Items | Graduates | Industry |
|---|-------------|-------------|
| General satisfaction with CBE models | 3.78 | 3.56 |
| Preparation with industry-relevant skills | 3.76 | 3.65 |
| Meets industry expectations | 3.76 | 3.60 |
| Graduates have necessary competencies | 3.84 | 3.80 |
| Enough practical training | 3.87 | 3.85 |
| Focus on practical skills | 3.81 | 3.90 |
| Up-to-date with industry standards | 3.81 | 3.65 |
| No extensive retraining needed | 3.81 | 3.75 |
| Hands-on training satisfactory | 3.76 | 3.75 |
| Prepared for industry demands | 3.85 | 3.90 |
| Reflects current industry practices | 3.80 | 3.70 |
| Implementation quality | 3.71 | 3.85 |
| Proper industry input | 3.85 | 3.65 |
| Industry satisfaction with graduates | 3.78 | 3.65 |
| Industry partnership satisfaction | 3.74 | 3.60 |
| Grand Mean | 3.80 | 3.72 |

Field Survey, 2025

Table 2 reveals that both the technical education graduates (3.80) and industry stakeholders (3.72) reported a high level of dissatisfaction with the CBE programme, as their mean scores are significantly higher than the decision rule of 2.50 (noting that on the satisfaction scale, 4 represented "Very Dissatisfied" and 1 represented "Very Satisfied"). The standard deviation values (0.46 for graduates and 0.58 for industry stakeholders) are relatively low, suggesting that the responses were generally consistent within each group. The slight difference in mean scores (3.80 for graduates and 3.72 for industry stakeholders) indicates that both groups share similarly high levels of dissatisfaction with the CBE programme in Lagos State.

Hypothesis Testing

Table 3: Pearson's Correlation (H_{01})

| Group | Mean | SD | N | r | t | p | Decision |
|-----------|------|------|----|------|------|----------|----------|
| Graduates | 3.80 | 0.51 | 80 | 0.65 | 8.56 | 1.59e-13 | Rejected |
| Industry | 3.71 | 0.56 | 20 | | | | |

Field Survey, 2025

Significant positive correlation exists between CBE exposure and employability skills. In Table 3, Pearson's correlation coefficient (r) was calculated to be 0.65, indicating a moderate positive correlation between the use of CBE models and the employability skills of graduates. The calculated t -value was 8.56, which is significantly high, showing strong evidence against the null hypothesis. The associated p -value was 1.59e-13, which is much lower than the significance level of 0.05, leading to the rejection of the null hypothesis. The null hypothesis, which stated that "There is no statistically significant relationship between the use of Competency-Based Education models and the employability skills of technical education graduates in Lagos State," was rejected. This decision is based on the low p -value and the strong positive correlation observed. Moreover, the rejection of the null hypothesis further reinforces the effectiveness of CBE models in enhancing employability skills. This implies that adopting and effectively implementing CBE models in technical education programs could significantly enhance technical education graduates' readiness for the job market.

Table 4: Chi-Square Test (H_{02})

| Group | N | Mean | SD | t | t-crit | Decision |
|-----------|----|------|------|------|------------|----------|
| Graduates | 80 | 3.80 | 0.46 | 0.66 | ± 1.98 | Accepted |
| Industry | 20 | 3.72 | 0.58 | | | |

Field Survey, 2025

In Table 4, a Chi-Square test was conducted to test the hypothesis that there is no significant difference in the level of satisfaction between technical education graduates and industry stakeholders with the competency-based education models in Lagos State. The data included a sample of 80 technical education graduates and 20 industry stakeholders, with mean dissatisfaction scores of 3.80 and 3.72, and standard deviations of 0.46 and 0.58, respectively. The test statistic (t -value) was calculated as 0.66, while the critical value for a two-tailed test at a 0.05 level of significance with 98 degrees of freedom was ± 1.98 . Since the test statistic (0.66) is less than the critical value (± 1.98), we fail to reject the null hypothesis. The findings indicate that there is no statistically significant difference between the level of satisfaction of technical education graduates and industry stakeholders with the competency-based education models in Lagos State. This result suggests that the competency-based education model in Lagos State is generally perceived negatively by both technical education graduates and industry stakeholders, with both groups expressing similarly high levels of dissatisfaction.

No significant difference in dissatisfaction levels between groups.

6. Discussion of Findings

Findings reveal strong support for CBE's effectiveness in enhancing employability skills. Graduates (3.80) and industry stakeholders (3.71) acknowledged CBE's positive impact on hands-on training, problem-solving, and workplace readiness, consistent with McClarty and Gaertner (2015) and Curry and Docherty (2017). However, substantial dissatisfaction with implementation (graduates 3.80, industry 3.72) reflects barriers including inadequate resources, unprepared instructors, and curriculum-industry gaps, corroborating Ogunleye (2020), Ogegbo et al. (2020), and Ajayi and Adebayo (2022).

The significant positive correlation ($r = 0.65$) between CBE exposure and employability confirms that improved CBE quality enhances graduate outcomes, supporting Sanghi (2016), Mulder (2017), and Chen et al. (2022). No significant difference in dissatisfaction levels indicates shared stakeholder concerns requiring systemic reform.

7. Implications of the Findings

Findings necessitate strengthening teacher capacity through continuous professional development in CBE pedagogy and authentic assessment. Curriculum

reform must prioritize competency-driven frameworks incorporating project-based learning, digital portfolios, and workplace simulations (McClarty & Gaertner, 2015; Curry & Docherty, 2017). Closer collaboration between institutions and industry partners is essential for curriculum design, mentorship, and internship opportunities (Abdullah et al., 2021; Mokoro, 2020). Regulatory bodies like NBTE must standardize practices, monitor quality, and embed employer feedback mechanisms (Nwogu & Ezech, 2023).

8. Conclusion

CBE demonstrates significant potential for improving technical graduate employability in Lagos State by aligning learning outcomes with industry demands. Both graduates and employers endorse its relevance, yet implementation challenges severely constrain effectiveness. Realizing CBE's full benefits requires investment in teacher training, modernized assessment, industry partnerships, and sustainable funding.

9. Recommendations

Based on the findings of the study, the following practical and actionable recommendations are offered:

Strengthen Policy Enforcement: The Lagos State Vocational and Educational Board should develop and enforce comprehensive policies that support the structured and phased adoption of CBE across all technical and vocational education institutions. Clear guidelines and accountability measures will drive consistency and quality.

Prioritize Continuous Teacher Development: Technical educators need ongoing professional training focused on CBE pedagogy, authentic assessment methods, and the integration of digital tools to facilitate student-centered learning.

Align Curriculum with Industry Demands: Technical institutions must collaborate closely with industry stakeholders to co-design and regularly update curricula that reflect current labor market needs, technological advancements, and workplace realities.

Deepen Industry-Education Partnerships: Building strong and sustained partnerships with employers will create more opportunities for internships, apprenticeships, mentorship, and hands-on project work—essential components of effective CBE.

Ensure Sustainable Funding Models: Public-private partnerships, targeted grants, and corporate sponsorships should be pursued to improve funding

for infrastructure, training, and resource development, especially in under-resourced institutions.

Upgrade Learning Infrastructure and Resources: Institutions should be equipped with modern tools, up-to-date training equipment, and digital platforms that promote practical learning, critical thinking, and problem-solving—hallmarks of CBE success.

Leverage Open Educational Resources (OER): Teachers should integrate OER, interactive learning platforms, and performance-based assessments into their teaching practice to create flexible and inclusive learning experiences.

Implement Structured Work-Integrated Learning (WIL): Internship and work-placement programs should be formally embedded within CBE curricula to ensure students gain real-world experience before graduation, improving job readiness.

Adopt Flexible Teacher Training Models: Teacher education and certification programs should offer flexible, blended formats to accommodate working educators, large class sizes, and schools in low-resource environments.

Enhance Institutional Support Systems: For CBE to thrive, schools must be supported with adequate administrative systems, digital infrastructure, and instructional support. Leadership commitment and institutional readiness are critical for long-term success.

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Comparative Effects of Rational Emotive Behaviour and Client-Centred Therapies on Academic Resilience of In-School Adolescents in Internally Displaced Persons' Camps in Borno State, Nigeria

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Abstract. Academic resilience is the ability to maintain or regain positive academic functioning despite significant adversity. It is a multi-dimensional construct comprising cognitive, emotional and behavioural processes that enable students to 'bounce back' from academic setbacks. Despite school enrollment, many displaced adolescents experience significant difficulties meeting academic demands, largely attributable to diminished academic resilience, heightened emotional distress, maladaptive or irrational self-beliefs regarding competence and self-worth, pervasive hopelessness and a fragile or disrupted learner identity. This study investigated the effects of rational emotive behaviour therapy (REBT) and client-centred therapy (CCT) on academic resilience among adolescents in internally displaced person (IDP) camps in Borno State. The moderating effects of gender and age were also examined. The study adopted a quasi-experimental design with a 3×2×3 factorial matrix. Ninety displaced adolescents participated in the study. The Academic Resilience Scale (ARS-30) developed by Cassidy (2016) was adopted for the study. The data were analysed via descriptive statistics and analysis of covariance (ANCOVA). The results were considered significant at the $p. < 0.05$ level. The participants' average age was 14.04 ± 4.46 years; 51% were female, and 49% were male. There were significant main effects of treatments (REBT and CCT) on the academic resilience. REBT was found to be more effective than CCT. The moderating effects of gender and age were not significant. It was concluded that REBT and CCT were effective in fostering academic resilience. Counselling psychologists should deploy both REBT and CCT in enhancing academic resilience among adolescents in IDPs' camps without due consideration to gender and age, but given priority to REBT.

Keywords: Rational emotive behaviour therapy, client-centred therapy, academic resilience, in-school adolescents and internally displaced person

1. Introduction

Education remains a critical pathway for human capital development, psychosocial wellbeing and social reconstruction, particularly in fragile and conflict-affected regions like Northeast, Nigeria. The protracted insurgency and associated insecurity in Northeast, Nigeria has produced large numbers of internally displaced person (IDP), with adolescents constituting a sizable and vulnerable subset of camp populations. Displacement disrupts schooling, fractures social supports and exposes young people to multiple traumatic stressors that increase risk for poor psychosocial outcomes and educational discontinuity. Adolescents who experience prolonged conflict and displacement often face profound educational disruption, psychosocial stress and diminished opportunities for learning and personal development. Adolescence represents a critical transitional stage in the human lifespan, characterised by accelerated physical maturation alongside significant biological, cognitive and psychosocial changes (Santrock, 2010; Berger, 2011).

For adolescents, schooling functions not only as a site for cognitive and academic skill acquisition but also as a critical developmental context that fosters psychosocial stability, identity formation, future orientation and a sense of purpose (Eccles & Roeser, 2011; Masten et al., 2012). Educational engagement during adolescence provides structure, routine and opportunities for social integration, all of which are essential for healthy developmental trajectories. However, in contexts of protracted conflict and forced

displacement such as Borno State, adolescents' access to stable, safe and supportive educational environments is severely disrupted. These disruptions expose young people to cumulative academic, psychological and social adversities such as trauma, loss, instability and resource deprivation that significantly compromise their capacity to adapt to educational demands, sustain academic engagement and achieve positive learning outcomes (Dryden-Peterson, 2016; Miller & Rasmussen, 2010).

Academic resilience can be described as the ability to maintain or regain positive academic functioning despite significant adversity, it has emerged as a critical construct in educational and counselling psychology research (Martin & Marsh, 2006; Cassidy, 2016). Resilience in academic settings reflects not only individual characteristics such as self-efficacy and motivation but also the interaction between learners' internal resources and external supports including school climate, teacher expectations and family involvement (Masten & Barnes, 2018). According to Martin and Marsh (2006), academic resilience is a multi-dimensional construct comprising cognitive, emotional and behavioural processes that enable students to 'bounce back' from academic setbacks. More recent conceptualisations emphasise resilience as a dynamic and context-dependent process rather than a static trait, highlighting how learners mobilise personal and contextual resources to negotiate adversity (Ruiz, Sánchez-Pérez, & Wang et al., 2020).

Borno State has experienced prolonged armed conflict associated with insurgency, resulting in large-scale internal displacement and the establishment of numerous IDP camps. Adolescents residing in these camps are frequently exposed to traumatic experiences, loss of family livelihoods, disrupted schooling, overcrowded living conditions, poverty and limited access to psychosocial and educational support services. Although humanitarian responses have increasingly prioritised access to basic education within IDP camps, schooling in such settings is often characterised by inadequate infrastructure, shortages of trained teachers, overcrowded classrooms and minimal counselling support. These structural challenges, combined with trauma-related emotional and cognitive difficulties, place adolescents at heightened risk of poor academic engagement, low motivation, school dropout and diminished educational aspirations.

Despite being enrolled in school, many displaced adolescent learners struggle to cope with academic demands due to low academic resilience, emotional distress, irrational beliefs about self-worth and

competence, hopelessness and weakened learner identity. These challenges underscore the need for targeted psychosocial interventions that not only address emotional distress but also fosters academic resilience, strengthen students' cognitive appraisals, self-beliefs and adaptive coping strategies related to learning and schooling. One way to enhance academic resilience is through implementation of counselling interventions. In this study, we selected REBT and CCT that aimed to foster academic resilience among displaced school-attending adolescents.

The REBT, developed by Albert Ellis, is grounded in the cognitive-behavioural tradition and posits that emotional and behavioural disturbances arise not from events themselves but from individuals' irrational beliefs about those events (Ellis, 1995). REBT emphasises the identification, disputation and restructuring of irrational beliefs such as catastrophising, low frustration tolerance and global self-downing, into more rational and adaptive cognitions. In educational contexts, irrational beliefs about academic failure, self-worth and future prospects can significantly impair motivation, persistence and emotional regulation. Many empirical studies have demonstrated the effectiveness of REBT in reducing maladaptive behaviours, improving emotional adjustment and enhancing students' adaptive functioning. REBT have been linked to improve coping skills, self-efficacy and academic resilience among adolescents exposed to adversity (Martin & Marsh, 2006; Rousseau et al., 2023). For displaced adolescents in IDP camps, REBT holds particular promise in addressing trauma-related cognitive distortions and defeatist academic beliefs that undermine resilience. By fostering rational thinking patterns, REBT may enhance students' capacity to interpret academic challenges realistically, regulate emotional responses and persist despite adversity.

On the other hand, the CCT, rooted in Carl Rogers' humanistic theory, adopts a fundamentally different therapeutic stance. Rather than focusing on cognitive restructuring, CCT emphasises the therapeutic relationship as the primary mechanism for change, characterised by empathy, unconditional positive regard and congruence (Rogers, 1951). CCT assumes that individuals possess an inherent tendency toward growth and self-actualisation, which can be facilitated within a supportive, non-judgmental environment. In context of displacement, adolescents often experience invalidation, marginalisation and loss of agency. CCT offers a relational space in which displaced youths can rebuild self-worth, emotional safety and intrinsic motivation. Many studies have shown that CCT is

associated with improvements in psychological resilience, hope, emotional regulation and self-concept among vulnerable populations (Rezapour-Mirsaleh et al., 2023). Although empirical evidence directly linking CCT to academic resilience remains limited, its theoretical foundations strongly indicate its relevance in enhancing the emotional, motivational and self-regulatory capacities that underpin sustained academic engagement and adaptive functioning.

Despite on-going efforts to improve access to education within IDP camps in Borno State, many in-school displaced adolescents continue to demonstrate low academic resilience, reflected in poor persistence, emotional disengagement, reduced academic self-efficacy and increased risk of school dropout. Adolescents in IDP camps are exposed to multiple, cumulative adversities: armed conflict, disrupted schooling, poverty and limited mental health and psychosocial support (MHPSS), which negatively affect motivation, future orientation and beliefs about academic competence (Betancourt et al., 2014; Ungar, 2013). However, educational responses in humanitarian contexts have largely focused on access and instruction, with limited integration of evidence-based counselling interventions targeting the psychosocial foundations of academic resilience (Dryden-Peterson, 2016; Panter-Brick et al., 2018). Although REBT and CCT have demonstrated effectiveness in improving adolescents' emotional and behavioural adjustment (Ellis & Dryden, 2007; Rogers, 1957; Szentagotai & David, 2013), research examining their impact on academic resilience, particularly through comparative designs in displacement settings remains scarce. It is against this backdrop, the present study investigates the effects of REBT and CCT on the academic resilience of in-school adolescents residing in IDP camps in Borno State, Nigeria.

1.1 Purpose of the Study

The aim of this study was to investigate the effectiveness of REBT and CCT in fostering academic resilience among in-school adolescents at Temporary Learning Centres (TLCs) in IDP camps in Borno State, Nigeria.

Specifically, the study investigated the:

- Main effect of treatments (REBT & CCT) on academic resilience of in-school adolescents at TLCs in IDP camps in Borno State.
- Interaction effect of treatments and gender on academic resilience of in-school adolescents at TLCs in IDP camps in Borno State.

- Interaction effect of treatments and age on academic resilience of in-school adolescents at TLCs in IDP camps in Borno State.

1.2 Hypotheses

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

H₀₁: There is no significant main effect of treatments (REBT and CCT) on academic resilience among in-school adolescents at TLCs in IDP camps in Borno State.

H₀₂: There is no significant interaction effect of treatments and gender on academic resilience among in-school adolescents at TLCs in IDP camps in Borno State.

H₀₃: There is no significant interaction effect of treatments and age on academic resilience among in-school adolescents at TLCs in IDP camps in Borno State.

2. Methodology

The study adopted a pre-test, post-test and control group quasi-experimental design with a 3×2×3 factorial matrix. It consists of two treatments (REBT and CCT) and a control group, gender at two levels (male and female) and age range at three levels (10 – 12 yrs, 13 – 15 yrs and 16 – 18 yrs). The population for the study consisted of all in-school adolescents at TLCs in IDPs' camps in Borno State, Nigeria. Multistage sampling strategy was adopted for the study. Firstly, three (3) IDPs' camps with TLCs were randomly selected from Borno State. Secondly, purposive sampling technique was used to select in-school adolescents with low academic resilience (aged 10 – 18 yrs) at TLCs in these IDPs' camps. However, Academic Resilience Scale (ARS-30) was used to screen out the out-of-school adolescents with low academic resilience at TLCs. A cut-off score between thirty (30) and sixty (60) on ARS-30 was used as benchmark for low academic resilience; the screening tool was administered on about three hundred (300) in-school adolescents and almost 70% of the screened population were eligible based on inclusion criteria. In the third stage, out of the approximately 70% potential participants, ninety (90) were randomly recruited to participate in the study (i.e. 30 participants per group: REBT, CCT and control groups).

Academic Resilience Scale (ARS-30) was adopted for the study. The ARS-30 developed by Cassidy (2016), is a multi-dimensional construct measure (sub-scale: perseverance, self-regulation and motivation), primarily designed to measure academic resilience

based on students’ response to academic adversity in educational context. ARS-30 comprises of thirty (30) items and is scored along a 5-point likert scale from “Likely” (1), “Somewhat Likely” (2), “Neutral” (3), “Somewhat Unlikely” (4) and “Unlikely” (5) with theoretical range of 30 to 150. Positive items are reversed, so a high score on this scale indicates greater academic resilience. Based on content, items 1, 3, 6, 7, 12, 14, 15, 19 and 28 are negative and others are positive. Many studies have shown that ARS-30 has a good sensitivity, specificity, concurrent and convergent validity and high reliability coefficient (Cronbach’s $\alpha = .72$ to $.85$) across different population. Also, ARS-30 was pilot tested among fifty (50) in-school adolescents at TLCs in the study area. The data obtained from the pilot test was processed using Cronbach Alpha method, and results revealed

that ARS-30 is highly reliable with internal consistency ($\alpha = .84$), thus, it can be generalized among in-school adolescents in Borno State.

The participants in the two experimental groups (REBT & CCT) were exposed to ten sessions each of 60 minutes weekly for ten weeks. Descriptive statistics (mean and standard deviation) and Analysis of Covariance (ANCOVA) were used to analyze data in the study. The socio-demographic variables were processed by descriptive statistics while ANCOVA was used to determine the main effect of treatments (REBT & CCT) on academic resilience as well as interaction effects of treatments, gender and age. Likewise, Duncan post hoc analysis was used to ascertain the differential effects between the two therapies (i.e. REBT and CCT). All the statistical significance was considered at $p < 0.05$.

3. Results

Table 1: Descriptive Statistics and Main Effects of REBT and CCT on Academic Resilience

| Measure | Pre-Intervention | | | | | | Post-Intervention | | | | | | Main Effect (Treatments) | | |
|------------|-------------------|------|------------------|------|----------------------|------|-------------------|------|------------------|------|----------------------|------|--------------------------|---------|----------|
| | REBT ^a | | CCT ^b | | Control ^c | | REBT ^a | | CCT ^b | | Control ^c | | F(2,71) | p. val. | η^2 |
| | \bar{x} | SD | \bar{x} | SD | \bar{x} | SD | \bar{x} | SD | \bar{x} | SD | \bar{x} | SD | | | |
| Acad. Res. | 40.30 | 5.83 | 44.17 | 6.66 | 39.43 | 6.60 | 141.77 | 5.15 | 117.18 | 7.11 | 46.50 | 6.40 | 1705.31 | <.001 | 0.98 |

Note: REBT = Rational Emotive Behaviour Therapy; CCT = Client-Centred Therapy; Acad. Res. = Academic Resilience; N = 90 (^an = 30; ^bn = 30; ^cn = 30); * $p < 0.05$

The results in this study revealed that ninety (90) adolescents participated in the study; the 90 participants were grouped into three (REBT, CCT & Control) groups with 30 clients each. As shown in Table 1, the scores on the ARS-30 measure at pre-treatment phase (REBT: $\bar{x} = 40.30$, SD = 5.83; CCT: $\bar{x} = 44.17$, SD = 6.66; Control Group: $\bar{x} = 39.43$, SD = 6.60) were obtained. On contrary, the following results were obtained at post-treatment phase (REBT: $\bar{x} = 141.77$, SD = 5.15; CCT: $\bar{x} = 117.18$, SD = 7.11; Control Group: $\bar{x} = 46.50$, SD = 6.40). Nonetheless, even a cursory look at the means shown in Table 1 indicates that fairly large differences exist between means of REBT & CCT at pre and post treatments, with the exception of control group. Additionally, one-way ANCOVA, $F(1, 71) = 1705.31$, $p < .001$ and $\eta^2 = .98$ demonstrated that there was significant main effect of REBT & CCT on academic resilience of the participants. The partial eta value ($\eta^2 = .98$), illustrated that 98% variance in the academic resilience is explained by the interventions, and thus the main effects of the treatments are rated large.

Table 2: Duncan Post Hoc Analysis of Treatments (REBT, CCT & Control Group)

| Treatment | N | Sub-Set for Alpha = 0.05 | | |
|---------------|----|--------------------------|--------|-------|
| | | 1 | 2 | 3 |
| REBT | 30 | 141.37 | | |
| CCT | 30 | | 116.23 | |
| Control Group | 30 | | | 46.13 |
| Sig. | | 1.00 | 1.00 | 1.00 |

Means for groups in homogeneous in subsets are displayed

There was significant differences in the post-hoc test mean scores in the REBT ($\bar{x} = 141.37$), CCT ($\bar{x} = 116.23$) and control group ($\bar{x} = 46.13$) levels of academic resilience. The Duncan post-hoc revealed that participants in the REBT group benefitted more than those participated CCT group. The results confirmed that there were statistically significant differential effects between the two therapies, however, both therapies were found to be effective in enhancing the academic resilience of the participants.

Table 3: Descriptive Statistics and Interaction Effects of Treatments and Gender on Academic Resilience

| Measure | Pre-Intervention | | Post-Intervention | | | | Interaction Effects (Treatments & Gender) | | | | |
|------------|--------------------|------|----------------------|------|--------------------|-------|---|-------|---------|---------|----------------|
| | Males ^a | | Females ^b | | Males ^a | | Females ^b | | F(1,71) | p. val. | η ² |
| | \bar{x} | SD | \bar{x} | SD | \bar{x} | SD | \bar{x} | SD | | | |
| Acad. Res. | 39.96 | 6.15 | 42.70 | 6.88 | 101.15 | 41.17 | 101.34 | 41.29 | .35 | 0.556 | 0.005 |

Note: Acad. Res. = Academic Resilience; N = 90 (^an = 46 for Males; ^bn = 44 for Females); * *p.* < 0.05

The results presented in Table 3 indicated that the participants in this study comprised of 46 males and 44 females. The two-way ANCOVA results: $F(1, 71) = 0.35, p. < .556$ and $\eta^2 = .005$, found that there was no significant interaction effect between treatments (REBT, CCT & control group) and gender on academic resilience of the participants.

Table 4: Descriptive Statistics and Interaction Effects of Treatments and Age on Academic Resilience

| Measure | Pre-Intervention | | | | Post- Intervention | | | | | | Interaction Effects (Treatments & Age) | | | | |
|------------|------------------------|------|------------------------|------|------------------------|------|------------------------|-------|------------------------|-------|--|-------|---------|--------|----------------|
| | 10–12 yrs ^a | | 13–15 yrs ^b | | 16–18 yrs ^c | | 10–12 yrs ^b | | 13–15 yrs ^b | | 16–18 yrs ^c | | F(2,71) | p.val. | η ² |
| | \bar{x} | SD | \bar{x} | SD | \bar{x} | SD | \bar{x} | SD | \bar{x} | SD | \bar{x} | SD | | | |
| Acad. Res. | 41.85 | 5.58 | 39.89 | 6.45 | 43.27 | 7.31 | 101.30 | 44.38 | 100.16 | 41.51 | 103.04 | 38.94 | 0.138 | 0.138 | 0.054 |

Note: Acad. Res. = Academic Resilience; N = 90 (^an = 20 for 10–12 yrs; ^bn = 44 for 13–15 yrs; ^cn = 26 for 16–18 yrs); Participants’ mean age = 14.04 ± 4.46 years old; * *p* < 0.05

The results of the study as presented in Table 3 have shown that the participants had average age 14.04 ± 4.46 years old and their age ranges from 10 to 18 years. The ANCOVA, $F(1, 71) = 2.040, p. < .138$ and $\eta^2 = .054$ showed that there was no significant interaction effect between treatments and age on academic resilience of the participants.

4. Discussion

The aim of our study was to compare effects of REBT and CCT on academic resilience of in-school adolescents in IDP camps in Borno State. At baseline, participants across the REBT, CCT and control groups demonstrated comparably low levels of academic resilience, reflecting the adverse effects of conflict, displacement and prolonged educational disruption on adolescents’ adaptive academic functioning. This pattern is consistent with prior studies documenting compromised resilience among conflict-affected youth due to cumulative trauma, instability and limited MHPSS (Masten & Barnes, 2018; McBride et al., 2022), and it strengthens the internal validity of the observed post-intervention effects.

Following the intervention, both treatment groups exhibited substantial improvements in academic resilience, with the REBT group achieving significantly higher post-test scores than the CCT group, while the control group showed minimal change. The statistically significant main effect of treatment, coupled with an exceptionally large effect size ($\eta^2 = .98$), underscores the potency of structured counselling interventions in high-risk and under-resourced settings such as Borno State. Consistent with prior intervention research, such pronounced effects are likely attributable to the absence of prior

systematic MHPSS among displaced adolescents (Tol et al., 2011; Betancourt et al., 2014).

The superior effectiveness of REBT can be theoretically and empirically explained by its directive, cognitively oriented focus on identifying and restructuring irrational beliefs and maladaptive cognitions that undermine academic engagement and persistence (Ellis & Dryden, 2007; David et al., 2018). By enhancing emotional regulation, adaptive coping and problem-solving, REBT directly targets core mechanisms underlying academic resilience (Martin & Marsh, 2006; Wang et al., 2020). These findings are consistent with previous studies demonstrating the effectiveness of REBT in improving academic self-efficacy, emotional adjustment and coping among adolescents (Szentagotai & David, 2013; Eremie & Akinboye, 2019; Ogunwale et al., 2020).

Although CCT produced comparatively smaller gains, its significant impact on academic resilience remains noteworthy. Grounded in Rogers’ (1957) humanistic theory, CCT fosters a therapeutic climate characterised by empathy, unconditional positive regard and congruence; conditions that are particularly salient for adolescents affected by displacement and trauma. Such relational support has been shown to promote self-worth, motivation, and emotional stability, which are foundational to resilient academic functioning (Ungar, 2013; Masten & Barnes, 2018). Empirical evidence similarly supports the positive effects of CCT on school engagement and emotional regulation among vulnerable youth populations (Cooper et al., 2013; Murphy et al., 2016). The observed differential effectiveness between REBT and CCT aligns with comparative psychotherapy research suggesting that while non-directive approaches are

effective for emotional support, structured cognitive-behavioural interventions often yield stronger outcomes for goal-oriented and performance-related constructs such as academic resilience (David et al., 2018; Schunk & DiBenedetto, 2020).

Additionally, this study examined whether gender and age moderate the effects of REBT and CCT on the academic resilience of in-school adolescents in IDP camps in Borno State. The findings revealed a near-equal gender distribution among participants and demonstrated no statistically significant interaction effects between treatments and gender on academic resilience, with a negligible effect size. This indicates that the effectiveness of REBT and CCT was not contingent upon participants' gender. The absence of gender-based differential effects suggests that male and female adolescents benefited comparably from the interventions. This finding is consistent with contemporary resilience frameworks that conceptualise academic resilience as a dynamic and malleable construct shaped primarily by psychosocial resources, cognitive appraisals and environmental supports rather than biological sex (Masten & Barnes, 2018; Wang et al., 2020).

Empirically, these findings align with prior intervention studies reporting non-significant gender differences in the effectiveness of cognitive-behavioural and humanistic therapies among adolescents, however REBT-based interventions have been shown to produce comparable cognitive and emotional gains across genders (Szentagotai & David, 2013), while CCT has similarly demonstrated gender-neutral effects on adolescent wellbeing and school engagement (Cooper et al., 2013). Studies on academic resilience further report minimal or inconsistent gender effects, particularly in high-risk educational environments (Martin & Marsh, 2006; Morales & Trotman, 2011). Evidence from humanitarian and conflict-affected settings also supports the present findings, with psychosocial interventions yielding similar benefits for boys and girls (Betancourt et al., 2014; Ogunwale et al., 2020).

With respect to age, the findings indicated that participants ranged from early to late adolescence, yet no statistically significant interaction effect was observed between treatments and age on academic resilience. This suggests that both younger and older adolescents benefited similarly from the interventions. This result is consistent with developmental resilience perspectives, which posit that resilience is responsive to psychosocial interventions across adolescence (Masten & Barnes, 2018; Ungar, 2013).

Furthermore, many empirical studies evidence indicates limited age-related moderation effects in counselling and resilience-based interventions. REBT interventions have demonstrated comparable outcomes across adolescent age groups (Szentagotai & David, 2013), while psychosocial programmes for conflict-affected youth have shown consistent benefits across broad age ranges (Tol et al., 2011). Moreover, research suggests that academic resilience is more strongly influenced by psychosocial and school-related factors than by chronological age, particularly in high-risk educational contexts (Martin & Marsh, 2006; Wang et al., 2020). Although certain developmental studies have identified age-related variations in coping and self-regulation, with older adolescents typically demonstrating greater cognitive sophistication and self-regulatory capacity (Eccles & Roeser, 2011; Zimmermann, 2013), these differences may be attenuated in displacement contexts due to shared exposure to chronic adversity and environmental constraints. The structured and developmentally sensitive nature of the interventions, combined with shared contextual constraints within IDP camps, may have contributed to the observed uniformity in treatment effects across age groups. While the small-to-moderate effect size suggests that age may exert a modest influence warranting further investigation, the present findings provide preliminary evidence of the broad applicability of REBT and CCT across adolescent developmental stages.

5. Conclusion

In conclusion, this study demonstrates that REBT and CCT are effective psychosocial interventions for enhancing the academic resilience of in-school adolescents living in IDP camps in Borno State, with REBT yielding comparatively stronger effects. The absence of significant moderating effects of gender and age indicates that the benefits of these interventions are consistent across male and female adolescents and across early to late adolescence, underscoring their broad applicability in humanitarian contexts. These findings highlight the critical role of structured, culturally responsive counselling interventions in addressing the educational and psychosocial challenges associated with displacement and conflict and they support the integration of evidence-based counselling programmes within school and camp-based educational services to promote sustained academic engagement and positive developmental outcomes among displaced adolescents.

6. Recommendations

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

- The Federal Ministry of Education through State Ministry of Education in collaboration with Education in Emergencies Working Group in Nigeria should integrate REBT and CCT into school-based support services in Internally Displaced Persons' (IDP) camps, given priority to REBT.
- The United Nations agencies, International Non-Governmental Organisations (INGOs) and National Non-Governmental Organisations (NNGOs) should focus on intervention quality, therapist competence and cultural sensitivity rather than demographics such as gender or age, ensuring equitable access and benefit for all adolescents within education sector.
- The Borno State Government through Borno State Emergency Management Agency (BOSEMA) should invest in the capacity building training and deployment of counselling psychologists skilled in REBT and CCT within IDP camps in Borno State.

7. Ethical Considerations

The University of Ibadan, Social Sciences and Humanities Research Ethics Committee (SSHREC) provided ethical approval for this research work, with approval number: UI/SSHREC/2023/00106. The Borno State Emergency Management Agency (BOSEMA) has also granted permission to access IDP camps in Borno State. Additionally, all participants and their parents/guardians/caregivers fill in and provided written informed consent or informed assent as appropriate.

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Tertiary Education Project Management in University of Benin, Nigeria: Potentials for Artificial Intelligence Infusion

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Abstract. The purpose of this research was to investigate tertiary education project management with artificial intelligence with the view of revolutionalising its processes in Nigerian universities. The phenomenon was investigated in the University of Benin, Benin City. Three research questions were raised that guided the study, descriptive survey research design of the ex-post-facto type was adopted, the population comprised all the faculties and institutes in the university. All the faculties and institutes were sampled to ensure adequate coverage. The instrument used was a checklist titled Project Initiated and Executed Checklist (PIEC). Data collected were analysed with the use of descriptive statistics. Findings revealed that the number of education projects initiated in University of Benin between 2020 to 2024 was fifteen (15). Some of the projects have been completed while others are still on-going, nine (9) of the initiated projects were executed within the time frame in the university between 2020 to 2024. Also, six of the education projects are yet to be completed. The study concluded that 60% of education projects were completed within the time frame while 40% are still on going in University of Benin. The study recommended that all education projects should be executed within the stipulated time frame to avoid cost overrun and wastages since resources are limited. In addition, project managers should investigate any other factors that can improve on execution of education projects within the time frame.

Keywords: Revolutionalising, Tertiary Education, Project, Management, Artificial Intelligence.

1. Introduction

Tertiary education is that level of education after secondary education which comprises of universities, colleges of education, polytechnics, monotronics, specialized education among others. It serves as an instrument for national growth, human capital development, entrepreneurship, skills and knowledge acquisition. Tertiary education also prepares the individual for social and cultural development because its recipient may be involved in social cohesion, cultural enrichment, public health, research and innovation which certainly will bring about economic development, poverty reduction and increase in employment opportunities for the development of nations.

The goals of tertiary education as stated in the National Policy of Education (2013) is to contribute to national development by training high level manpower, intellectual capacity of individuals that will help them to understand and appreciate their local and external environment. In addition, to promote technological advancement through research and teaching. It encourages civic engagement, political awareness, reduction in poverty and inequality in the society.

To achieve these goals efficiently and effectively, tertiary education requires projects and systematic management. Through policies, plans and programmes, government aimed to achieve its goals for education. Hence it institutes projects to actualize its goals for education within a stipulated period of time. UNESCO (2010) classified education projects into physical projects, curriculum and textbooks projects, training projects and management projects. According to UNESCO (2010) Physical projects includes infrastructural construction, equipment and

materials. Curriculum and textbooks projects include the production and procurement of books, school manuals, teachers guide, education aids, curriculum and textbook development and pilot projects. On the other hand, training projects includes training the trainers and teachers which includes pre-service, in-service and mentorship, while management projects in education includes capacity building in general management of systems of education, development of education information management systems and the like.

A project can be seen as a commitment that involves investment of human and material resources, fiscal and time towards attainment of goals within a limited time with the aims to benefit both economic and non-economic now or later under certain uncertainties (Nwadiani 2010). In his contribution, Enaigbe (2021) defined a project as an important and carefully planned piece of work that is intended to build or produce something new or to deal with a problem. An education project is intended to resolve an issue in the field of education. For instance, a building project involving an ultra-modern hostel accommodation for students would be aimed at providing students with accommodation as a result of increase in enrollment. All these activities involve investment with time limit to complete and are usually situated in a specific location. A project is also seen as a series of tasks that has a definite beginning and end, that requires expenditure of resources that must be completed in order to achieve the goals and objectives that were stated. It is capital investment using resources to provide and develop facilities for the provision of goods and services which involves planning, financing, organizing, implementation and evaluation.

Education project management involves systematic planning process that uses scarce resources within a specified time with the aim of providing some economic returns in future. Hence, it is capital intensive when completed would ultimately provide goods and services to the satisfaction of end users. These variables have to be considered by the project management team to avoid project overrun and ensures project feasibility and viability. Imakpokpomwan (2021) stated that management is the deliberate efforts made towards the provision and utilization of human, physical and fiscal materials for the actualization of stated goals within set time frame. For education project to be implemented all the needed resources must be made available and the time frame must be stated otherwise the project may become an abandon one or project overrun in terms of cost and time. Badau (2017) postulated that education project management as the planning, organising, directing and

controlling of tasks with the rare resources of knowledge and people to attain stated result in the education system. In like manner, Imakpokpomwan (2024) defined education project management as the application of management processes, procedures and principles in resolving certain temporary task designed to serve some identified specific needs in education sector. Certainly, education projects require sustainability hence the maintenance of the procured project must be planned along other variables at the conception stage. This also involves managing and utilization of the scarce resources bearing in mind the cost and benefit, time resources, risk and uncertainty that surrounds a project in order to prolong its life span. The goal is to complete a project for the services of education for a long time.

In Nigeria, many uncompleted projects dots the landscape of the education. For example, Amzat (2018) investigated Universal Basic Education (UBE) projects in four states in Nigeria discovered that some school projects were not completed, although the actual project cost had been settled. This scenario needs a revolutionalising for project initiated for education to serve its purposes. Revolutionalising education project management requires a dramatic and radical change that could influence the way projects are executed. It requires a change that could impact on the institution's belief, attitude and ways of executing education project especially in tertiary institutions. A call for a fundamental change in the way of thinking, mindset, paradigm shift and innovation in application of technology in executing education projects. The shift should be capable of changing the types and ways technology can ensure project execution on time but must not lose focus on scope, quality, time and cost effectiveness. Revolutionizing tertiary education project call for radical reduction in project cost overrun and abandonment of school projects. Imakpokpomwan (2024) discussed the project overrun which is either cost overrun or time overrun. It's a factor of inability to complete the project as schedule. Ikechuchwu & Emoh (2017) reported in their study that cost overrun will result to wastage of educational resources and also in projection execution as well in tertiary education. Education project may suffer if it is not benefiting from strong monitoring and evaluation processes. An emerging technology that could be handy in minimizing the contemporary issues in education project management is Artificial Intelligence (AI). It refers to simulation of human intelligence into machines that are programme to think and learn like humans. It has the potential to transform education project through effective implementation, monitoring and evaluation for efficiency in the education system.

Artificial intelligence has been described as capable of revolutionizing industries including education (Fellicetti, et al, 2024, Feng & Qinglun, 2024, Savio & Ali, 2023). Project management in education could benefit from the advent of the AI in many ways. According to Ruiz, 2020, artificial intelligence could function in project human resources classification, in project management as well as assisting the application for maintenance schedule and operations. It is expected to also assist in the area of forecasting and optimization (Savio & Ali, 2003). in developed world where AI has been deplored to the service of education, there are positive influence on the way things are done for the improvement in educational services.

1.1 Statement of the Problem

The major function of tertiary education is to train, up-skills and develop the human resources of the nation to a higher manpower level so that the beneficiaries could obtain valuable knowledge, values, skills, techniques and innovation to execute their works efficiently. To achieve this goal, a lot of education projects have to been completed as scheduled. Are there education projects being initiated at the University of Benin in spite of the tight economy of the nation in recent times, could it be real that some of the projects in a federal university like the University of Benin may have not be completed on schedule? To what extent are project initiated at the University of Benin completed within the actual time frame. Could it be true that project overrun may be happening inspite of the tight budget which education institution operates on. What could be responsible for this? This study therefore is to investigate if there is a need to deploy Artificial intelligence in tertiary education project management in Nigeria.

1.2 Research Questions

- What education projects were initiated between 2020-2024 in University of Benin, Benin City?

- To what extent are the initiated projects executed within the time frame in the University of Benin, Benin City?
- What proportion of initiated education project exceeded schedule during the period in University of Benin, Benin City?

1.3 Purpose of the Study

The main purpose of the study was to investigate tertiary education project management in University of Benin, Nigeria and its potentials for artificial intelligence infusion. Specifically, the study:

- analyzed the education projects that were initiated between 2020-2024 in University of Benin, Benin City.
- determined the extent to which the initiated projects were executed within the time frame in the university.
- found out the proportion of initiated education project that exceeded the schedule during the period in the university.

2. Methodology

The study is a descriptive survey research design. The population comprised all the building infrastructure projects initiated for faculties, institutes and administrative units and departments between 2020 and 2024 scheduled to be completed within the period in the University of Benin, Benin City. They were purposively sampled because of its small size to ensure adequate coverage of the investigation subject matter. The instrument used for data collection was a checklist titled Project Initiated and Executed Checklist (PIEC). The content validity was done by showing the instrument to three experts in Educational Planning. Reliability of the instrument was not carried out because the instrument was a checklist which normally does not need a reliability test. The instrument was administered to Physical Planning Division of the University by the researchers and the data collected were analysed using descriptive statistics such as ratio, percentage and a range of 70% as high, 50%-60% moderate high and 50% below low. Data analysis

Research Question 1: What education projects were initiated between 2020 and 2024 and scheduled to be completed within the period in University of Benin, Benin City?

Table 1: Projects Initiated in University of Benin between 2020 to 2024

| S/N | Name of project | Initiation Date | Completion Date | Remark |
|-----|---|-----------------|-----------------|-----------|
| 1 | College of Medical Sciences | Jan-2020 | Dec-2024 | On-going |
| 2 | Faculty of Agriculture office complex | Nov-2020 | Dec-2022 | Completed |
| 3 | Optometry building phase I | Nov-2021 | Jun-2022 | Completed |
| 4 | Medical lecture hall | Oct-2021 | Oct-2023 | Completed |
| 5 | Perimeter fence site A & B phase I | Dec-2021 | Feb-2022 | Completed |
| 6 | Medical Science office block | Nov-2022 | May-2023 | Completed |
| 7 | Perimeter fence site A & B Phase II | Dec-2021 | Feb-2022 | Completed |
| 8 | Optometry building phase II | Nov-2022 | May-2023 | On-going |
| 9 | Institute of child health building | Feb-2023 | Oct-2023 | On-going |
| 10 | Medical student hall | Feb-2023 | Sep-2023 | Completed |
| 11 | Clinical equipment in Medical lab | Dec-2022 | Jan-2024 | Completed |
| 12 | Equipment for Engineering | Sep-2023 | Jan-2024 | Completed |
| 13 | Toilet conveniences at bus stop pack main gate. | Nov-2022 | Apr-2023 | On-going |
| 14 | Internal audit building | Sep-2023 | Sep-2024 | On-going |
| 15 | Perimeter fence site A & B Phase III | Sep-2023 | Jul-2025 | On-going |

Source: Physical Planning Division, University of Benin.

Table 1 shows that a total number of fifteen education projects were initiated in the University of Benin between 2020 to 2024. They were spread across academic and administrative buildings in faculties, institutes and halls of residence in the university.

Research Question 2: To what extent are the initiated projects were executed within the time frame in the University of Benin, Benin City?

Table 2: Initiated projects executed within scheduled time frame in the University of Benin.

| S/N | Name of project | Initiation Date | Scheduled Completion Date | Remark |
|-----|---|-----------------|---------------------------|-----------|
| 1 | Faculty of Agriculture office complex | Nov-2020 | Dec-2022 | Completed |
| 2 | Medical lecture hall | Oct-2021 | Oct-2023 | Completed |
| 3 | Perimeter fence site B | Dec-2022 | Feb-2022 | Completed |
| 4 | Medical Science office block | Nov-2022 | May-2023 | Completed |
| 5 | Perimeter fence site A & B | Dec-2021 | Feb-2022 | Completed |
| 6 | Medical student hall | Feb-2023 | Sep-2023 | Completed |
| 7 | Clinical equipment in Medical lab | Dec-2022 | Jan-2024 | Completed |
| 8 | Provision and installation of equipment for Engineering faculty | Sep-2023 | Jan-2024 | Completed |
| 9 | Toilet conveniences at bus stop pack | Nov-2022 | Apr-2023 | Completed |

Source: Authors calculation based on sources from Physical Planning Division.

Table 2 indicated that nine (9) of the initiated projects were executed within the scheduled time frame in the university between 2020 to 2024. Thus, 60% of the initiated projects were executed within the time frame, which is moderately high.

Research Question 3: What proportion of initiated education project exceeded schedule during the period in University of Benin, Benin City?

Table 3: On-going Projects in the University between 2020 to 2024

| S/N | Name of project | Initiation Date | Completion Date | Remark |
|-----|--------------------------------------|-----------------|-----------------|----------|
| 1 | College of Medical Sciences Block 24 | Jan-2020 | Dec-2024 | On-going |
| 2 | Optometry building phase I | Nov-2021 | Jun-2022 | On-going |
| 3 | Optometry building phase II | Nov-2022 | May-2023 | On-going |
| 4 | Institute of child health building | Feb-2023 | Oct-2023 | On-going |
| 5 | Internal audit building | Sep-2023 | Sep-2024 | On-going |
| 6 | Perimeter fence site A & B | Sep-2023 | Jul-2025 | On-going |

Source: Authors calculation based on sources from Physical Planning Division

The data in Table 3 revealed the number education projects ought to have completed between 2020-2024 but yet to be completed in the university. Of the fifteen (15) initiated projects expected to be completed within the period could not be completed. There are six (6) of such projects, thus leading to a proportion of 40% that was not completed on scheduled which is also considered low.

3. Discussion of Findings

Findings in research question one indicated the education building projects that were initiated in University of Benin between 2020 to 2024. The finding of this study has shown that some of the projects were completed while others were on-going. This finding is in line with Amzat (2018) who investigated Universal Basic Education (UBE) and found out that some school projects were not completed, although the cost of the project had been settled. In this case, the project owners may not be the problems since funds were said to be released as expected. Other factors including inflation, time, material, policy, legal issues or human resources may negatively affect the completion of the project. In any case, it could lead to project overrun or even abandonment. In as much as the project was not completed as scheduled to service the intended users, it amounted to wastage which should be avoided to barest minimum. Here comes the opportunity to introduce Artificial intelligence to assist the project's completion.

Findings in research question two established that nine (9) of the initiated projects were completed while the remaining ones are on-going. Though none of the project can be said to be abandoned at this stage, it could happen if for a long-time contractor does not move in to complete the work. Ikechuckwu and Emoh (2017) argued that projects not completed on schedule could result in wastage of scarce resources as well as project overrun, if not abandoned. From the findings, 60% completion is not encouraging enough because millions of Naira sunk into the uncompleted projects are not productively contributing to the growth of the national economy since they are idea and hence serving no end users.

Research question 3 revealed that the proportion of the education projects yet to be completed is 40%. A ratio of 3:2 success to failure rate is not good enough for a growing tertiary institution whose teeming population carve for the project.

4. Potentials application of Artificial Intelligence in Education Project Management in Nigeria

Kamalov, et, al (2023) argued that Artificial Intelligence could assist in providing customer service and supports for other tasks. The potential application of Artificial intelligence in education project management is still at its infancy stage. In all aspect of project management, from the initiation, Planning, Execution, Monitoring and Controlling, and Closing stages, artificial intelligence can be applied to transform its operation for success. Bento, et al (2022) deduced from a research work that artificial intelligence could be applied in project integration, project scope management, project time management, project cost management, project quality management, project resource management, project communication management, project risk management, project procurement management, project stakeholders' management.

Project management in education organisation is a recent addition to the courses of educational management/administration. In order to promote its study, student would be motivated to embrace all available avenue to study it. Artificial intelligence is one such agency that could promote the learning of education project management in educational institutions. According to Kamalov et, al (2023), the potential application of AI in education includes personalised learning, intelligence tutoring systems, automation of assessment and teachers-students collaboration. Courses in Education Project Management can be promoted with the application of AI even for inclusiveness.

Big data and machine learning are recent addition to the knowledge economy and the learning industry. Artificial intelligence is known to be enhancing their adaptation to many sectors and education project management is not isolated. It could be used for policy marking and monitory education projects by utilizing the most effective artificial intelligence tools

5. Conclusion

Based on the findings of this study, it was concluded that 60% of education projects were completed within the time frame while 40% were not completed on schedule in the University of Benin between 2020 to 2024. This study buttresses the fact that for every project to succeed all the needed factors must be put in place. The failure to do so could delay project completion. There is the need to deploy artificial intelligence to analyse data in order to assist in

identifying the cause/s of the failure as well as to arrest the situation in any other projects henceforth.

6. Recommendations

From the findings of this study, the researcher recommended that all education projects should be executed within the stipulated time frame to avoid cost overrun and wastages since resources are limited. In addition, project managers should be conversant with Artificial Intelligence and capable of exploring its usage in order to improve the execution of education projects within the time frame. Artificial intelligence should be deployed from the project conception stage to alert stake-holders on areas of risk and possible cause of a failure for all concerned to plan out how to avoid the pitfalls. If completed project must be durable, artificial intelligence should be explored to programme scheduled maintenance. Upon failure to do so as expected, Artificial Intelligence should raise the alarm that the building project is in danger for all human elements and materials to be safeguarded.

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Teachers' Culturally Responsive Learning Environment Practice, Classroom Management and Students' Discipline in Public Senior Secondary Schools in Lagos State, Nigeria

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Abstract. Culturally diverse classrooms require teachers to implement instructional practices that acknowledge students' cultural backgrounds and promote inclusive learning environments. This study investigated the relationship between teachers' culturally responsive learning environment practices, classroom management, and students' discipline in public senior secondary schools in Lagos State, Nigeria. A descriptive survey research design was adopted. The population comprised teachers and students in public senior secondary schools, with 1,800 questionnaires administered and 1,797 valid responses obtained, representing a 99.8% response rate. Data were collected using the Teachers' Culturally Responsive Learning Environment Practice and Classroom Management Questionnaire (TCRLEPCMQ) and the Students' Discipline Questionnaire (SDQ). The instruments were validated by experts, and their reliability was confirmed using Cronbach's Alpha. Data were analysed using descriptive statistics, Pearson Product-Moment Correlation, and regression analysis at the 0.05 significance level. The results indicated a significant moderate positive relationship between teachers' culturally responsive learning environment practices and classroom management ($r = .438, p < .05$). However, culturally responsive practices did not significantly influence students' discipline ($\beta = .027, p > .05$). The study concludes that while culturally responsive practices improve classroom organisation and teacher-student interactions, they may not independently determine students' disciplinary behaviour. It recommends integrating culturally responsive teaching with broader behavioural management strategies and strengthening teacher professional development in inclusive classroom practices.

Keywords: Culturally Responsive Teaching, Classroom Management, Students' Discipline, Learning Environment.

1. Introduction

Education systems across the world are increasingly confronted with the challenge of managing culturally diverse classrooms. In multicultural societies, students come from varied linguistic, ethnic, religious, and socio-economic backgrounds that shape their learning experiences and behavioural patterns. As a result, teachers must adopt pedagogical approaches that acknowledge and incorporate these diverse cultural experiences into teaching and classroom management practices. The concept of culturally responsive learning environment practices emphasises the recognition and integration of students' cultural backgrounds into teaching processes to enhance engagement and promote positive behaviour. According to Adeyemi (2018), culturally responsive teaching involves using cultural knowledge, prior experiences, and performance styles of diverse students to make learning more appropriate and effective. Such practices promote inclusivity and strengthen students' sense of belonging within the school environment.

In many Nigerian public secondary schools, particularly in Lagos State, teachers encounter challenges related to students' discipline, including truancy, classroom disruption, insubordination, and bullying. These behaviours often disrupt teaching and learning activities and negatively influence academic outcomes. Scholars such as Owolabi and Olatoye (2020) argue that ineffective classroom management

practices frequently contribute to increased disciplinary problems among students.

Classroom management remains one of the most important competencies required of teachers. Effective classroom management involves the organisation of classroom resources, the establishment of behavioural expectations, and the implementation of instructional strategies that facilitate learning and maintain order (Obiakor & Oguejiofor, 2020).

Despite the increasing recognition of culturally responsive teaching practices globally, empirical evidence regarding their relationship with classroom management and students' discipline within Nigerian public secondary schools remains limited. This study, therefore, examines the relationship between teachers' culturally responsive learning environment practices, classroom management, and students' discipline in public senior secondary schools in Lagos State.

1.1 Statement of the Problem

Students' discipline has become a significant concern in many public secondary schools in Nigeria. Teachers frequently encounter behavioural challenges such as truancy, disruptive classroom behaviour, disobedience to school rules, and conflicts among students. These disciplinary problems often hinder effective teaching and learning processes.

In Lagos State, which is characterised by significant cultural diversity, the cultural mismatch between teachers' instructional approaches and students' cultural backgrounds may contribute to behavioural issues in classrooms. When students perceive classroom instruction as culturally irrelevant or unresponsive to their identities, they may become disengaged from the learning process, resulting in disruptive behaviours.

Although culturally responsive teaching has been widely advocated as a strategy for improving student engagement and behaviour, many Nigerian classrooms still rely on traditional teaching practices that may not adequately address cultural diversity. Furthermore, empirical studies examining the relationship between culturally responsive learning environment practices, classroom management, and students' discipline within Nigerian secondary schools remain scarce.

Consequently, there is a need to empirically examine how teachers' culturally responsive practices relate to classroom management and students' discipline in public senior secondary schools in Lagos State.

1.2 Research Hypotheses

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

H01: There is no significant relationship between teachers' culturally responsive learning environment practices and classroom management in public senior secondary schools in Lagos State.

H02: Teachers' culturally responsive learning environment practices have no significant influence on students' discipline in public senior secondary schools in Lagos State.

2. Literature Review

2.1 Culturally Responsive Learning Environment Practices

Culturally responsive learning environments refer to classroom settings where teaching practices recognise and incorporate students' cultural backgrounds into instructional activities. Adeyemi (2018) describes culturally responsive teaching as an approach that utilises cultural knowledge and experiences of students to improve learning outcomes. When teachers incorporate culturally relevant examples, acknowledge students' identities, and promote inclusive classroom interactions, students tend to demonstrate higher engagement and participation.

Similarly, Ladson-Billings (2021) emphasises that culturally responsive pedagogy promotes academic success while simultaneously fostering cultural competence and critical consciousness among learners. Teachers who adopt culturally responsive approaches establish stronger relationships with students and create supportive classroom environments.

A culturally responsive learning environment is essential in today's diverse classrooms. This concept emphasises the importance of recognising, respecting, and nurturing the varying cultural backgrounds of students. In essence, it seeks to enhance educational experiences by making them relevant to the lives and experiences of learners from different cultures. As schools become increasingly multicultural, understanding and implementing practices that support culturally responsive learning is of utmost importance.

According to Gay (2018), creating an inclusive and secure environment where students feel safe and accepted to express their identities is crucial to fostering a successful learning environment. Teachers

are aware of the cultural diversity of their students and tend not to potentially be culturally insensitive or put their students under unnecessary stress by challenging their prevailing cultural and educational ideas (Franco, 2009). According to the National Center for Culturally Responsive Educational Systems (NCCREST), “cultural responsiveness is the ability to learn from and relate respectfully with people of your own culture as well as those from other cultures”. Being culturally responsive entails actively incorporating cultural variations into interactions, procedures, and regulations while also acknowledging and appreciating them. It entails respecting other people's beliefs, values, and customs as well as remaining receptive to new ideas. To be culturally responsive, one must recognise, effectively incorporate, and respond to the entire range of diversity dimensions that each individual brings to encounters as well as the mix of cultural variables. Being culturally responsive entails valuing diversity, endeavouring to increase cultural awareness, and striving to establish workplaces and community areas that value variety (Hopf et al., 2021).

In a culturally responsive learning environment, teachers strive to know their students' cultural backgrounds, introduce diverse perspectives into the curriculum, use inclusive language, and adapt teaching methods to respect and validate students' experiences, all while managing the classroom with sensitivity to cultural nuances and promoting a positive, equitable space for all learners; key practices include actively listening to students, respecting their home languages, inculcating culturally relevant examples, and attending to potential biases in classroom interactions. A learning environment is a space where students feel safe and supported in their pursuit of knowledge and inspired by their surroundings. Aside from the physical space in a learning environment, teachers can provide a culturally responsive learning environment through the practices they employ in the way they teach and the atmosphere they create. Teachers can influence student learning by encouraging student engagement and providing positive and constructive feedback that supports exploration, community among peers, and cultural diversity. According to Seelet *et al.* (2017), “learning environments are intended to create learning opportunities responsive to the different learning categories established by Roth (1963, as cited in Seel, 2017) and Gagne's Nine Events of Instruction”. On the one hand, Roth found that acquiring different skills requires different approaches to learning and instruction.

Gagne established that “successful learning environments must have well-defined learning objectives to which teaching and student action are closely related.” With these two main concepts in mind, Seelet *et al.* (2017) propose that “learning environments are constructive and student-led.” “Teachers organise materials and activities that initiate and facilitate learning and reflection. Hence, learning environments require stimulating learners' motivation, developing self-directed learning in each student, and constructing social skills of cooperation and communication among learners” (Seel *et al.*, 2017). Employing culturally responsive learning environment practices helps increase students' focus, retention of information, and discipline. Culture is the characteristics and knowledge of a specific group of people, comprising language, religion, cuisine, social habits, music, and the arts (Pappas & McKelvie, 2021).

Culture represents a shared view of the world and shared values (Matthiesen-Jones, 2022). People from varied cultures attend classrooms with culturally based differences that influence their interaction. With the rising diverse student enrolments in public schools, there is an increasing need for teachers to refine the culturally responsive learning environment practices employed. A culturally responsive learning environment with well-structured practices directly contributes to improved student discipline, as a supportive and organised classroom setting fosters a sense of accountability, reduces distractions, and allows students to focus on learning, leading to better behaviour and overall academic performance. Due to the growing diverse student populations in schools, teachers must be well-equipped to create learning environments that are motivating, engaging, and inclusive. This can be done by acknowledging the ethnic diversity in the classroom and the important role each group plays in society, adding culturally relevant subject materials to their classrooms, and using the community they teach in as a backdrop to explain certain concepts.

Culturally responsive practices (CRP) is an asset-based approach aimed at supporting students' academic and social-emotional well-being at school. “This incorporates personal strengths, cultural knowledge, experiences, and home communication styles into daily classroom interactions” (Gay, 2018). Crucially, CRP is not limited to curriculum adoptions. According to CRP theory, teachers can improve the classroom experience for students by using their instructional content (what they teach) and practices (how they teach) to make learning experiences more interesting, which will increase students' access to

learning, their chances of achieving academic success, and their ability to be disciplined for better behaviour. The idea that students' cultural differences are assets that impact their learning is embraced by teachers' culturally responsive teaching methods.

2.2 Concept of Classroom Management

Effective classroom management is the cornerstone of a productive learning environment and is essential in determining students' behaviour, involvement, and academic performance. It creates an engaging atmosphere in the classroom, which is essential for successful teaching and learning (Onyali, 2020). Classroom management entails reducing disruptive behaviours from students, such as fighting and making noise, closely monitoring the classroom, and organising the learning resources.

Students typically respond differently to a diversified classroom environment, since the students come from a variety of cultural backgrounds. Marvi (2023). Incorporating all aspects of the classroom, from lesson delivery to the classroom environment, becomes crucial when classroom management is seen more broadly and comprehensively (Obiakor & Oguejiofor, 2020). Classroom management encompasses all of the activities teachers must carry out to encourage students' academic participation and cooperation to create a favourable learning environment.

By fostering an atmosphere that discourages disruptions and bad behaviour and encourages constructive student interactions, good classroom management can have a positive effect on students' discipline. According to Adedigba and Sulaiman (2020), effective classroom management can lessen extreme aggression and violence. Although discipline is crucial for learning, it may provide difficulties for teachers in culturally diverse groups. One of the most important components of successful teaching and learning is classroom management (Billingsley *et al.*, 2020). A key area of instruction that has a significant impact on student learning outcomes and teacher retention and attrition is classroom management. Its main purpose is proactive, with a focus on addressing students' social and academic needs as well as preventing disruptive behaviour (Egeberg & McConney, 2018). For instance, a study by Adams *et al.* (2022) found that teachers who successfully run their classrooms have stronger interactions with their students and superior affective and cognitive outcomes. For students' intellectual and behavioural development, classroom management—which encompasses both behavioural and instructional

management—is an essential educational competence (Ateh & Ryan, 2023).

Classroom management significantly reduces student misbehaviour by creating a structured learning environment with clear expectations, which helps to prevent disruptions and encourages positive behaviour among students. Depending on the complexity and severity of the behaviour, teachers who practice good classroom management employ a variety of tactics to promote proper behaviour and reduce inappropriate behaviour (Rusby *et al.*, 2011; Simonsen *et al.*, 2008). These tactics consist of making the most of structure, setting and enforcing expectations, involving students, and recognising and reacting to appropriate and inappropriate behaviour (Colvin *et al.*, 2009; Emmer & Stough, 2001; Garwood *et al.*, 2017; Moore, 2010). Although pedagogical approaches and classroom management practices are different, there is an intrinsic connection between academic education and classroom management. Reactive classroom management becomes less necessary as instructional quality rises because effective teaching practices promote classroom engagement and good student behaviour (Gay, 2006).

In addition to preventing behavioural disruptions, classroom management involves planning and directing interactive learning activities that are interesting, welcoming, and inclusive of a broad range of pupils (Gay, 2006). It is often acknowledged that reducing behavioural issues in the classroom requires good classroom management (Simonsen *et al.*, 2008). Classroom management is a prerequisite to effective teaching and learning (Poulou *et al.*, 2019). As one of the essential elements for tackling the educational issues of the secondary school classroom in the twenty-first century, it should thus receive the credit it merits.

2.3 Concept of Students' Discipline

An essential component of classroom management is discipline. Fostering a polite and organised learning environment entails laying forth precise expectations, rules, and sanctions. Teachers who foster discipline provide students with structure and boundaries, which aid in the development of self-control, accountability, and responsibility. Discipline is a key tool for creating a responsive learning environment. Discipline, according to Grossman (2020), is the process of setting clear guidelines and expectations and constantly enforcing them in a way that promotes learning, development, and progress. Globally, student indiscipline is a widespread issue. Exam malpractice, cultism, contempt for authority, absenteeism, and

hooliganism are among the growing student disciplinary problems in Nigerian schools (Ehiane, 2014). Twelve students from Lagos' Oduduwa Junior Secondary School were accused of gang membership and conspiracy in September 2017. Similarly, two people were detained in February 2019 in Lagos for enlisting elementary and secondary school pupils in a cult group (Lawal, 2019). Also, in December 2018, a violent demonstration at Community Grammar School in Olodo, Ibadan, claimed a life and caused substantial property damage (Ajayi, 2020).

Positive results linked to students feeling valued and understood demonstrate the connection between culturally responsive practices and students' discipline. Cultural differences between teachers and pupils might result in miscommunications and excessive disciplinary measures (Skiba et al., 2011). Teachers may unintentionally contribute to a cycle of exclusion and a rise in behavioural problems if they do not acknowledge and address these cultural differences. By defining explicit expectations and consequences that are in keeping with students' cultural norms, culturally responsive teachers encourage a proactive approach to discipline. For example, incorporating culturally appropriate material into classes can promote collaboration and a sense of community while minimising disturbances (Hernandez et al., 2017). Teachers enable students to contribute to the classroom culture, which fosters respect for one another and deters bad behaviour, by integrating students' cultural narratives into class discussions.

One of the main responsibilities of teachers is to minimise damage caused by students' misbehaviour and to foster a pleasant learning environment for effective learning to occur. Despite challenges and some effort, not all of the best teachers are also adept at disciplining their students; instead, they frequently prioritise academic success over the conduct of the individual students (Miller *et. al.* 2014) and according to expert research, mistreating students can have a detrimental effect on how they interact with peers, acquaintances, and other people (Holinger, 2014).

3. Theoretical Framework

This framework can guide educators in developing practices that effectively manage their classrooms while promoting student discipline.

3.1 Culturally Responsive Pedagogy (CRP)

The theory of Culturally Responsive Pedagogy (Gloria Ladson-Billings, 1990s) is an educational approach

that recognises the diverse backgrounds and experiences of learners and seeks to create inclusive and engaging learning environments that enhance engagement, motivation, and academic achievement. Culturally Responsive Pedagogy is culturally responsive; it involves recognising cultural backgrounds, building relationships, adapting instruction, and promoting critical consciousness to empower students. This approach emphasises the need for teachers to integrate students' cultural identities and viewpoints into the teaching and learning processes, going beyond "good teaching" (Ladson-Billings, 1995).

To make learning more relevant and interesting, this approach, which was created by Gloria Ladson-Billings in the 1990s, contends that teaching should be closely linked to the cultural surroundings of the students. Culturally responsive pedagogy seeks to recognise and utilise the cultural strengths of students to enhance their learning experiences. It is more than just an educational technique or set of practices; it is a carefully considered philosophy that underscores the interplay between culture and education. CRP as a philosophy enables teachers to adopt a better understanding of the backgrounds of their pupils, not just a collection of methods. It helps close the gap between experiences at home and school, creating a more welcoming classroom, and fostering an inclusive learning environment where all students feel valued and empowered (Milner & Latham, 2020)

In addition to including multicultural information into the curriculum, this method recognises the significance of teachers' beliefs, classroom management practices, and methods for encouraging students' discipline. Culturally responsive pedagogy emphasizes relationships and community building within the classroom. Culturally responsive classroom management practices encourage the implementation of explicit expectations that take into account the varied backgrounds of the students. Teachers who understand cultural differences in communication and behaviour, for instance, are better able to establish standards that their students will find acceptable. Establishing an atmosphere in the classroom where students feel comfortable sharing their ideas, queries, and experiences is essential. Teachers can foster this by promoting candid communication, group projects, and cooperative learning opportunities that let students benefit from each other's cultural perspectives. The ways that culturally responsive pedagogy affects classroom management are a significant component of this approach.

Culturally responsive classroom management practices acknowledge that some students, especially those from underrepresented groups, may not respond well to standard forms of discipline. Instead, teachers are urged to form bonds with students and create a classroom environment that is focused on the community. Simonsen et al. (2020) opine that using culturally responsive methods in behavioural interventions can result in better student outcomes. Understanding the cultural backgrounds of pupils and rewarding proper behaviour are two examples of these techniques. According to the research, teachers can establish more encouraging and productive learning environments by integrating students' cultural identities into their management techniques.

Teachers must incorporate culturally responsive pedagogy into their lesson plans as they work to create an inclusive environment. Talbert and Smith (2021) studied successful teaching methods that promote CRP. How to modify teaching strategies to take into account the varied cultural backgrounds of pupils is covered in their essay, "Integrating Culturally Responsive Strategies for Inclusive Learning Environments." In addition to improving students' academic achievement, the authors stress that integrating culturally relevant resources and viewpoints empowers students to take charge of their education. Positive engagement with the curriculum and peers is more likely to occur when students perceive that classroom norms represent their cultural heritage.

CRP inspires teachers to reconsider how they handle students' discipline. Teachers are encouraged to use restorative methods that foster communication and understanding rather than just using disciplinary measures. Gionet's (2020) study, "Culturally Responsive Discipline: Moving Beyond Punishment," claims that including restorative techniques into CRP enables students to communicate emotions and comprehend the consequences of actions. This method respects students' cultural backgrounds while fostering a sense of community and encouraging them to accept accountability for actions. According to Gionet's research, restorative techniques improve the classroom environment and make it more conducive to learning while lowering disciplinary events.

Additionally, teachers can foster a culturally responsive classroom that supports equitable disciplinary practices. "Equity and Discipline: Culturally Responsive Approaches to Student Behaviour," research by Pinder *et al.* (2021), assesses different disciplinary frameworks and their efficacy in diverse classrooms. The authors stress the importance

of understanding the cultural foundations of behaviour in determining students' discipline and exhort educators to employ culturally appropriate tactics when dealing with behavioural concerns. According to the study, teachers who adopt a culturally sensitive approach to students' discipline are better able to treat the underlying reasons of behavioural problems while upholding high standards for every student.

In conclusion, teachers' classroom management practices, student discipline, and overall learning environments are influenced by culturally responsive pedagogy. Research has demonstrated the need for incorporating students' cultural identities into management and instruction techniques to create more inclusive environments. Teachers may design classrooms that reduce disruptive behaviour and increase student involvement by cultivating connections based on mutual respect and understanding. A more equitable educational system where all students can succeed is made possible by teachers' continued use of culturally responsive teaching methods.

3.2 Empirical Studies

In the Nigerian educational system, several studies have examined classroom management practices and their implications for students' behaviour and academic performance. For instance, Owolabi and Olatoye (2025) conducted a study on classroom management strategies and students' discipline in secondary schools in southwestern Nigeria. Using a survey research design involving teachers and students, the study revealed that effective classroom management strategies significantly reduced disruptive behaviours among students. The findings further indicated that teachers who adopted supportive and participatory management styles created more conducive learning environments.

Similarly, a study by Adedigba and Sulaiman (2017) investigated the influence of teachers' classroom management styles on students' motivation and behavioural outcomes in Nigerian primary schools. The researchers used a correlational research design and found that supportive classroom management strategies positively influenced students' motivation, engagement, and classroom discipline.

Another Nigerian study by Onyali (2018) examined the relationship between classroom management and teaching effectiveness in public secondary schools. Using descriptive survey methods, the findings showed that effective classroom organisation, positive teacher–student relationships, and clear behavioural

expectations significantly improved classroom discipline and teaching effectiveness.

Furthermore, Olorunsola (2018) conducted a study on teachers' classroom management competence and students' academic performance in Ekiti State, Nigeria. The study employed a correlational research design and found that teachers who demonstrated effective classroom control strategies, clear communication, and culturally responsive interaction patterns had students with higher levels of discipline and academic achievement.

In addition, a study by Akinyemi examined the impact of teachers' classroom management practices on students' behaviour in secondary schools in Lagos State. Using a descriptive survey design, the study revealed that teachers who utilised positive reinforcement, collaborative learning strategies, and culturally inclusive teaching methods recorded fewer disciplinary cases among students.

More recently, Adeyemi (2018) investigated the relationship between school climate, classroom management practices, and students' academic performance in Nigerian secondary schools. The study adopted a correlational research design involving teachers and students across several schools. Findings indicated that a positive classroom climate, effective management strategies, and supportive teacher-student interactions significantly enhanced students' discipline and academic engagement.

Despite the growing number of studies on classroom management and students' discipline in African and Nigerian schools, most existing studies focus largely on general classroom management strategies without explicitly examining the role of culturally responsive learning environment practices in shaping students' behavioural outcomes. Furthermore, empirical investigations that explore the combined influence of culturally responsive learning environments and classroom management on students' discipline in public secondary schools in Lagos State remain limited.

Therefore, this study contributes to the existing literature by examining the relationship between teachers' culturally responsive learning environment

practices, classroom management strategies, and students' discipline in public senior secondary schools in Lagos State, Nigeria.

4. Research Methodology

The study adopted a descriptive survey research design. The population consisted of teachers and students in public senior secondary schools in Lagos State, Nigeria. A total of 1,800 questionnaires were administered, comprising 1,200 for teachers and 600 for students. Out of these, 1,797 questionnaires were returned, representing a 99.8% response rate.

Two instruments were used for data collection:

Teachers' Culturally Responsive Learning Environment Practice and Classroom Management Questionnaire (TCRLEPCMQ)

4.1 Students' Discipline Questionnaire (SDQ)

The instruments were validated by experts in educational management, while reliability was established through a pilot study using Cronbach's Alpha coefficient.

Data were analysed using descriptive statistics (mean and standard deviation) and inferential statistics, including Pearson Product-Moment Correlation and regression analysis at the 0.05 level of significance.

5. Results

Hypotheses One:

This hypothesis states that "there is no significant relationship between teachers' culturally responsive learning environment practices and classroom management in public senior secondary schools in Lagos State, Nigeria". To test this hypothesis, data collected on teachers' culturally responsive learning environment practices and classroom management in public senior secondary schools in Lagos State, Nigeria, were subjected to Pearson's Product-Moment Correlation analysis. The results are presented in Table 1

Table 1: Relationship Between Teachers' Culturally Responsive Learning Environment Practices and Classroom Management in Public Senior Secondary Schools in Lagos State, Nigeria (N = 1,197)

| Variable | 1 | 2 |
|---|--------|--------|
| 1. Teachers' culturally responsive learning environment practices - | | .438** |
| 2. Classroom management | .438** | - |

** $\rho < .05$ (two-tailed).

The results of the Pearson’s Product–Moment correlation test conducted to examine the relationship between teachers’ culturally responsive learning environment practices and classroom management in public senior secondary schools in Lagos State, Nigeria revealed a statistically significant, moderate positive correlation between the two variables, ($r_{(1195)} = .438, p < .05$). This indicates that higher levels of culturally responsive learning environment practice are associated with better classroom management in public senior secondary schools in Lagos State, Nigeria. Hence, the hypothesis which state that there is no significant relationship between teachers’ culturally responsive learning environment practice and classroom management in public senior secondary schools in Lagos State, Nigeria is hereby rejected. The implication of this is that teachers’ culturally responsive learning environment practice have something to do with their classroom management. Hence, teachers’ culturally responsive learning environment practice does influence classroom management in public senior secondary schools in Lagos State, Nigeria.

Hypotheses Two

This hypothesis states that “there is no significant influence of teachers’ culturally responsive learning environment practices on students’ discipline in public senior secondary schools in Lagos State, Nigeria”. To test this hypothesis, data collected on teachers’ culturally responsive learning environment practices and students’ discipline in public senior secondary schools in Lagos State, Nigeria, were subjected to Simple Linear Regression Analysis. The results are presented in Table 2.

Table 2: Simple Linear Regression Analysis of Teachers’ Culturally Responsive Learning Environment Practices Influencing Students’ Discipline in Public Senior Secondary Schools in Lagos State, Nigeria

| Predictor | B | SE B | β | T | ρ |
|---|--------|-------|---------|--------|--------|
| Constant | 67.601 | 3.207 | - | 21.081 | < .05 |
| Teachers’ Culturally Responsive Learning Environment Practice | 0.034 | 0.051 | .027 | 0.657 | .511 |

Note. Dependent Variable: Students’ discipline.

B = unstandardized coefficient; SE = standard error; β = standardised coefficient.

The results of the simple linear regression analysis conducted to examine the influence of teachers’ culturally responsive learning environment practices on student discipline in public senior secondary schools in Lagos State, Nigeria revealed that teachers’ culturally responsive learning environment practices did not significantly influence students’ discipline in public senior secondary schools in Lagos State, Nigeria ($\beta = .027, t_{(1195)} = 0.657, \rho = .511$). The unstandardized regression coefficient was $B = 0.034$ (SE = 0.051), indicating that for every one-unit increase in teachers’ culturally responsive learning environment practices, students’ discipline increased by 0.034 units; however, this relationship was not statistically significant. Thus, the hypothesis which state that there is no significant influence of teachers’ culturally responsive learning environment practices on students’ discipline in public senior secondary schools in Lagos State, Nigeria is hereby not rejected.

6. Discussion of Findings

The hypothesis one which states that there is no significant relationship between teachers’ culturally responsive learning environment practice and classroom management in public senior secondary schools in Lagos State, Nigeria is hereby rejected. The implication of this is that teachers’ culturally

responsive learning environment practice have something to do with their classroom management. Hence, teachers’ culturally responsive learning environment practice does influence classroom management in public senior secondary schools in Lagos State, Nigeria. The goal of the current research was to assess instructors’ classroom management and cultural sensitivity. In general, the results showed that instructors are very skilled at analyzing and assessing different cultures in order to determine how best to approach and interact with pupils. The information that has been produced indicates that the instructors are attempting to comprehend and adjust to the new culture that they are constantly coming into contact with in the classroom. This finding supports the research showing that teachers possess a high degree of cultural competency in regard to relationship building, behavioral flexibility, identity management, intercultural management, and messaging skills (Panuncillo, 2016). The outcome also supports the idea that a successful cross-cultural communicator should be able to comprehend their own culture and how it affects their conduct, in addition to being able to adjust to "new social conventions and behavior demands." Regarding this, another research confirmed that educators were receptive to other viewpoints and provided constructive interactions with others (Jantawej & Inada, 2011). The results, however, are in

contrast to a research that found that instructors experienced culture shock despite having received substantial training on how to manage a diverse classroom (Killick, 2008). This implies that the educators are sensitive enough to understand how they will intervene without upsetting the students from other cultures. Teachers have been used to the many cultures of their students as a result of their extended stay, which has exposed them to children from a variety of ethnic backgrounds.

The hypothesis two which states that there is no significant influence of teachers' culturally responsive learning environment practices on students' discipline in public senior secondary schools in Lagos State, Nigeria is hereby not rejected. In general, the instructors used non-punitive methods. Establishing and reiterating norms, urging students to take responsibility, and encouraging students to talk about behaviour, feelings, or troublesome circumstances are examples of non-punitive approaches, according to Eleftheria, Kafenia, and Andreou (2013). This finding is consistent with a research that found a weak correlation between instructors' classroom management in terms of discipline and cultural sensitivity. This suggests that students' discipline and classroom management are influenced by instructors' cultural sensitivity. The results also support the Diversity Pedagogy Theory, which served as the study's framework. It turns out that when instructors recognize the importance of culture in the classroom environment, they see student discipline and classroom management as more successful. Furthermore, this is supported by Ladson-Billing's (1995) Culturally Responsive Teaching, which takes into account the cultural background of their students while enforcing discipline.

7. Conclusion

This study examined the relationship between teachers' culturally responsive learning environment practices, classroom management, and students' discipline in public senior secondary schools in Lagos State.

The findings revealed that culturally responsive learning environment practices significantly relate to classroom management but do not significantly predict students' discipline. This suggests that while culturally responsive teaching improves classroom organisation and teacher-student relationships, students' discipline may be influenced by additional factors such as school policies, peer influence, and family background.

8. Recommendations

Based on the findings, the following recommendations were made:

- Education authorities should organise regular professional development programmes to equip teachers with culturally responsive teaching strategies that enhance classroom management.
- Schools should integrate culturally responsive teaching with comprehensive behaviour management frameworks to effectively address students' discipline.
- Teachers should strengthen positive teacher-student relationships to promote mutual respect and classroom order.
- Educational policymakers should incorporate culturally responsive pedagogy into teacher training programmes.

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Epistemic Beliefs as Predictors of Students' Conceptual Understanding and Scientific Reasoning in Senior Secondary School Biology in Lagos State, Nigeria

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Abstract. Understanding how students learn biology meaningfully requires attention not only to instructional practices but also to learners' epistemic beliefs about knowledge and knowing. This study investigated epistemic beliefs as predictors of students' conceptual understanding and scientific reasoning in Biology in Lagos State, Nigeria. Guided by epistemic cognition and constructivist learning theories, the study adopted a correlational survey design with a predictive focus. The population comprised senior secondary school Biology students in Lagos State, from which a representative sample was selected using multistage sampling techniques. Data were collected using three validated instruments: an Epistemic Beliefs Questionnaire (EBQ, Cronbach alpha=0.92), a Biology Conceptual Understanding Test (BCUT, Kuder-Richardson 20=0.90), and a Scientific Reasoning Test (SRT, Kuder-Richardson 20=0.94). Data were analysed using descriptive statistics, Pearson correlation, and multiple regression analysis. Findings revealed that students' epistemic beliefs were significantly related to both conceptual understanding and scientific reasoning in Biology. Specifically, sophisticated epistemic beliefs—such as beliefs in the tentativeness, complexity, and justification of biological knowledge—significantly predicted higher levels of conceptual understanding and scientific reasoning. Conversely, naïve epistemic beliefs were associated with lower performance on both outcome variables. The regression model indicated that epistemic beliefs accounted for a statistically significant proportion of variance in students' conceptual understanding and scientific reasoning. The study concludes that students' epistemic beliefs play a critical cognitive role in shaping how biological concepts are understood and how scientific reasoning skills are developed. It therefore recommends that Biology instruction and curriculum implementation in secondary schools

should explicitly foster sophisticated epistemic beliefs through inquiry-based, argumentation-focused, and reflective pedagogical approaches. The study contributes to Biology education research in Nigeria by providing empirical evidence on the predictive role of epistemic beliefs in students' learning outcomes.

Keywords: Epistemic beliefs, conceptual understanding, scientific reasoning, Biology education, secondary school students, Lagos State.

1. Introduction

Biology, as a core science subject, occupies a central position in secondary and tertiary education due to its relevance to understanding life processes, health, environmental sustainability, and technological advancement. Beyond the acquisition of factual knowledge, contemporary biology education emphasizes the development of deep conceptual understanding and scientific reasoning skills that enable learners to interpret biological phenomena, solve complex problems, and make informed decisions in everyday and professional contexts. However, persistent evidence from classroom practice, national examination reports, and international assessments suggests that many students struggle to develop coherent conceptual understanding and robust scientific reasoning in biology (WAEC Chief Examiner's reports, 2020-2025; Oguniwin & Oladipo, 2018; Oladipo & Ebabhi 2020; Fasuyi & Oladipo, 2022; Oladipo & Akhigbe, 2023). Instead, learning is often characterized by rote memorization, fragmented knowledge structures, and superficial engagement with scientific ideas (Oladipo, 2016; Oguniwin & Oladipo, 2018). Conceptual understanding in biology refers to learners' ability to meaningfully integrate biological concepts, explain relationships among ideas, and apply knowledge to

novel situations (Oladipo,2009). Scientific reasoning, on the other hand, involves the capacity to generate hypotheses, interpret data, evaluate evidence, and draw logical conclusions based on scientific principles. These two constructs are closely interrelated: conceptual understanding provides the knowledge base upon which scientific reasoning operates, while reasoning processes deepen and reorganize conceptual knowledge (Conley, Pintrich, Vekiri, & Harrison, 2004; Driver, Asoko, Leach, Mortimer, & Scott, 1994). Despite their importance, many biology students exhibit misconceptions, alternative conceptions, and reasoning difficulties, particularly in abstract and complex topics such as genetics, cellular respiration, photosynthesis, homeostasis, and evolution.

Traditional instructional approaches in biology classrooms—often dominated by teacher-centered lectures, textbook-driven explanations, and examination-oriented practices—have been identified as major contributors to these learning challenges (Oladipo, 2016; Ogundiwin & Oladipo,2018; Oladipo, Adewumi, Ogundiwin 2019; Oladipo, Akhigbe & Udeani, 2023; Adewumi, Ogundiwin & Oladipo 2025). Such approaches tend to prioritize content coverage over understanding, discourage inquiry and argumentation, and position students as passive recipients of information rather than active constructors of knowledge (Oladipo,2016; Ogundiwin & Oladipo, 2018; Arigbabu & Awofala, 2023). In response, educational researchers have increasingly turned their attention to learner-related factors that shape how students engage with knowledge and reasoning processes. Among these factors, epistemic beliefs have emerged as a critical yet underexplored determinant of students’ learning outcomes in science. Epistemic beliefs refer to individuals’ beliefs about the nature of knowledge and knowing—what knowledge is, how it is constructed, how certain or tentative it is, and how claims are justified. These beliefs influence how learners interpret information, evaluate evidence, approach learning tasks, and regulate their cognitive strategies (Awofala & Akinoso, 2024). In biology education, students’ epistemic beliefs can shape whether they view biological knowledge as a set of fixed facts to be memorized or as a dynamic, evidence-based system that evolves through scientific inquiry. Consequently, epistemic beliefs have profound implications for both conceptual understanding and scientific reasoning.

1.1 Research Questions

The following research questions were answered in this study:

- What are the dominant epistemic beliefs held by secondary school students about biological knowledge and knowing?
- What is the level of students’ conceptual understanding in Biology?
- What is the level of students’ scientific reasoning in Biology?
- What is the relationship between students’ epistemic beliefs and their conceptual understanding in Biology?
- What is the relationship between students’ epistemic beliefs and their scientific reasoning in Biology?
- Which dimensions of epistemic beliefs (certainty of knowledge, simplicity of knowledge, source of knowledge, justification of knowledge, and beliefs about learning) significantly predict students’ conceptual understanding in Biology?
- Which dimensions of epistemic beliefs significantly predict students’ scientific reasoning in Biology?

2. Conceptual Understanding and Scientific Reasoning in Biology

Conceptual understanding in biology involves more than the ability to recall definitions or label diagrams. It entails the integration of concepts into a coherent framework that allows learners to explain biological mechanisms, recognize patterns, and transfer knowledge across contexts (Oladipo & Ihemedu, 2018; Oladipo, Osokoya &Udeani, 2019; Oladipo, Adewumi, Ogundiwin 2019; Oladipo, Akhigbe & Udeani, 2023). For example, understanding cellular respiration requires students to connect molecular-level processes with organism-level functions, energy flow, and environmental conditions. When students lack such integrative understanding, they often rely on memorised sequences or isolated facts, which are easily forgotten or misapplied (Oladipo, Osokoya & Udeani, 2019).

Scientific reasoning complements conceptual understanding by enabling learners to think and act like scientists. It encompasses skills such as identifying variables, controlling for confounding factors, interpreting experimental data, constructing explanations, and evaluating competing claims. In biology, scientific reasoning is particularly important because many biological phenomena are complex, probabilistic, and influenced by multiple interacting variables. Students who possess strong reasoning skills are better equipped to navigate these complexities, resolve misconceptions, and construct

scientifically valid explanations. Despite curricular reforms that emphasize inquiry-based learning and scientific practices, research consistently shows that students' conceptual understanding and scientific reasoning in biology remain weak (Oladipo, Osokoya & Udeani, 2019; Oladipo & Ihemedu, 2018). Examination reports frequently highlight students' inability to explain biological processes, interpret experimental results, or apply knowledge to unfamiliar situations. These challenges are not merely instructional but are deeply rooted in how students perceive knowledge and learning itself.

3. Epistemic Beliefs: Nature and Dimensions

Epistemic beliefs have their roots in epistemology, the branch of philosophy concerned with the nature, sources, and justification of knowledge. In educational research, epistemic beliefs are conceptualized as learners' implicit theories about knowledge and knowing, which develop over time through formal education and personal experiences (Sopekan & Awofala, 2019). These beliefs are not static traits but dynamic cognitive frameworks that influence learning behaviors and outcomes. Scholars commonly describe epistemic beliefs along several dimensions (Awofala, Lawani, Oraegbunam, 2019, Awofala et al., 2025). One key dimension concerns the certainty of knowledge—whether knowledge is viewed as absolute and unchanging or tentative and evolving. Another dimension relates to the simplicity of knowledge—whether knowledge consists of isolated facts or interconnected concepts. Additional dimensions include the source of knowledge (authority-based versus constructed through reasoning and evidence), the justification of knowledge (acceptance of claims based on authority versus critical evaluation of evidence), and the speed of learning (beliefs about whether learning occurs quickly or gradually through effort). In the context of biology education, these dimensions are particularly salient. Students who believe that biological knowledge is certain and handed down by authorities may focus on memorizing textbook content and teacher explanations. In contrast, students who view knowledge as evolving and evidence-based are more likely to engage in inquiry, question assumptions, and seek conceptual coherence. Similarly, beliefs about the simplicity of knowledge influence whether students attempt to integrate concepts or treat them as disconnected units (Awofala, Lawani, Oraegbunam, 2019, 2020).

3.1 Epistemic Beliefs and Conceptual Understanding in Biology

A growing body of research suggests that epistemic beliefs play a crucial role in shaping conceptual understanding in science. Students with sophisticated epistemic beliefs—those who view knowledge as complex, tentative, and constructed—tend to adopt deep learning strategies, such as elaboration, organization, and self-explanation (Hofer, 2001; Schommer-Aikins, 2004). These strategies facilitate the integration of new information with prior knowledge, leading to more robust conceptual understanding. In biology, where many concepts are abstract and counterintuitive, epistemic beliefs can either support or hinder learning (Muis, 2007). For instance, students who believe that learning biology involves memorizing facts may struggle to understand processes like gene expression or energy transformation, which require systems thinking and causal reasoning. Conversely, students who recognize that understanding emerges through explanation and evidence are more likely to confront misconceptions and restructure their knowledge. Research has also shown that epistemic beliefs influence how students respond to cognitive conflict—situations in which their existing ideas are challenged by new evidence (Kallery & Psillos, 2001). Learners with naive epistemic beliefs may resist revising their conceptions, attributing discrepancies to errors or anomalies (Awofala et al., 2025). In contrast, those with more advanced beliefs are more open to conceptual change, viewing conflict as an opportunity for deeper understanding (Awofala et al., 2025).

3.2 Epistemic Beliefs and Scientific Reasoning in Biology

Scientific reasoning is inherently epistemic, as it involves judgments about evidence, explanation, and justification. Students' epistemic beliefs shape how they engage in reasoning tasks, such as designing experiments, interpreting data, and evaluating claims. For example, students who believe that scientific knowledge is derived from authority may accept conclusions without critically examining the evidence. In contrast, students who view knowledge as justified through empirical evidence are more likely to scrutinize data, consider alternative explanations, and engage in argumentation (Oladipo, Osokoya & Udeani, 2019; Awofala & Lawal, 2022). In biology education, scientific reasoning is often challenged by the complexity and variability of biological systems. Epistemic beliefs influence whether students approach these challenges with curiosity and critical thinking or with a search for simple, definitive answers. Beliefs

about the certainty and simplicity of knowledge can lead students to oversimplify biological phenomena or ignore uncertainty, thereby undermining their reasoning processes (Awofala, Lawani, Oraegbunam, 2019, 2020). Moreover, epistemic beliefs interact with motivational and metacognitive factors to influence reasoning. Students who believe that understanding requires effort and reflection are more likely to persist in challenging tasks, monitor their reasoning, and revise their conclusions based on feedback (Awofala et al., 2019; Oladipo, Osokoya & Udeani, 2019). These behaviors are essential for the development of scientific reasoning in biology.

4. Theoretical Perspectives Linking Epistemic Beliefs, Conceptual Understanding, and Scientific Reasoning

Several theoretical frameworks provide insight into the relationship between epistemic beliefs, conceptual understanding, and scientific reasoning. Constructivist learning theory posits that learners actively construct knowledge by integrating new information with prior conceptions. Epistemic beliefs influence this process by shaping how learners interpret information and engage in meaning-making activities. Students with constructivist-oriented beliefs are more likely to engage in deep learning and conceptual integration. Conceptual change theory further emphasizes the role of epistemic beliefs in learning. According to this perspective, conceptual change occurs when learners recognize the inadequacy of their existing conceptions and adopt more scientifically accurate ones. Epistemic beliefs about the nature of knowledge and justification play a critical role in determining whether learners are willing to revise their ideas in response to evidence. From a socio-cognitive perspective, epistemic beliefs also influence participation in scientific practices, such as argumentation and inquiry. Students' beliefs about authority, evidence, and explanation shape how they interact with peers, teachers, and learning materials. These interactions, in turn, contribute to the development of conceptual understanding and scientific reasoning.

While existing research has established links between epistemic beliefs and learning outcomes in science, several gaps remain. First, much of the research has focused on general academic achievement rather than specific outcomes such as conceptual understanding and scientific reasoning in biology. Second, studies often examine epistemic beliefs in isolation, without considering their predictive relationships with multiple learning outcomes. Third, there is a paucity of context-specific research, particularly in secondary school biology settings in developing countries.

Moreover, few studies employ advanced analytical approaches to model the complex relationships among epistemic beliefs, conceptual understanding, and scientific reasoning. Understanding these relationships is essential for designing instructional interventions that address not only what students learn but also how they think about knowledge and learning. Against this backdrop, the present study seeks to examine epistemic beliefs as predictors of students' conceptual understanding and scientific reasoning in biology. By investigating how different dimensions of epistemic beliefs relate to learning outcomes, the study aims to contribute to theoretical understanding and inform instructional practice in biology education. The findings of this study are expected to have significant implications for theory, research, and practice. Theoretically, the study would extend existing models of science learning by integrating epistemic beliefs as key predictors of conceptual understanding and scientific reasoning. Methodologically, it would provide empirical evidence using robust analytical techniques to elucidate the relationships among these constructs. Practically, the study would inform biology teachers, curriculum designers, and policymakers about the importance of fostering sophisticated epistemic beliefs to enhance meaningful learning and scientific reasoning.

5. Methodology

5.1 Research Philosophy

This study is grounded in a post-positivist paradigm, which acknowledges that although social phenomena cannot be known with absolute certainty, they can be approximated through systematic observation and rigorous measurement. The post-positivist stance uses quantitative methods to test theories and hypotheses, emphasizing objectivity, measurement precision, and statistical inference. Given the predictive nature of the research questions, the study adopts quantitative approaches that facilitate the analysis of relationships among latent constructs such as epistemic beliefs, conceptual understanding, and scientific reasoning.

5.2 Research Design

A correlational research design was employed, specifically predictive correlational research, because the study sought to determine the extent to which epistemic beliefs predicted students' conceptual understanding and scientific reasoning in biology. Correlational designs are appropriate when the aim is to examine relationships among variables without manipulating them (Creswell & Creswell, 2018). In this design, epistemic beliefs serve as the predictor

(independent variable), while conceptual understanding and scientific reasoning are the criterion (dependent variables).

5.3 Population of the Study

The target population consists of senior secondary school year three students (SS3) in Shomolu Local Government Area of Lagos State, Nigeria who are currently enrolled in schools with Biology as a subject. Senior Secondary year three (SS3) students were chosen because they have completed most foundational biology topics and are sufficiently exposed to the conceptual and practical aspects of the subject. Shomolu has 10 public senior secondary schools, with a total population of 7,968, and a total of 2,550 SS3 students.

5.4 Sample Size and Sampling Techniques

5.4.1 Sample Size Determination

A sample size that is statistically adequate for regression analysis is critical. Regression analysis requires large sample sizes to yield stable parameter estimates. Following guidelines from Kline (2016) and Hair et al. (2019), a minimum sample of 300 respondents is targeted. This sample size satisfies the rule of thumb of at least 10 respondents per estimated parameter in regression and enhances the statistical power to detect predictive relationships. To account for potential non-responses and incomplete data, a buffer of 10% was added, increasing the planned sample size to approximately 330 students.

5.4.2 Sampling Techniques

A multi-stage sampling technique was used:

Stage 1 – Selection of Local Government Area (LGA): Lagos State has 20 LGAs. One LGA was chosen through a simple random sampling technique. This was achieved by writing the name of each LGA on a rolled paper. A student was asked to pick one rolled paper from the basket, and a Shomolu LGA was picked.

Stage 2 – Purposive Selection of Schools: From Shomolu LGA, only public schools were selected, and there were only 10 senior secondary schools in the LGA. SS3 students were purposively selected because they have completed most foundational biology topics and are sufficiently exposed to the conceptual and practical aspects of the subject.

Stage 3 – Selection of Students: Within the 10 schools, SS3 Biology classes were identified. From these classes, students were randomly sampled using systematic random sampling (e.g., selecting every *n*th student from class registers) to achieve the required number of participants.

These procedures ensure that the sample was representative of the larger student population while minimizing selection bias.

5.5 Research Instruments

The study used three primary instruments:

- Epistemic Beliefs Questionnaire on Biology (EBQ-Bio)
- Conceptual Understanding Test in Biology (CUT-B)
- Scientific Reasoning Test in Biology (SRT-B)

These instruments were developed, adapted, and validated for the study.

Epistemic Beliefs Questionnaire on Biology (EBQ-Bio): The purpose of this instrument was to measure students' beliefs about the nature of biological knowledge and knowing. It has 30 items delineated into five domains including: Certainty of knowledge, Simplicity of knowledge, Source of knowledge, Justification of knowledge, Speed and nature of learning. Each item was anchored on 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).

Conceptual Understanding Test in Biology (CUT-B): The purpose of this instrument was to assess students' deep understanding of key biology concepts beyond recall. The structure of the CUT-B entailed 25 two-tier multiple-choice items in which Tier 1 = Conceptual answer and Tier 2 = Reasoning explanation. The content areas included cell biology, photosynthesis, cellular respiration, genetics, homeostasis, and ecology.

Scientific Reasoning Test in Biology (SRT-B). The purpose of this instrument was to assess students' scientific reasoning within biological contexts. It contains 25 two-tier multiple-choice items covering control of variables, hypothesis testing, evidence evaluation, probabilistic reasoning, and causal reasoning.

5.6 Validity and Reliability of the Instruments

To assess content validity, the three instruments were reviewed by five experts in biology education, measurement and evaluation, and science pedagogy. They evaluated items for relevance, representativeness, clarity, and appropriateness. Their

corrections were incorporated into each of the instruments. The Content Validity Index (CVI) was computed for each instrument, ranging from 0.92 to 0.96. Items with low CVI (< 0.80) were revised or removed. Reliability assesses consistency. The study used internal consistency, in which Cronbach's alpha coefficient was calculated for each instrument and subscale. For the EBQ-Bio, the reliability coefficient was 0.92, which was considered an acceptable threshold ($\alpha \geq 0.70$). For two-tier tests, Kuder-Richardson 20 (KR-20) reliability was computed. CUT-B and SRT-B had reliability coefficients of 0.90 and 0.94, respectively.

5.7 Data Collection Procedure

The data collection process followed these steps. First, permissions and approvals were obtained from the Lagos State Ministry of Education and relevant school authorities. Second, letters of introduction and consent forms were taken to the schools and participants. Third, trained research assistants administered the questionnaires and tests during scheduled class periods. Students completed EBQ-Bio, CUT-B, and SRT-B in one session (approximately 90–120 minutes). Instructions were clearly explained before the administration of the instruments, and students were assured of confidentiality, anonymity, and voluntariness. Completed questionnaires were checked for completeness immediately after administration. Data were coded and entered into Statistical Package for the Social Sciences (SPSS v27) for analysis.

5.8 Data Analysis Techniques

Preliminary analyses included descriptive statistics of mean and standard deviation. The research questions were answered using the Pearson product-moment correlation coefficient and multiple regression analysis.

6. Results

Preliminary Data Screening and Assumptions Testing

Prior to substantive analyses, the data were screened for missing values, outliers, and normality. Missing data constituted less than 5% of the dataset and were handled using mean substitution. Skewness and kurtosis values for all variables fell within the acceptable range of ± 2 , indicating approximate normal distribution. Multicollinearity diagnostics showed tolerance values above 0.40 and variance inflation

factor (VIF) values below 2.5, confirming the absence of multicollinearity among predictor variables.

Research Question One: What are the dominant epistemic beliefs held by secondary school students about biological knowledge and knowing?

Descriptive statistics were computed for the five dimensions of epistemic beliefs. The results indicate that students demonstrated moderately sophisticated epistemic beliefs overall ($M = 3.42$, $SD = 0.61$). Students scored highest on Justification of Knowledge ($M = 3.78$, $SD = 0.58$), indicating a relatively strong belief that biological knowledge should be supported by evidence. Scores on Certainty of Knowledge ($M = 3.21$, $SD = 0.64$) suggest that many students still perceive biological knowledge as relatively fixed. Simplicity of Knowledge recorded a moderate mean ($M = 3.18$, $SD = 0.67$), indicating partial recognition of biology as an interconnected body of knowledge. Source of Knowledge ($M = 3.36$, $SD = 0.59$) shows that students moderately rely on authority while also acknowledging personal construction of knowledge. Nature and Speed of Learning ($M = 3.57$, $SD = 0.62$) suggests that many students believe effort contributes to learning biology.

Research Question Two: What is the level of students' conceptual understanding in Biology?

Students' scores on the Conceptual Understanding Test in Biology (CUT-B) ranged from 14 to 46 out of a possible 50, with a mean score of 31.84 ($SD = 6.92$). Using a norm-referenced categorisation: 23.5% of students demonstrated low conceptual understanding, 49.2% demonstrated moderate conceptual understanding, 27.3% demonstrated high conceptual understanding. This result indicates that while a majority of students possess moderate understanding, a substantial proportion still struggle with deep biological concepts.

Research Question Three: What is the level of students' scientific reasoning in Biology?

Scores on the Scientific Reasoning Test in Biology (SRT-B) ranged from 12 to 45 out of 50, with a mean score of 29.76 ($SD = 7.14$). Categorisation revealed: 28.7% of students exhibited low scientific reasoning, 46.1% exhibited moderate scientific reasoning, 25.2% exhibited high scientific reasoning. Overall, students' scientific reasoning ability was found to be moderate, indicating challenges in hypothesis testing, control of variables, and evidence evaluation.

Research Question Four: What is the relationship between students' epistemic beliefs and their conceptual understanding in Biology?

Table 1: Correlation between epistemic beliefs and conceptual understanding in biology

| Variables | Mean | SD | R | p |
|--------------------------|-------|------|------|------|
| Epistemic belief | 3.42 | 0.61 | 0.48 | 0.00 |
| Conceptual understanding | 31.84 | 6.92 | | |

Pearson Product Moment Correlation analysis revealed a significant positive relationship between overall epistemic beliefs and conceptual understanding ($r = 0.48, p < 0.01$). This indicates that students with more sophisticated epistemic beliefs tend to demonstrate higher levels of conceptual understanding in Biology.

Research Question Five: What is the relationship between students' epistemic beliefs and their scientific reasoning in Biology?

Table 2: Correlation between epistemic beliefs and scientific reasoning in biology

| Variables | Mean | SD | R | p |
|----------------------|-------|------|------|------|
| Epistemic belief | 3.42 | 0.61 | 0.52 | 0.00 |
| Scientific reasoning | 29.76 | 7.14 | | |

Correlation analysis showed a moderate positive relationship between epistemic beliefs and scientific reasoning ($r = 0.52, p < 0.01$). This finding suggests that students who view biological knowledge as tentative, complex, and evidence-based are more likely to engage in effective scientific reasoning.

Research Question Six: Which dimensions of epistemic beliefs significantly predict students' conceptual understanding in Biology?

Table 3: Multiple Regression Analysis of epistemic beliefs on conceptual understanding

| Predictor | β | t | p |
|------------------------------|---------|------|------|
| Justification of knowledge | 0.31 | 8.94 | 0.00 |
| Simplicity of knowledge | 0.24 | 6.72 | 0.00 |
| Nature and speed of learning | 0.19 | 4.23 | 0.00 |
| Certainty of knowledge | 0.08 | 0.85 | 0.88 |
| Source of knowledge | 0.07 | 0.83 | 0.92 |

$R^2=0.32$

Multiple regression analysis was conducted with the five epistemic belief dimensions as predictors and conceptual understanding as the criterion variable. In Table 3, the regression model was statistically significant: $F(5, 324) = 19.87, p < 0.001$, explaining 32% of the variance in conceptual understanding ($R^2 = 0.32$). Significant predictors included: Justification of Knowledge ($\beta = 0.31, p < 0.001$). Simplicity of Knowledge ($\beta = 0.24, p < 0.01$). Nature and Speed of Learning ($\beta = 0.19, p < 0.05$). Certainty of knowledge and source of knowledge were not statistically significant predictors.

Research Question Seven: Which dimensions of epistemic beliefs significantly predict students' scientific reasoning in Biology?

Table 4: Multiple Regression Analysis of epistemic beliefs on conceptual understanding

| Predictor | β | t | p |
|------------------------------|---------|-------|------|
| Justification of knowledge | 0.34 | 7.22 | 0.00 |
| Simplicity of knowledge | 0.02 | 0.83 | 0.78 |
| Nature and speed of learning | 0.21 | 5.52 | 0.00 |
| Certainty of knowledge | -0.22 | -5.57 | 0.00 |
| Source of knowledge | 0.04 | 0.97 | 0.87 |

$R^2=0.35$

Multiple regression analysis revealed a statistically significant model: $F(5, 324) = 22.45, p < 0.001$, accounting for 35% of the variance in scientific reasoning ($R^2 = 0.35$). In Table 4, significant predictors were: Justification of Knowledge ($\beta = 0.34, p < 0.001$). Certainty of Knowledge ($\beta = -0.22, p < 0.01$). Nature and Speed of Learning ($\beta = 0.21, p < 0.01$). The negative beta for certainty of knowledge suggests that students who view biological knowledge as fixed tend to exhibit weaker scientific reasoning skills.

7. Discussion

7.1 Students' Epistemic Beliefs about Biological Knowledge

The findings revealed that secondary school students in Lagos State possess moderately sophisticated epistemic beliefs about biological knowledge. Students demonstrated relatively higher sophistication in the justification of knowledge dimension, indicating an emerging recognition that biological claims should be supported by evidence rather than accepted solely on authority. However, moderate scores on certainty and simplicity of knowledge suggest that many students still view biology as a body of fixed facts rather than a dynamic, evolving discipline. This pattern aligns with the developmental view of epistemic beliefs proposed by Perry (1970) and later expanded by Hofer and Pintrich (1997), which posits that learners often transition gradually from absolutist to evaluativist epistemic positions. The findings also corroborate earlier studies (Schommer-Aikins, 2004; Muis, 2007; Awofala et al., 2025) indicating that students may simultaneously hold sophisticated beliefs in some dimensions while maintaining naïve beliefs in others. In the Lagos State context, this mixed epistemic profile may be attributed to teacher-centred instructional practices, examination-driven curricula, and limited exposure to inquiry-based learning. These systemic factors often reinforce the perception of knowledge as certain and authoritative, thereby constraining epistemic development.

7.2 Level of Students' Conceptual Understanding in Biology

Results indicated that students' conceptual understanding of Biology was moderate, with a substantial proportion demonstrating low understanding of core biological concepts. This finding suggests that while students may recall biological facts, many struggle with explaining underlying mechanisms, linking concepts, and

applying knowledge to novel situations. This outcome supports earlier research that identifies biology as conceptually demanding due to its abstract processes, multiple representations, and hierarchical structures (Chi, 2005; Duit, 2009; Oladipo & Ihemedu, 2018; Oladipo et al 2019). Persistent misconceptions in topics such as genetics, respiration, and evolution have been widely documented (Bishop & Anderson, 1990; Smith et al., 1993; Oladipo, 2009; Ogundiwin & Oladipo, 2020), and the present findings suggest that such misconceptions remain prevalent in Lagos State secondary schools. From a conceptual change perspective (Posner et al., 1982), moderate conceptual understanding implies that instructional approaches may not sufficiently create cognitive conflict or support the restructuring of students' alternative conceptions.

7.3 Level of Students' Scientific Reasoning in Biology

The study found that students' scientific reasoning ability was also moderate, with notable weaknesses in hypothesis testing, control of variables, and evidence evaluation. This suggests that many students engage with Biology primarily at a descriptive level rather than through the epistemic practices of science. These findings are consistent with Lawson's (2000) assertion that scientific reasoning does not automatically develop through content instruction alone. Similar results have been reported by Oladipo (2009), Zimmerman (2007) and Driver et al. (1996), who observed that students often lack opportunities to engage in authentic scientific inquiry. In the Nigerian context, limited laboratory resources, large class sizes, and emphasis on examination performance may further restrict the development of scientific reasoning skills, reinforcing procedural rather than epistemic engagement with Biology.

7.4 Relationship between Epistemic Beliefs and Conceptual Understanding

The results revealed a significant positive relationship between students' epistemic beliefs and their conceptual understanding in Biology. Students who viewed knowledge as tentative, complex, and evidence-based demonstrated higher levels of conceptual understanding. This finding supports theoretical propositions that epistemic beliefs shape how learners process information, respond to conceptual conflict, and integrate new ideas (Hofer, 2001; Muis, 2007). Learners with sophisticated epistemic beliefs are more likely to engage in deep

learning strategies such as elaboration, self-explanation, and metacognitive monitoring, which facilitate conceptual integration. Empirically, this result aligns with studies by Kallery and Psillos (2004) and Oktay and Kaya (2016), who found that epistemic beliefs significantly influence students' understanding of scientific concepts. The present study extends these findings by providing context-specific evidence from Lagos State.

7.5 Relationship between Epistemic Beliefs and Scientific Reasoning

The findings also demonstrated a moderate positive relationship between epistemic beliefs and scientific reasoning. Students who recognised the evidential and tentative nature of biological knowledge were more capable of engaging in scientific reasoning processes. This result reinforces the view that scientific reasoning is inherently epistemic, involving judgments about evidence, uncertainty, and justification (Zohar & Nemet, 2002). Students with naïve epistemic beliefs may struggle to evaluate evidence critically or consider alternative explanations, thereby limiting their reasoning capacity. The findings are consistent with Conley et al. (2004) and Lederman, Lederman, and Antink (2013), who reported that epistemic beliefs predict students' argumentation and reasoning in science. The implication is that strengthening epistemic beliefs may serve as a lever for improving reasoning skills.

7.6 Predictors of Conceptual Understanding

Regression analysis revealed that justification of knowledge, simplicity of knowledge, and nature of learning were significant predictors of conceptual understanding. Among these, justification of knowledge emerged as the strongest predictor. This finding underscores the importance of helping students understand that biological knowledge is generated through evidence and reasoning rather than memorisation. Students who value evidence are more likely to interrogate explanations, reconcile conflicting ideas, and engage in conceptual change. The non-significance of certainty and source of knowledge suggests that believing knowledge comes from authority does not necessarily hinder conceptual understanding unless it is accompanied by beliefs that knowledge is fixed and unchallengeable.

7.7 Predictors of Scientific Reasoning

The results showed that justification of knowledge, certainty of knowledge, and nature of learning significantly predicted scientific reasoning. Notably,

certainty of knowledge negatively predicted scientific reasoning, indicating that students who perceive biological knowledge as fixed tend to demonstrate weaker reasoning skills. This finding aligns with epistemic cognition theory, which posits that reasoning thrives in contexts where uncertainty and evaluation are acknowledged (Greene et al., 2016). Students who expect absolute answers may be less inclined to test hypotheses or evaluate evidence critically.

8. Conclusion

The present study set out to examine the predictive role of students' epistemic beliefs on their conceptual understanding and scientific reasoning in Biology. Drawing on epistemic belief theory, conceptual change theory, and models of scientific reasoning, the study adopted a robust quantitative approach to explore these relationships among secondary school students in Lagos State. The findings revealed that students possess moderately sophisticated epistemic beliefs, characterised by relatively strong beliefs in the justification of knowledge but lingering naïve beliefs regarding the certainty and simplicity of biological knowledge. This mixed epistemic profile reflects a transitional stage of epistemic development, where students recognise the role of evidence yet continue to view Biology as a largely fixed and authoritative body of knowledge. Students' levels of conceptual understanding and scientific reasoning were also found to be moderate. While many students demonstrated basic comprehension of biological concepts, a significant proportion struggled with explaining underlying mechanisms, integrating ideas across topics, and applying knowledge in novel contexts. Similarly, scientific reasoning skills—such as hypothesis formulation, control of variables, and evidence evaluation—were not sufficiently developed among many learners.

Most importantly, the study established that epistemic beliefs significantly predict both conceptual understanding and scientific reasoning in Biology. Students who viewed biological knowledge as tentative, complex, and evidence-based demonstrated deeper conceptual understanding and stronger reasoning skills. Among the epistemic belief dimensions, justification of knowledge emerged as the strongest predictor of both outcomes, underscoring the centrality of evidence-based thinking in science learning. This finding provides empirical support for integrated models of science learning that position epistemic cognition as a foundational regulator of cognitive engagement. Overall, the study concludes that improving students' conceptual understanding and

scientific reasoning in Biology cannot be achieved through content-focused instruction alone. Rather, there is a need for deliberate attention to students' epistemic beliefs and reasoning practices within Biology classrooms.

9. Recommendations

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

- Biology teachers should adopt inquiry-oriented instructional strategies that emphasise evidence generation, hypothesis testing, and explanation rather than rote memorisation.
- Teachers should explicitly address the nature of biological knowledge, helping students understand that scientific knowledge is tentative, evolving, and subject to revision based on evidence.
- Classroom practices should encourage students to justify their answers, critique explanations, and evaluate alternative viewpoints.
- Continuous professional development programmes should be organised to equip teachers with skills for integrating epistemic and reasoning-focused pedagogy into Biology instruction.
- School administrators should support the provision and utilisation of laboratory facilities and instructional resources that promote hands-on and minds-on learning.
- Timetables should allow adequate time for practical activities, discussions, and inquiry-based lessons.
- School leadership should promote a school culture that values critical thinking and reasoning over examination drilling.
- Biology curricula should explicitly incorporate epistemic goals, such as understanding the nature of scientific knowledge and reasoning processes.
- Assessment formats used by bodies such as WAEC and NECO should include items that assess conceptual understanding and scientific reasoning, not merely factual recall.
- Curriculum documents should provide guidance on pedagogical strategies that foster epistemic development and reasoning skills.

10. Implications of the Study

The findings have significant implications for educational policy in Lagos State and Nigeria at large.

Current science education policies emphasise curriculum coverage and examination performance, often at the expense of deep understanding and reasoning. This study suggests that: Science education policies should explicitly recognise epistemic beliefs and reasoning skills as key learning outcomes. Teacher education and certification policies should require training in epistemic cognition, inquiry pedagogy, and scientific argumentation. Policy frameworks should support systemic shifts from content-heavy syllabi to competency-based science education. For classroom practice, the study highlights the need for a pedagogical shift: Biology teaching should move from transmissive methods to student-centred, inquiry-driven approaches. Teachers should design learning activities that confront misconceptions, stimulate cognitive conflict, and promote conceptual change. Assessment practices at the classroom level should reward reasoning, explanation, and evidence use. Such practices are likely to foster more sophisticated epistemic beliefs, leading to improved learning outcomes in Biology. The study contributes to the growing body of literature on epistemic beliefs in science education, particularly within the Nigerian context. It opens several avenues for further research: Future studies could employ longitudinal designs to examine how epistemic beliefs and reasoning develop over time. Experimental studies could investigate the effects of epistemic-focused instructional interventions on students' learning outcomes. Qualitative approaches, such as classroom observations and interviews, could provide deeper insights into how epistemic beliefs are enacted in classroom interactions. Further research could extend this model to other science subjects such as Chemistry and Physics or to different educational levels.

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Libraries and Psychosocial Determinants of Adolescent Substance Use and Mental Health in Nigeria: A Scoping Review

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Abstract. In Nigeria, adolescent substance use and mental health issues continue to pose public health problems as psychosocial factors which include family relationships, peer pressure, media exposure, and socioeconomic status drive these issues. Research has extensively studied these factors but scholars have not investigated how libraries can serve as community centers for mental health support and prevention work. This scoping review examines existing research from 2015 to 2025 which studies how psychosocial factors affect Nigeria's adolescent substance abuse and mental health problems, and it identifies library-based intervention points for further research. Researchers conducted a structured search using PRISMA-ScR framework which included PubMed, Scopus, JSTOR, Google Scholar, and Nigerian academic databases. Eleven studies met inclusion criteria. The findings show that educational programs taking place in schools and community settings can create opportunities for mental health literacy, substance use prevention, and peer support programs even though the study did not assess library-based interventions directly. The review shows major research deficiencies as studies testing library-led programs and research on vulnerable adolescent groups remains insufficient. Future intervention studies must investigate how libraries create safe spaces for adolescent mental health support in low-resource environments according to the study results.

Keywords: Adolescent substance use, psychosocial factors, libraries and information literacy

1. Introduction

The public health issue of adolescent substance use in Nigeria results from multiple interlinked psychosocial factors, family dynamics, and environmental circumstances. Nigerian researchers have established that family dynamics function as a crucial factor which determines whether adolescents will engage in risk behaviors or remain safe from such activities. Studies found that family environments which included parental supervision, emotional support, and organized daily activities worked as protective factors that reduced the likelihood of substance use (Obadeji et al., 2020; Omotoso et al., 2023). The combination of dysfunctional family systems, parental substance use, and mental disorders leads to higher rates of substance initiation and addiction (Akinawo et al., 2025). The research results confirm previous studies established a connection between adolescent substance abuse and mental health problems in Nigerian youth (Igwe & Ojinnaka, 2010). The use of substances develops within complex human ecosystems including various social and environmental factors rather than appearing as an isolated problem.

Adolescent substance use continues to exist due to peer pressures which affect their decision-making. The students at school face social pressure, requiring them to follow peer group standards to gain acceptance (Omopo, Quadri, & Ukpere, 2025; Omotoso et al., 2023). A study found that when people spend time with peers who consider substance use acceptable, they become more likely to try substances especially in situations that lack adult supervision, and have easy access to substances (Taiwo & Olayemi, 2019). Peer

relationships function together with emotional distress, childhood neglect, and depressive symptoms to establish substance use as a method for handling difficult situations (Omopo, Quadri, & Ukpere, 2025). The study results demonstrate how school and community environments create both dangerous conditions and opportunities to stop substance abuse.

The social and environmental contexts existing beyond family and peer relationships function as essential factors shaping adolescent behavior. Young people who use social media want to access content on multiple platforms which increases their chances of facing cyberbullying and experiencing pressure to compare themselves with others and developing dangerous behaviors (Omopo, Quadri, & Ukpere, 2025). Another study found that adolescents who watch media content develop their own methods for handling stress which also affect their ability to deal with stress (Akinbo & Omoto, 2024). Urban areas and low-income neighborhoods show higher rates of substance use, as structural social inequalities increase psychosocial vulnerability (Habila et al., 2025; Paul & Kabiru, 2025). The COVID-19 pandemic demonstrated how health awareness programs and community centers implement their functional programs to educate people about health matters (Omopo, 2021). The study showed how youth behavior changes due to youth behavioral patterns which depend on their information access to health information inside their community.

Mental health problems like anxiety and depression, stress, sleep problems, and resilience deficits directly relate to how adolescents and young adults use substances. Ibigbami et al. (2023) established through their research that adolescents who experience psychological distress through two different forms of resilience exhibit higher rates of psychoactive substance use. Omopo (2025) showed through his research that stress, sleep disorders, and substance use among tertiary students show structural links. The findings show how psychosocial vulnerability develops from late adolescence through young adulthood although tertiary populations slightly exceed the conventional adolescent age range. The structured psychological approaches which include cognitive reframing and stress inoculation training show effective results in treating trauma-related distress according to intervention research conducted among Nigerian adults (Offor & Omopo, 2025). The studies demonstrate how mental health intervention research functions throughout Nigeria, while establishing the need for accessible psychoeducational facilities.

Studies on psychosocial determinants leading to substance use and mental health challenges remains underexplored as researchers have not studied how libraries and library services might help the system through their contributions. Libraries serve as educational, informational, and community-based institutions that enable people to access multiple resources they have organized, while teaching them information literacy skills and providing them with structured learning facilities. Studies began to examine how libraries help adolescents who need to cope with their problems through programs which prevent substance use (Akinbo & Omoto, 2024; Sulaimon et al., 2023). The school-based prevention discussions which extend beyond their current limits show how libraries need to operate as part of the educational infrastructure existing in schools (Shuaibu et al., 2020). Libraries serve as essential platforms enabling youth to learn about mental health and media literacy through their mission to provide equal access to information especially in areas that lack specialized mental health services.

The scoping review investigates existing research about psychosocial factors leading to adolescent substance use and mental health in Nigeria, while assessing the role libraries play in the existing research from both direct and indirect evidence. This review synthesizes adolescents, youths, and Nigerian mental health studies to clarify research relationships, and determine which areas need more investigation through library-based research

1.1 Research Questions

- What role do libraries play in addressing psychosocial factors (family dynamics, peer pressure, media exposure) that contribute to substance use among Nigerian adolescents?
- What evidence exists regarding library-based interventions in addressing adolescent substance use and mental health?
- What are the key challenges and barriers faced by libraries in implementing interventions to support adolescent substance use prevention and mental health in Nigerian communities?

2. Research Methodology

The study uses a scoping review approach which followed the guidelines established by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR). The researchers chose a scoping review method to create a comprehensive map of all existing studies

which investigated how psychosocial factors affect adolescent substance use and mental health in Nigeria, while examining the role of libraries within this research area. The review included studies between 2015 and 2025, studied adolescents between 10 and 19 years old while investigating how family dynamics, peer pressure, media exposure, and socioeconomic conditions affect their mental health. The study selection process used peer reviewed articles, and included both qualitative, quantitative, and mixed-methods approaches together with literature reviews that studied Nigeria and similar low-resource countries. Studies focusing exclusively on adult populations, commentaries without empirical data, conference abstracts, and publications outside the specified timeframe were excluded, except where older studies were considered foundational for contextual understanding.

The researchers performed a systematic search throughout different electronic databases which included PubMed, Scopus, JSTOR, Google Scholar, and specific Nigerian institutional repositories. Search terms were combined using Boolean operators and included phrases such as “adolescent substance use

Nigeria,” “psychosocial factors and Nigerian adolescents,” “mental health and peer pressure Nigeria,” “libraries and adolescent mental health,” and “information literacy and substance use prevention.” The research team began by screening titles and abstracts to determine their relevance before they assessed full-text documents of studies which met eligibility criteria. The review process included 11 studies which satisfied the inclusion requirements. Researchers created data charts through a structured extraction form which documented study features, population information, and all psychosocial variables which were studied and all intervention programs which were tested through school or community designs including libraries. The researchers used descriptive and thematic synthesis methods to analyze the data as the study designs and outcomes showed variations, while they aimed to discover common psychosocial factors and potential library-based engagement methods. The researchers conducted mapping of existing evidence through a scoping review process, which required them to establish research gaps without performing risk-of-bias evaluations.

3. Results

3.1 Study Characteristics

A total of 11 studies were included in this scoping review after applying the eligibility criteria. The study selection process is summarized in Figure 1:

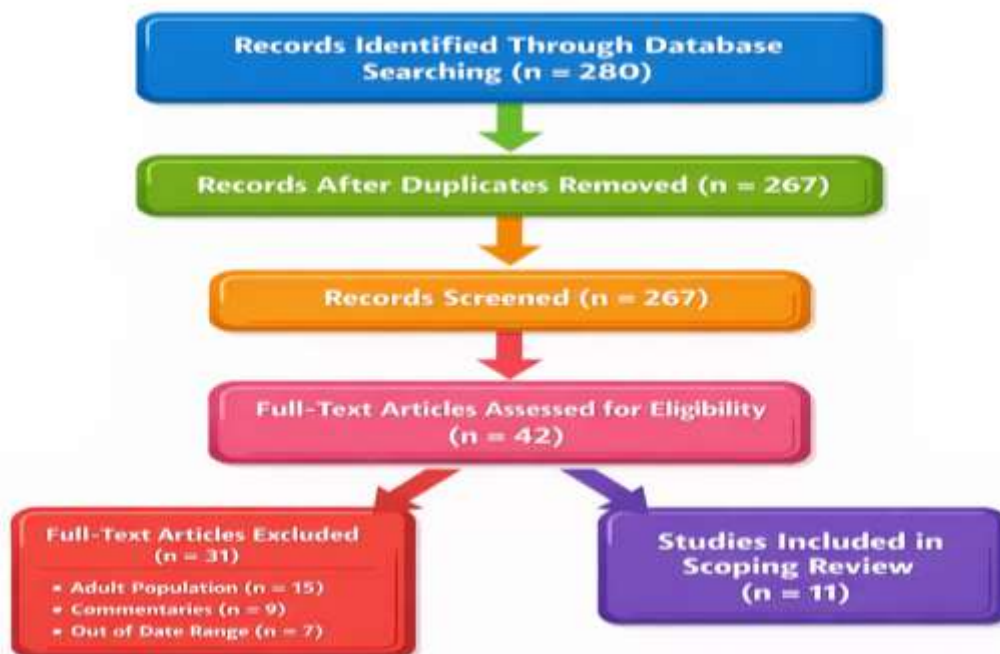


Figure 1: PRISMA-ScR flow diagram illustrating the study selection process.

The research studies which were selected for this analysis included studies which occurred between 2015 and 2025. The studies made use of cross-sectional survey designs for most of their investigation, while some studies applied qualitative methods and others followed literature review methods. The research studies took place across multiple Nigerian states which displayed various geographic environments that existed in low-resource regions.

The studies investigated multiple psychosocial elements that impacted how adolescents used substances and their mental well-being. The elements which affected substance use and mental health included family dynamics through parental monitoring and family conflict together with peer pressure, peer acceptance, and media use through social media dependence, and psychological distress which encompassed anxiety and depression, stress and socioeconomic factors. The included studies did not assess library-based interventions through direct evaluation. Two studies identified educational or school-based platforms as potential library operating environments which fostered mental health literacy development and substance use prevention educational programs. The existing research presents strong evidence about how psychosocial factors lead to adolescent substance use and mental health problems, studies about how libraries function as intervention sites has been briefly investigated.

Table 1: Characteristics of Included Studies on Psychosocial Factors Influencing Adolescent Substance Use and Mental Health in Nigeria

| Study | Geographic Location | Study Design | Population | Psychosocial Factors Addressed | Key Findings Relevant to Review | Reference to Libraries |
|--------------------------------|-------------------------|-------------------|---------------------------------|--|--|--|
| Obadeji et al. (2020) | Nigeria (Lagos) | Cross-sectional | Adolescent high school students | Family dynamics, peer pressure, mental health | Parental monitoring and peer influence significantly associated with substance use | None |
| Paul & Kabiru (2025) | Nigeria (Abuja) | Cross-sectional | Adolescents | Family dynamics, substance use | Substance abuse negatively associated with adolescent mental health | None |
| Omotoso et al. (2023) | Nigeria (Ilorin) | Cross-sectional | Secondary school students | Peer pressure, social environment | Peer-related factors strongly linked to substance use | None |
| Akinawo et al. (2025) | Nigeria (Akungba-Akoko) | Cross-sectional | In-school adolescents | Parental factors, psychopathologies | Parental variables predicted substance abuse tendencies | None |
| Shuaibu et al. (2020) | Nigeria | Literature review | Secondary school students | Psychoactive substance use, peer influence | Emphasized school-based psychoeducation approaches | Indirect (school-based platforms) |
| Ibigbami et al. (2023) | Nigeria | Cross-sectional | Adolescents | Anxiety, depression, resilience | Mental health variables associated with psychoactive substance use | None |
| Taiwo & Olayemi (2019) | Nigeria (Osun State) | Cross-sectional | Secondary school students | Socioeconomic factors, substance use | Socioeconomic vulnerability linked to substance abuse | None |
| Omopo, Quadri, & Ukpere (2025) | Nigeria | Cross-sectional | Adolescents | Peer acceptance, childhood neglect, depression | Social media dependence and peer pressure associated with distress | None |
| Habila et al. (2025) | Nigeria (Cross River) | Cross-sectional | Adolescents | Substance use, psychosocial correlates | Identified prevalence and psychosocial predictors | None |
| Akinbo & Omoto (2024) | Nigeria (Benin) | Qualitative | Adolescents | Media exposure, stress | Media influence contributes to stress and coping behaviors | Suggests potential library role in mental health education |
| Sulaimon et al. (2023) | Nigeria (Ogun State) | Cross-sectional | Secondary school students | Peer pressure, substance use | Recommended educational awareness strategies | Suggests potential library role in prevention |

3.2 Findings on Library-Related Opportunities

The studies included in this research could not assess whether library-based programs effectively reduced substance use among teenagers and improved their mental health conditions. However, two studies (Akinbo & Omoto, 2024;

Sulaimon et al., 2023) referenced educational and information-based strategies that could conceptually be supported within library environments. The research conducted by Shuaibu et al. (2020) showed how educational psychoeducation programs delivered at schools need library resources as essential components of their entire educational system.

The literature suggests that libraries, particularly within school settings, may serve as platforms for information dissemination, mental health literacy promotion, and youth engagement activities. These potential roles of the library remain theoretical until scientists conduct research to test their existence. The research found no studies that assessed the results of library-based programs, which created a significant gap in existing evidence about library programming.

Table 2: Conceptual Opportunities for Library Engagement Identified in the Literature

| Library-Related Activity | Studies Referencing the Concept | Nature of Evidence |
|--|---|--|
| Information literacy and psychoeducation | Shuaibu et al. (2020), Sulaimon et al. (2023) | Suggested within school-based educational strategies |
| Mental health awareness programming | Akinbo & Omoto (2024) | Conceptual recommendation |
| Peer discussion platforms | Sulaimon et al. (2023) | Implied through school-based prevention initiatives |

3.3 Psychosocial Factors and Conceptual Role of Libraries

The research identified psychosocial factors which educational and informational programs could address, although the investigations did not test library programs. Researchers found four major themes which participants reported throughout their study: family dynamics, peer pressure, media exposure, and psychological distress. Family-related factors such as parental monitoring and family conflict were associated with substance use risk, suggesting that family education resources and parenting support materials could be disseminated through community-based platforms. The study found a strong connection between peer pressure and social media habits which led to specific adolescent behavior patterns, thus emphasizing the importance of media literacy and resilience-building programs. The study found that mental health problems which included anxiety and depression, and stress were major reasons why people used substances, thus making mental health education and coping skills training essential. People who experienced socioeconomic vulnerability faced increased risk as they needed basic information which should be provided through affordable services to people who live in underserved areas.

Table 3: Psychosocial Factors Influencing Adolescent Substance Use and Conceptual Entry Points for Libraries

| Psychosocial Factor | Study References | Conceptual Library Role |
|---|---|--|
| Family dynamics | Obadeji et al. (2020); Akinlawo et al. (2025) | Parent education materials; family-focused information resources |
| Peer pressure | Omotoso et al. (2023); Sulaimon et al. (2023) | Youth engagement programs; peer discussion spaces |
| Media exposure and social media influence | Omopo et al. (2025); Akinbo & Omoto (2024) | Media literacy workshops; digital awareness resources |
| Stress, anxiety, depression | Ibigbami et al. (2023); Habila et al. (2025) | Mental health literacy campaigns; coping skills programming |
| Socioeconomic vulnerability | Taiwo & Olayemi (2019) | Accessible prevention materials in underserved communities |

4. Discussion

The scoping review results create a mapping of current research studies which investigated how psychosocial elements affect adolescent substance use and mental health conditions in Nigeria and provide library engagement points which researchers can use to study this evidence base. The included studies show that adolescent substance use and psychological distress develop through a combination of family dynamics with peer pressure, media exposure, and socioeconomic vulnerability. Although strong evidence exists for these determinants, no empirical research has investigated how libraries contribute to reducing adolescent substance use and mental health

problems. The specific need for future research exists because libraries establish their presence in both school and community environments. Studies identified family dynamics and peer influence as primary factors which controlled the outcome of their research.

Parents who control their children's activities provide them with emotional support to create a family environment, which leads to two outcomes, either to protect from or to increase the danger of adolescent substance use (Obadeji et al., 2020; Akinlawo et al., 2025). Substance use behaviors showed a strong relationship with peer pressure, and social environmental factors according to research findings

from Omotoso et al. (2023) and Taiwo and Olayemi (2019). The study results confirm existing theories about adolescent behavior, which state that close social surroundings greatly impact how teenagers behave. The literature points to educational settings using structured family interventions as the direct path to teaching families about libraries. Shuaibu et al. (2020) established school-based psychoeducation as the main educational tool which should expand library operations within educational systems.

Social media dependence and media exposure lead to increased stress and vulnerability among adolescents. Omopo, Quadri, and Ukpere (2025) found that people who use social media face two problems, which include social pressure to fit in with their peers and psychological distress. The research from Akinbo and Omoto (2024) showed that media exposure directly impacts how adolescents handle stress and develop coping mechanisms. The findings show that organizations should use media literacy programs together with critical information engagement to create preventive measures against health problems. The libraries in this context function as platforms which provide digital literacy programs to help adolescents evaluate online content with critical thinking skills, while they deal with media-related pressures. The library-based media literacy programs that have been developed require research to show how they influence substance use and mental health outcomes.

The review demonstrates that psychological distress especially anxiety and depression, and stress has a strong connection with substance use in adolescents (Ibigbami et al. 2023 Habila et al. 2025). The research findings demonstrate multiple mental health literacy and coping skills education needs, which should be made available to the public. All studies proposed school-based awareness initiatives, but none of them conducted assessments of libraries as delivery locations for educational programs. Socioeconomic vulnerability serves as a risk factor for substance use (Taiwo and Olayemi, 2019), which establishes the need for affordable information resources to reach underserved areas. Libraries function as dedicated spaces that provide free educational resources to everyone, thus establishing inclusive environments, enabling prevention activities which face resource limitations in their respective domains.

The scoping review establishes its primary value by showing an important evidence gap which exists as no studies have tested library programs for adolescent substance prevention in Nigeria, although library services should connect with psychosocial prevention methods. The existing research concentrates on

finding risk elements, but it does not evaluate solutions which would be implemented through community activities or through informational resources. The research environment needs intervention-based studies to establish program impacts and effectiveness, yet this study reveals a positive direction for upcoming research. The research requires experimental studies combined with longitudinal studies and implementation studies to determine how libraries will become part of school, community mental health systems, and to measure specific results that will emerge from these operations. The scoping review shows that Nigeria has well-documented psychosocial risk factors for adolescent substance use and mental health issues, but libraries need more research to verify their educational role. Libraries function as educational spaces which allow public access without creating identifying experiences thus, they enable mental health literacy activities, helping young people stay healthy. The possibilities of these facilities need research evidence verifying their existence. Research needs to shift from theoretical discussions to practical studies, analyzing library-based programs and their impact on adolescent welfare in resource-limited areas.

5. Conclusion

The scoping review investigated all available research, which studied how psychosocial elements affect drug use and mental health among adolescents in Nigeria, while it specifically studied ways library services can support educational activities. The research findings indicate that family relationships, peer pressure, media consumption, psychological distress, and socioeconomic vulnerability all serve as critical factors that shape the development of risk behaviors in adolescents. Research exists on how psychosocial elements impact adolescent behavior, yet researchers have not studied how libraries help reduce youth substance use and mental health problems. The review identifies a research deficit, libraries possess conceptual links to prevention-based programs which include information literacy education, mental health awareness, and youth engagement initiatives, yet available studies fail to show how libraries directly impact adolescent substance use and mental health in Nigeria. Libraries operate as educational resources, serving as community centers that provide essential services to libraries who work with adolescents. Research needs to progress from theoretical analysis to practical studies to show how libraries function within both school mental health programs and community mental health initiatives.

6. Implications for Theory and Practice

The scoping review establishes theoretical connections between adolescent substance use and mental health by examining library functions in relation to psychosocial factors within environmental contexts. Existing theoretical models focus on human relationships and environmental factors through their research frameworks which study family systems, peer networks, and environmental determinants. The review findings indicate that libraries function as community resources which support adolescent development according to their place in ecological development frameworks. The library system operates as information centers which provide secure environments and educational resources to establish connections with family networks, peer relationships, and media exposure, which all play a role in shaping adolescent behavior. The development of future theoretical models should include libraries as social infrastructure elements, which influence psychosocial risk pathways and resilience development.

The findings demonstrate a need to expand the number of organizations which should participate in programs that protect adolescent mental health and prevent substance use problems. Libraries in under-resourced communities need to become prevention programs, yet schools, families, healthcare providers, and community organizations remain the main prevention actors. Studies show that libraries can enhance existing mental health initiatives by helping people learn about mental health, creating pathways to prevention resources, and delivering organized programs for young people. The functions of these entities exist only in theory, yet they need scientific research to prove their actual existence. Policymakers and practitioners should investigate pilot programs that use libraries for mental health initiatives in schools and community spaces.

7. Recommendations

The scoping review revealed research deficiencies which led to specific recommendations:

Educational stakeholders together with policymakers must identify methods to include libraries in mental health programs which operate within educational institutions and their surrounding communities. Pilot programs could assess the feasibility of delivering prevention education, information literacy workshops, or youth engagement activities through library platforms.

Libraries may benefit from partnerships with schools, public health entities, and community organizations to build joint prevention programs. Collaborative methods would enable better resource distribution, while helping to reach out to young people who live in areas with insufficient services.

Training in mental health literacy and adolescent psychosocial development may strengthen librarians' capacity to support youth-focused initiatives. Librarians who complete this training will not become clinicians but they will learn how to guide users toward valid information together with professional referral networks.

Educational institutions and government bodies should include libraries in their mental health programs to tackle adolescent substance use and mental health issues. Library-based initiatives need evidence-based funding which will enable pilot projects and implementation research to create their library-based initiatives.

The adoption of these recommendations will lead to practical applications that will make libraries to become evidence-based tools for adolescent mental health treatment and substance use prevention. Community-based institutions like libraries need more empirical research and policy assessment in Nigeria as specialized service access gets limited in low-resource regions.

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Transformational Leadership Practices and Teachers' Organisational Citizenship Behaviour in Public Senior Secondary Schools, Education District VI, Lagos State, Nigeria

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Abstract. The study investigated how principals' leadership styles influence teachers' willingness to engage in voluntary, extra-role behaviours that enhance school effectiveness. The study adopted a descriptive survey research design, which allowed for the systematic investigation of relationships among variables without manipulating them. The population consisted of all teachers in public senior secondary schools within Education District VI of Lagos State, totaling about 1,500 teachers, while a sample of 200 teachers was selected using stratified and purposive sampling techniques to ensure fair representation across schools. Data were collected using a structured questionnaire. The instrument comprised items measuring leadership dimensions, idealised influence, inspirational motivation, and intellectual stimulation and OCB components. Data were analysed using Pearson Product-Moment Correlation (PPMC) to test the hypotheses at a 0.05 level of significance. The findings revealed a significant positive relationship between principals' transformational leadership and teachers' organisational citizenship behaviour. The study concluded that transformational leadership is a critical determinant of teachers' organisational citizenship behaviour in Lagos State public schools. The study recommended that the Lagos State Ministry of Education should organise continuous leadership development programmes to equip principals with transformational leadership competencies.

Keywords: Transformational Leadership, Organisational Citizenship Behaviour, Teachers, Public Senior Secondary Schools, Lagos State.

1. Introduction

Leadership remains one of the most critical determinants of organisational success, particularly within the education sector where the outcomes of leadership directly influence teaching effectiveness, staff morale, and student achievement. Effective leadership in schools provides direction, motivation, and structure, enabling teachers and learners to achieve shared educational objectives (Northouse, 2018). The type of leadership style adopted by a school principal can either enhance or hinder the performance and commitment of teachers. In the contemporary educational landscape, characterized by rapid change and accountability demands, principals are increasingly expected to go beyond traditional administrative functions and act as catalysts for innovation, collaboration, and professional growth (Bush & Glover, 2003).

When a school has a healthy school culture, the interaction between the principal and the instructors is crucial to the building's success. Transformational leadership is a crucial leadership style for teacher preparation programmes because it enables principals to employ motivating factors to change teachers' attitudes, beliefs, and actions in order to improve student performance and accomplishment (Anderson, 2017). It is known as Organizational Citizenship Behaviour (OCB; Lemmon & Wayne, 2015) when educators exhibit actions that benefit the school, students, and coworkers. Additionally, it is critical that principals comprehend the driving forces underlying OCB. Concern, value, and impression are the three

main driving elements, according to Rioux and Penner (2001). According to other studies, children who attend schools with higher OCB scores also tend to do better (Burns & DiPaola, 2013). In order to boost the motivational elements that result in higher OCB, educational leadership preparation programmes may find it necessary to teach transformational leadership methods.

Among the many leadership paradigms that have emerged over time, transformational leadership has been widely recognized as particularly effective in fostering commitment and engagement among followers. Initially introduced by Burns (1978) and later expanded by Bass and Avolio (1994), transformational leadership is defined as a leadership style that inspires followers to transcend their self-interests for the collective good of the organisation. It involves influencing others through vision, motivation, and individualized support rather than coercion or transactional exchanges. According to Bass and Riggio (2019), transformational leaders exhibit four major behavioural dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. These dimensions collectively enhance organisational trust, creativity, and performance by motivating subordinates to embrace shared values and goals.

In educational institutions, transformational leadership has been associated with increased teacher motivation, stronger school climate, and improved student outcomes. Teachers under transformational leaders often exhibit higher levels of commitment, job satisfaction, and enthusiasm for collaborative problem-solving (Leithwood & Sun, 2018). This leadership approach also empowers teachers by granting them autonomy and recognition, thereby nurturing a sense of ownership and accountability. By contrast, transactional leadership based on reward and punishment has been found inadequate in promoting intrinsic motivation or long-term commitment among teachers (Adebayo & Ojo, 2021). Consequently, many scholars argue that transformational leadership represents a sustainable model for 21st-century educational leadership, capable of fostering not only professional excellence but also behavioural change conducive to school improvement (Akinwale & George, 2020).

The relationship between transformational leadership and organisational citizenship behaviour (OCB) has become a central focus of educational leadership research in recent years. OCB refers to discretionary, voluntary behaviours exhibited by employees that are not formally recognized or rewarded but contribute to the smooth functioning of the organisation (Organ,

1988). In the school context, teachers who demonstrate OCB engage in activities such as mentoring new staff, assisting colleagues, maintaining positive relationships with students, volunteering for school projects, and protecting school property. These behaviours, while not formally mandated, enhance the social and operational efficiency of schools (Somech & Ron, 2007).

In Nigeria, recent studies have begun exploring how transformational leadership influences teachers' attitudes and behaviours. For example, Uchenwamgbe (2019) found that principals who practiced transformational leadership significantly improved teachers' motivation, commitment, and cooperative behaviour. Similarly, teachers in schools with transformational leaders were more likely to volunteer for additional responsibilities and support institutional goals. These findings are consistent with global research, including the work of Leithwood and Jantzi (2017), which underscores that transformational leaders promote trust, fairness, and collective efficacy key antecedents of OCB. Thus, transformational leadership does not merely improve organisational performance through formal control but through the voluntary and self-initiated efforts of employees.

The first dimension, idealized influence, refers to leaders' ability to serve as ethical role models who command respect and trust from subordinates. Principals who display this trait act with integrity, fairness, and consistency, thereby creating a moral climate that encourages teachers to adopt prosocial behaviours. When teachers perceive their principals as trustworthy and visionary, they are more likely to engage in altruistic acts, such as assisting colleagues or voluntarily taking on additional tasks (Bass & Riggio, 2018).

The second dimension, inspirational motivation, involves communicating high expectations and a compelling vision that motivates teachers to exceed ordinary performance levels. According to Leithwood and Sun (2018), principals who provide meaningful inspiration foster a sense of belonging and shared purpose among teachers. In such schools, teachers not only fulfill assigned duties but also engage in organisational citizenship behaviour by maintaining optimism, supporting institutional goals, and demonstrating resilience even in challenging conditions.

The third dimension, intellectual stimulation, encourages creativity and innovation among teachers. Transformational leaders challenge existing assumptions, promote reflective thinking, and support experimentation in pedagogy (Northouse, 2018).

Teachers who are intellectually stimulated tend to adopt problem-solving approaches, collaborate with colleagues, and introduce new strategies to enhance learning outcomes. These behaviours mirror the OCB dimensions of conscientiousness and civic virtue, which involve responsibility and constructive participation in school governance (Podsakoff et al., 2018).

Individualized consideration refers to the leader's attention to the individual needs and professional growth of subordinates. Principals who mentor, coach, and provide feedback create an environment of emotional support that strengthens teachers' commitment and willingness to reciprocate through OCB. It is worthy to note that teachers who feel valued and supported by their principals display stronger interpersonal courtesy, teamwork, and willingness to volunteer. Thus, the four components of transformational leadership are interrelated mechanisms that collectively foster organisational citizenship behaviour among teachers in schools.

Organisational Citizenship Behaviour (OCB) has become an essential concept in understanding school effectiveness. It represents the social glue that binds teachers together and enables schools to function as cohesive professional communities (Organ, 1988). Teachers who exhibit OCB are often more adaptable, collaborative, and proactive in addressing educational challenges. The five widely recognized dimensions of OCB: altruism, conscientiousness, sportsmanship, courtesy, and civic virtue reflect the multifaceted nature of extra-role behaviours. Altruism refers to helping behaviours directed toward colleagues and students; conscientiousness involves diligence and commitment to work standards; sportsmanship denotes maintaining a positive attitude even under stress; courtesy entails consideration for others' needs; and civic virtue encompasses active participation in school decision-making and governance (Podsakoff et al., 2018).

Transformational leadership, by contrast, provides the relational foundation upon which OCB thrives. By demonstrating fairness, inspiration, and intellectual engagement, transformational principals stimulate teachers' intrinsic motivation and sense of responsibility. Teachers who work in such environments are more likely to display altruism and civic virtue, ultimately contributing to the achievement of institutional goals. Thus, understanding the relationship between transformational leadership and teachers' OCB is not only academically relevant but also practically significant for enhancing the effectiveness of public secondary schools in Lagos State.

Education District VI comprising Ikeja, Mushin and Oshodi/Isolo areas represent a microcosm of these challenges. The district contains schools with diverse socio-economic environments, varying leadership competencies, and differing teacher commitment levels. Some principals have successfully fostered strong collaborative cultures, while others struggle with staff indifference and poor communication. Transformational leadership behaviours revolve around idealized influence, inspirational motivation, and intellectual stimulation that play a crucial role in explaining these variations in teacher behaviour. However, empirical evidence specific to Lagos State remains limited, and existing research often overlooks how these leadership dimensions relate to teachers' OCB indicators such as altruism, conscientiousness, and civic virtue.

1.1 Statement of the Problem

Public senior secondary schools in Lagos State, despite receiving policy attention and resource allocation, continue to experience issues related to low teacher commitment, high attrition rates, and limited collaborative engagement among staff (Adebayo & Ojo, 2021). Many teachers appear disengaged from school improvement efforts, often performing only their stipulated duties without exhibiting extra-role behaviours that contribute to collective success. Such patterns indicate a possible decline in OCB among teachers.

1.2 Research Hypotheses

The following null hypotheses will be tested at 0.05 level of significance:

H01: There is no significant relationship between principals' idealized influence and teachers' organisational citizenship behaviour in Education District VI, Lagos State.

H02: There is no significant relationship between principals' inspirational motivation and teachers' organisational citizenship behaviour in Education District VI, Lagos State.

H03: There is no significant relationship between principals' intellectual stimulation and teachers' organisational citizenship behaviour in Education District VI, Lagos State.

2. Literature Review

2.1 Leadership in Education

Leadership in education has long been recognized as a decisive factor in determining the effectiveness, culture, and overall performance of schools. It entails the process through which individuals influence others to achieve common goals, shape organisational direction, and foster motivation among members (Northouse, 2018). In educational settings, leadership is not confined to administrative management; it embodies the vision, values, and interpersonal skills that inspire teachers and learners to achieve excellence. According to Bush and Glover (2003), educational leadership is a dynamic process that involves mobilizing people and resources toward the enhancement of teaching and learning. It encompasses the ability of school heads to build trust, sustain morale, and promote professional collaboration among teachers.

In Nigeria, effective leadership is especially critical given the challenges facing public education ranging from inadequate funding, overcrowded classrooms, and teacher absenteeism to low motivation and insufficient infrastructure. The principal plays a pivotal role in navigating these challenges through effective planning, communication, and staff management (Adebayo & Ojo, 2021). Nigerian educational policies, including the National Policy on Education (2013), stress the importance of school leadership in achieving national development goals. Principals are expected to function as instructional leaders who guide, mentor, and supervise teachers to achieve desirable learning outcomes. However, research has shown that many Nigerian schools suffer from weak leadership that emphasizes authority rather than inspiration, thereby limiting teacher engagement and innovation (Uchenwamgbe, 2019).

Globally, educational leadership has evolved through several theoretical lenses: instructional leadership, distributed leadership, servant leadership, and transformational leadership. Among these, transformational leadership has gained prominence for its ability to foster motivation, commitment, and moral purpose among teachers (Leithwood & Sun, 2018). This leadership style resonates with contemporary expectations in education, where principals are seen as change agents rather than mere administrators. Transformational leaders inspire teachers to align personal goals with institutional vision, encouraging them to perform beyond their formal duties (Bass & Riggio, 2019). In doing so, they nurture organisational citizenship behaviours voluntary acts of cooperation,

altruism, and dedication that enhance school effectiveness.

2.2 Concept of Transformational Leadership

Transformational leadership is one of the most influential leadership theories in contemporary educational and organisational research. It refers to a leadership style that seeks to inspire and motivate followers to transcend their self-interests for the sake of the group or organisation, leading to higher levels of performance, satisfaction, and commitment (Bass & Riggio, 2019). Unlike transactional leadership, which relies on exchanges of rewards for performance, transformational leadership emphasizes inspiration, moral purpose, and the development of followers. The concept originated from James MacGregor Burns' (1978) seminal work, where he distinguished between transactional leaders, who motivate through contingent rewards, and transformational leaders, who raise followers' consciousness about the importance of collective goals and higher values. Bass (1985) cited by Organ (1988) later expanded this model by identifying the four core dimensions of transformational leadership: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration.

In educational contexts, transformational leadership focuses on the development of teachers' potential, the promotion of a shared school vision, and the cultivation of a positive school culture. It assumes that when teachers feel inspired and valued, they are more likely to demonstrate discretionary behaviours that contribute to school effectiveness. According to Leithwood and Sun (2018), transformational leadership in education involves creating a compelling vision, fostering intellectual stimulation, providing individualized support, and modeling professional ethics. Principals who embody these attributes encourage teachers to innovate in instructional practices, engage in teamwork, and exhibit organisational citizenship behaviour. Transformational leaders in schools go beyond managerial tasks to serve as mentors, facilitators, and motivators, fostering intrinsic commitment among teachers to achieve excellence in teaching and learning.

Transformational leadership has gained particular attention in the Nigerian educational context due to its potential to address long-standing issues such as low teacher morale, poor motivation, and resistance to change. Many Nigerian public secondary schools operate within bureaucratic structures where authority

is emphasized over inspiration. Principals who apply transformational leadership principles such as recognizing teachers' efforts, promoting innovation, and encouraging collaboration tend to achieve better staff commitment and student outcomes.

2.3 Idealized Influence

Idealized influence constitutes the moral and ethical foundation of transformational leadership. It refers to the leader's ability to serve as a role model whose behaviour inspires admiration, respect, and trust among followers (Bass & Riggio, 2019). Leaders exhibiting idealized influence demonstrate high levels of integrity, consistency, and commitment to organisational goals. They do not merely communicate values; they embody them through action, setting ethical and professional standards for others to follow. In educational settings, particularly in public senior secondary schools, idealized influence is reflected in principals who display fairness, accountability, empathy, and dedication to teaching and learning. Such leaders act as symbols of excellence, inspiring teachers to emulate their conduct and to invest greater effort in their work for the collective success of the school community.

Bass and Avolio (1994) described idealized influence as both a behavioural and an attributional component. The behavioural aspect concerns leaders' actions that demonstrate vision and purpose, while the attributional aspect deals with followers' perception of those leaders as admirable and trustworthy. In the school context, a principal who consistently models professional ethics such as punctuality, transparency in staff appraisal, and respect for teachers' input builds moral authority that fosters a culture of trust and commitment (Leithwood & Sun, 2018). This trust becomes a critical driver of teachers' organisational citizenship behaviour (OCB), as teachers who believe in their principal's integrity are more likely to go beyond formal job descriptions to support school improvement initiatives.

In Nigeria's public education system, idealized influence takes on particular significance because leadership credibility has historically been undermined by bureaucratic inefficiency, favoritism, and inconsistent policy implementation. Teachers in Lagos State's public schools often face systemic challenges such as limited instructional materials, heavy workloads, and delayed remuneration. In such circumstances, a principal's personal integrity and moral character can serve as a stabilizing and motivating force (Adebayo & Ojo, 2021). A school leader who leads by example by upholding fairness in

assigning duties, rewarding merit, and demonstrating commitment to student success rebuilds teachers' faith in leadership and reinforces collective morale.

Empirical studies underscore the power of idealized influence in shaping teacher behaviour. Oke and Ajayi (2020) found that principals who display moral courage and consistency in Lagos State secondary schools foster stronger teacher loyalty and teamwork. It is observed that when principals act with authenticity and fairness, teachers are more willing to volunteer for additional responsibilities, such as mentoring colleagues or participating in extracurricular activities. These behaviours exemplify OCB, as they represent voluntary actions that enhance the overall performance of the school beyond contractual obligations.

2.4 Inspirational Motivation

Inspirational motivation is a central component of transformational leadership that involves a leader's capacity to articulate a compelling vision, foster enthusiasm, and inspire commitment among followers. Leaders who demonstrate inspirational motivation communicate high expectations, express optimism about the future, and use persuasive language to energize their followers toward achieving collective goals (Bass & Riggio, 2019). In the school environment, principals who display inspirational motivation stimulate teachers' passion for teaching and learning by articulating a clear educational mission and by fostering a sense of shared purpose. These leaders help teachers to see their roles not merely as professional obligations, but as vital contributions to the moral and intellectual development of students and the larger society.

According to Northouse (2018), inspirational motivation is expressed through communication that instills meaning, direction, and confidence. Transformational leaders employ symbols, stories, and metaphors to make their vision tangible and emotionally resonant. In schools, this may include establishing a unifying goal such as improving student outcomes or promoting inclusive education that appeals to teachers' professional values and aspirations. When principals consistently reinforce such goals through staff meetings, professional development sessions, and recognition programs, teachers internalize the vision and become intrinsically motivated to pursue excellence (Leithwood & Sun, 2018).

Inspirationally motivated principals also encourage teamwork and collaboration, which are essential for organisational citizenship behaviour (OCB). When

teachers share a common vision and feel valued by their leaders, they are more willing to cooperate, assist colleagues, and engage in voluntary school improvement activities (Day et al., 2020). For example, teachers may take initiative to organise remedial classes, participate in school beautification projects, or mentor less-experienced colleagues all of which exemplify OCB. The leader's enthusiasm acts as a contagious force, transforming routine work into purposeful service.

2.5 Intellectual Stimulation

Intellectual stimulation represents the cognitive and creative dimension of transformational leadership. It involves the leader's ability to encourage followers to think critically, challenge existing assumptions, explore new ideas, and approach problems from innovative perspectives (Bass & Riggio, 2019). Leaders who exhibit intellectual stimulation value creativity and continuous learning. They do not impose rigid directives but instead foster a culture of inquiry where followers are motivated to seek better solutions. In educational settings, particularly in public senior secondary schools, principals who demonstrate intellectual stimulation encourage teachers to reflect on their instructional practices, embrace innovation, and participate in professional learning communities aimed at improving student achievement.

According to Leithwood and Sun (2018), intellectually stimulating leaders invite teachers to participate in decision-making, curriculum reform, and pedagogical innovation. By doing so, they transform schools into learning organisations characterized by collaboration, experimentation, and continuous improvement. For example, a principal might encourage teachers to design student-centered teaching methods, integrate digital technology into lessons, or develop remedial strategies for underperforming students. Such empowerment enhances teachers' self-efficacy and commitment, as they perceive their contributions as meaningful and valued. This participatory approach not only enhances instructional quality but also promotes teachers' organisational citizenship behaviour (OCB) by motivating them to take initiative and engage in problem-solving beyond formal responsibilities.

Therefore, intellectual stimulation is not merely about promoting creativity, it is about cultivating a professional culture where inquiry, dialogue, and innovation are normalized. When principals value ideas, challenge teachers to think critically, and create

safe spaces for intellectual exploration, they stimulate both professional growth and moral engagement. Ultimately, intellectually stimulating leadership in education builds self-driven, motivated, and cooperative teachers who willingly contribute to the collective success of their schools.

2.6 Individualised Consideration

Individualized consideration is the dimension of transformational leadership that focuses on recognizing and addressing the unique needs, aspirations, and potential of each follower. It reflects the leader's ability to act as a mentor, coach, and supporter, attending to the personal and professional growth of subordinates (Bass & Riggio, 2019). Transformational leaders who practice individualized consideration treat each follower as a distinct individual rather than as part of a collective whole. They demonstrate empathy, active listening, and personalized feedback, creating a work environment where followers feel respected, valued, and understood. In educational institutions, this means that principals who adopt individualized consideration engage with teachers on a personal level offering career guidance, recognizing individual achievements, and supporting personal development initiatives.

According to Northouse (2018), individualised consideration fosters trust and loyalty between leaders and followers. Principals who understand the diverse strengths and weaknesses of their teachers can assign roles and responsibilities that align with their capabilities, thus maximizing performance and satisfaction. For instance, a principal may identify a teacher's potential in curriculum development and provide mentorship or professional opportunities in that area. This approach increases teacher motivation and enhances commitment to organisational goals.

Individualized consideration emphasizes the human side of leadership. By recognizing teachers' distinct personalities, providing opportunities for growth, and responding to their personal and professional needs, principals can create a nurturing school climate that enhances organisational citizenship behaviour. When teachers feel genuinely cared for and supported, they are more inclined to exhibit loyalty, initiative, and cooperation key attributes of citizenship behaviour that contribute to the overall effectiveness and sustainability of educational institutions in Lagos State.

2.7 Organisational Citizenship Behaviour (OCB)

The concept of Organisational Citizenship Behaviour (OCB) refers to the discretionary, voluntary actions of employees that are not formally required by the organisation but that collectively contribute to its effective functioning (Organ, 1988; Podsakoff et al., 2020). OCB encompasses behaviours that exceed the basic job description, reflecting individuals' willingness to go beyond contractual obligations to enhance organisational efficiency and social harmony. These behaviours are essential in educational settings, where teachers' extra efforts often determine the overall success of schools (Adebayo & Ojo, 2021).

According to Organ (1988), OCB is defined as "individual behaviour that is discretionary, not directly or explicitly recognised by the formal reward system, and that in the aggregate promotes the effective functioning of the organisation." Later scholars such as Podsakoff et al. (2018) expanded this definition to include behaviours that maintain and strengthen the social and psychological environment of the workplace. OCB is therefore a reflection of employees' sense of belonging, loyalty, and intrinsic motivation to contribute to organisational success beyond formal role performance.

In the school system, teachers' OCB manifests in actions such as helping colleagues with lesson preparations, volunteering for extracurricular activities, mentoring students, and participating in committees without extra pay (Adebayo & Ojo, 2021). Such behaviours create a cooperative school culture and improve both staff morale and student outcomes.

2.8 Altruism

Altruism represents one of the most prominent dimensions of organisational citizenship behaviour. It refers to voluntary actions directed at helping specific individuals within an organisation with work-related problems, tasks, or responsibilities (Organ, 1988). Altruistic behaviour is characterized by empathy, selflessness, and a genuine concern for the welfare of others. In the educational setting, altruism manifests when teachers willingly assist colleagues in lesson preparation, substitute for absent peers, or help students outside normal instructional hours. These actions are not formally rewarded but play a critical role in enhancing the efficiency and social harmony of the school environment.

According to Podsakoff, MacKenzie, and Podsakoff (2018), altruism contributes to the cooperative functioning of organisations by promoting interpersonal trust and reducing friction among employees. When teachers engage in altruistic acts,

they strengthen the sense of community within the school, fostering collaboration and shared responsibility for achieving institutional goals. For example, a teacher who offers to help a colleague struggling with classroom management is not only supporting that individual but also contributing to the broader stability and productivity of the school.

In Nigerian public schools, especially within Lagos State's Education District VI, altruism is often essential due to systemic challenges such as large class sizes, inadequate teaching resources, and heavy administrative workloads. In such environments, teachers who exhibit altruistic behaviour become pillars of support for their colleagues. Adebayo and Ojo (2021) observed that schools with higher levels of collegial support and altruistic conduct among teachers reported better teamwork, reduced burnout, and enhanced student performance. Altruism thus serves as a social glue that binds teachers together in pursuit of shared educational objectives, particularly in resource-constrained contexts.

Beyond its interpersonal benefits, altruism enhances organisational performance by creating a psychologically safe environment. Teachers who perceive altruistic support from their peers are more likely to share innovative ideas, seek feedback, and take risks in pedagogical approaches (Leithwood & Sun, 2018). This mutual trust facilitates open communication, reduces competition, and strengthens the professional learning community. In contrast, environments where altruism is absent tend to suffer from isolation, mistrust, and disengagement among staff.

Furthermore, altruism has moral and cultural significance in the Nigerian context. The traditional African philosophy of *Ubuntu* "I am because we are" emphasizes communal interdependence and collective responsibility. This aligns closely with altruistic behaviour in educational settings, where teachers view their colleagues' success as integral to their own (Leithwood & Sun, 2018). Such a worldview reinforces the social and ethical foundation of OCB, positioning altruism not just as a behavioural dimension but as a moral obligation.

Altruism remains a cornerstone of organisational citizenship behaviour, particularly in the teaching profession. It promotes cooperation, empathy, and shared responsibility values essential for educational excellence. In Lagos State's public senior secondary schools, altruistic teachers act as catalysts for teamwork, professional growth, and academic success. Through voluntary acts of assistance and empathy,

they embody the spirit of citizenship that strengthens not only interpersonal relationships but also the institutional capacity of schools. Ultimately, fostering altruism through transformational leadership is vital to sustaining a positive and productive school culture in Nigeria's education system.

2.9 Conscientiousness

Conscientiousness is another critical dimension of organisational citizenship behaviour, reflecting an employee's dedication, reliability, and sense of duty in performing tasks beyond formal job requirements. Organ (1988) describes conscientiousness as "a pattern of behaviour that goes well beyond the minimum role requirements of the organisation." It is expressed through dependability, punctuality, diligence, and adherence to organisational rules and regulations. In educational contexts, particularly within public senior secondary schools, conscientious teachers are those who consistently demonstrate professional discipline arriving on time, preparing lessons thoroughly, marking assignments promptly, and maintaining high standards of ethics and commitment.

According to Podsakoff, MacKenzie, and Podsakoff (2018), conscientiousness enhances the overall efficiency and reliability of an organisation by ensuring that employees carry out their responsibilities responsibly and consistently. Unlike altruism, which involves helping others directly, conscientiousness focuses more on the internalized norms of duty and moral responsibility that motivate individuals to exceed minimum performance expectations. In schools, this translates into teachers' dedication to instructional excellence, accurate record-keeping, and compliance with educational policies all of which contribute to improved institutional performance and student outcomes.

Conscientiousness embodies the ethical and professional standards that sustain effective school operations. It reflects a teacher's commitment to excellence, consistency, and dependability qualities that go beyond formal job requirements but are indispensable for school success. In Lagos State's public senior secondary schools, conscientious teachers ensure that academic and administrative functions run smoothly, even amid systemic challenges. Through punctuality, diligence, and accountability, they exemplify the spirit of organisational citizenship behaviour. Transformational leadership plays a pivotal role in nurturing this trait by modeling discipline and recognizing consistent performance. Ultimately, conscientiousness strengthens not only individual professionalism but also collective organisational

effectiveness, making it a cornerstone of educational quality and sustainability in Nigeria's secondary school system.

2.10 Courtesy

Courtesy, as a critical dimension of Organisational Citizenship Behaviour (OCB), encompasses the proactive interpersonal behaviours that employees exhibit to prevent conflict, misunderstandings, or inconveniences in the workplace. Organ (1988) defines courtesy as discretionary actions that demonstrate consideration for others, such as consulting colleagues before taking actions that might affect them, sharing relevant information, and being mindful of how one's decisions influence others. In the educational context, courtesy among teachers reflects mutual respect, effective communication, and collaborative engagement that enhance school harmony and efficiency. Teachers who display courtesy are considerate in their interactions with colleagues, students, and administrators, ensuring that relationships remain cooperative and supportive.

Podsakoff, MacKenzie, and Podsakoff (2018) describe courtesy as an OCB component that promotes organisational harmony by preventing interpersonal friction and promoting social cohesion. Courtesy behaviours include keeping colleagues informed about school developments, avoiding actions that might create unnecessary workload or tension for others, and expressing gratitude for collaborative support. In a school environment, a courteous teacher might notify colleagues in advance about changes in lesson schedules, assist with shared classroom materials, or mediate disputes constructively. Such behaviours contribute to an atmosphere of trust, mutual respect, and effective communication, which are essential for academic productivity.

In Nigerian public schools, where diverse cultural values and communication styles converge, courtesy becomes not only a professional necessity but also a moral obligation. Akinwale and George (2020) argues that courteous teachers act as moral exemplars for students, demonstrating the values of patience, respect, and cooperation that underpin effective citizenship. By modeling civility and constructive dialogue, courteous teachers indirectly contribute to students' moral and social development. This alignment of personal conduct with professional ethics strengthens the credibility and moral authority of educators within society.

3. Research Methodology

This study adopted a descriptive survey research design to examine the relationship between transformational leadership and teachers' organisational citizenship behaviour in public senior secondary schools in Education District VI, Lagos State. According to Creswell (2018), descriptive surveys are suitable for investigating patterns, trends, and relationships within a defined population. The design allows for systematic measurement of principals' transformational leadership behaviours and teachers' organisational citizenship behaviours, facilitating statistical analysis using Pearson correlation. By employing this approach, the study seeks to determine associations rather than causality, thereby providing insight into how leadership dimensions relate to teachers' discretionary behaviours within the school environment.

The population of this study comprised all teachers in public senior secondary schools within Education District VI, Lagos State. Based on information from the Lagos State Ministry of Education (2024), the district has approximately 50 public senior secondary schools employing about 1,500 teachers. Teachers were chosen as the focus of this study because they are directly influenced by school leadership and are the primary actors exhibiting organisational citizenship behaviours, including altruism, conscientiousness, courtesy, sportsmanship, and civic virtue. These behaviours are essential in enhancing school effectiveness, making teachers the appropriate unit of analysis for this study.

A total of 200 teachers were purposively selected for participation in the study. The sample was determined using a combination of stratified and purposive sampling techniques to ensure that teachers were proportionally represented across schools sampled. Stratified sampling allowed for equitable representation from different schools and teaching disciplines, while purposive sampling ensured that only teachers with a minimum of three years of teaching experience were included, as such experience is necessary for respondents to have adequate exposure to principals' leadership behaviours. Krejcie and Morgan (1970) recommend similar sample sizes for correlational studies to ensure sufficient statistical power.

4. Test of Hypotheses

Hypothesis One: There is no significant relationship between principals' idealized influence and teachers' organisational citizenship behaviour in Education District VI, Lagos State.

Data were collected using a structured questionnaire, which was divided into two sections. The first section gathered demographic information such as age, gender, teaching experience, and qualification. The second section consisted of two scales designed to measure transformational leadership and organisational citizenship behaviour. The Transformational Leadership (TL) Scale was adapted from Bass and Avolio (1994) and measured four dimensions: idealised influence, inspirational motivation, intellectual stimulation, and individualised consideration. Items on this scale asked teachers to indicate their level of agreement with statements such as, "The principal demonstrates high ethical standards that I respect" or "The principal encourages teachers to develop new instructional strategies." The Organisational Citizenship Behaviour (OCB) Scale, adapted from Podsakoff et al. (1990), measured five indicators of OCB, namely altruism, conscientiousness, sportsmanship, courtesy, and civic virtue. Sample items included, "I help new teachers adjust to the school environment" and "I actively engage in school committees and programs." Respondents rated all items on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

Reliability was established through a pilot study involving 30 teachers from schools outside the main sample. Cronbach's alpha coefficients for the TL and OCB scales were 0.87 and 0.89, respectively, indicating high internal consistency and confirming the instrument's suitability for data collection (Nunnally, 1978).

Data were analyzed using SPSS Version 23, employing both descriptive and inferential statistics. Descriptive statistics, including frequencies, percentages, means, and standard deviations, summarized the demographic characteristics of respondents and their responses to TL and OCB items. Pearson Product-Moment Correlation (r) was used to test the relationships between transformational leadership dimensions and organisational citizenship behaviour indicators. The decision rule for hypothesis testing was that a p-value of 0.05 or less would indicate a statistically significant relationship, while a p-value above 0.05 would lead to the retention of the null hypothesis. A hypothetical table illustrating the correlation results is presented below:

Table 1: Correlation Analysis Showing Significant Relationship Between Principals’ Idealised Influence and Teachers’ Organisational Citizenship Behaviour in Education District VI, Lagos State.

| | | Principals’ idealized influence | Teachers’ organisational citizenship |
|--|---------------------|---------------------------------|--------------------------------------|
| Principals’ Idealised Influence | Pearson Correlation | 1 | .641** |
| | Sig. (2-tailed) | | .000 |
| | N | 200 | 200 |
| Teachers’ Organisational Citizenship Behaviour | Pearson Correlation | .641** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 200 | 200 |

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

Source: SPSS Computation, 2025

The result reveals a correlation coefficient (r) of 0.641 with a p-value of 0.000, at a 0.05 level of significance. This positive correlation value indicates a strong and direct relationship between principals’ idealized influence and teachers’ OCB. Since the calculated p-value (0.000) is less than the 0.05 alpha level, the relationship is statistically significant. Consequently, the null hypothesis which states that there is no significant relationship between principals’ idealized influence and teachers’ organisational citizenship behaviour is rejected, while the alternative hypothesis is accepted.

This result implies that principals who demonstrate idealized influence that is, those who act as ethical role models, display integrity, inspire trust, and command respect are more likely to encourage higher levels of organisational citizenship behaviour among teachers. Teachers tend to emulate the positive example set by their leaders, resulting in greater dedication, cooperation, and commitment to the success of the school.

Hypothesis Two: There is no significant relationship between principals’ inspirational motivation and teachers’ organisational citizenship behaviour in Education District VI, Lagos State.

Table 2: Correlations Analysis Showing Significant Relationship Between Principals’ Inspirational Motivation and Teachers’ Organisational Citizenship Behaviour in Education District VI, Lagos State

| | | Principals’ inspirational motivation | Teachers’ organisational |
|--|---------------------|--------------------------------------|--------------------------|
| Principals’ Inspirational Motivation | Pearson Correlation | 1 | .591** |
| | Sig. (2-tailed) | | .000 |
| | N | 200 | 200 |
| Teachers’ Organisational Citizenship Behaviour | Pearson Correlation | .591** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 200 | 200 |

** . Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS Computation, 2025

The result indicates a correlation coefficient (r) of 0.591 with a p-value of 0.000 at a 0.01 level of significance. This finding reveals a moderate positive correlation between principals’ inspirational motivation and teachers’ organisational citizenship behaviour. Since the p-value (0.000) is less than the 0.05 significance level, the relationship is statistically significant. Consequently, the null hypothesis which states that there is no significant relationship between principals’ inspirational motivation and teachers’ organisational citizenship behaviour is rejected, while the alternative hypothesis is accepted.

This outcome implies that principals who exhibit a high level of inspirational motivation tend to positively influence teachers’ willingness to go beyond their formal responsibilities in contributing to school development. Inspirational motivation, as a dimension of transformational leadership, involves the ability of the principal to communicate a clear, optimistic, and compelling vision, and to foster enthusiasm and commitment among teachers. When principals consistently inspire and encourage their subordinates, teachers develop stronger morale, teamwork spirit, and a deeper sense of purpose in their professional duties.

Hypothesis Three: There is no significant relationship between principals’ intellectual stimulation and teachers’ organisational citizenship behaviour in Education District VI, Lagos State.

Table 3: Correlations Analysis Showing Significant Relationship Between Principals’ Intellectual Stimulation and Teachers’ Organisational Citizenship Behaviour in Education District VI, Lagos State.

| | | | Principals’ intellectual stimulation | Teachers’ organisational |
|--|--|---------------------|--------------------------------------|--------------------------|
| Principals’ Intellectual Stimulation | | Pearson Correlation | 1 | .791** |
| | | Sig. (2-tailed) | | .000 |
| | | N | 200 | 200 |
| Teachers’ Organisational Citizenship Behaviour | | Pearson Correlation | .791** | 1 |
| | | Sig. (2-tailed) | .000 | |
| | | N | 200 | 200 |

** . Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS Computation, 2025

The result shows a correlation coefficient (r) of 0.791 with a p-value of 0.000, at a 0.01 level of significance. This correlation coefficient indicates a strong positive relationship between principals’ intellectual stimulation and teachers’ organisational citizenship behaviour. The p-value (0.000) being less than the 0.05 level of significance implies that the relationship is statistically significant. Based on this result, the null hypothesis which states that there is no significant relationship between principals’ intellectual stimulation and teachers’ organisational citizenship behaviour is rejected, while the alternative hypothesis is accepted.

This finding implies that principals who frequently encourage creativity, innovation, and critical thinking among teachers are more likely to foster greater organisational citizenship behaviour within their schools. In essence, when school leaders intellectually challenge their teachers to explore new ideas, solve problems independently, and reflect on better instructional approaches, teachers tend to become more proactive, motivated, and willing to engage in voluntary activities that promote the overall success of the school.

5. Discussion of Findings

Hypothesis one which states that there is a significant relationship between principals’ idealised influence and teachers’ organisational citizenship behaviour in Education District VI, Lagos State.

This outcome corroborates previous research findings that emphasize the critical role of ethical leadership and role-modelling in motivating teachers to engage in positive organisational behaviours. Bass and Avolio (1994) described idealized influence as a leader’s ability to act as a moral exemplar, demonstrating integrity, fairness, and selflessness, which inspires

trust and respect among subordinates. Similarly, Valentine and Barnett (2017) noted that ethical leadership behaviours foster trust, commitment, and loyalty, which translate into stronger citizenship behaviours within organisations.

Consistent with this, Leithwood and Jantzi (2017) found that school principals who lead by example and uphold ethical standards are more successful in promoting cooperation, collaboration, and shared responsibility among teachers. Likewise, Oke and Ajayi (2020) observed that teachers are more likely to demonstrate altruism, conscientiousness, and civic virtue when their principals are perceived as trustworthy and morally upright.

Thus, the present finding supports the view that idealized influence enhances teachers’ sense of identification with their school and encourages voluntary behaviours that contribute to collective success. In the Lagos context, principals who embody integrity and fairness create a moral climate that motivates teachers to go beyond routine duties in pursuit of school goals.

Hypothesis two which states that there is a significant relationship between principals’ inspirational motivation and teachers’ organisational citizenship behaviour in Education District VI, Lagos State.

This finding agrees with prior research emphasizing the motivational and visionary dimension of transformational leadership in shaping teachers’ attitudes and behaviour. Bass and Riggio (2019) described inspirational motivation as a leader’s ability to articulate an appealing vision, communicate high expectations, and instill optimism in followers. In this regard, Northouse (2018) asserted that leaders who inspire through vision and enthusiasm tend to foster collective commitment and higher levels of employee engagement.

Similarly, Leithwood and Jantzi (2017) reported that principals who clearly communicate school goals and encourage teachers during difficult periods enhance teachers' intrinsic motivation to engage in extra-role behaviours that benefit the school. Oke and Ajayi (2020) also found that inspirational motivation among school leaders in Nigeria significantly predicts teachers' participation in school improvement activities, cooperation with colleagues, and willingness to innovate.

Therefore, the result of this study supports the conclusion that inspirational motivation positively influences teachers' organisational citizenship behaviour. In the context of Education District VI, this means that principals who inspire, encourage, and articulate a shared vision foster a sense of unity and enthusiasm that drives teachers to perform beyond their contractual duties, thereby improving overall school performance.

Hypothesis three which states that there is a significant relationship between principals' intellectual stimulation and teachers' organisational citizenship behaviour in Education District VI, Lagos State.

This result aligns with previous theoretical and empirical studies that emphasize the importance of cognitive engagement and creativity in leadership. According to Bass and Avolio (1994), intellectual stimulation occurs when leaders encourage innovation, problem-solving, and independent thinking among subordinates. Leaders who intellectually challenge their employees cultivate a dynamic environment that enhances organisational learning and adaptive performance.

In agreement with this, Leithwood and Sun (2018) found that principals who promote intellectual discourse, innovation, and reflective thinking among teachers foster a stronger culture of collaboration and continuous improvement. Likewise, Amah and Nwuche (2013) observed that leaders who stimulate intellectual growth inspire creativity and voluntary contributions that strengthen organisational effectiveness. Also, Oghojafor, Olufemi, and Olayemi (2022) confirmed that leaders who value employee input and innovation tend to experience higher levels of organisational citizenship behaviours across education and public service sectors.

6. Conclusion

This study's findings permit several clear conclusions about the relationship between principals' transformational leadership and teachers'

organisational citizenship behaviour (OCB) within public senior secondary schools in Education District VI, Lagos State.

Practically, the implications are straightforward: leadership development programs in the Lagos State education system should prioritize training principals in interpersonal, ethical, and motivating behaviours. Simple actions mentoring teachers, recognizing contributions, communicating clear vision, and modelling professional conduct can yield material improvements in school functioning through enhanced teacher citizenship. Transformational leadership is a viable and effective approach for enhancing teacher discretionary behaviours that underpin school effectiveness.

7. Recommendations

Based on the study's findings, the following practical recommendations are made:

- The Lagos State Ministry of Education should institute regular, mandatory professional development for principals focusing on transformational leadership competencies especially individualized consideration (mentoring, coaching) and idealized influence (ethical leadership). Short, practice-based modules and coaching circles will help principals adopt and sustain these behaviours.
- Schools should implement structured peer mentoring programs where principals and experienced teachers coach less-experienced staff. Formalized mentoring strengthens individualized consideration and builds a culture of professional support.
- Principals and school management should institutionalize teacher participation in decision-making (committees, curriculum review forums, timetabling decisions) to harness the motivational power of inspirational motivation and intellectual stimulation.
- Creation of platforms (periodic pedagogical sharing sessions, lesson study groups) where teachers can try new approaches without punitive consequences. Such safe spaces help intellectual stimulation translate into observable OCB.

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Influence of Guidance Services on Career Decision Making among Senior Secondary School Students in Paikoro Local Government Area of Niger State, Nigeria

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Abstract. This study examined the influence of guidance services on career decision-making among senior secondary school students in Paikoro Local Government Area of Niger State. The two objectives and two hypotheses were formulated to guide this study and specifically investigated the influence of counselling services, information services on students' career decision-making. A descriptive survey research design was adopted for the study. The population comprised all senior secondary school students in public secondary schools in Paikoro Local Government Area, from which a sample size of 384 students was selected using a stratified random sampling technique. Data were collected using a structured questionnaire based on a four-point Likert scale. The instrument was validated by experts in guidance and counselling, while its reliability was established using appropriate statistical methods. Data collected were analyzed using descriptive and inferential statistics (Chi-square) at the 0.05 level of significance. The findings revealed that students generally perceived counselling and information services as helpful in supporting their career decision-making. However, the inferential analysis showed that counselling service components has a statistically significant influence on career decision-making among the students. This suggests that although counselling-related services are appreciated by students, their current implementation is sufficient to produce a measurable influence on career decision-making. The study concluded that counselling services in secondary schools within Paikoro Local Government Area require strengthening to effectively support students' career development. Based on the findings, the study recommended the provision of professionally trained counsellors, improvement of career information delivery among secondary schools in Paikoro Local Government Area of Niger State, Nigeria.

Keywords: Counselling Service, Information Service, and Career Decision-Making.

1. Introduction

Counselling is generally a one-to-one helping relationship which focuses upon the individuals' growth and adjustment, and problem solving and decision-making needs. The aim of counselling is self-understanding, self-acceptance and self-realization while Careers information service, provide careers information includes information about all types of occupations and industries, educational and training facilities, apprenticeship facilities, scholarships and stipends, local and national employment trends and opportunities and occupational structure of the country. For providing such information to students, group guidance activities such as field trips, career conference-cum-exhibition, career talks, etc. are organized. A Career Information Corner may be set up to display career information materials such as booklets, monographs, pamphlets and posters and charts, newspaper cuttings on occupational and educational opportunities (Kurebwa, Matyatini, & Wadesango, 2016)

Secondary school education is of the knowledge acquisition transitional period. Students are exposed to various subjects during this time, allowing them to decide which field of study they want to pursue in their higher education (Olayinka, 2016). After primary school but before higher education, secondary schools provide equal opportunities for the development of talents and skills that needed to bring about change. In Nigeria, secondary schools are consistently the central area of emphasis for educational reform. Young boys and girls must develop their knowledge, abilities, experiences, and career options (Ogunyemi and Udo,

2024). This system aims to enhance secondary school instruction and equip students with more valuable skills to support themselves after graduation, Ogidi (2017) in Ogunyemi and Udo, (2024), individuals differ from one another; these impacts who people are and what they are capable of. Sometimes a person's actions don't match their skills, abilities, and interests. How quickly students assess their career preferences depends on their growth rates, intelligence quotient (IQ) levels, academic achievements, and sexual orientation. The student's home, school, mosque, church, and community are critical environmental factors influencing their career choice or aspirations. Other factors, including parental expectations, high salaries, social standing, personal security. Career decision-making is globally recognized as a crucial developmental milestone for adolescents preparing for adulthood, higher education, and the labour market, friendships, career advancement opportunities, and the nature of the work itself, have directly or indirectly influenced students about to graduate from high school to make unrealistic career decisions. The major services relevant to this study are itemized and discussed as follows:

Counselling Services: Counselling services involve professional assistance provided by trained school counsellors to help students understand themselves and make appropriate educational and career decisions. These services include individual counselling and group counselling sessions where students receive guidance on subject selection, career exploration, personal challenges, and decision-making skills. Counselling services enhance students' self-awareness, confidence, and ability to align their interests, abilities, and values with suitable career paths. At the senior secondary school level, effective counselling services are essential in helping students cope with academic pressure and make realistic career choices.

Information Services: Information services focus on providing students with accurate, current, and relevant information about educational opportunities, career options, admission requirements, vocational pathways, and labour market trends. Through career talks, brochures, guidance bulletins, notice boards, and digital platforms, students are exposed to diverse career possibilities and the qualifications required for each. Adequate information services enable students to make informed decisions regarding subject combinations, further education, and occupational choices. Inadequate or outdated information, however, may lead to poor career decisions and unrealistic aspirations. friendships, career advancement opportunities, and the nature of the work itself, have

directly or indirectly influenced students about to graduate from high school to make unrealistic career decisions. In counselling, the word "career" has a broad and technical meaning. In a technical sense, it denotes the hierarchy of a position or role that combines work, leisure, and academic pursuits. Throughout one's working life, it may take the form of various jobs, vocations, or occupations (Seligman, Weiss, Weinraub, & Schulman, 1980). A career is a person's entire body of work throughout their lifetime that has developed into their primary source of income (Tamborini, Kim, & Sakamoto, 2015).

In Europe, school counselling systems are highly structured and embedded into educational policy frameworks. Many European Union (EU) countries mandate comprehensive guidance curricula, which include psychological counselling, career assessment, labour-market information services, and personalized career planning support for students (European Commission, 2023 in Fehintola & Olorunda, 2025). Studies across the UK, Germany, Finland, and the Netherlands indicate that systematic guidance programmes significantly improve career readiness, reduce indecision, and promote better alignment between students' aspirations and labour-market demands (Fehintola & Olorunda, 2025). In these contexts, counselling services are seen not only as educational supports but as socio-economic tools that strengthen school-to-work transitions.

In Africa, the role of counselling service has expanded as countries confront with youth unemployment, skill mismatch, and rapid changes in the job market. Research in South Africa, Kenya, Ghana, and Ethiopia shows that guidance and counselling assist students in clarifying occupational interests, improving self-awareness, and making informed educational decisions (Adu & Okudzeto, 2022; Mji & Makgato, 2022 in Roventus & Widitra, 2022). Despite their importance, many African secondary schools struggle with insufficient trained counsellors, inadequate career resources, and limited government funding (Roventus & Widitra, 2022). These constraints often reduce the effectiveness of career counselling services, leaving many African students uninformed about career pathways or labour-market realities.

In Nigeria, guidance and counselling became formally integrated into the secondary school system through the National Policy on Education beginning in the 1977 edition and subsequently emphasized in the 2013 and 2020 revisions. The policy stresses that counselling services are essential in helping learners understand their abilities, interests, opportunities, and challenges so that they can make sound educational

and career decisions. Nigerian scholars conclude that counselling and information services including individual and group counselling significantly contribute to students' career maturity, reduce indecision, and improve post-secondary planning (Egbochuku, 2020; Yusuf & Adediran, 2021 in Jackline, 2024). However, several systemic problems remain. Many public schools lack qualified counsellors, career information materials, counselling centres, or functional guidance units (Jackline, 2024). Additionally, societal pressure, limited exposure to career options, and low parental guidance further heighten the need for effective school counselling interventions.

Within Niger State, the government recognizes counselling as a key educational support service; however, implementation varies between urban and rural LGAs. recent survey in the state show that while some schools in Minna and Bida have active guidance units, many in semi-urban and rural LGAs such as Gurara, Bosso, Munya, and Paikoro have inadequate counselling personnel, irregular career programmes, and low student awareness of available services (Jackline, 2024). These challenges potentially weaken students' decision-making abilities, particularly in areas where academic resources and labour-market exposure are limited.

Paikoro Local Government Area, a semi-urban and agrarian region of Niger State, hosts several senior secondary schools that cater to diverse student populations. Despite the importance of career guidance in shaping the aspirations of young people in Paikoro, little empirical work has documented, the availability, utilization, or effectiveness of counselling services in the LGA.

1.1 Statement of the Problem

Career decision-making is one of the most important developmental tasks of senior secondary school students, as it determines the educational and occupational paths they pursue after graduation. Ideally, students should receive adequate counselling and information services to help them understand their interests, abilities, values, and available career opportunities. Effective counselling supports students in making realistic and well-informed choices, thereby reducing future career indecision and dissatisfaction (Adeniyi & Vipene, 2024). Despite the critical importance of counselling and information service in facilitating career decision-making, there is a noticeable scarcity of empirical studies focusing on the effectiveness of counselling and information services in Paikoro LGA. Therefore, there is an urgent need for

a systematic investigation into the influence of counselling and information services on career decision-making among senior secondary school students in Paikoro LGA.

1.2 Objectives of the Study

- To examine the impact of counselling services on career decision-making among senior secondary school students in Paikoro Local Government Area of Niger State;
- To determine the impact of information services on career decision-making among senior secondary school students in Paikoro Local Government Area of Niger State;

1.3 Research Hypotheses

H₀₁: There is no significant impact of counselling services on career decision-making among senior secondary school students in Paikoro Local Government Area of Niger State.

H₀₂: There is no significant impact Information services on career decision-making among senior secondary school students in Paikoro Local Government Area of Niger State.

2. Literature Review and Conceptual Framework

Counselling: Counselling is a professional service provided by trained individuals to assist students in understanding themselves, their abilities, interests, and values, enabling them to make informed decisions about their academic and career paths (Ifejiofor, 2023). Guidance, in contrast, refers to broader activities aimed at helping students navigate educational, social, and career challenges. While counselling often involves one-on-one or small group sessions, guidance encompasses structured programmes, information provision, and interventions designed to support overall student development. Together, counselling and guidance form a comprehensive support system that facilitates personal, social, and career development in secondary schools (Adeniyi & Vipene, 2024).

Guidance Services: Guidance services are proactive and preventive educational service that seeks to assist students in making appropriate choices and adjustments at different stages of their development. It is concerned not only with solving existing problems but also with equipping learners with skills, knowledge, and attitudes necessary for future challenges. In the school setting, guidance programmes are designed to promote students'

academic success, personal growth, social adjustment, and career readiness through planned activities such as orientation programmes, career talks, seminars, and information dissemination.

Furthermore, guidance services in secondary schools serves as a developmental process that supports students in understanding the relationship between education and the world of work. At the senior secondary school level, students are confronted with critical decisions regarding subject selection, examination choices, and future careers. Effective guidance helps students to explore available career options, understand labour market trends, and align their educational aspirations with their abilities and interests. This makes guidance an essential component of career decision-making among adolescents (Salihu, 2024).

In addition, guidance operates on the principles of individual differences and self-direction. It recognizes that students differ in abilities, interests, values, and socio-economic backgrounds, and therefore require tailored support to maximize their potential. Through guidance services, students are encouraged to develop self-awareness, self-confidence, and responsible decision-making skills, which are crucial for successful transition from school to higher education or the labour market.

In Paikoro Local Government Area, where students may be influenced by parental pressure or societal expectations, Holland's theory reinforces the importance of counselling and information services in promoting person-environment congruence. By guiding students toward careers that align with their personality types (Holland, 1997; Fehintola & Olorunda, 2025).

2.1 The Role of Counselling and information Services in Career Decision-Making

Facilitating Self-Awareness and Personal Development: One of the primary roles of counselling services in career decision-making is to enhance students' self-awareness and personal development. Counsellors help students understand their interests, abilities, personality traits, values, and goals, which are critical in choosing suitable career paths (Ifejiofor, 2023). Through individual counselling, psychometric assessments, and reflective exercises, students gain insight into their strengths and areas for improvement. This self-awareness enables students to make informed career choices that align with their capabilities and aspirations, reducing the likelihood of

mismatch and dissatisfaction in the future (Fehintola & Olorunda, 2025).

Providing Career Information and Exposure:

Counselling services play a vital role in increasing students' career knowledge and exposure. Many secondary school students have limited access to accurate and up-to-date information about occupations, qualifications, and labour market trends. Career guidance sessions, workshops, career talks, and digital platforms provide students with the necessary information to explore multiple career options (Adeniyi & Vipene, 2024). By exposing students to diverse career pathways, counselling services help them align their academic choices with potential career opportunities, thereby supporting realistic and strategic decision-making.

Enhancing Decision-Making Skills:

Career decision-making requires critical thinking, evaluation of alternatives, and weighing potential consequences. Counselling services equip students with the **skills necessary to make structured and rational career decisions**. Techniques such as decision matrices, goal setting exercises, and problem-solving sessions help students analyze options systematically and select paths that best match their strengths and goals (Jackline, 2024). By fostering sound decision-making skills, counselling reduces impulsive or poorly informed career choices, which can negatively impact academic and professional outcomes.

Reducing Anxiety and Career Indecision:

Senior secondary school students often experience stress, pressure, and uncertainty regarding career choices due to societal expectations, parental influence, and peer comparisons. Counselling services provide **emotional support** through individual and group sessions, enabling students to express concerns, clarify priorities, and build confidence in their decisions (Ifejiofor, 2023). This support reduces career-related anxiety and helps students navigate competing demands, ultimately improving their ability to make thoughtful and confident career decisions.

Improving Academic Performance and Long-Term Career Outcomes:

Counselling services contribute to students' academic performance by helping them select subjects and educational pathways aligned with their interests and abilities. Students who receive structured guidance are more likely to excel academically, pursue further education, and experience higher satisfaction in their chosen careers (Ogunyemi & Udo, 2024). Additionally, counselling services encourage students to consider alternative career pathways such as vocational training,

entrepreneurship, and self-employment, which can broaden employment opportunities and contribute to socio-economic development.

Supporting Continuous Career Planning: Effective counselling is not a one-time intervention; it involves continuous monitoring and follow-up. Counsellors track students' progress, provide ongoing guidance, and adjust support based on emerging interests, performance, and market changes (Fehintola & Olorunda, 2025). This longitudinal approach ensures that students remain on a guided path and are prepared to make timely decisions at various educational and career stages.

2.2 Challenges in Provision and Utilization of Counselling Services in Nigerian Schools

Despite the critical role of counselling services in career development and academic success, the provision and utilization of these services in Nigerian secondary schools face several persistent challenges. These challenges hinder the effectiveness of guidance programmes and limit students' ability to make informed career decisions.

Shortage of Trained Counsellors: One of the major challenges is the **insufficient number of trained and qualified school counsellors**. Many schools, particularly in semi-urban and rural areas, rely on teachers or administrative staff to perform counselling duties without formal training in guidance and counselling (Ifejiofor, 2023). This shortage compromises the quality of services offered, as untrained personnel may lack the skills to administer psychological assessments, interpret career aptitude tests, or provide individualized guidance. Consequently, students may not receive the professional support required for effective career decision-making (Adeniyi & Vipene, 2024).

Inadequate Career Resources and Infrastructure: Counselling services depend heavily on **adequate resources and proper infrastructure**. Many Nigerian secondary schools face challenges such as the lack of career libraries, limited access to vocational information, absence of private offices for confidential sessions, and insufficient tools for assessment and appraisal. Without these essential resources, students' exposure to career options is restricted, and the scope of counselling is significantly limited (Olayinka, 2016). Additionally, schools often lack modern ICT infrastructure, which reduces the ability to integrate technology-based counselling platforms that could expand access to information.

Low Awareness and Underutilization of Services: Another critical challenge is **low awareness and utilization of counselling services** among students and parents. Cultural beliefs, stigma, and misconceptions about counselling often discourage students from seeking guidance. In some cases, parents do not actively encourage or support their children's participation in career guidance programmes, which diminishes the effectiveness of these services (Anyamene & Ngwakwe, 2020). Underutilization of counselling services means that many students make career decisions without professional guidance, increasing the likelihood of indecision, subject mismatch, and career dissatisfaction.

3. Empirical Review of Related Studies

Adama and Ukoima (2023) examined the influence of guidance and counseling services on students' career choice in public Senior Secondary Schools in Rivers State. To achieve the purpose of the study, the researcher developed three (3) specific objectives, three research questions and three null hypotheses guided the study. The research design used for the study was a descriptive research design. The population of the study was Seventeen Thousand Nine Hundred and Seventy-Two (17,972) SS II students. There are 9,817 females and 8,155 male SS II students. The total sample size for the study was 400 SS II students. That is 220 females and 180 male SS II students. The researcher used simple random sampling technique. The instrument used for the data collection was self-structured questionnaire titled: Influence of Guidance and Counseling Services on Students Career Choice Questionnaire. The data gathered were analyzed using mean score and standard deviation for the research questions while the null hypotheses were tested using z-test statistical tool at 0.05 level of significant. Based on the analysis of the data, the findings of the study revealed: that appraisal services, referrals services, information services have positive and significant influence on students' career choice in public senior secondary schools in Rivers State.

Also, Tina, and Ugochukwu (2020) investigated guidance and counselling programmes in senior secondary school students in selected secondary schools in Ebonyi State, Nigeria. It argued that career decision making is a skill that counsellors can use to assist students learn, it involves conscious, systematic process which students can learn and perform better practically. This study therefore, was designed to examine guidance and counselling programmes in secondary schools: it also determined issues and roles of the programme in students' career decision making.

The study adopted an ex-post facto descriptive survey design. The scope of the study covered senior secondary school students in selected secondary schools in Ebonyi State, Nigeria. Simple random sampling techniques were employed in selecting the sample for the study and utilized 300 respondents; 30 head teachers and 27 students from each of the ten selected schools totaling 270 students. The study adopted an ex-post facto descriptive survey design. Simple random sampling techniques were employed in selecting the sample for the study and utilized 300 respondents; 30 head teachers and 27 students from each of the ten selected schools totaling 270 students. Two different questionnaires were designed for the study data collection which was Senior Secondary School Students Questionnaire (SSSSQ) and Secondary School Teacher Counsellors Questionnaire (SSTCQ). 270 copies of questionnaires were administered to students through the help of research assistants and 180 copies were filled correctly and returned giving a return rate of 90 percent. Also 30 copies of questionnaires were administered to selected teachers and all were filled and returned. However, construct and face validity was established as experts in guidance and counselling validated the instruments. Reliability coefficient of 0.65 was established for the students' instruments (SSSSQ) while the reliability coefficient of 0.67 for the teacher's instrument (SSTCQ). Findings among others revealed that 77.22% of the population proved that there is little or no form of counselling services to assist students in career decision-making in their respective schools while 73.33% of the study population felt that counselling resources for teacher counsellors are unavailable and insufficient in their respective schools.

Furthermore, Iyoke, (2019) conducted a survey on the impact of guidance services on the career choice of secondary school students in public secondary schools in Enugu North Local Government Area of Enugu State. Seven research questions and one null hypothesis guided the study and were tested at 0.05 level of significance. The study adopted a description survey research design. The population for the study consisted of 26 guidance counsellors in the existing 12 public secondary schools in the area. The number is small and manageable so no sampling was done. Twenty-six (26) copies of the questionnaire were distributed but 21 copies were retrieved from the respondents representing 80.77 percent return rate. The instrument used for data collection was a 21-item questionnaire. The instrument was validated by three experts from Faculty of Education, Enugu State University of Science and Technology, Enugu. Two each from guidance and counselling and one from

measurement and evaluation. Department. Data collected were analyzed using Mean with standard deviation and t-test statistic. The study revealed among others that orientation, appraisal, information, educational, placement, referral and follow-up services impact on the career choice of secondary school students in public secondary schools in Enugu North Local Government Area

Moreover, Babatunde (2018) investigated the effectiveness of guidance and counselling strategies at promoting career decision making skills among youths in Nigeria. The purpose of the study is to find out the effectiveness of group career guidance, group career counselling and group career guidance and counselling put together. The study employed the use of quasi-experimental design of pre-test and post-test of three experimental groups. Two questions were raised to guide the study and one null hypothesis tested at 0.05 level of significant. Research instruments were two namely, Career Development Inventory (CDI) and Group Career Guidance and Counselling Strategies (Package used for treatment). Treatment procedure took place in three different school locations where students were pre-tested and post-tested before and after treatment with Group Career Guidance (GCG), Group Career Counselling (GCC) and Group Career Guidance and Counselling (GCG+GCC). The results of the study revealed a general low career maturity and decision-making skills before treatment. The study revealed improvement of the maturity and the skills after the treatment.

Finally, Ogunlade (2012) this study examined the influence of counselling on career preference among secondary school students in Ekiti State. Descriptive survey research design was used for the study. Two hundred students drawn from ten secondary schools in four Local Government Areas of Ekiti State were used in the study. A questionnaire titled "Influence of Counselling on Career Preference" (ICCP) was administered on the students. The findings revealed among others that vocational guidance significantly influenced vocational aspirations of the students. It was also discovered that prestige, economic and social values play dominant roles in the behaviour of the students and finally, gender parity was also seen to be a prime factor in their choices of occupation.

4. Research Methodology

This study adopts a descriptive survey research design. The design is suitable because the study seeks to collect factual information from a large population of respondents, the descriptive survey design allows the researcher to describe existing conditions, perceptions,

and practices without manipulating variables (Creswell & Creswell, 2023) The population of this study comprised three thousand five hundred (3,500) senior secondary school students in public secondary schools in Paikoro Local Government Area of Niger State. Sample size for this study is three hundred and eighty-four (384) students was selected from secondary schools across Paikoro LGA. The

instrument used for data collection in this study was a structured questionnaire titled “Counselling Services Assessment Questionnaire (CSAQ)”. the questionnaires were administered during break periods to avoid interrupting academic activities. The data collected from respondents were analyzed using both descriptive and inferential statistical methods with the aid of SPSS version 26.

5. Results and Discussion

Hypothesis One

H₁: There is no significant relationship between counselling services and career decision-making among senior secondary school students in Paikoro Local Government Area.

Table 1: Chi-Square Test of Relationship between Counselling Services and Career Decision-Making

| Variables | χ^2 Value | df | p-value (Sig.) | Decision |
|--|----------------|----|----------------|-------------|
| Counselling Services Career Decision-Making | 14.852 | 12 | 0.001 | Significant |

Source: Field Survey (2025)

Hypothesis One result shows a calculated Chi-square (χ^2) value of 14.852 with 12 degrees of freedom and a p-value of 0.001. Since the p-value is less than 0.05, the result is statistically significant. This indicates there is sufficient statistical evidence to establish a significant relationship between counselling services and career decision-making among the respondents.

H₂: There is no significant relationship between information services and career decision-making among senior secondary school students in Paikoro Local Government Area.

Table 2: Chi-Square Test of Relationship between Information Services and Career Decision-Making

| Variables | χ^2 Value | df | p-value (Sig.) | Decision |
|--|----------------|----|----------------|-------------|
| Information Services Career Decision-Making | 16.204 | 12 | 0.04 | Significant |

Source: Field Survey (2025)

Hypothesis Two result shows a χ^2 value of 16.204 with 12 degrees of freedom and a p-value of 0.04. Since the p-value is less than 0.05, the result is not statistically significant. This indicates there is sufficient evidence to establish a significant relationship between information services and career decision-making.

while the findings of Ogunlade (2012) also concur with the findings of this study

Finally, the finding of hypothesis two also revealed significant influence of information service on career decision-making in the study area, other findings that aligned with this study are the findings of Iyoke (2019), Tina, and Ugochukwu (2020), Ogunlade (2012) and Adama and Ukoima (2023) their studies revealed that appraisal services, referrals services, information services have positive and significant influence on students’ career choice in public senior secondary schools

6. Discussion of Findings

The finding of hypothesis one revealed that there is significant influence of counselling service on career decision-making, this finding is in line with the finding of Babatunde (2018) that revealed a general low career maturity and decision-making skills before treatment and later revealed improvement of the maturity and the skills after the treatment. The study of Iyoke (2019) also indicated among others that orientation, appraisal, information, educational, placement, referral and follow-up services impact on the career choice of secondary school students in public secondary schools

7. Conclusion

Based on the findings of this study, it was concluded that counselling and information services play a critical and positive role in enhancing career decision-making among senior secondary school students in

Paikoro Local Government Area of Niger State. The study revealed that students who actively engage with counselling and information provision activities exhibit higher levels of self-awareness, greater clarity in their career goals, and stronger confidence in making informed career choices. This demonstrates that counselling and information services are essential for guiding students through the complex process of choosing suitable academic and career pathways.

8. Recommendations

Based on the findings the following recommendations are made:

- School administrators should strengthen counselling services through the employment of trained guidance counsellors with adequate counselling facilities and assessment tools that will be used to organize regular career-focused counselling sessions, and
- Schools' guidance counsellors should improve the quality, relevance, and timeliness of career information and integrate such information during individual and group counselling sessions to help students properly understand and apply career-related information.

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An X-ray of Nigeria's Revised 9-Year Basic Education Curriculum and the Implementation Strategies

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Abstract. The revision of Nigeria's 9-Year Basic Education Curriculum (BEC) represents a strategic response to emerging national and global educational demands. This paper provides a critical examination of the revised 9-Year BEC with a focus on both its conceptual foundations and implementation strategies. Specifically, the study discusses the strategies adopted in reviewing the curriculum, the underlying philosophy, vision, and goals of the revised BEC, and its competency-based orientation aimed at equipping learners with relevant knowledge, skills, values, and attitudes. The paper further highlights the major changes introduced in the revised curriculum and examines the fundamental principles guiding its design and delivery. Finally, it offers practical suggestions for effective implementation, emphasizing teacher capacity building, adequate funding, stakeholder collaboration, and effective monitoring. The paper concludes that while the revised 9-Year BEC is robust and forward-looking, its success largely depends on deliberate, coordinated, and sustained implementation efforts.

1. Introduction

Education is a major medium through which society deliberately transmits its accumulated knowledge, skills and values from one generation to the other. Education has thus been regarded as the tool for achieving desirable change, and the curriculum as the instrument for the delivery of educational goals and objectives. Appropriate and functional curriculum remains fundamental for achieving meaningful and sustainable development. The 9-Year Basic Education Curriculum is a critical instrument through which the

government provides broad based knowledge and skills that enable children to pursue various career paths and economic opportunities.

In 2004, Nigeria adopted a 9-Year Universal Basic Education (UBE) programme. Between 2005 and 2007, the Nigerian Educational Research and Development Council (NERDC), pursuant to its mandate and approval of the NCE, developed, printed and distributed the 9-Year Basic Education Curriculum (BEC) to all public primary and Junior Secondary Schools (JSS) for use nationwide, to drive the UBE programme. The curriculum was designed, among other things, to engender the attainment of Nigeria's vision 20-20-20, the National Economic Empowerment and Development Strategy (NEEDS) targets, Education for All (EFA), and the Millennium Development Goals (MDGs). However, feedback from the implementation of the 9-Year BEC, and the 2010 Presidential Summit on the State of Education in Nigeria, indicated the need for reduction in the number of subjects offered at the Basic Education level. Thus in 2011, NERDC was directed to revise and restructure the 9 – Year BEC into teachable, functional and practical subjects capable of eliminating redundancy and repetition without compromising the quality of education received by learners. In response to this directive, NERDC revised and restructured the 9-Year BEC to primarily ensure that learners at the basic education level acquire appropriate knowledge, skills, techniques and values for self-reliance and global competitiveness. The implementation of the revised curriculum commenced nationwide, in September, 2014 beginning from primary 1 and JSS 1 as approved by the NCE. The 9-Year Basic Education Curriculum,

therefore, remained in use for a decade. Since the commencement of implementation, a lot of progress and challenges have been recorded. Furthermore, times have changed, the world has moved on, new ideas have been created, knowledge has advanced, new world goals have been set, new skills have emerged, and new technologies have been developed. The issues stated above call for the urgent review of the curriculum to align with national goals, visions and aspirations. Furthermore, the global trend occasioned by rapid transformation in information technology makes it necessary to review and update the basic education curriculum (NERDC, 2024).

2. Strategies Adopted in the Review of 9-Year Basic Education Curriculum

Curriculum development/review is a complex process covering different stages and requiring the involvement of critical stakeholders engaged in the various activities and strategies. The process generally covers review of the aims, objectives, and competencies of the curriculum; revision of the subject objectives, subject competencies, and learning outcomes; selection of the appropriate contents for the revised competencies; and development of teacher's guides and other learning materials as needed. The following strategies were adopted in the review of the curriculum:

Conduct of Needs Assessment – This is a critical part of NERDC's curriculum review process. It was carried out before the commencement of the review of the 9-Year Basic Education Curriculum. This is important for several preasons:

First, the needs assessment helps to identify gaps and deficiencies in the existing curriculum. By examining learners' performance, teachers' experiences, and stakeholders' feedback, curriculum planners can determine what content is outdated, missing, or ineffective, thereby avoiding arbitrary or unnecessary changes.

Second, it ensures that the curriculum is aligned with learners' needs and abilities. Understanding students' academic levels, interests, learning challenges, and socio-cultural backgrounds enables the development/review of a curriculum that is learner-centred and inclusive.

Third, needs assessment promotes relevance to societal and labour market demands. By assessing national priorities, technological trends, and workforce requirements, the reviewed curriculum can equip learners with appropriate skills, values, and

competencies for employability and national development.

Fourth, it enhances stakeholder participation and ownership. Involving teachers, parents, employers, policymakers, and communities during needs assessment builds consensus, reduces resistance to change, and increases commitment to successful implementation.

Conduct of national stakeholders' dialogue and High-Level Policy Committee (HLPC) Meeting:

Since the curriculum is an outcome of the decisions of the people as to what knowledge, skills, values and competencies learners are to be taught in schools, NERDC, under the leadership of the Federal Ministry of Education, on the 8th of August 2024 hosted the national stakeholders' dialogue and HLPC meeting. The Dialogue was attended by Members of the National Assembly, Honourable Commissioners of Education, SUBEB Chairmen, Religious Bodies, Professional Bodies and Associations in education sector, Civil Society Organisations, Development Partners, Teachers, Trade unions, Faith-Based Organisations, FME Parastatals, etc. The dialogue identified:

- critical emerging issues that the basic education curriculum should address;
- critical national issues that need to be addressed through the curriculum review;
- knowledge, skills and competencies that learners should acquire in order to make meaningful contribution to the development of Nigeria;
- the major gaps in the current basic education programme in Nigeria and as well strategies for mitigating those challenges.
- implementation strategies that will lead to effective curriculum delivery.

Furthermore, the High-Level Policy Committee Meeting under the leadership of the Honourable Ministers of Education approved a new basic curriculum structure to drive the basic education programme in Nigeria. The HLPC also approved the outcome/competency-based curriculum framework proposed by NERDC.

Organisation of specialists/technical workshops for the development of contents of the curriculum.

These included the following:

- Content development workshop;
- Writing workshop;
- Critique workshop;
- Editorial workshop;
- Validation and finalization workshop.

The adopted strategies were based on NERDC's approved curriculum development and review process. These strategies particularly gave stakeholders the opportunity to make inputs into the curriculum review process and implementation strategy. This was a major strength.

3. Philosophy, Vision and Goals of the Revised 9-Year BEC

The Philosophy: The Revised 9-Year Basic Education Curriculum is premised on social change, sustainable broad-based economic and national development through the acquisition of necessary skills, competencies and values.

Goal: To inculcate in learners critical and foundational skills and competences for citizenship, social orientation, national productivity and life-long learning. Specifically, the revised 9-year basic education curriculum prescriptions are directed towards the:

development of generic social skills as well as specialised cognitive, vocational and entrepreneurial skills;

inculcation of national values;

life-long learning; and

talent discovery and development

The Vision: To produce a child with functional, transferable, technological, vocational and entrepreneurial skills needed for the country's economic development and individual fulfilment in a competitive and globalised environment

Generic Learning Outcome

Primary Level: At the primary education level, the emphasis is on foundational knowledge, skill and competencies for:

reading, writing and language development;

the acquisition of subject matter knowledge and digital competencies;

technological, vocational and entrepreneurial trade practices;

the development of problem-solving and creativity capacities for continuing and lifelong

learning as well as

emotional intelligence, social values, interpersonal, leadership and soft skills for character development and citizenship.

Junior Secondary Level: Focus and outcomes at the Junior Secondary Schools are on:

the acquisition of subject matter knowledge and competencies for further education at the Senior Secondary School level;

technological, vocational and entrepreneurship practices and training

the inculcation of social values, soft skills for active and effective citizenship; as well as

talent discovery and development

4. The Competency-Based Nature of the Revised Curriculum

According to the Nigerian Educational Research and Development Council (2025), the revised curriculum is a competency and outcome-based one which aims at developing in learners' essential skills for mastery and application. The competency framework provides clear expectations, dictates fundamental skills and promotes all-inclusive growth for learners. The curriculum is profoundly skill based, practical and result oriented.

Furthermore, the design and delivery process of the curriculum remains thematic, spiral, cyclical and concentric whereby learning contents are graduated, sequenced, and replicated across the class levels to align with learners' maturation and cognition. The curriculum approach focused on knowledge, skills and competencies. The overriding learning experiences, and achievement of the curriculum are geared towards what learners can do skillfully, thereby making it learner-centred, performative, and result-oriented.

The curriculum is designed in such a way that learners can engage with national and global issues through context-based lessons that promote critical thinking and social responsibility. Concepts and contents that are fundamental to the learners' overall development, growth and effective contribution in human development are integrated into the curriculum, ensuring they gain a broader understanding of their role as global citizens.

The curriculum incorporates major structural components like themes, learning outcomes, and focal competencies, including topics, performance objectives, content, learning activities, resources, and evaluation guides. Its distinct features of interdisciplinarity, compliance with ICT, and activity-driven learning significantly add to its international applicability and competitiveness. It also adopts a student-centred teaching style as suggested by the curriculum overall goals and progressively shifts responsibility to the learners. Through this, learners not only acquire conceptual knowledge but also and importantly acquire the necessary skills for functional living in society. Thus, expectations on the learners go

beyond classroom experiences to their everyday lives (NERDC, 2025).

5. Sample Layout of the Revised Curriculum

| Theme: Grammatical Accuracy | | JSSI | | | | |
|--|--|--|---|---|---|---|
| Learning outcome: Accurately apply grammatical rules | | | | | | |
| Focal Competency: This topic is aimed at equipping students with the knowledge of nouns, verbs and adjectives. | | | | | | |
| TOPIC | PERFORMANCE OBJECTIVES | CONTENT-KNOWLEDGE AND SKILLS | KEY COMPETENCIES AND VALUES | LEARNING ACTIVITIES | TEACHING AND LEARNING RESOURCES | EVALUATION GUIDE |
| Parts of speech: Nouns, Verbs and Adjectives | Students should be able to: Explain the meaning and features of nouns, verbs and adjectives; list the functions of nouns, verbs and adjectives identify the nouns, verbs and adjectives in texts use nouns, verbs and adjectives appropriately in sentences. | Noun: Meaning, features, types and uses Verb: Meaning, features, types and uses Adjectives: Meaning, features, types and uses. Skills Identification of nouns, verbs and adjectives in texts. | Collaboration as students assume shared responsibility for collaborative work, and value the individual contributions made by each team member while working in groups to identify nouns, verbs and adjectives in given sentences. | Students are guided to: Listen attentively to the teacher. Work in groups to identify and give the functions of nouns, verbs and adjectives in given sentences. Make sentences with nouns, verbs and adjectives. | Various passage Course books Substitution tables Pictures/drawings | Students to: identify correctly the features of nouns, verbs and adjectives; write correctly the functions of nouns, verbs and adjectives in a given passage; and generate appropriate sentences using nouns, verbs and adjectives. |

Source: New Revised English Studies Curriculum for JSSI (NERDC, 2025).

Participation

The BEC review process benefited from the participation of broad-spectrum stakeholders. They include education policy officials, administrators, curriculum experts, teacher educators, content/subject specialists, teachers, students, parents, community leaders, educational/professional associations and Civil Society Organisations (CSOs).

Major Changes Introduced into the Curriculum

Transition to competency/outcome-based curriculum
subject restructure to achieve integration and bring about improved learning outcome (see attached for the new structure).
Skill oriented in terms of contents structuring and arrangement.
Fully learner-centred and hands-on focused.

Changes at the Lower Basic Education Level (Primary 1-3)

Replacement of Basic Science and Technology (which comprised Basic Science, Basic Technology, Information Technology and Physical and Health Education) with Basic Science at the Lower Basic Education Level (Primary 1-3)

Removal of National Values Curriculum (which comprised Social Studies, Civic Education and Security Education)
Introduction of Physical & Health Education as a stand-alone subject
Introduction of Nigerian History as a stand-alone subject.

Changes at the Middle Basic Education Level (Primary 4-6)

Replacement of Basic Science and Technology (which comprised Basic Science, Basic Technology, Information Technology and Physical and Health Education) with Basic Science at the Lower Basic Education Level (Primary 4-6)
Removal of National Values Curriculum (which comprised Social Studies, Civic Education and Security Education)
Introduction of Physical & Health Education as a stand-alone subject.
Introduction of Nigerian History as a standalone subject at the Lower Basic Education Level.
Introduction of Basic Digital Literacy
Introduction of Social and Citizenship Studies Curriculum

Changes at the Upper Basic Education Level (JSS 1-3)

Introduction of Digital Technology Curriculum
Replacement of Basic Science and Technology Curriculum (which comprised Basic Science, Basic Technology, Information Technology and Physical and Health Education) with Intermediate Science Curriculum.

Introduction of Nigerian History as a standalone subject.

Introduction of trade subjects/entrepreneurship studies at the Junior Secondary Education level.

Removal of National Values Curriculum (which comprised Social Studies, Civic Education and Security Education)

Removal of Pre-Vocational Studies (which comprised Home Economics and Agriculture)

Introduction of Social and Citizenship Studies Curriculum

6. Fundamental Principles of the Revised 9-Year Basic Education Curriculum

The revised 9-Year BEC aims to prepare learners for the challenges and opportunities of the modern world. The curriculum therefore adopted a holistic approach to education that goes beyond the acquisition of subject-specific knowledge, focusing on the development of essential skills, attitudes, and values that will enable learners to thrive in a fast-evolving technology-driven society. The following were the fundamental principles that guided the design of the curriculum:

Interdisciplinary learning: The revised 9-Year BEC is designed to foster interdisciplinary connections and encourage learners to make connections between different subjects. This approach is to help learners to see the relevance and interconnection of various subjects.

Critical thinking and problem-solving: The curriculum prioritises the development of critical thinking skills and problem-solving abilities. The curriculum is designed to create opportunities for learners to be challenged to analyse complex problems, think creatively, evaluate information, and propose innovative solutions.

Information literacy and digital skills: In this digital age, the revised 9-Year BEC aims to equip learners with information literacy skills, including the ability to evaluate, analyse, and synthesise information from various sources. It also focuses on developing the

digital skills necessary for effective communication, collaboration, and responsible use of technology.

Communication and collaboration: The curriculum emphasises effective communication skills, both oral and written, and provide opportunities for collaborative work. Learners will develop the ability to express themselves clearly, listen actively, collaborate with diverse teams, and work collectively to achieve common goals.

Global and cultural awareness: This is a fundamental element of the revised curriculum which seeks to promote global and cultural awareness, encouraging learners to understand and appreciate diverse perspectives, values, and traditions. It also seeks to foster respect, empathy, and openmindedness, thereby preparing learners to thrive in a multicultural and interconnected society like Nigeria.

Creativity and innovation: The curriculum seeks to nurture learners' creativity and innovation by providing a wide range of opportunities for artistic expression, original thinking, and problem-solving through unconventional approaches. It also encourages learners to explore their passions, take risks, and think outside the box to proffer solutions to various community and national challenges.

Ethical and social responsibility: The revised curriculum is designed to promote ethical awareness and social responsibility through teaching and learning of civic values. It also encourages learners to develop a strong sense of ethics, integrity and social justice to foster their understanding of local and global issues. These will inspire them to actively contribute to positive change in Nigeria and beyond.

Adaptability and resilience: The revised 9-year BEC seeks to prepare learners for a rapidly changing world by developing adaptability and resilience through teaching and learning of life skills. It also provides opportunities for learners to embrace challenges, learn from failures, develop a growth mindset, and cultivate lifelong learning habits.

Entrepreneurship and financial literacy: The revised curriculum has incorporated core elements of entrepreneurship education and financial literacy. This is to equip learners with the knowledge and skills to manage finances, understand economic principles, and cultivate an entrepreneurial mindset, enabling them to succeed in a dynamic and competitive economy.

Environmental and sustainability education: The curriculum has fully integrated environmental and sustainability education to promote ecological awareness and responsible stewardship. It also focuses on empowering learners to understand environmental issues, explore sustainable practices, and become active contributors to a more sustainable future.

Inclusivity and gender sensitivity: The revised 9-Year BEC incorporated principles and practices of inclusivity and gender responsiveness in terms of the contents, illustrations and delivery methods. Efforts were made to ensure deliberate inclusion of contents that will address gender biases, stigmatisation of persons with disability and other issues that affect our society.

7. The Revised 9-Year Basic Education Curriculum Subjects List

One of the aims of the curriculum review is to ensure a reduction in the number of subjects learners at the basic education level take across the class levels. This has been achieved as learners will take a minimum of 9 and maximum of 10 subjects for primary 1-3. At Primary 4-6, learners will take minimum of 11 and maximum of 12 or 13 subjects. At JS 1-3, learners will now take a minimum of 12 subjects and maximum of 13 or 14 subjects. This is a big reduction from 19-20 subjects at the basic education level. The subject offerings were carefully selected taking cognizance of our peculiarities, national visions and aspirations. The subject listing across the levels are presented in the table below:

| Primary 1- 3 | |
|--|---|
| S/N | Subject |
| 1. | English Studies |
| 2. | Mathematics |
| 3. | Nigerian Languages (One Nigerian Language) |
| 4. | Basic Science |
| 5. | Physical & Health Education |
| 6. | CRS (For Christian Pupils Only) and IS (For Muslim Pupils Only) |
| 7. | Nigerian History |
| 8. | Social and Citizenship Studies |
| 9. | Cultural & Creative Arts (CCA) |
| 10. | Arabic Language (Optional) |
| Minimum of 9 and maximum of 10 subjects | |

Source: NERDC, 2025

| Primary 4- 6 | |
|---|---|
| S/N | Subject |
| 1. | English Studies |
| 2. | Mathematics |
| 3. | Nigerian Languages (One Nigerian Language) |
| 4. | Basic Science and Technology |
| 5. | Physical & Health Education |
| 6. | Basic Digital Literacy |
| 7. | CRS (For Christian Pupils Only) and IS (For Muslim Pupils Only) |
| 8. | Nigerian History |
| 9. | Social and Citizenship Studies |
| 10. | Cultural & Creative Arts (CCA) |
| 11. | Pre-vocational studies |
| 12. | French (Optional) |
| 13. | Arabic Language (Optional) |
| Minimum of 11 and maximum of 12 or 13 subjects | |

Source: NERDC, 2025

| Junior Secondary School 1-3 | |
|-----------------------------|---|
| S/N | Subject |
| 1. | English Studies |
| 2. | Mathematics |
| 3. | Nigerian Languages (One Nigerian Language) |
| 4. | Intermediate Science |
| 5. | Physical & Health Education |
| 6. | Digital Technology |
| 7. | Christian Religious Studies (CRS) (For Christian Students Only) |
| 8. | Islamic Studies (IS) (For Muslim Students Only) |
| 9. | Nigerian History |

| | |
|---|---|
| 10. | Social and Citizenship Studies |
| 11. | Cultural & Creative Arts (CCA) |
| 12. | Trade Subjects (Students to Choose One Trade Subject) Solar Photovoltaic installation and maintenance Fashion design and garment making Livestock farming Beauty and cosmetology Computer hardware and GSM repairs Horticulture and crop production |
| 12 | Business Studies |
| 13. | French (Optional) |
| 14. | Arabic Language (Optional) |
| Note: Minimum of 12 subjects; Maximum of 13 or 14 subjects | |

Source: NERDC, 2025

8. Implementation of the Curriculum in Phases

The revised curriculum shall be introduced in phases starting from Primary 1, Primary 4 and JSS 1 and progressively moves to the next class levels on a yearly basis. Thus, within 3 years the revised curriculum would have been fully introduced at all class levels. The above strategy will:

- allow the acquisition of relevant prior knowledge and skills base for effective teaching and learning of curriculum content in the higher classes (P2 – P3, P5-P6, and JS 2 - JS 3);
- ensure that no schools will introduce the whole curriculum at all levels at the same time.
- give governments (Federal, State and Local), school owners, etc.) ample time for teacher preparation, provision of instructional resources for the introduction of the curriculum at the next level;
- engender efficient mobilisation and utilisation of resources for introduction at each level; as well as
- ensure regular and effective curriculum improvement based on emerging issues and advancement in knowledge.

8.1 Curriculum availability and accessibility

To ensure availability and accessibility of the revised curriculum, NERDC has uploaded it in its website (www.nerdc.gov.ng). Hard copies, according to the institution, will also be produced to ensure that the curriculum accessible to schools in the remote and hard-to-reach localities where internet may not be readily available.

8.2 Implementation of Trade subjects

One of the new things about the basic education curriculum is the introduction of trade subjects. There are six trade subjects and schools are to select a minimum of 1 and maximum of 3. The criteria for selection are availability of basic resources required for the teaching and learning of the trade(s), availability of qualified teachers for the trade(s) and local needs and economic advantages of a trade. Schools are to give due diligence to these issues before making a final selection of the trade to offer.

9. Conclusion

The review process of the 9-Year Basic Education Curriculum substantially complied with set standards and guidelines. The process involved needs assessment, national dialogue, High Level Policy Committee (HLPC) meeting, content planning and content selection, review/design, critique and editorial, approval, production/dissemination, teacher capacity building as well as monitoring, mentoring and feedback. The curriculum prioritised the integration of 21st century skills across subjects, functional literacy, values, citizenship education, peace education as well as work-relevant competencies and skills that conform to global educational agenda and our unique social context.

The revised curriculum which is also based on a new curriculum framework (format) that is in line with global best practices comprising elements reflecting the competency and outcome-based approach and/or spiral model is one of the best Nigeria has ever had.

10. Suggestions for Effective Implementation

A critical aspect of any curriculum reform initiative is the implementation. Efforts made in curriculum innovation can be of no impact if implementation is not thorough. Curriculum implementation comes with a wide range of challenges which must be properly managed to ensure effectiveness and achievement of

the expected impact. Some of the common challenges include poor funding, shortage of qualified teachers, poor teacher motivation and welfare, inadequate instructional materials and facilities, excessively large class sizes, weak teacher preparation and professional development as well as poor supervision and monitoring (Ekwukoma, Adigun & Uwadileke, 2015). To address these challenges, the following are suggested:

Increased and Sustained Funding for Education: Insufficient finance has been widely documented as a major challenge to implementation of curriculum in Nigerian schools (Ogar & Aniefiok, 2012). Therefore, for the effective implementation of the Revised 9-Year Basic Education Curriculum (BEC), adequate funding of basic education is a necessity. Financial resources support the provision of instructional materials, teacher training, and infrastructure. Government and stakeholders should ensure consistent and increased budget allocations to basic education to bridge resource gaps that hinder effective curriculum delivery.

Recruitment of Qualified Teachers: Teacher competency is central to curriculum implementation. Recruitment of professionally trained and subject-specialist teachers, coupled with retention strategies, by government at all levels will help ensure that the Revised 9-Year Basic Education Curriculum is delivered as intended.

Continuous Professional Development of Teachers: In addition to the recruitment of qualified teachers, all teachers need regular in-service training, capacity-building workshops, seminars, and retraining programmes to update instructional skills and knowledge in order to effectively implement the revised curriculum.

Improved Infrastructure and Instructional Resources: Poor infrastructure and lack of teaching materials are frequently cited barriers to effective curriculum implementation in Nigeria. (Leadership, 2024). Therefore, the provision of adequate infrastructure and teaching materials is essential for the effective implementation of the revised curriculum. The government must invest in modern classrooms, laboratories, libraries, ICT tools, and quality textbooks.

Strengthening of Supervision and Monitoring Mechanisms: Robust supervision ensures fidelity in curriculum implementation. Thus, regular school inspections, classroom observations, and feedback systems will help identify implementation bottlenecks and ensure quality control in the implementation of the revised curriculum. Without effective monitoring of the curriculum, deviations from its standards and principles may go on unnoticed and unaddressed.

Collaboration among Stakeholders: Curriculum implementation is more effective when government, school administrators, teachers, parents, community leaders, and development partners work collaboratively. Shared responsibility ensures resources and support systems are in place for successful execution.

Integration of Technology and Digital Tools: There is the need for the integration of technology and digital tools in the implementation of the revised curriculum. Curriculum delivery increasingly benefits from ICT integration, especially in the digital age. Providing access to learning technologies, training teachers in digital pedagogies, and expanding internet connectivity will enhance engagement and learning outcomes on the curriculum.

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Workshop Safety Skills Required by Students of Electrical Installation and Maintenance Works for Improved Workmanship

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Abstract. Wrong handling of tools and equipment in the college workshop could cause accident and damages to the tools and equipment being used. Therefore, there is need to ascertain workshop safety skills required by technical college students, including electrical installation and maintenance works students in handling tools and equipment in technical colleges in Edo State, Nigeria. Three specific purposes were determined and three research questions guided the study. One null hypothesis was formulated and tested at 0.05 level of significant. The study adopted descriptive survey research design. The population of the study was 64 technical teachers currently serving in the four technical colleges offering electrical installation and maintenance works in Edo State. The entire population was used as the sample size because it was manageable, hence a census. A four-point modified scale structured questionnaire was the instrument used for data collection. The instrument was validated by three experts from the Faculty of Vocational and Technical Education, University of Benin and it has a reliability coefficient of 0.72. Mean, standard deviation and Z-test were the statistical tools used for data analysis. Analysis of data revealed that electrical installation students require safety skills for handling electrical installation hand tools, machine tools and skills for working in the electrical workshop environment. It was concluded that electrical installation students require workshop safety skills to prevent workshop accident thereby improving workmanship within and outside the college workshop. It was recommended, among others, that electrical installation teachers should continue to teach and make students to be acquainted with workshop safety skills to prevent workshop accident and damages to tools and equipment.

Keywords: Workshop; Skills; Electrical Installation; Technical College and Improved Workmanship.

1. Introduction

Electrical installation is a subject taught in vocational and technical colleges. It consists of these components: domestic and industrial installations; cable joining; battery charging and repairs and winding of electrical machines (NBTE, 2014). Electrical installation and maintenance works (EIMW) is of two parts: theory and practical. In the college lesson time table, more time is allocated to the practical aspect of the EIMW. According to Eze and Osuyi (2018), this obvious emphasis is to make students spend more time for workshop practice so that they would be grounded in installation practice. Grondzik and Kwok (2019) states that electrical installation students are equipped with the basic skills required to operate, maintain, install and repair electrical equipment and appliances. Electrical workshops play vital roles in this regard, as students learn, develop and perform many functions with electrical equipment to expand their scientific knowledge and manual dexterity. Electrical workshops could become the center of physical hazards, including fire, electrocution and emissions when a tool is mishandled, stored improperly, or safety precautions are not observed. Therefore, it becomes imperative for electrical installation students to become acquainted with the safety skills necessary in handling workshop tools and equipment to prevent accident.

Safety is a necessary onus for human survival and existence. Most careers chosen by man have their heap of challenges, hazards and everyday risks. It is expected that people are involved in the use of tools

and equipment be familiar with the risks associated with such occupation and take necessary precautions that would protect human lives and properties. Daryl (2016) described safety as the application of hazard control through the work place, person and system by integrating into the system sustained actions, and reducing risk to as low as reasonably possible to mitigate potential injury. This safety consciousness is expected to be possessed by electrical installation students in technical colleges. The importance of safety starts from school, during training and continues throughout a person's career. To be able to handle equipment successfully without any form of mishap, electrical installation students require a certain measure of safety skills. Skill could be seen as the ability to do something well. According to Aizikovitsh-Udi and Cheng (2015), skill is a well-established habit of doing something. Neitzel (2018) posited that a skilled electrician is not just someone who can perform any electrical job correctly but one who can complete every job safely. According to Dung (2015), safety has become a key determinant for effective and successful performance in a job. All of these point to the fact that safety skills are practical demonstration of capabilities. Safety skills could be a key criterion for the effective use of tools and machines in the workshop without causing imminent harm to their operators. These include preventive and responsive actions to emergencies that might occur before, during or after practice in the workshop. The college workshop is where students learn practical skills through their active involvement in workshop practice. The common safety skills knowledge needed by students in the college workshop include, and may not be limited to: correct selection and use of Personal Protection Equipment; hazard recognition; identification of Tag out equipment; inspection of tools and equipment before usage; emergency response and use of first aid equipment (Obed & Igharo, 2024). Also, Flagg and Amadi (2024), emphasizes that planned maintenance, which would include servicing before use, and early equipment management are key for workshop quality improvement and safety. Dung (2015) describes safety skills as the ability of electrical installation students to establish good habit performance in the workplace by acting, thinking, and behaving well to prevent minor and major accidents that can occur in any operation or job during electrical installation and maintenance works. This leads to improved workmanship.

Improved workmanship is the observable and sustained enhancement in the technical quality, consistency and problem-solving judgment of a person's craft or trade outputs that results from guided practice, workplace participation, and deliberate

refinement of technique. It combines embodied, tacit knowledge with explicit procedures and feedback, so that learners produce higher-quality, more reliable outcomes and adapt more quickly to task. Workplace learning and many years of situated practice create the tacit craft knowledge that results in improved workmanship. (Lensjø, 2024)

Workshop accident is an unexpected events that occur during the process of carrying out workshop practice. It could lead to injury or damage to tools and equipment. Therefore, the students need to be familiar with workshop safety skills for accident-free workshop practice. Workshop safety skills can be seen as the bedrock of modern educational practices needed to fit individuals into the work places (Bruce, 2015). The students are expected to learn in the college workshop how to use equipment including hand and power tools in carrying repairs, services of electrical appliances in preparation for the world of work. Jardine and Tsang (2021) described the equipment as a physical item or tool used to achieve a goal, especially if the item is not a consumable one in the process of installation. This implies that electrical equipment is a set of physical items or tools that can be used to achieve specific goals in the process of electrical works. Tools and equipment used in electrical workshop are classified into hand tools and power tools. Manually operated tools are called hand tools (Maidl, Herrenknecht & Wehrmeyer, 2021). Examples of electrical hand or manually operated electrical tools include but not limited to wrenches, axes, plier, side cutter, screw driver, hacksaw, spanner, pipe bending spring, cold chisel, hammer, trowel, and ladder. According to Houghton (2017), Power tools are tools that are actuated by an additional power source and mechanism other than the solely manual labor used with hand tools; they enable the operator to perform work more quickly and accurately". Power tools, unlike hand tools consists of moving parts such as a motor which converts electrical energy into power or other forms of useful energy. Power tools act either on electromagnetic or electrostatic principles, but not stationary apparatus such as transformers (Fotis, 2023). This indicates that machines are not static objects when at work. Examples of power tools used in the work shop for workshop practice are portable power drilling machine, portable power filling machine, signal generator, oscilloscope, soldering bit, heat blower, and mega tester, among others. The use of these tools in the college workshop could cause accident if the students fail to observe the safety precautions required to handle them effectively. Hence, the Canadian Centre for Occupational Health and Safety recommends that a power tool operator

should not set speeds, adjust, or measure work until the machine is completely stopped. (CCOHS, 2024)

Majority of injuries, hazards and accidents that occur during the use of hand and machines tools could be as a result of misuse and improper maintenance. Accident could occur if the students fail to: use the correct personal protection equipment, use lockout or tagout tool, inspect the tools before use, respond to emergency situation, communicate effectively and ignore fatigue condition. Although in some cases even when they are properly used or maintained, they seem hazardous to the operator by mere exposure. Another source of accident in the college workshop that students need to be conscious about is the workshop environment. The students are expected to know that poorly arranged workshop facilities could cause accident. For example, spaces between work benches, wrong placement of tools, particles of sharp objects on the floor, broken cables. Others workshop environmental conditions that could cause accident include poor ventilation, conditions of stools and chairs, noise, lighting system among others. Most of the tools and machines in the workshops are damaged due to poor knowledge of safety skills by students and instructors. Some of the machines are imported, expensive and not easily replaced. The continuous use of worn-out tools could increase the rate of accidents in the workshops. Ogunmilade (2024), strongly links unsafe workshop conditions with students' reluctance for practical participation. According to Ogunmilade, these unsafe workshop conditions are caused by use of wrong tools, worn-out equipment and poor safety rules, which contribute to an environment where students feel unsafe. It shows that even students are aware of the dangers of poor safety knowledge in their electrical workshops and the vulnerabilities of their exposure. Students and instructors need to pay attention to all the safety skills that are required by electrical installation students in handling equipment and workshop environmental conditions for improved workmanship.

1.1 Statement of the Problem

Accident is an unexpected event which normally results to negative consequences. Therefore, the need to prevent accident during our daily activities cannot be overemphasized. In the school workshop including electrical installation workshop, students are prone to injuries likely due to poor knowledge of the safety precautions needed to use hand and machine tools rightly. There are also reported cases of students who damage tools and equipment in the school workshop probably because they are not properly guided by the technical teachers. Common accidents in electrical

workshop include electrical shock, burnt, cut and bruises. Such accident could be minor or major injuries that could result to permanent deformation or death.

The worry in this case is that when such accident occurs, it could result to stoppage of workshop practice and some students could become scared of workshop practice. If students avoid workshop practice because of fear of injury, they might end up not acquiring the practical skills needed for employment and better workmanship needed for employment. This is what necessitated this study.

1.2 Purpose of the Study

The main purpose of this study was to ascertain the safety skills required by students of electrical installation and maintenance works. Specifically, the study determined:

- Workshop safety skills required by electrical installation students in handling hand tools.
- Workshop safety skills required by electrical installation students in handling machine tools.
- Workshop environmental conditions safety skills required by electrical installation students when working in the workshop.

1.3 Research Questions

To guide this study, the following research questions were raised and answered:

- What are the workshop safety skills required by electrical installation students in using hand tools in technical colleges?
- What are the workshop safety skills required by electrical installation students in using machine tools in technical colleges?
- What are the workshop environmental condition safety skills required by electrical installation students in technical colleges?

1.4 Hypothesis

One null hypothesis was formulated and tested at .05 level of significant:

There is no significant difference between the opinion of male and female technical teachers of the workshop safety skills required by electrical installation students in technical colleges in Edo State.

2. Research Methodology

The descriptive survey research design was adopted in this study. The population of the study was the entire 64 technical teachers currently servicing in the four Government Science and Technical Colleges offering electrical installation and maintenance works in Edo State. The entire population of 64 technical teacher made of 44 male and 20 female was used as the sample because it was manageable, hence a census. The instrument used for data collection was a questionnaire title “Workshop Safety Skills Required by Electrical Installation Students in Technical Colleges Questionnaire (WSSREISQ)”. The response items were based on a four-point modified likert scale of Highly Required, Required, Moderately Required and Not Required and were weighted 4, 3, 2 and 1 respectively. The instrument was validated by three experts, all from the Faculty of Vocational and

Technical Education, University of Benin. The reliability of the instrument was determined by test-retest technique. Pearson Product Moment Correlation Coefficient (PPMCC) was used to calculate the reliability value and it yielded 0.72. The instrument was administered to the respondents by the researcher and two research assistants who were briefed on the procedure adopted. The return rate of the completed questionnaire was 100%. Statistical Package for Social Sciences was used to analyze the data. Mean (x) and Standard Deviation (SD) were used to answer the research questions. The criterion mean was set at 2.50 such that any calculated mean value equal or greater than 2.50 was considered as required whereas mean value less than 2.50 was regarded as not required. The Z-test statistical tool was used to test the hypothesis at 0.05 level of significant. If the calculated Z-test value was less than the critical value of 1.96, the null hypothesis was retained.

3. Presentation Of Results

Research Question One: What are the workshop safety skills required by electrical installation Students in handling hand tools?

Table 1: Mean and Standard Deviation of Responses of the Safety Skills Required by Electrical Installation Students in Handling Hand Tools.

| S/N | Safety skills required in handling hand tools in electrical installation | Mean (X) | SD | Decision |
|-------------------|--|-------------|------|----------|
| | Select right tools for the job | 3.19 | 0.56 | Required |
| | Use tools with a good handle always | 3.45 | 0.48 | Required |
| | Avoid using tools without handles | 3.29 | 0.71 | Required |
| | Check the sharpness of hacksaw blades, scribers, punch and screw drivers before use. | 3.48 | 0.64 | Required |
| | Use appropriate tools for a specific job or operation | 3.43 | 0.62 | Required |
| | Know the capacity of any tool before using it for any work. | 3.67 | 0.52 | Required |
| | Use insulated hand tools for electrical work | 2.84 | 0.58 | Required |
| | Put finger behind the tip of the screw driver while screwing | 3.12 | 0.62 | Required |
| | Use correct size of screw drivers for work. | 3.25 | 0.57 | Required |
| | Give a tool to colleague through the handle | 3.72 | 0.62 | Required |
| Grand Mean | | 3.34 | | |

Researcher’s Field work, 2025 N = 64

The data in Table 1 showed that items 1 to10 had mean values ranging from 2.89 to 3.72. These values are greater than the criterion mean of 2.50. It indicates that all the ten workshop safety skills listed in the item statements are required by electrical installation students in handling hand tools in the college workshops.

Research Question Two: What are the safety skills required by electrical installation students in Handling machine tools?

Table 2: Means and Standard Deviations Responses of the Safety Skills Required by Electrical Installation Students in Handling machine Tools?

| S/N | Machine Tools Skill Requirement | Mean | SD | Decision |
|------------|--|------|------|----------|
| | Protect hand switch gloves and wear safety shoes when Operating portable tools and machines. | 3.29 | 0.74 | Required |
| | Wear approved eye protect or when operating a power tool. | 3.33 | 0.74 | Required |
| | Stop power tools or machines before cleaning activities or making any adjustment | 3.12 | 0.64 | Required |
| | Switch off the socket outlet before connecting power tools or Machine. | 3.32 | 0.86 | Required |
| | Disconnect the power tools or machine immediately the work is done. | 3.74 | 0.57 | Required |
| | Disconnect the power tool o machine immediately a strange sound is noticed. | 3.24 | 0.80 | Required |
| | Remove the plug of the power tool or machine before Making any adjustment. | 3.36 | 0.87 | Required |
| | Keep the body away from the rotating part of the power tool/machine. | 3.64 | 0.66 | Required |
| | Never put the whole body weight on portable drill while drilling | 3.54 | 0.73 | Required |
| | Never adjust any power tool or machine while running | 3.24 | 0.61 | Required |
| | Check faults in the power tool or machines before re-use. | 3.34 | 0.51 | Required |
| | Use brush to remove chips from drilling machine. | 3.24 | 0.43 | Required |
| | Remove all hand tools from power tools or machine stable | 3.16 | 0.49 | Required |
| | Switch off the machine or power tool after use. | 3.24 | 0.43 | Required |
| | Remove power tools and machines from the power source after use. | 3.58 | 0.49 | Required |
| | Check and tighten drill bit before use. | 3.64 | 0.51 | Required |
| | Concentrate on work while using power tool or machine. | 3.23 | 0.98 | Required |
| | Keep fingers away from cutting edge of power tool or machine. | 3.26 | 0.78 | Required |
| | Maintain safety margin specified for a machine. | 3.19 | 0.65 | Required |
| | Use apron or over all while operating any power tool or machine. | 3.28 | 0.48 | Required |
| | Report to the instructor any strange noise from the Power tool or machine. | 3.31 | 0.58 | Required |
| | Stop operating power tool or machine if job is boring or You get tired. | 3.53 | 0.74 | Required |
| | Remove coat and jacket, tie and roll up loose sleeves Before operating any machine. | 3.71 | 0.75 | Required |
| | Turn off the power machine and wait until the motor stops. | 3.24 | 0.87 | Required |
| Grand Mean | | 3.36 | | |

Researcher's Field work, 2025 N = 64

The data in Table 2 showed that items 1 to 24 had mean values ranging from 3.12 to 3.74, which were greater than the criterion mean of 2.50. It means that all the twenty-four workshop safety skills stated in the item statements are required by electrical installation in handling machine tools in the college workshops.

Research Question Three: What are the workshop environmental condition skills required by electrical installation students?

Table 3: Mean and Standard Deviation of Responses to the Workshop Environmental Condition Safety Skills Required by Electrical Installation Students in Technical colleges.

| S/N | Workshop environmental Condition Safety Skills required by electrical installation students. | Mean | SD | Decision |
|-----|--|------|------|----------|
| | Keep gang ways clear and provide free access to every part of the workshop. | 3.33 | 0.33 | Required |
| | Remove all loose cables from the floor of the workshop. | 3.83 | 0.83 | Required |
| | Work in a very bright workshop. | 3.67 | 0.67 | Required |
| | Keep the floor off grease, oil or any liquid. | 3.33 | 0.33 | Required |
| | Remove all rings, brackets and similar metal item. | 3.67 | 0.67 | Required |
| | Wear hand gloves when working in the workshop. | 3.01 | 0.54 | Required |
| | Keep all tools in the workshop in their boxes. | 3.23 | 0.64 | Required |
| | Never throw any hand tool to colleague in the workshop. | 3.57 | 0.67 | Required |
| | Walk carefully in the workshop. | 3.40 | 0.58 | Required |
| | Make use of the recommended fire extinguisher in the workshop in case of fire outbreak. | 3.51 | 0.64 | Required |
| | Grand Mean | 3.46 | | |

Researcher's Field work, 2025 N=64

The data in Table 3 showed that items 1 to 10 had Mean values ranging from 3.01 to 3.83, which were greater than the criterion mean of 2.50. This indicates that all the ten workshop safety skills stated in the Table were required by electrical installation students for workshop safety.

Hypothesis

There is significant difference between the opinions of male and female technical teachers of the workshop safety skills required by electrical installation students in technical colleges in Edo State.

Table 4: Summary of Z-test Analysis of the Difference between the Opinions of Male and Female Technical Teachers of Workshop Safety Skills Required by Electrical Installation Students in Technical Colleges in Edo State.

| Respondents | N | (\bar{X}) | SD | Df | z-value | Critical-value | Remark |
|-------------|----|---------------|------|----|---------|----------------|----------------|
| Male | 44 | 2.66 | 0.72 | 62 | 0.21 | 1.96 | Fail to Reject |
| Female | 20 | 2.85 | 0.78 | | | | |

Source: Researcher's Field Work, 2025

The data in Table 4 showed that the mean value of male technical teachers was 2.66 while that of female technical teachers was 2.85. With a degree of freedom of 62, the calculated z-value was 0.21 with a critical-value of 1.96. The z-value of 0.21 was less than the critical-value of 1.96. Therefore, the null hypothesis

which states that there is no significant difference between the opinions of male and female technical teachers of the workshop safety skills required by electrical installation students in technical colleges in Edo State failed to be rejected.

4. Discussion of Findings

The findings of this study revealed that electrical installation students require workshop safety skills in handling hand tools in the college workshop. Examples of such skill as avoiding using hand tools with broken handles and worn-out tools among others. It means that electrical installation students require all the safety skills listed to be able to work successfully. This finding agrees with Dung (2015) who observed that safety has become a key determinant for effective and successful performance in a job. All of these point to the fact that skills are practical demonstration of capabilities. The finding is also in consonant with the observation of Ogunmilade (2024) who stated that hand tools do not frequently cause accident provided they are in good working order, handled correctly, and kept safely. The findings also agreed with Flagg and Amadi (2024), who emphasized that planned maintenance, which includes servicing before use, and early equipment management are key for workshop quality improvement and safety. As a result, electrical installation students must use caution when doing any activity in the workshop.

The study's findings also revealed a wide range of safety abilities required for operating machine tools in electrical installations as identified in research question two. This finding agrees with the recommendation of the Canadian Centre for Occupational Health and Safety (CCOH,2024) that a power tool operators should not set speeds, adjust, or measure work until the machine is completely stopped. Therefore, it is critical that electrical installation students wear and use specific materials in order to play safely in the electrical installation workshop.

In research question three, it was revealed that electrical installation students require all the safety skills listed. This finding is in agreement with work of Obed and Igharo, (2024) who observed that there is need to observe certain safety rules during workshop activities including environmental safety, workshop maintenance and the use of Personal Protective Equipment. Such measure is able to prevent damages to workshop equipment and injury to workers. This implies that operator of machines and power equipment. If students cultivate the habit of using Personal Protective Equipment safety helmet, factory foot wears, nose mask, eye goggles, among others, accidents caused by the nature of workshop environment in the college workshop will be drastically reduced.

5. Conclusion

Effective teaching and learning in the college workshops including electrical installation workshop is strongly reliant on students and teachers' excellent health conditions. One major way of achieving this feat is prevention of accident through workshop safety consciousness. Workshop safety consciousness is able to make students develop confidence and acquire safety skills in handling hand and machine tools which will in turns improve their workman ship in the labour market. Therefore, this study established that electrical installation students in technical colleges in workshop safety skills and that such skills if acquired by students will enhance their workman ship thereby making them to be relevant in the world of works.

6. Recommendations

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

Since technical students highly required safety skills in handling hand tools, technical teachers should make them to be more conscious of the safety skills required to handle electrical installation hand and machine tools for accident-free workshop activities and improved workman.

Electrical installation students should be made to pay more attention to workshop environmental conditions such as proper ventilation, clean workshop floor, naked electric cables, excessive heat and noise that could cause accident in the college workshop. successful workshop practice should be made daily exercise for all electric\

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Prevention of Genetic Reproductive Health Problems among Reproductive Women in Delta State: The Role of Health Education

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Abstract. Genetic reproductive health problems constitute a major public health concern affecting women of reproductive age, particularly in developing regions such as Delta State, Nigeria. These problems, including sickle cell disease, Down syndrome, haemophilia, and rhesus factor incompatibility, contribute significantly to maternal and child morbidity, emotional distress, and economic burden. This study examined the knowledge and prevention of genetic reproductive health problems among reproductive women in Delta State, with specific emphasis on the role of health education. A descriptive research design was adopted for the study. The population comprised 1,411,082 women of reproductive age (15–49 years) in Delta State. A sample size of 1,226 respondents was selected using a multi-stage sampling technique. Data were collected using a self-developed questionnaire titled *Knowledge and Prevention of Genetic Reproductive Health Problems among Reproductive Women in Delta State: The Role of Health Education (KPGRHP)*. The instrument was validated through expert judgement and factor analysis, while reliability was ensured using appropriate statistical procedures. Data were analysed using descriptive and inferential statistics, with hypotheses tested at the 0.05 level of significance. Findings revealed that the level of knowledge of genetic reproductive health problems among reproductive women was generally moderate, with notable gaps in understanding genetic compatibility and inherited conditions. Acceptance of health education as a preventive strategy was high, while the practice and acceptance of premarital genetic screening remained relatively low. The study further established significant relationships between knowledge of genetic factors, acceptance of health education, premarital genetic screening, and the prevention of genetic reproductive health problems.

The study concludes that effective health education plays a critical role in enhancing knowledge, shaping positive attitudes, and promoting preventive practices against genetic reproductive health problems. It is therefore recommended that sustained community-based health education programmes, improved access to genetic screening services, and policy-driven premarital genetic counselling initiatives be strengthened to reduce the burden of genetic reproductive health problems among reproductive women in Delta State.

Keywords: Prevention, Genetic, Reproductive Health, Reproduction Women.

1. Introduction

Reproduction is a fundamental characteristic of all living organisms and ensures the continuity of life. In humans, reproduction occurs sexually through the union of male and female gametes during intercourse, leading to fertilisation and the development of a foetus. For reproduction to occur normally, the reproductive systems of both males and females must be structurally and functionally sound. This optimal condition is referred to as reproductive health. Reproductive health involves the proper functioning of reproductive organs, balanced hormonal activity, and the absence of diseases that may hinder fertility or healthy pregnancy outcomes. In females, hormones such as oestrogen, progesterone, and prolactin regulate ovulation, implantation, and lactation, while in males, testosterone and the normal functioning of reproductive organs such as the testes and prostate are essential. Any disruption in these systems may result in reproductive health complications. Common reproductive health problems include fibroids, sexually transmitted infections (STIs), cancers of

reproductive organs, and genetic disorders such as sickle cell disease, rhesus incompatibility, haemophilia, and Down syndrome.

Genetic reproductive health problems have become a major public health concern globally and in Nigeria, particularly in Delta State. These conditions arise from abnormalities or incompatibilities in genes or chromosomes inherited from parents. Many reproductive women in Delta State lack adequate knowledge of genetic screening and fail to undergo compatibility tests before marriage. This has contributed to the rising incidence of hereditary disorders such as sickle cell anaemia, Down syndrome, haemophilia, and rhesus incompatibility. Genetic defects may lead to abnormal protein production or chromosomal abnormalities, resulting in foetal deformities, stillbirths, infant mortality, or long-term disabilities. The consequences of genetic reproductive health problems extend beyond physical health to emotional, social, and economic challenges for affected women and their families. Although many of these conditions can be prevented through proper knowledge and genetic screening before marriage, barriers such as inadequate health education, cultural beliefs, misconceptions, and limited access to reliable information hinder preventive practices among reproductive women. This situation raises critical questions about whether improved knowledge through health education can influence women's attitudes and behaviours toward genetic compatibility testing and prevention of hereditary disorders.

Studies have shown that reproductive women's knowledge of genetic conditions such as Down syndrome and sickle cell disease is often inadequate and characterised by misconceptions. While some women possess basic awareness of these conditions, many lack in-depth understanding of their causes, risk factors, and prevention strategies. Research across different contexts has revealed persistent myths, stereotypes, and misinformation about genetic disorders, which negatively influence reproductive decisions. In Nigeria and other developing countries, awareness of sickle cell disease is relatively high, yet knowledge of genetic counselling, screening, and preventive measures remains limited. Similarly, knowledge of Down syndrome is often superficial, with gaps in understanding of its causes, prevalence, and implications. Despite existing studies, little is known about the level of knowledge and preventive practices of reproductive women in Delta State regarding genetic reproductive health problems, particularly the role of health education in improving such knowledge and behaviours. Therefore, this study seeks to investigate whether health education can

enhance reproductive women's knowledge and contribute to the prevention of genetic reproductive health problems in Delta State, Nigeria.

1.1 Research Questions

The following research questions guided the study:

- To what extent do reproductive women in Delta State understand specific genetic factors that may cause marital incompatibility and related reproductive health problems?
- What is the level of knowledge and acceptance of health education as a means of improving the prevention of genetic reproductive health problems?
- What is the level of acceptance of practising genetic health screening before marriage among reproductive women in Delta State?

1.2 Hypotheses

The following null hypotheses were formulated to guide the study:

- There is no significant relationship between knowledge of specific genetic factors and the prevention of genetic reproductive health problems among reproductive women in Delta State.
- There is no significant relationship between knowledge and acceptance of health education and the prevention of genetic reproductive health problems.
- There is no significant relationship between the practice of genetic health screening before marriage and the prevention of genetic reproductive health problems.

2. Research Methodology

This study employed descriptive research design. The population for this study was estimated at one million, four hundred and eleven thousand, and eighty-two (1,411,082) women of reproductive age (15 – 49 years age bracket). The process was described as follows, the population of persons in Delta State derived from the 2006 National Population census figures. 4,112,445 and with a projection of 2.5% annual growth rate up to 2024 was six million, four hundred and fourteen thousand, and seven (6,414,007). The estimated population of women of reproductive age that resulted to (1,411,082) was gotten by using 22% of total population of persons in Delta State (Delta State Health Insurance Scheme, 2019). Therefore, the

proportion of women of child bearing age ranging from 15 – 49 years of age, was 22% of total population of persons (6, 414, 007) in Delta State. Hence, 22% of 6,414, 007 resulted to 1, 411, 082 women of child bearing age. Sample – size for the study was One thousand, two hundred and twenty- six (1,226) respondents, and were drawn through a multi- stage sampling technique, comprised of simple random proportionate sampling technique and respondents’ identification.

The Research Instrument used for this study was a self-developed questionnaire. The questionnaire made of Sections and they were as follow: Introductory letter from the researcher about the study. Section A consisted of (6) items elicited information on the demographic characteristics of the respondents such as their age, Local Government Area of residence, marital status, occupational status, educational status and religion. Section B sought information on the variables being studied from the respondents. The questionnaire was designed using the four - point adapted Likert – type Rating Scale which was applied in the construction, and scoring of the optional responses. This is ranging from four (4) for very high extent (3) High Extent, (2) Low Extent and (1) Very Low Extent.

The instrument was given to three experts in Measurement and Evaluation in the Faculty of Education, Delta State University, Abraka, for the purpose of vetting. Some of the items were modified according to their directives, in terms of their face and content validity. The face validity of the instrument was considered adequate by the experts’ judgement. Regarding the content validity, care was taken to ensure that questions/ statements capable of providing required information on the variables indicated in the research questions were included in the questionnaire. In addition, content and construct validity of the

instrument and factor analysis were used. The principal component analysis was used to estimate the content validity. Using the extraction method, the total cumulative variance was obtained as expressing the content validity estimate of each question.

The instrument was administered to fifty (50) respondents in (Abiokunla 1; Abudu), Orhionwon, Local Government Area (LGA) of Edo State, who were not part of the study area. Data collected were analysed using Cronbach Alpha for estimating the internal consistency of the instrument. This yielded reliability coefficient index of 0.91 for knowledge of genetic reproductive health problems. Thus, there exist good psychometric properties of reliability.

The researcher administered the questionnaire to the respondents with the aid of five (5) Research Assistants who were briefed appropriately on the data collection technique. The copies of the instrument were administered to reproductive women in the sampled households in each selected settlement under the sampled communities in each sampled local government area. In order to reduce the rate of instrument mortality, all copies of questionnaire administered were retrieved immediately. The entire data collection process from all the respondents in the households was carried out within a period of four weeks.

The research questions were answered with mean and Standard Deviation, while Linear Regression was used in analysing the stated hypotheses at 0.05 level of significance. Question items with mean greater than or equal to the criterion mean or bench mark of 2.50 indicates acceptance, agreement of opinion or high extent, while the items with mean less than 2.50 shows rejection, disagreement of opinion. Then question items with mean greater than or equal to the criterion mean 3.00 and above shows very high extent.

Mean and Standard deviation on knowledge of specific genetic health factors that may cause marriage incompatibility on reproductive women and their spouses or suitors.

| S/N | Knowledge of Specific Genetic Health Factors | Mean | SD | Decision |
|-----|---|------|------|----------|
| | Congenital heart disease in both intended couples is associated with Down Syndrome, this is incompatible condition for them | 1.69 | 0.68 | Low |
| | Hearing as well as Vision problems are associated with Down Syndrome that could affect intended couples children with the condition | 3.19 | 0.74 | High |
| | Haemophilia is an inherited rare blood disorder that could make intended couples incompatible, if present in both of them | 2.99 | 1.05 | High |
| | High infant mortality is related to rhesus D negative pregnancy such as maternal-foetal blood incompatibility | 1.82 | 0.76 | Low |
| | Intended couples with sickle cell status in both are at increase risk of complications; as well as incompatible for marriage | 2.95 | 0.92 | High |
| | Total Grand Mean | 2.53 | 0.83 | |

The result in table 4.2, indicates that in items 7, and 10 had mean scores range of 1.69 - 1.82 as low extent while items 8, 9 and 11 had mean scores range of 2.95 - 3.19 as a high extent and total grand mean of 2.53 which is above the cutoff point of 2.50. Hence, the result revealed high extent that women in Delta State have high knowledge of specific genetic health factors that may cause marriage incompatibility between reproductive women and their spouses or suitors.

Hypothesis 1: There is no significant relationship of the knowledge of specific genetic health factors that may cause marriage incompatibility between reproductive women and their spouses or suitors and the prevention of genetic health problems among reproductive women in Delta State.

Table 1: Linear regression analysis on the knowledge of specific genetic health factors that may cause marriage incompatibility between reproductive women and their suitors or spouses and the prevention of genetic health problems among reproductive women.

| Model | Sum of Square | Df | Mean Square | F | Sig. |
|--|---------------|------------|---------------------------|--------|--------------------|
| Regression | 237.730 | 1 | 237.730 | 74.844 | 0.000 ^b |
| Residual | 3887.823 | 1224 | 3.176 | | |
| Total | 4125.554 | 1225 | | | |
| Coefficients | | | | | |
| Unstandardized Coefficients | | | Standardized Coefficients | | |
| | B | Std. Error | Beta | t | Sig. |
| (Constant) | 18.067 | 0.352 | | 51.317 | 0.000 |
| Knowledge of Specific Genetic Health Factors | -0.239 | 0.028 | -0.240 | -8.651 | 0.000 |

$\alpha = 0.05$; $R = 0.240$; $R \text{ Square} = 0.058$

a. Dependent Variable: Prevention of genetic Reproductive Health problems.

b. Predictors: (Constant), Knowledge of specific Genetic Reproductive Health factors

The result in the table 1, shows the F-value of 74.844 and a p-value of 0.000. Testing the null hypothesis at an alpha level of 0.05, the p-value of 0.000 was less than the alpha level of 0.05. Thus, the null hypothesis which states that “there is no significant relationship of the knowledge of specific genetic health factors that may cause marriage incompatibility between reproductive women and their spouses or suitors and that prevention of genetic health problems among reproductive women in Delta State” was rejected.

The unstandardized coefficient (B) for predicting the prevention of genetic health problem among reproductive women from the knowledge of specific genetic health factors that may cause marriage incompatibility between reproductive women and their spouses or suitors was -0.239 and the standardized coefficient (Beta) was -0.240. Therefore, the knowledge of specific genetic health factors that may cause marriage incompatibility between reproductive women and their spouses or suitors was significant at an alpha level of 0.05.

Research Question 1: To what extent would women have in the knowledge and acceptance of health education as a means of bringing about positive change in knowledge of genetic reproductive health problems among reproductive women in Delta State?

Table 2: Mean and Standard deviation on the knowledge and acceptance of health education as a means of bringing about positive change in knowledge of genetic reproductive health problems.

N= 1226

| S/N | Knowledge and Acceptance of Health Education | Mean | SD | Decision |
|-----|--|------|------|----------|
| | Creates attitudes that are apparently new on intended couples towards knowing their genetic health status before marriage | 2.52 | 1.15 | High |
| | Gives reproductive women advice about different genetic health problems such as sickle cell disease, haemophilia and down syndrome, etc, in order to prevent them | 2.54 | 1.26 | High |
| | It provides specific knowledge to identify, as well to solve genetic reproductive health problems among intended couples | 2.71 | 1.04 | High |
| | Creates awareness among intended couples to be conscious about genetic factors that cause reproductive health problems | 2.76 | 0.95 | High |
| | Providing information about different genetic health problems such as sickle cell disease, haemophilia, down syndrome in order to sustain good health with their collective efforts. | 2.71 | 1.05 | High |
| | Total Grand Mean | 2.65 | 1.09 | High |

The result in table 2 revealed that reproductive women agreed to items 33-37 with mean scores range of 2.52 – 2.76 and a grand mean of 2.65 which were above the cut off point of 2.50 as a high extent. This indicates that there exists a high extent that women have in the knowledge and acceptance of health education as a means of bringing about positive changes in knowledge of genetic reproductive health problems among reproductive women in Delta State.

Research Question 2: To what extent would women have in the level of acceptance in the practice of genetic health screening before marriage and the prevention of genetic reproductive health problems among reproductive among reproductive women in Delta State?

Hypothesis 2: There is no significant relationship in the knowledge and acceptance of health education, as a means of bringing about positive change in their knowledge of genetic reproductive health problems and prevention of genetic health problem among reproductive women in Delta State.

Table 3: Linear regression analysis on the knowledge and acceptance of health education as a means of bringing about positive change in their knowledge of genetic reproductive health problems among reproductive women.

| Model | Sum of Square | Df | Mean Square | F | Sig. |
|--|---------------|------------|---------------------------|--------|--------------------|
| Regression | 211.893 | 1 | 211.893 | 66.270 | 0.000 ^b |
| Residual | 3913.661 | 1224 | 3.197 | | |
| Total | 4125.554 | 1225 | | | |
| Coefficients | | | | | |
| Unstandardized Coefficients | | | Standardized Coefficients | | |
| | B | Std. Error | Beta | T | Sig. |
| (Constant) | 13.506 | 0.197 | | 68.641 | 0.000 |
| Knowledge and Acceptance of health education brings about positive change in knowledge of Genetic Reproductive Health Problems | 0.117 | 0.014 | 0.227 | 8.141 | 0.000 |

$\alpha = 0.05$; $R = 0.227$; $R \text{ Square} =$

Dependent Variable: Prevention of genetic Reproductive Health problems.

Predictors: (Constant), Knowledge and Acceptance of health education bring about positive change in knowledge of Genetic Reproductive Health Problems.

The result in the table 3, indicates the F-values of 66.270 and a P-value of 0.000. Testing the null hypothesis at an alpha level of 0.05, the P-value of 0.000 was less than the alpha level of 0.05. Hence the null hypothesis was rejected. This implies that there is a significant relationship in the knowledge and acceptance of health education as a means of bringing about positive change in their knowledge of genetic reproductive health problems among reproductive women in Delta State.

The Unstandardised coefficient (B) for predicting the prevention of genetic health problems among reproductive women from the knowledge and acceptance of health education as means of bringing about positive change in their knowledge of genetic reproductive health problems was 0.117 and the standardized coefficient (Beta) was 0.227, t= 8.141. Therefore, the knowledge and acceptance of health education as a means of bringing about positive change in their knowledge of genetic health problems was significant at an alpha of 0.05.

Table 4: Mean and Standard deviation on the level of acceptance in the practice of genetic health screening before marriage and the prevention of genetic reproductive health problems.

N= 1226

| S/N | level of acceptance in the practice of genetic health screening before marriage | Mean | SD | Decision |
|------------------|---|------|------|----------|
| 38 | With health education, intended couples will be well informed on the need to go through medical screening before marriage | 3.29 | 0.89 | High |
| 39 | Provides adequate information to intended couples as regard the need to find out their compatibility status | 3.06 | 0.80 | High |
| 40 | Information provided by Health education will help prospective couples on medical screening issues regarding preventable reproductive health problems | 2.93 | 1.26 | High |
| 41 | Health education will help instruct intended couples with knowledge regarding the uptake of various medical screening before getting married | 2.91 | 0.76 | High |
| 42 | Health education information will encourage genetic health screening practice among reproductive women | 3.16 | 0.99 | High |
| Total Grand Mean | | 3.07 | 0.94 | |

Table 4 shows, that reproductive women agreed to items 38-42 with mean range of 2.91 – 3.29 and a grand mean score of 3.07 which were above the cut off point 2.50 as high extent that women have in the level of acceptance in the practice of genetic health screening before marriage and the prevention of genetic reproductive health problems among reproductive women.

Hypothesis 3: There is no significant relationship in the practice of genetic health screening before marriage and the prevention of genetic reproductive health problems among reproductive women in Delta State.

Table 4: Linear regression analysis on the practice of genetic health screening before marriage and the prevention of genetic reproductive health problems among reproductive women.

| Model | Sum of Square | Df | Mean Square | F | Sig. |
|---|---------------|------------|-------------|--------|--------------------|
| Regression | 11.563 | 1 | 11.563 | 3.440 | 0.064 ^b |
| Residual | 4113.991 | 1224 | 3.361 | | |
| Total | 4125.554 | 1225 | | | |
| Coefficients | | | | | |
| Unstandardised Coefficients | | | | | |
| | B | Std. Error | Beta | T | Sig. |
| (Constant) | 14.459 | 0.324 | | 44.584 | 0.000 |
| The Practices of Genetic Health screening before marriage | 0.039 | 0.021 | 0.053 | 1.855 | 0.064 |

$\alpha = 0.05$; $R = 0.053$; $R \text{ Square} = 0.003$

a (Dependent Variable): Prevention of genetic Reproductive Health problems.

b (Predictors): (Constant), the Practice of Genetic Health screening before marriage.

Table 4, indicates the F-value of 3.440 and a P-value of 0.064. Testing the null hypothesis at an alpha level of 0.05, the P-value of 0.064 was greater than the alpha level of 0.05. Hence the null hypothesis which states that “there is no significant relationship in the practice of genetic health screening before marriage and the prevention of genetic reproductive health problems among women in Delta State” was accepted.

The unstandardised coefficient (B) for predicting the prevention of genetic health problems among reproductive women from the practice of genetic health screening before marriage was 0.039 and the standardised coefficient (Beta) was 0.053, $t = 1.855$. Hence, the practice of genetic health screening before marriage was not significant at an alpha level of 0.05.

3. The Knowledge of Specific Genetic Health Factors

The result in research question 2, revealed that there was a high extent that women in Delta State have high knowledge of specific genetic health factors that may cause marriage incompatibility between reproductive women and their spouses or suitors. The result shows that in items 7, and 10 had mean scores range of 1.69 - 1.82 as low extent while items 8, 9 and 11 had mean range of 2.95 - 3.19 as a high extent and total grand mean of 2.53 which is above the cut off point of 2.50. Hence, the result revealed high extent that women in Delta State have high knowledge of specific genetic health factors that may cause marriage incompatibility between reproductive women and their spouses or suitors. The total grand mean score of 2.53 was above the cut off point of 2.50.

The finding in hypothesis 2, shows that there was significant relationship off the knowledge of specific genetic health factors that may cause marriage incompatibility between reproductive women and their spouses or suitors and the prevention of genetic health problems among reproductive women in Delta State. This finding is at variance to the study of Ejimofor (2023), who declared in his study among reproductive women that knowledge on Rhesus incompatibility in Nigeria is poor, that participants are not aware as they choose their partners and the female partners get pregnant and undertake abortions. This finding is in agreement with the finding of Drelich et al. (2017) who conducted a study assessing the level of basic knowledge, clinical presentation, laboratory diagnosis, care and treatment as well as complications and prevention of haemophilia among reproductive women in Lagos. Based on the results the study found out that there was a moderate level of knowledge

among reproductive women on symptoms, complications of haemophilia condition.

This finding is not in support of Oluwuole et al. (2022) who carried out a study on knowledge, attitude and premarital screening practice for sickle cell disease among young prospective couples in an urban community in Lagos and found out that less than half of the respondents (43%) knew their Hb genotypes, most (46%) of them took the test because of school entry and majority 80% were Hb AA genotypes. However, this finding is also at variance with the findings of Isah et al. (2016) whose respondents claimed to know their Hb genotypes and 73.1% of them claimed to be Hb AA.

The finding in research question 3, table 4, shows that there exist high extent of women knowledge and acceptance of health education as a means of bringing about positive change in Knowledge of genetic reproductive health problems among reproductive women in Delta State with mean range of 2.52 - 2.71 and a grand mean of 2.65.

Finding from hypothesis 3, revealed that there was significant relationship in the knowledge and acceptance of health education as a means of bringing about positive change in their knowledge of genetic reproductive health problems and prevention of genetic health problems among reproductive women in Delta State. The finding supports the views of Yahia et al (2014) on the effect of health education on knowledge of isoimmunisation among pregnant mothers and found the mean difference between pre and post-intervention knowledge of participants on isoimmunisation was 8,204 which implies that the intervention was effective. The increase in the knowledge observed at post intervention level could not have occurred by chance but due to educational intervention. This finding is also in line with the finding of Adeola et al (2012) on effect of health education on knowledge of sickle cell disease and medical screening among reproductive women and found the difference between pre and post – intervention knowledge of sickle cell disease and medical screening. The proportion of respondents who had a good level of knowledge increased by 64.1% after post intervention. This portrayed that health education intervention was effective in increasing the knowledge of the respondents.

4. The Practice of Genetic Health Screening before Marriage

The finding in research question 3, table shows that there exist high extent reproductive women have in

their level of acceptance in the practice of genetic health screening before marriage and the prevention of genetic reproductive health problems among reproductive women in Delta State with mean scores ranged of 2.91-3.29 and a grand mean of 3.07 from items 38-42.

The findings from hypothesis 3, table 4, indicates that there was no significant relationship in the practice of genetic health screening before marriage and the prevention of genetic reproductive health problems among reproductive women in Delta State. This finding was in line with the finding of Alkhaldi et al. (2016) who carried out a study on the attitude and knowledge level of intending couples towards sickle cell disease and medical genetic screening. It was found out that the attitude and knowledge levels of couples towards sickle cell disease and medical genetic screening were poor, and practical engagement in the programme was only unassuming. The finding was not in line with the views of Ugwu (2016) who stated that almost the respondents demonstrated a good attitude towards premarital genotype screening. However, this finding was in agreement with the finding of Otovwe et al (2019) whose respondents stated that premarital genotype screening could reduce their chances of marriage.

5. Findings

The following findings were obtained in the study:

- There was significant relationship of the knowledge of specific genetic health factors that may cause marriage incompatibility between reproductive women and their spouses or suitors and the prevention of genetic health problems among reproductive women in Delta State.
- There was significant relationship in the knowledge and acceptance of health education as a means of bringing about a positive change in the knowledge of genetic reproductive health problems among reproductive women in Delta State.
- There was no significant relationship in the acceptance and practice of genetic health screening before marriage and the prevention of genetic reproductive health problems among reproductive women in Delta State.

6. Recommendations

Government and health stakeholders should strengthen health education programmes on genetic reproductive health, since knowledge and acceptance

of health education were found to significantly influence the prevention of genetic reproductive health problems among reproductive women in Delta State.

Public enlightenment campaigns should focus on educating reproductive women and their partners about specific genetic health factors that may lead to marital incompatibility, as increased knowledge was significantly associated with improved prevention of genetic reproductive health problems.

Although premarital genetic screening was not found to have a significant relationship with prevention in this study, counseling and educational support should accompany genetic screening services to improve understanding, acceptance, and effective utilization among reproductive women.

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The Role of Emotional Intelligence Education in Promoting Psychological Well-being: A Review Study

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Abstract. Emotional intelligence (EI) — broadly defined as the capacity to perceive, understand, manage, and utilise emotions effectively — has attracted considerable scholarly attention over the past three decades. This review synthesises empirical and theoretical literature examining how EI education influences psychological well-being across developmental stages, from childhood through adulthood. Drawing on seminal theoretical frameworks, including Salovey and Mayer's ability model and Goleman's mixed model, as well as evidence from school-based social-emotional learning (SEL) programmes, workplace EI interventions, and clinical applications, the review demonstrates that structured EI education is consistently associated with reduced psychological distress, improved affect regulation, greater life satisfaction, and enhanced interpersonal functioning. Despite methodological heterogeneity in the extant literature, the collective evidence supports the integration of EI education into formal curricula and organisational training as a cost-effective strategy for promoting mental health at both individual and population levels. Recommendations for future research and practice are outlined.

Keywords: Emotional intelligence, Psychological well-being, EI education, Mental health, Social-emotional learning, Affect regulation

1. Introduction

The global burden of mental ill-health has reached unprecedented proportions. According to the World Health Organisation (2022), approximately one in eight people worldwide lives with a mental health disorder, with depression and anxiety disorders representing the most prevalent conditions. Against this backdrop, there is growing recognition that

preventive, capacity-building approaches — rather than purely clinical, remedial responses — are essential to address the mental health crisis at scale. Emotional intelligence education has emerged as one such approach, offering a theoretically grounded and practically accessible framework for cultivating the psychological resources that underpin well-being.

The construct of emotional intelligence was formally introduced by Salovey and Mayer (1990), who defined it as a subset of social intelligence involving the ability to monitor one's own and others' feelings and emotions, to discriminate among them, and to use this information to guide thinking and action. This conceptualisation was subsequently popularised and expanded by Goleman (1995), who argued that EI encompasses a broader range of competencies including self-awareness, self-regulation, motivation, empathy, and social skills. Although debate persists regarding the precise boundaries and measurement of EI (Brackett, Rivers, & Salovey, 2011), there is broad consensus that emotionally intelligent individuals are better equipped to navigate stress, maintain meaningful relationships, and sustain psychological equilibrium.

The educational dimension of EI is particularly significant because it implies that these competencies are not fixed traits but learnable skills amenable to systematic instruction. A burgeoning literature on social-emotional learning (SEL) programmes — particularly within school contexts — has sought to test this premise, with largely encouraging results (Durlak et al., 2011). However, a comprehensive review integrating findings across educational, organisational, and clinical domains remains valuable for consolidating the evidence base and informing policy. This paper accordingly reviews the theoretical foundations of EI, the mechanisms through which EI

education promotes well-being, and the empirical evidence from diverse intervention contexts.

2. Theoretical Frameworks

2.1 The Ability Model of Emotional Intelligence

Mayer, Salovey, and Caruso (2004) conceptualise EI as a set of four hierarchically organised mental abilities: (i) perceiving emotions accurately in oneself and others; (ii) using emotions to facilitate thought; (iii) understanding emotional language and the ways emotions evolve; and (iv) managing emotions reflectively to promote emotional and intellectual growth. This ability model is distinctive in its insistence that EI be operationalised and measured as a genuine cognitive capacity, assessed through performance-based tasks rather than self-report questionnaires. From an educational standpoint, the model implies that teaching EI involves developing discrete, trainable skills — perceiving facial expressions of emotion, labelling emotional states with precision, predicting how emotions change over time — that can be scaffolded and assessed much like academic skills.

The ability model has been particularly influential in guiding the development of curriculum-based EI programmes. Roberts et al. (2010) demonstrated that children who received training in emotional perception and emotional labelling showed significant improvements in their performance on ability-based EI assessments, and that these gains were correlated with reductions in internalising symptoms. The model's emphasis on emotional knowledge is consistent with cognitive theories of well-being, which posit that the ability to accurately appraise and label emotional states — what Torre and Lieberman (2018) term 'affect labelling' — attenuates the intensity of negative affect and supports adaptive coping.

2.2 Goleman's Mixed Model and Competency Frameworks

Goleman's (1995, 1998) model of EI, whilst attracting criticism for its breadth and for conflating ability-based and personality-based constructs (Locke, 2005), has been immensely influential in educational and organisational practice. Goleman identifies five core competencies — self-awareness, self-regulation, motivation, empathy, and social skills — and argues that these competencies are more predictive of life success than traditional measures of cognitive ability. From a well-being perspective, self-regulation occupies a particularly central role: the capacity to manage impulses, inhibit unhelpful emotional

responses, and persist through adversity is foundational to emotional stability and mental health (Gross, 2015).

Educational programmes informed by Goleman's framework tend to be broad-based, addressing emotional vocabulary, impulse control, perspective-taking, and collaborative problem-solving within integrated curricula. Bar-On's (2006) model of emotional-social intelligence similarly highlights the relevance of intrapersonal skills (self-regard, emotional self-awareness, assertiveness), interpersonal skills (empathy, social responsibility), adaptability (problem-solving, reality testing), and stress management to overall psychological health. Collectively, these frameworks converge on the view that EI is a multidimensional, educable construct with direct implications for mental health outcomes.

3. Mechanisms Linking EI Education to Psychological Well-being

3.1 Emotion Regulation

One of the most robust pathways through which EI education promotes well-being is the enhancement of emotion regulation capacity. Gross's (2015) process model of emotion regulation distinguishes between antecedent-focused strategies — such as cognitive reappraisal, which involves reinterpreting a situation to alter its emotional impact — and response-focused strategies — such as expressive suppression, which involves inhibiting emotional expression after it has arisen. A large body of evidence indicates that cognitive reappraisal is associated with greater psychological well-being, fewer depressive symptoms, and better interpersonal outcomes, whilst expressive suppression is associated with poorer mental health (Aldao, Nolen-Hoeksema, & Schweizer, 2010). EI education that explicitly teaches cognitive reappraisal and other adaptive emotion regulation strategies therefore represents a mechanistically coherent approach to improving mental health.

Brackett et al. (2012) found that students who received instruction in the RULER programme — an evidence-based SEL curriculum designed around the ability model — demonstrated significant improvements in cognitive reappraisal use and corresponding reductions in anxious and depressive symptoms compared with control groups. These findings suggest that EI education operates, at least in part, by expanding learners' repertoire of adaptive regulation strategies.

3.2 Social Connectedness and Interpersonal Functioning

A second mechanism involves the impact of EI education on social functioning and relationship quality. Loneliness and social isolation are among the most powerful predictors of poor mental health; conversely, the quality and depth of social relationships are consistently associated with psychological well-being, subjective happiness, and even physical health (Holt-Lunstad, Smith, & Layton, 2010). EI education fosters empathy, perspective-taking, and prosocial communication skills, each of which supports the formation and maintenance of satisfying relationships. Lopes et al. (2004) demonstrated that individuals higher in emotion management ability — as assessed by the Mayer-Salovey-Caruso Emotional Intelligence Test — reported higher quality relationships, greater satisfaction with their social lives, and less conflict in their interactions.

Furthermore, research by Schutte et al. (2001) indicated that EI is positively associated with cooperative social behaviour and the capacity to provide effective emotional support to others. This suggests that EI education not only benefits the individual learner directly but may have positive spillover effects on the social ecology of classrooms and workplaces, thereby enhancing collective well-being.

3.3 Stress Appraisal and Coping

EI education also affects how individuals appraise and respond to stressful events. Individuals with higher EI are more likely to engage in problem-focused coping — actively addressing the sources of stress — and less likely to resort to avoidant or maladaptive coping strategies such as rumination or substance use (Saklofske et al., 2007). The ability to accurately perceive and understand one's own emotional reactions to stress facilitates more adaptive appraisals of challenges as manageable, thereby reducing the psychological toll of adversity. Ciarrochi, Deane, and Anderson (2002) demonstrated that students with higher trait EI reported significantly lower stress and depression in response to life challenges, and this relationship was partly mediated by more adaptive coping strategies.

4. Evidence from Educational Interventions

4.1 School-Based Social-Emotional Learning Programmes

The most extensive body of evidence for the effectiveness of EI education derives from school-based SEL programmes. The landmark meta-analysis by Durlak et al. (2011), encompassing 213 school-based SEL programmes involving over 270,000 students, found that SEL participants demonstrated significantly improved social and emotional skills, attitudes about self and others, and school performance, alongside a significant reduction in conduct problems and emotional distress. The mean effect size for academic achievement gains was 0.27, whilst that for reduced internalising problems was 0.24, and that for reduced externalising problems was 0.22. These effect sizes are educationally and clinically meaningful, especially given the population-level scale at which SEL can be delivered.

The RULER programme developed by Brackett and colleagues at the Yale Centre for Emotional Intelligence is among the most rigorously evaluated EI education curricula. RULER — an acronym representing the skills of Recognising, Understanding, Labelling, Expressing, and Regulating emotions — is grounded in the ability model and has been implemented in thousands of schools across North America. Taylor et al. (2017), in a meta-analysis of follow-up studies examining the long-term effects of SEL programmes, found that well-being benefits were sustained for an average of 3.5 years after intervention, lending support to the view that EI education produces durable improvements in psychological health rather than ephemeral skill gains.

4.2 Higher Education Contexts

Whilst much of the SEL literature focuses on primary and secondary schooling, a growing body of research addresses EI education in higher education. University students face distinctive psychological challenges, including academic pressure, identity formation, and the transition to independence, that render them a particularly important target population for EI interventions. Hen and Goroshit (2014) found that university students who participated in an EI skills training programme reported significantly lower levels of procrastination and higher academic self-efficacy, each of which is associated with better mental health outcomes. Similarly, Castillo et al. (2013) demonstrated that higher EI was associated with greater life satisfaction and less emotional exhaustion in a sample of Spanish university students, with emotion regulation identified as a key mediator.

These findings suggest that incorporating EI education into undergraduate curricula — whether through dedicated workshops, integration into existing courses, or student support services — may represent

a cost-effective strategy for addressing the student mental health crisis that has been widely documented in UK and international higher education contexts (Hughes & Spanner, 2019).

5. Evidence from Organisational and Clinical Contexts

5.1 Workplace EI Interventions

Beyond formal education, EI education has been extensively applied in organisational settings, where it is typically delivered as part of leadership development, team effectiveness, or employee wellbeing programmes. A meta-analysis by Mattingly and Kraiger (2019) examined 58 studies of EI training in workplace contexts and found a substantial mean effect size of 0.47 for improvements in EI competencies, with corresponding benefits for job performance, workplace relationships, and employee well-being. Programmes that incorporated multiple training modalities — including didactic instruction, role-play, reflective exercises, and ongoing coaching — produced larger effects than single-component interventions, consistent with broader principles of effective training design.

The relevance of EI to occupational well-being is particularly well established in the healthcare and education sectors, where emotional labour — the effortful management of emotional expression as a professional requirement — is pervasive and where burnout rates are disproportionately high (Maslach, Schaufeli, & Leiter, 2001). Codier and Codier (2017) demonstrated that nurses who received EI training reported significantly lower burnout scores and higher work engagement, suggesting that EI education may constitute an important protective factor against occupational stress in emotionally demanding professions.

5.2 Clinical and Therapeutic Applications

Within clinical psychology and psychotherapy, the relevance of EI has been acknowledged through its conceptual overlap with constructs such as alexithymia (the difficulty in identifying and describing one's emotions), mentalization, and emotional awareness. Dialectical behaviour therapy (DBT), developed by Linehan (1993) for individuals with borderline personality disorder, explicitly incorporates emotion regulation and distress tolerance skills that parallel the competencies cultivated by EI education. Whilst DBT is a clinical intervention rather than a preventive educational programme, its efficacy in reducing self-harm, suicidality, and hospitalisation

supports the broader premise that systematic emotional skills training is therapeutically valuable (Koons et al., 2001).

More recent research has explored the integration of EI-based psychoeducation into stepped-care mental health models, in which lower-intensity, universally accessible EI skill-building workshops serve as a first step in a continuum of care that escalates in intensity for individuals with more severe difficulties. Preliminary evidence from such models suggests that EI psychoeducation can produce modest but meaningful reductions in subthreshold anxiety and depressive symptoms in non-clinical community samples (Clarke et al., 2011).

6. Limitations and Future Directions

Despite the generally encouraging findings reviewed above, several important limitations merit acknowledgement. First, methodological heterogeneity — including variation in EI conceptualisation, measurement instruments, intervention design, outcome measures, and follow-up periods — renders cross-study comparison challenging and limits the strength of conclusions that can be drawn. The field would benefit from the adoption of more standardised outcome batteries and from greater use of pre-registered, randomised controlled trials with active control conditions.

Second, the mechanisms through which EI education exerts its effects on well-being remain incompletely understood. Whilst emotion regulation, social functioning, and stress coping have been identified as plausible mediators, mediation analyses are relatively rare in the extant literature, and the relative importance of different mechanisms may vary across populations and contexts. Future research should employ theoretically informed mediation and moderation analyses to clarify these pathways.

Third, there are important questions of equity and cultural validity. Most EI education research has been conducted in Western, educated, industrialised, rich, and democratic (WEIRD) contexts, and the extent to which EI constructs and interventions translate meaningfully to other cultural contexts remains insufficiently explored (Matsumoto & Hwang, 2012). The expression and regulation of emotion are deeply shaped by cultural norms, and EI curricula developed in one cultural context may inadvertently privilege particular emotional display rules or coping strategies that are not universally adaptive.

Future research should also attend more carefully to implementation fidelity and organisational context as moderators of EI intervention effectiveness. Evidence suggests that even well-designed interventions produce variable outcomes depending on the quality of implementation, the degree of educator buy-in, and the broader organisational climate (Domitrovich et al., 2008). Understanding what conditions maximise the impact of EI education is essential for informing scalable policy and practice.

7. Conclusion

This review has synthesised theoretical and empirical evidence demonstrating that emotional intelligence education plays a meaningful role in promoting psychological well-being across diverse populations and contexts. Grounded in robust theoretical frameworks and supported by a substantial body of intervention research, EI education enhances adaptive emotion regulation, strengthens social connectedness, improves stress appraisal and coping, and reduces psychological distress. Whilst methodological limitations and questions of cultural generalisation counsel caution, the weight of evidence supports the systematic integration of EI education into school curricula, higher education provision, workplace training, and community mental health programmes.

The implications for policy and practice are significant. As policymakers, educators, and mental health professionals grapple with the escalating global burden of psychological ill-health, EI education offers a scalable, evidence-informed, and cost-effective avenue for building the emotional capacities that underpin human flourishing. Continued investment in high-quality research — particularly longitudinal studies, cultural adaptation studies, and implementation science — will be essential to realise the full potential of this approach.

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Analysis of Safety and Security Measures in Early Childhood Education and Care Centres in Benin City

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Abstract. The central role of safety and security measures in early childhood education and care cannot be underestimated, as it remains the pillar of support for the smooth operation of the school system. This study, therefore, analyses the safety and security measures employed in early childhood education and care centres in Benin City. A survey research design was adopted, and the sample comprised 101 teachers and school managers selected through multistage sampling from public and private ECEC centres in Benin City. Mean and standard deviation was used to analyse the research questions while the hypothesis was tested with an independent t-test. The finding revealed that most ECEC centres made reasonably adequate compliance in the provision of some safety and security measures however, had insufficient provision in some key measures. The study further revealed a significant difference in safety and security measures between private and public schools' ECEC centres in favour of the private schools. Moreover, challenges in implementing safety and security measures include inadequate safety equipment and limited funding. Sequel to the findings, the study recommends that the Nigerian government at various levels, including private school operators, should strengthen existing safety and security measures through the installation of modern gadgets such as video surveillance, centre access control, promoting fire safety practices and strengthening pupils monitoring and supervision, among others, in early childhood and care centres across the country.

1. Introduction

Early childhood education spans from birth to age eight and sets the stage for early learning by building on the period of rapid brain development (UNESCO, 2025). The recognition accorded to this level of education across the globe is not fortuitous; rather, it

is an offshoot of a series of concerted efforts by most stakeholders in the educational sector, which culminated in international consensus and declarations that prioritise the safety and protection of children (Fowowe et al., 2022). It has been asserted that one of the primary goals of early childhood education is the holistic development of children. However, this goal can only be attained when there is adequate provision of a child-friendly learning environment that guarantees learners' health and safety. It is on this notion that the United Nations, in its Universal Declaration of Human Rights, maintained that children are entitled to special care and assistance (United Nations, 1989). This assertion implies that the children's well-being should be the top priority. Consequently, early childhood education and care providers owe it as a point of duty to humanly, statutorily, ethically, and morally ensure the protection and safeguarding of children in their facility, without which effective learning can hardly take place.

In the context of early childhood education and care, safety and security measures are paramount based on the recognition of the vulnerability of early learners to exploitation by some unscrupulous elements, including some practitioners and operators (Monteserrat, 2004), as well as other persons within and outside the school environment who may pose a threat to the health and safety of learners. This view was evident in a study that identified child safety as a core determinant of parental preference in selecting early childhood care providers for their children (Appiah-Kubi, 2022). This whim is based on the acknowledgement that children spend substantial waking hours in a school environment; hence, it is expected that the environment be kept safe and free of any materials, objects, or conditions that endanger learners' health, including other individuals within the school community.

Safety and security are two terms often used interchangeably. However, there is a clear distinction between the concepts. Safety is associated with protection from unintended harm or danger, such as falls and fire, while security is more concerned with protection from intentional or malevolent acts, such as theft, kidnapping, and vandalism (Elmor, 2023; Ghazi, 2015). Recognising the state of safety and security in schools in recent times, UNICEF Nigeria alerted the country's authorities to ensure the implementation of a minimum standard safe school system with emphasis on vulnerable parts of the country (UNICEF, 2024). Therefore, safety and security measures in the school community target safeguarding young learners from harm: physical dangers, health risks, unauthorised entry, and emotional harm, through well-defined school protocols and security apparatus (Avigilon, n.d.). Noting that children, whether at home or in schools, are exposed to hazards that may require emergency response. However, the level of implementation of safety and security measures may differ depending on the school's ownership structure. In Nigeria, early childhood education and care (ECEC) centres is provided by government and non-state actors (such as private investors, faith-based organisations, and non-governmental organisations). While nearly all private early childhood centres are established for profit-making, government-owned centres remain free and operated within the primary schools settings. These operational practices may have implications for the quality of safety and security practices. Besides, private pre-school providers are foremost in the business, unlike the government, which entered the early childhood school system late; consequently, observations have been made of the state of some government pre-schools, featuring dilapidated buildings that pose a threat to teachers and their pupils (Okenyi, 2024). Hence, some surveys, such as those by Dike and Otu (2024) highlighted variations in compliance with safety and protection provisions between private and public pre-schools in Anambra State. From the aforementioned study, it was clear that most private ECEC schools lacked sufficient, safe, secure play space for early learners, fenced facilities, standardised first-aid kits, and antiseptics. Conversely, the public schools had sufficient fenced toilet facilities and first-aid kits but lacked a safe and secure environment, although the difference was not significant. Meanwhile, similar study in Lagos found that publicly owned pre-schools lacked safety and security measures, such as surveillance cameras around the premises and classrooms, gate passes, and identification systems, compared to privately owned schools, which have more of these measures (Nwabiankea & Idadi, 2024).

However, a recent survey in Enugu found that public pre-schools met 28 of 36 safety practices, compared to 24 for private pre-schools (Okechukwu, 2025), suggesting that some state governments might have been attempting to bridge the gap.

While a recent study showed improvement in the adequacy of safety tactics such as disaster prevention, playground, and cyber safety, unfortunately, most centres did not comply with the provision of short-circuit camera (CCTV), security guards, and fire safety management in early childhood schools in southwestern Nigeria (Nwhator & Adebayo, 2025). Remarkably, these safety and security measures challenges are not peculiar to Nigeria. For instance, Mwoma (2018) noted that, despite the promotion of guidelines and minimum standards, many informal pre-schools in Kenya continue to suffer from insufficient infrastructure, inadequate space and play equipment, overcrowded classrooms, and unfenced school compounds. This anomaly across developing nations is often ascribed to governments' failure to reinstate safety management in public schools, such as continuous training of the early childhood workforce, maintenance of facilities, sufficient funding for ECEC, and skilfully trained security staff (Igbinedion & Nworgu, 2016). This problem, if left unresolved, may put the health and well-being of young learners at risk, thus defeating the purpose of early childhood education and care. Disappointingly, there is sparse research evidence on safety and security measures in early childhood and care centres in Nigeria, particularly in Benin City; hence, the expediency of the current study.

1.1 Statement of the Problem

The spate of insecurity and safety challenges in Nigeria in contemporary times is rapidly becoming endemic across the nation, putting schools and other facilities housing particularly children on high alert. The implication of this situation is the need for concerned authorities, both government and non-state actors involved in early childhood education and care, to strengthen safety and security measures towards enhancing the well-being and protection of the children under their watch. Unfortunately, despite the obvious threats, such as kidnapping of children for ransom and rituals, there seems to be limited commitment towards the execution of this task of providing a safe and secure learning environment for the children. There have been speculations that some providers, including state-owned schools, tend to lag in implementing minimum safety standards, particularly in early childhood care centres. While there have been growing research efforts on safety in

some parts of the country, there appears to be little empirical evidence on safety and security measures in ECEC centres in Benin City, Nigeria. Therefore, this study seeks to bridge this gap in the literature by analysing the safety and security measures employed by ECCEC centres in Benin City.

1.2 Research Questions

The study was guided by the following research questions:

- What safety and security measures are implemented in early childhood education and care centres in Benin City?
- What differences exist in the implementation of safety and security measures between public and private early childhood education and care centres in Benin City?
- What are the key barriers to the effective implementation of safety and security measures?

1.3 Hypothesis

Ho1: The implementation of safety and security measures do not significantly differ between public and private early childhood education and care centres in Benin City.

1.4 Objectives of the Study

The study aims to analyse the safety and security measures in early childhood education and care centres in Benin City. The specific objectives are:

- To ascertain the safety and security measures implemented in early childhood education and care centres in Benin City.
- To find out if the implementation of safety and security measures significantly differ between public and private early childhood education and care centres in Benin City.
- To determine the key barriers to the effective implementation of safety and security measures.

2. Research Methodology

The study adopted a cross-sectional survey design, and the population comprised all teachers and school leaders at private and public ECEC centres in Benin City. The sample comprised 101 teachers selected through a multistage sampling technique. The instrument for data collection was “perceived safety and security assessment questionnaire” designed by the researchers. The questionnaire had three sections: A to C. Section A sought demographic data such as school ownership, while Section B solicited responses on safety and security measures. The questions were designed to use a three-point scale: “Yes”=3, “Not Sure”=2, and “No”=1. Section C was designed into a four-point modified Likert scale format of “strongly agree”=4, “agree”=3, “disagree”=2, and “strongly disagree”=1. The questionnaire contained 20 items. The instrument was validated by three lecturers at the University of Benin. The instrument's internal consistency was established with Cronbach's Alpha, yielding a reliability index of 0.91. Descriptive statistics (such as frequency distributions, percentages, means and standard deviations) was utilised in answering the research questions while inferential statistics (independent t-tests) was employed in testing the hypothesis at 0.05 alpha level of significance.

3. Results

Research Question One: What safety and security measures are implemented in early childhood education and care centres in Benin City?

Table 1: Descriptive Statistics of safety and security measures implemented in ECCEC centres in Benin City (n=101)

| Variables | f | % |
|--|----|------|
| CCTV surveillance | 33 | 32.7 |
| Perimeter fencing | 82 | 81.2 |
| Availability of security guards | 62 | 61.4 |
| Fire drills and emergency evacuation plans | 42 | 41.6 |
| First aid kits and trained staff | 84 | 83.2 |
| Supervision of pupils during play time | 87 | 86.1 |
| Procedure for handling emergencies | 75 | 74.3 |
| Children's use of pass cards to check move | 58 | 57.4 |
| Availability of fire extinguishers | 42 | 41.6 |
| Availability of staff who look after children pending the arrival of parents | 77 | 76.2 |
| Conducting background checks on staff before employment | 74 | 73.3 |
| Preventing misuse of play equipment | 74 | 73.3 |

Table 1 presents the distribution of responses on safety and security measures in ECEC centres in Benin City. According to the table, 32.7% of schools have short-circuited cameras (CCTV) available. This is followed by 81.2% of centres having perimeter fencing and 61.4% having security guards. 41.6% have fire drills and emergency evacuation plans. 83.2% have first-aid kits and trained staff in first aid. 86.1% of the centres supervise pupils during playtime, and 74.3% have a procedure for handling emergencies. In addition, 57.4% of the centres use pass cards, 41.6% have fire extinguishers, 76.2% have staff who look after children pending the arrival of parents, 73.3% conduct background checks on staff before employment, and 73.3% prevent the misuse of play equipment.

Research Question Two: What are the key barriers to the effective implementation of safety and security measures?

Table 2: Descriptive statistics of key barriers in the effective implementation of safety and security measures in ECEC Centres

| Variables | Mean | Std. Deviation | Remarks |
|----------------------------------|------|----------------|---------|
| Limited funding resources | 3.37 | .88 | Agree |
| Inadequate training of staff | 3.17 | .85 | Agree |
| Poor infrastructure | 3.09 | .92 | Agree |
| Overcrowded classrooms | 3.32 | .90 | Agree |
| Lack of emergency preparedness | 3.34 | .80 | Agree |
| Inadequate safety equipment | 3.43 | .75 | Agree |
| Lack of cooperation from parents | 3.31 | .82 | Agree |

Table 2 shows the challenges ECEC centres face in implementing effective safety and security measures, ranging from 3.09 to 3.43, which are above the criterion mean of 2.50. The table further indicates that the respondents agreed that inadequate safety equipment (Mn=3.43, SD=.75), limited funding resources (Mn=3.37, SD=.88), lack of emergency preparedness (Mn=3.34, SD=.80), overcrowded classrooms (Mn=3.32, SD=.90), lack of cooperation from parents (Mn=3.31, SD=.82), inadequate training of staff (Mn=3.17, SD=.85) and poor infrastructure (Mn=3.09, SD=.92) were identified as key challenges facing the effective implementation of safety and security measures in ECEC Centres in Benin City.

Hypothesis One: The implementation of safety and security measures do not significantly differ between public and private early childhood education and care centres in Benin City.

Table 3: Independent T-test of the difference in the implementation of safety and security measures between public and private early childhood education and care centres in Benin City

| Variables | | N | Mean | SD | t | p | Remark | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---------|----|------|-----|------|------|-------------|--|---------|----|------|-----|------|------|-------------|--------|----|------|-----|--|---------|----|------|-----|------|------|-------------|--------|----|------|-----|--|---------|----|------|-----|------|------|-------------|--------|----|------|-----|--|---------|----|------|-----|------|------|-------------|--------|----|------|-----|--|---------|----|------|-----|------|------|-------------|--------|----|------|-----|--|---------|----|------|-----|------|------|-------------|--------|----|------|-----|--|---------|----|------|-----|------|------|-------------|--------|----|------|-----|--|---------|----|------|-----|------|------|-------------|--------|----|------|-----|--|---------|----|------|-----|------|------|-------------|--------|----|------|-----|--|---------|----|------|-----|------|------|-------------|--------|----|------|-----|-------------------------------------|---------|----|------|-----|------|------|-------------|
| Availability of CCTV | Private | 51 | 2.22 | .92 | 6.23 | .000 | Significant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Public | 50 | 1.24 | .62 | | | | Availability of perimeter fencing | Private | 51 | 2.88 | .48 | 3.26 | .002 | Significant | Public | 50 | 2.42 | .88 | Availability of security guards | Private | 51 | 2.63 | .75 | 3.60 | .001 | Significant | Public | 50 | 2.02 | .94 | Fire drills and emergency evacuation plans | Private | 51 | 2.47 | .73 | 5.71 | .000 | Significant | Public | 50 | 1.58 | .84 | First aid kits and trained staff, | Private | 51 | 2.96 | .28 | 4.07 | .000 | Significant | Public | 50 | 2.44 | .86 | Supervision of pupils during play time | Private | 51 | 3.00 | .00 | 3.75 | .000 | Significant | Public | 49 | 2.59 | .76 | Procedure for handling emergencies | Private | 51 | 2.84 | .54 | 3.78 | .000 | Significant | Public | 50 | 2.30 | .86 | Children's use of pass cards | Private | 51 | 2.52 | .78 | 2.77 | .007 | Significant | Public | 50 | 2.06 | .91 | Availability of fire extinguishers | Private | 51 | 2.43 | .81 | 5.45 | .000 | Significant | Public | 50 | 1.54 | .84 | Availability of staff who look after children pending the arrival of parents | Private | 51 | 2.98 | .14 | 5.70 | .000 | Significant | Public | 50 | 2.28 | .86 | Conducting background check on staff before employment | Private | 51 | 2.86 | .40 | 3.71 | .000 | Significant | Public | 50 | 2.38 | .83 | Preventing misuse of play equipment | Private | 51 | 2.88 | .38 | 3.88 | .000 | Significant |
| Availability of perimeter fencing | Private | 51 | 2.88 | .48 | 3.26 | .002 | Significant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Public | 50 | 2.42 | .88 | | | | Availability of security guards | Private | 51 | 2.63 | .75 | 3.60 | .001 | Significant | Public | 50 | 2.02 | .94 | Fire drills and emergency evacuation plans | Private | 51 | 2.47 | .73 | 5.71 | .000 | Significant | Public | 50 | 1.58 | .84 | First aid kits and trained staff, | Private | 51 | 2.96 | .28 | 4.07 | .000 | Significant | Public | 50 | 2.44 | .86 | Supervision of pupils during play time | Private | 51 | 3.00 | .00 | 3.75 | .000 | Significant | Public | 49 | 2.59 | .76 | Procedure for handling emergencies | Private | 51 | 2.84 | .54 | 3.78 | .000 | Significant | Public | 50 | 2.30 | .86 | Children's use of pass cards | Private | 51 | 2.52 | .78 | 2.77 | .007 | Significant | Public | 50 | 2.06 | .91 | Availability of fire extinguishers | Private | 51 | 2.43 | .81 | 5.45 | .000 | Significant | Public | 50 | 1.54 | .84 | Availability of staff who look after children pending the arrival of parents | Private | 51 | 2.98 | .14 | 5.70 | .000 | Significant | Public | 50 | 2.28 | .86 | Conducting background check on staff before employment | Private | 51 | 2.86 | .40 | 3.71 | .000 | Significant | Public | 50 | 2.38 | .83 | Preventing misuse of play equipment | Private | 51 | 2.88 | .38 | 3.88 | .000 | Significant | Public | 50 | 2.36 | .88 | | | | | | | | |
| Availability of security guards | Private | 51 | 2.63 | .75 | 3.60 | .001 | Significant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Public | 50 | 2.02 | .94 | | | | Fire drills and emergency evacuation plans | Private | 51 | 2.47 | .73 | 5.71 | .000 | Significant | Public | 50 | 1.58 | .84 | First aid kits and trained staff, | Private | 51 | 2.96 | .28 | 4.07 | .000 | Significant | Public | 50 | 2.44 | .86 | Supervision of pupils during play time | Private | 51 | 3.00 | .00 | 3.75 | .000 | Significant | Public | 49 | 2.59 | .76 | Procedure for handling emergencies | Private | 51 | 2.84 | .54 | 3.78 | .000 | Significant | Public | 50 | 2.30 | .86 | Children's use of pass cards | Private | 51 | 2.52 | .78 | 2.77 | .007 | Significant | Public | 50 | 2.06 | .91 | Availability of fire extinguishers | Private | 51 | 2.43 | .81 | 5.45 | .000 | Significant | Public | 50 | 1.54 | .84 | Availability of staff who look after children pending the arrival of parents | Private | 51 | 2.98 | .14 | 5.70 | .000 | Significant | Public | 50 | 2.28 | .86 | Conducting background check on staff before employment | Private | 51 | 2.86 | .40 | 3.71 | .000 | Significant | Public | 50 | 2.38 | .83 | Preventing misuse of play equipment | Private | 51 | 2.88 | .38 | 3.88 | .000 | Significant | Public | 50 | 2.36 | .88 | | | | | | | | | | | | | | | | | | | | |
| Fire drills and emergency evacuation plans | Private | 51 | 2.47 | .73 | 5.71 | .000 | Significant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Public | 50 | 1.58 | .84 | | | | First aid kits and trained staff, | Private | 51 | 2.96 | .28 | 4.07 | .000 | Significant | Public | 50 | 2.44 | .86 | Supervision of pupils during play time | Private | 51 | 3.00 | .00 | 3.75 | .000 | Significant | Public | 49 | 2.59 | .76 | Procedure for handling emergencies | Private | 51 | 2.84 | .54 | 3.78 | .000 | Significant | Public | 50 | 2.30 | .86 | Children's use of pass cards | Private | 51 | 2.52 | .78 | 2.77 | .007 | Significant | Public | 50 | 2.06 | .91 | Availability of fire extinguishers | Private | 51 | 2.43 | .81 | 5.45 | .000 | Significant | Public | 50 | 1.54 | .84 | Availability of staff who look after children pending the arrival of parents | Private | 51 | 2.98 | .14 | 5.70 | .000 | Significant | Public | 50 | 2.28 | .86 | Conducting background check on staff before employment | Private | 51 | 2.86 | .40 | 3.71 | .000 | Significant | Public | 50 | 2.38 | .83 | Preventing misuse of play equipment | Private | 51 | 2.88 | .38 | 3.88 | .000 | Significant | Public | 50 | 2.36 | .88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| First aid kits and trained staff, | Private | 51 | 2.96 | .28 | 4.07 | .000 | Significant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Public | 50 | 2.44 | .86 | | | | Supervision of pupils during play time | Private | 51 | 3.00 | .00 | 3.75 | .000 | Significant | Public | 49 | 2.59 | .76 | Procedure for handling emergencies | Private | 51 | 2.84 | .54 | 3.78 | .000 | Significant | Public | 50 | 2.30 | .86 | Children's use of pass cards | Private | 51 | 2.52 | .78 | 2.77 | .007 | Significant | Public | 50 | 2.06 | .91 | Availability of fire extinguishers | Private | 51 | 2.43 | .81 | 5.45 | .000 | Significant | Public | 50 | 1.54 | .84 | Availability of staff who look after children pending the arrival of parents | Private | 51 | 2.98 | .14 | 5.70 | .000 | Significant | Public | 50 | 2.28 | .86 | Conducting background check on staff before employment | Private | 51 | 2.86 | .40 | 3.71 | .000 | Significant | Public | 50 | 2.38 | .83 | Preventing misuse of play equipment | Private | 51 | 2.88 | .38 | 3.88 | .000 | Significant | Public | 50 | 2.36 | .88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supervision of pupils during play time | Private | 51 | 3.00 | .00 | 3.75 | .000 | Significant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Public | 49 | 2.59 | .76 | | | | Procedure for handling emergencies | Private | 51 | 2.84 | .54 | 3.78 | .000 | Significant | Public | 50 | 2.30 | .86 | Children's use of pass cards | Private | 51 | 2.52 | .78 | 2.77 | .007 | Significant | Public | 50 | 2.06 | .91 | Availability of fire extinguishers | Private | 51 | 2.43 | .81 | 5.45 | .000 | Significant | Public | 50 | 1.54 | .84 | Availability of staff who look after children pending the arrival of parents | Private | 51 | 2.98 | .14 | 5.70 | .000 | Significant | Public | 50 | 2.28 | .86 | Conducting background check on staff before employment | Private | 51 | 2.86 | .40 | 3.71 | .000 | Significant | Public | 50 | 2.38 | .83 | Preventing misuse of play equipment | Private | 51 | 2.88 | .38 | 3.88 | .000 | Significant | Public | 50 | 2.36 | .88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Procedure for handling emergencies | Private | 51 | 2.84 | .54 | 3.78 | .000 | Significant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Public | 50 | 2.30 | .86 | | | | Children's use of pass cards | Private | 51 | 2.52 | .78 | 2.77 | .007 | Significant | Public | 50 | 2.06 | .91 | Availability of fire extinguishers | Private | 51 | 2.43 | .81 | 5.45 | .000 | Significant | Public | 50 | 1.54 | .84 | Availability of staff who look after children pending the arrival of parents | Private | 51 | 2.98 | .14 | 5.70 | .000 | Significant | Public | 50 | 2.28 | .86 | Conducting background check on staff before employment | Private | 51 | 2.86 | .40 | 3.71 | .000 | Significant | Public | 50 | 2.38 | .83 | Preventing misuse of play equipment | Private | 51 | 2.88 | .38 | 3.88 | .000 | Significant | Public | 50 | 2.36 | .88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Children's use of pass cards | Private | 51 | 2.52 | .78 | 2.77 | .007 | Significant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Public | 50 | 2.06 | .91 | | | | Availability of fire extinguishers | Private | 51 | 2.43 | .81 | 5.45 | .000 | Significant | Public | 50 | 1.54 | .84 | Availability of staff who look after children pending the arrival of parents | Private | 51 | 2.98 | .14 | 5.70 | .000 | Significant | Public | 50 | 2.28 | .86 | Conducting background check on staff before employment | Private | 51 | 2.86 | .40 | 3.71 | .000 | Significant | Public | 50 | 2.38 | .83 | Preventing misuse of play equipment | Private | 51 | 2.88 | .38 | 3.88 | .000 | Significant | Public | 50 | 2.36 | .88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Availability of fire extinguishers | Private | 51 | 2.43 | .81 | 5.45 | .000 | Significant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Public | 50 | 1.54 | .84 | | | | Availability of staff who look after children pending the arrival of parents | Private | 51 | 2.98 | .14 | 5.70 | .000 | Significant | Public | 50 | 2.28 | .86 | Conducting background check on staff before employment | Private | 51 | 2.86 | .40 | 3.71 | .000 | Significant | Public | 50 | 2.38 | .83 | Preventing misuse of play equipment | Private | 51 | 2.88 | .38 | 3.88 | .000 | Significant | Public | 50 | 2.36 | .88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Availability of staff who look after children pending the arrival of parents | Private | 51 | 2.98 | .14 | 5.70 | .000 | Significant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Public | 50 | 2.28 | .86 | | | | Conducting background check on staff before employment | Private | 51 | 2.86 | .40 | 3.71 | .000 | Significant | Public | 50 | 2.38 | .83 | Preventing misuse of play equipment | Private | 51 | 2.88 | .38 | 3.88 | .000 | Significant | Public | 50 | 2.36 | .88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Conducting background check on staff before employment | Private | 51 | 2.86 | .40 | 3.71 | .000 | Significant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Public | 50 | 2.38 | .83 | | | | Preventing misuse of play equipment | Private | 51 | 2.88 | .38 | 3.88 | .000 | Significant | Public | 50 | 2.36 | .88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Preventing misuse of play equipment | Private | 51 | 2.88 | .38 | 3.88 | .000 | Significant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Public | 50 | 2.36 | .88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Table 3 shows an independent-samples t-test comparing the mean scores for safety and security measures between private and public ECEC centres in Benin City. There was a statistically significant difference in CCTV availability between private schools ($Mn=2.22$, $SD=.92$) and public schools ($Mn=1.24$, $SD=.62$), $t(99) = 6.23$, $p<.001$. Private early childhood centres reported greater CCTV availability than public centres.

Correspondingly, a statistically significant difference in perimeter fencing was found between private ($Mn=2.88$, $SD=.48$) and public early childhood centres ($Mn=2.42$, $SD=.58$), $t(99) = 3.26$, $p=.002$. It implies that private schools have more perimeter fencing than public schools.

In addition, there was a statistically significant difference in the availability of security guards between private ($Mn=2.63$, $SD=.75$) and public early childhood centres ($Mn=2.02$, $SD=.94$), $t(99) = 3.60$, p

$=.002$. Private early childhood centres had more security guards than public centres.

Similarly, the study found a statistically significant difference in fire drills and emergency evacuation plans between private ($Mn=2.47$, $SD=.73$) and public early childhood centres ($Mn=1.58$, $SD=.84$), $t(99) = 5.71$, $p<0.001$. Private early childhood centres conduct more fire drills and demonstrate a higher level of emergency preparedness than public early childhood centres.

Furthermore, there was a statistically significant difference in the provision of first-aid kits and trained staff between private ($Mn=2.96$, $SD=.28$) and public early childhood centres ($Mn=2.44$, $SD=.86$), $t(99)=4.07$, $p<.001$. Private early childhood centres were more likely to provide first-aid kits and trained staff than public early childhood centres.

Moreover, there was a statistically significant difference in the supervision of pupils during playtime between private ($Mn=3.00$, $SD=.00$) and public early

childhood centres ($Mn=2.59$, $SD=.76$), $t(99)=3.75$, $p<.001$. This difference indicates that private early childhood centres expressed greater concern about pupil supervision during playtime than public early childhood centres.

Again, a significant difference was evident in the procedures for handling emergencies between private ($Mn=2.84$; $SD=.54$) and public early childhood centres ($Mn=2.30$; $SD=.86$), $t(99)=3.78$, $p<.001$. Private early childhood centres followed better procedures for handling emergencies than public centres.

Additionally, there was a statistically significant difference in the use of pass cards between private ($Mn= 2.52$, $SD=.78$) and public early childhood centres ($Mn=2.06$; $SD=.91$), $t(99)= 2.77$; $p= .007$. Private schools demonstrated better use of pass cards than public schools.

Still, there was a significant difference in the availability of fire extinguishers between private ($Mn=2.43$, $SD=.81$) and public early childhood centres ($Mn=1.5$, $SD=.84$), $t(99) = 5.45$, $p<.001$. Private early childhood centres demonstrated more fire extinguishers than public centres.

Similarly, there was a significant difference in the availability of staff who look after children pending the arrival of parents between private early childhood centres ($Mn=2.9$, $SD=.14$) and public early childhood centres ($Mn=2.28$, $SD=.86$), $t(99)=5.70$, $p<.001$. Private early childhood centres are more likely to provide after-school hours care pending the arrival of parents or guardians.

Similarly, the study found a significant difference in the frequency of conducting background checks on staff's prior employment between private ($Mn=2.86$, $SD=.40$) and public early childhood centres ($Mn=2.3$, $SD=.83$), $t(99) = 3.71$, $p <.001$. Private early childhood centres are more likely to conduct staff background checks before hiring than public centres. Finally, a statistically significant difference was established in the prevention of misuse of play equipment between private ($Mn=2.88$, $SD=.38$) and public early childhood centres ($Mn=2.36$, $SD=.88$), $t(99)=3.88$, $p<.001$. Private schools demonstrated greater commitment to preventing misuse of play equipment than public early childhood centres.

The overall results, therefore, indicated that all variables have p-values ranging from .000 to .007, which are lower than the alpha value of 0.05. Consequently, the null hypothesis, which states "The

implementation of safety and security measures do not significantly differ between public and private early childhood education and care centres in Benin City", was rejected. By implication, there is a significant difference in the implementation of safety and security measures between private and public ECCE centres in favour of the private centres.

4. Discussion of Findings

The objective of the study was to analyse safety and security measures in early childhood education and care centres in Benin City. The finding revealed that large proportion of the early childhood centres made adequate provision for some safety and security measures as the found that majority supervises pupils during play time, have first aid kits and trained staff on first aid, perimeter fencing, staff who look after children pending the arrival of parents, procedure for handling emergencies, conduct background check on staff before employment, have security guards and uses of pass cards to monitor pupils movement. However, the centres lacked adequate provision for CCTV cameras, fire extinguishers and fire safety drills. This finding aligns with an earlier study that found that most centres did not comply with provisions for short-circuit camera (CCTV) and fire safety management, among others, in early childhood centres in Southwestern Nigeria (Nwhator & Adebayo, 2025).

The study further revealed a significant difference in the implementation of safety and security measures between private and public schools' ECCE centres in favour of the private schools. This finding corroborates a previous study that found that publicly owned pre-schools lacked safety measures and security, such as surveillance cameras, gate passes, and identification systems, compared to privately owned schools, which have more of these measures (Nwabiankea & Idadi, 2024). However, the study contradicts Dike and Otu's (2024) survey, which found no statistically significant difference in safety compliance based on school ownership.

Finally, the study found that challenges affecting the implementation of safety and security measures in early childhood and care centres include inadequate safety equipment, limited funding, insufficient emergency preparedness, overcrowded classrooms, limited parental cooperation, inadequate staff training, and poor infrastructure. These findings support previous research outcomes, which posit that failure of the government's re-enactment of safety management in public schools, such as continuous training of early childhood personnel, maintenance of facilities, sufficient funding of ECEC, including skilfully trained

security staff, constitutes challenges in managing safety (Igbinedion & Nworgu, 2016).

5. Conclusion

It can be concluded that early childhood centres in Benin City demonstrated appreciable safety and security consciousness in some key areas, such as supervision of pupils during play time, procedure for handling emergencies, perimeter fencing, availability of staff who look after children pending the arrival of parents/guardians, conducting background checks on staff before employment, and preventing misuse of play equipment. With fair use of security guards, a pass card for pupils. However, CCTV surveillance, fire extinguishers, fire drills, and emergency evacuation plans were poorly implemented. The availability of safety and security measures was significantly higher in private than in public ECEC centres. However, the key challenges affecting safety and security measures include inadequate safety equipment, Limited funding resources, and overcrowded classrooms, among others.

6. Recommendations

Consequent upon the findings of the study the following recommendation were made:

The Nigerian government at various levels, including private school operators, should strengthen existing safety and security measures through the installation of modern gadgets such as video surveillance, centre access control and communication systems.

Government and other stakeholders in the educational sector, particularly the Universal Basic Education and private school operators, should, as a matter of urgency, take the lead by providing periodic staff training on modern safety, security, and safeguarding techniques in Schools including promoting fire safety practices.

Parents should support the safety and security of children in schools through partnerships by reinforcing safety rules at home, such as stranger awareness, and by volunteering to supervise during school events, among other measures.

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Investigating the Influence of Gender Equality on The Attainment of Sustainable Development Goals in Public Senior Secondary Schools in Lagos State Education District II, Nigeria

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Abstract. This study examines the influence of gender equality on the attainment of Sustainable Development Goals (SDG 4: Quality Education and SDG 5: Gender Equality) in public senior secondary schools within Education District II of Lagos State, Nigeria. The objective is to determine how gender equality in participation, leadership, and resource allocation affects students' academic achievement and the realization of educational goals. The research adopted a descriptive survey design using both quantitative approaches. The population consisted of students, teachers, and administrators from public senior secondary schools in Ikorodu, Kosofe, and Somolu Local Government Areas. A stratified random sampling technique was used to select representative respondents across the district. Data were collected through structured questionnaires, data were analyzed using inferential statistics, including Pearson's correlation and regression analysis. The findings revealed persistent gender disparities in participation, subject choice, and leadership representation despite policy interventions. Girls were underrepresented in science and technology subjects and often excluded from high-status leadership roles, while boys faced stigma in non-traditional subjects. Infrastructure deficiencies particularly inadequate sanitation and overcrowded classrooms, also contributed to absenteeism among female students. The study concluded that gender inequality in schools continues to hinder progress toward SDG 4 and SDG 5 by limiting inclusive participation and equitable educational outcomes. It recommended that the Lagos State Ministry of Education strengthen gender-sensitive policies, ensure equitable access to resources, promote teacher training on gender responsiveness, and expand mentorship and leadership programs for both genders.

Keywords: Gender Equality, Sustainable Development Goals, Education District II, Leadership, Academic Performance.

1. Introduction

Education is universally regarded as a cornerstone of human development and a key driver of sustainable progress. It is not merely a tool for knowledge transfer but a fundamental human right and a catalyst for promoting empowerment, reducing inequality, and fostering inclusive economic growth. The United Nations' adoption of the Sustainable Development Goals (SDGs) in 2015 emphasized this role, with SDG 4 focusing on inclusive and equitable quality education and SDG 5 targeting gender equality and the empowerment of women and girls (United Nations, 2015). These goals are mutually reinforcing: without gender equality, education cannot be inclusive, and without education, gender equality cannot be achieved. Globally, education has been strongly linked to a wide range of development outcomes. Gender equality in education is associated with improved social indicators, including reduced fertility rates, lower maternal mortality, and increased female participation in the labor market. Societies which close gender gaps in education witness enhanced innovation and productivity, since diversity of thought contributes to economic competitiveness. Kabeer (2017) further emphasizes that education expands women's agency, enabling them to participate more effectively in political and civic life.

Education in Africa occupies a central role in the continent's development agenda, yet gender inequality remains one of its most enduring challenges. Despite numerous policy frameworks and interventions,

millions of African children especially girls are still excluded from formal education. The African Union's Agenda 2063 and the Continental Education Strategy for Africa (CESA 16–25) place education at the heart of the continent's long-term development vision, recognizing its potential to transform economies and empower citizens. However, entrenched cultural norms, poverty, and weak policy implementation continue to perpetuate disparities. Education systems across Africa remain "highly stratified," with outcomes shaped not only by economic inequality but also by gendered and cultural hierarchies that limit access for girls. The statistics are sobering. UNESCO (2020) estimated that sub-Saharan Africa accounts for over half of the world's out-of-school children, and girls are disproportionately represented in this figure. While primary enrollment has improved in recent decades, secondary school access remains deeply unequal, with boys more likely to transition than girls. Socio-economic pressures such as the need for child labor, domestic responsibilities, and early marriage intersect with poverty to restrict female education UNESCO (2020). In some regions, parents prioritize boys' schooling under the assumption that sons are future breadwinners, while daughters are expected to marry early and contribute to the household through unpaid care work.

Nigeria, as Africa's most populous nation and its largest economy, faces unique opportunities and challenges in advancing education and achieving gender equality. Despite numerous policy initiatives, including the Universal Basic Education (UBE) programme, the National Policy on Education, and Nigeria's commitment to the Sustainable Development Goals (SDGs), significant gender disparities remain across different levels of education. These disparities are most visible at the secondary level, where girls are disproportionately excluded due to socio-cultural and economic factors. UNICEF (2020) reports that Nigeria has one of the highest numbers of out-of-school children globally, with nearly 10.5 million children excluded from education. A disproportionate number of these are girls, particularly in northern regions where cultural norms and practices such as child marriage, *pardah* (seclusion of women), and household responsibilities impede female education (Okeke, 2021). Scholars like Adebayo and Olanrewaju (2019) argue that patriarchal norms and deeply rooted gender stereotypes continue to prioritize boys' education over that of girls, as sons are perceived as future providers while daughters are viewed through the lens of domesticity and marriage.

Even in urban centers where access to schooling is relatively higher, challenges persist. Although Lagos,

Abuja, and Port Harcourt have better educational infrastructure, girls still lag behind in retention and completion rates compared to boys. This suggests that structural inequalities are not confined to rural areas but are embedded in Nigeria's educational and cultural fabric. In addition, gender-based violence in and around schools remains a significant barrier. Harassment, bullying, and insecurity discourage many girls from attending school or lead to premature withdrawal. One of the most pressing issues is early marriage, which continues to truncate educational opportunities for Nigerian girls.

The Nigerian government has made attempts to address these issues through policies and international commitments, but implementation gaps remain. Ojo and Akintoye (2021) observe that while Nigeria has signed onto major frameworks promoting gender equality, including CEDAW (Convention on the Elimination of All Forms of Discrimination Against Women), enforcement of policies at state and local levels is weak. Corruption, inadequate funding, and lack of political will undermine progress. Consequently, despite rising enrollment rates, the quality of education remains low, and gender gaps persist. The effects of these disparities extend into Nigeria's broader development trajectory. When girls are denied education, they are excluded from the formal labor market, leading to lost potential and a less diversified economy. Furthermore, educated women are more likely to engage in political participation, community development, and decision-making processes. Thus, excluding women undermines democratic governance and civic engagement.

Lagos State, Nigeria's commercial hub and the most populous state in the federation, occupies a unique position in the national education landscape. With its cosmopolitan population and relatively advanced infrastructure, Lagos has historically been viewed as a leader in educational reforms. However, beneath this progress lies a persistent challenge of gender inequality in education, particularly at the secondary level. The state government has made significant strides in expanding access to education. The introduction of free basic education under the Lagos State Universal Basic Education programme has improved enrollment, and recent reforms have focused on integrating technology into classrooms. According to Adeoye and Salami (2020), these interventions have helped reduce the number of out-of-school children in Lagos compared to the national average. Nonetheless, gender-related challenges remain entrenched. Female students, in particular, face multiple barriers that hinder their full participation in education. For instance, socio-cultural expectations often push girls

into domestic responsibilities, limiting their time for study and school attendance.

Education District II of Lagos State, which covers Ikorodu, Kosofe, and Somolu Local Government Areas, offers an important setting for exploring how gender equality affects educational outcomes. Like other urban districts in Lagos, it is characterized by rapid population growth, diverse communities, and mounting pressure on public infrastructure. The secondary schools in this district serve thousands of students, yet many face challenges such as overcrowding, limited resources, and gender-based disparities that directly influence students' experiences and achievements. One of the most visible challenges is overcrowding. Many public secondary schools in Ikorodu, Kosofe, and Somolu struggle to accommodate their growing student population. Large class sizes often reduce teachers' ability to give personalized attention, and girls are more likely to be disadvantaged in such environments. Poor access to sanitation facilities further complicates matters, as inadequate toilets and hygiene systems often discourage female students, especially during menstruation, from attending regularly. Studies in Lagos have shown that lack of gender-sensitive infrastructure can contribute significantly to absenteeism and, in some cases, school dropout among girls (Adeoye & Salami, 2020).

1.1 Research Hypotheses

The following null hypotheses are formulated to guide the study:

HO₁ There is no significant relationship between gender equality in participation, and students' academic performance.

HO₂ There is no significant relationship between gender stereotypes and leadership opportunities.

HO₃ There is no significant relationship between school resources and gender equality in Education District II.

HO₄ There is no significant relationship between gender inequality in schools and the attainment of SDG 4 (Quality Education).

HO₅ There is no significant relationship between gender inequality in schools and the attainment of SDG 5 (Gender Equality).

2. Literature Review

2.1 Concept of Gender Equality

Gender equality is one of the most discussed concepts in global development and educational discourse. It

refers to a condition in which men and women, boys and girls, have equal rights, responsibilities, and opportunities across all aspects of life including education, employment, leadership, and social participation (UN Women, 2023). It does not imply that men and women are the same but that their opportunities, access to resources, and decision-making powers should not be determined by gender. Within the educational context, gender equality entails fairness in access, participation, treatment, and outcomes for both male and female learners (UNESCO, 2021).

The global commitment to gender equality is rooted in several international conventions and declarations, including the Universal Declaration of Human Rights (1948), the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW, 1979), and the Beijing Declaration and Platform for Action (1995). These documents frame education as a human right and call for equal access for both genders. In 2015, the United Nations Sustainable Development Goals (SDGs) further reinforced this commitment through Goal 5 (Gender Equality) and Goal 4 (Quality Education), recognizing education as both a driver and outcome of gender equity (United Nations, 2015).

It is important to note that gender equality is not only a moral and legal obligation but also a strategic investment in national development. When girls and women have equal access to education, labor markets, and leadership opportunities, societies benefit from improved innovation, productivity, and social stability. Conversely, persistent gender inequality undermines social progress by restricting half of the population from contributing fully to development processes (Kabeer, 2017). Therefore, achieving gender equality is central to both social justice and economic transformation.

In educational settings, gender equality encompasses three interrelated dimensions access, participation, and outcomes (UNESCO, 2021).

Access: This refers to the right of both boys and girls to enroll and remain in school without discrimination.

Participation: This includes classroom engagement, leadership opportunities, and decision-making involvement.

Outcomes: These involve academic achievement, life skills, and future opportunities derived from education.

Furthermore, gender inequality in schools often extends to leadership and participation. Boys tend to dominate high-status leadership roles like prefects and

sports captains, while girls are relegated to welfare or support positions (Olayinka & Okonkwo, 2019). This not only limits girls' early exposure to leadership experiences but also reinforces the social belief that leadership is a male domain. Gendered expectations also influence teachers' attitudes. Research shows that teachers often have lower expectations for girls in science-related subjects and may unconsciously encourage boys to take academic risks while urging girls to be cautious and obedient (Omotosho & Adeleke, 2020).

In Lagos State's Education District II, which includes Ikorodu, Kosofe, and Somolu, these challenges take on distinct forms. The district's urban diversity brings both opportunities and inequalities. While some communities enjoy access to modern educational infrastructure, others face overcrowded classrooms and limited resources. Cultural attitudes continue to shape how boys and girls are socialized toward different roles, and economic pressures often push students particularly boys into informal work or street trading, affecting school attendance. Thus, achieving gender equality in such contexts involves addressing both social and economic constraints.

In relation to the Sustainable Development Goals, gender equality serves as both a goal and a catalyst. Progress on SDG 5 (Gender Equality) reinforces SDG 4 (Quality Education), and vice versa. When education systems are equitable and inclusive, they produce empowered individuals capable of challenging stereotypes, participating in leadership, and contributing to sustainable development. For Lagos State and Nigeria as a whole, gender equality in education is not merely about fairness it is a strategic imperative for achieving national development targets, economic diversification, and social cohesion.

2.2 Gender Equality in Educational Participation

Educational participation refers to the extent to which learners are enrolled, attend, engage, and complete schooling successfully. It encompasses the entire learning experience from access and attendance to classroom involvement, leadership participation, and academic completion (UNESCO, 2021). Gender equality in educational participation, therefore, means that both boys and girls have equal opportunities to take part fully in every aspect of education without discrimination or bias. It ensures that gender does not determine who learns, how they learn, or the extent of their achievement (UN Women, 2023).

Globally, significant progress has been made toward improving girls' participation in education. According to UNESCO (2023), the global gender parity index for

primary and lower secondary education now stands close to 1.0, indicating near equality in enrollment. However, disparities remain more pronounced in sub-Saharan Africa, where cultural norms, poverty, and early marriage continue to limit girls' participation (UNESCO, 2021). The United Nations (2022) reports that over 130 million girls worldwide are still out of school, with sub-Saharan Africa accounting for more than half of this figure. These challenges highlight that improving participation requires more than expanding access; it demands addressing the socio-economic and cultural barriers that sustain inequality.

In Nigeria, gender disparities in educational participation remain significant, particularly at the secondary level. UNICEF (2022) estimates that over 10 million Nigerian children are out of school, with girls representing a disproportionate share, especially in northern states. While the southern and urban regions have achieved relatively higher enrollment parity, gender gaps persist in retention, classroom participation, and subject specialization (Ojo & Akintoye, 2021). The reasons are multifaceted ranging from cultural expectations and poverty to inadequate infrastructure and gender-based violence.

2.3 Gender and Leadership Opportunities in Schools

Leadership within the educational context refers to the capacity of individuals students, teachers, or administrators to influence others, make decisions, and take responsibility for achieving common goals. For students, leadership roles such as class representatives, prefects, club executives, and team captains are not merely ceremonial; they form a crucial part of personal development, confidence building, and preparation for civic participation in adulthood (Ajibade & Adegoke, 2021). When leadership opportunities in schools are distributed unequally between boys and girls, the inequality extends beyond the school walls into society, reinforcing stereotypes about gender and authority. Hence, gender equality in leadership is central to both educational empowerment and sustainable development.

Globally, leadership equality has gained recognition as a fundamental aspect of gender equity. The United Nations' Sustainable Development Goal 5 emphasizes women's and girls' full and effective participation in decision-making at all levels, including educational institutions (UN Women, 2023). Schools serve as microcosms of society where leadership norms are first practiced and internalized. When girls are given equal opportunities to lead, they develop confidence, communication skills, and problem-solving abilities

that extend into professional and political domains later in life. Conversely, when leadership is dominated by boys, it perpetuates gender hierarchies and limits girls' visibility and voice.

Teacher expectations and administrative practices play a critical role in reinforcing or challenging gender stereotypes in school leadership. Olayinka and Okonkwo (2019) found that teachers often unconsciously favour male students for leadership roles due to assumptions that they are more disciplined, vocal, or capable of handling responsibility. Girls who exhibit assertiveness or leadership ambition are sometimes labeled as "proud" or "disrespectful," discouraging them from participating. These biases mirror broader societal expectations and limit the emergence of balanced leadership cultures in schools. Promoting leadership equality therefore requires re-examining selection criteria and classroom cultures to ensure that leadership opportunities are merit-based rather than gender-biased.

Empirical evidence suggests that equal leadership representation benefits not just individuals but the entire school community. Ajibade and Adegoke (2021) observed that schools with gender-balanced prefect systems tend to have higher levels of student engagement, improved peer mentoring, and lower rates of bullying and absenteeism. Female leaders often serve as role models, motivating younger girls to pursue excellence and aspire to leadership. Moreover, mixed-gender leadership teams bring diversity of thought and approach, fostering cooperation and inclusiveness in school governance. Such environments prepare students for life in pluralistic societies and mirror the democratic ideals promoted under SDG 5.

Promoting gender equality in leadership aligns directly with both SDG 4 (Quality Education) and SDG5 (Gender Equality). Equal participation in school leadership contributes to quality education by nurturing inclusive learning environments where all voices are heard. It also prepares students for active citizenship and shared leadership in adulthood, laying the foundation for more equitable political, economic, and social participation in the future (UN Women, 2023). For Lagos State, fostering balanced student leadership in public schools contributes to a pipeline of confident, skilled young women and men equipped to drive innovation and governance reform.

2.4 Concept of Sustainable Development Goals (SDG 4 and SDG 5)

The Sustainable Development Goals (SDGs) are a universal framework adopted by the United Nations in 2015 to guide global efforts toward ending poverty, protecting the planet, and ensuring prosperity for all by the year 2030. They consist of 17 interconnected goals and 169 targets that collectively represent a comprehensive roadmap for inclusive and sustainable development (United Nations, 2015). Among these, SDG 4 (Quality Education) and SDG 5 (Gender Equality) are particularly relevant to education systems, as they directly address the intersection between learning, empowerment, and equality. The relationship between these two goals is symbiotic: progress in education promotes gender equality, while gender equality enhances educational outcomes (UNESCO, 2021).

2.5 Sustainable Development Goal 4: Quality Education

SDG 4 seeks to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all." It emphasizes not only access but also the quality and relevance of learning. The goal recognizes education as a fundamental driver of human development, social justice, and economic growth. SDG 4 consists of ten targets, covering areas such as universal primary and secondary education, affordable higher education, gender equality in education, literacy, skills development, and education for sustainable development.

Globally, SDG 4 reflects a shift from mere enrollment toward meaningful learning. In the past, development efforts often focused on increasing school attendance, but the SDGs broaden this vision to include equitable learning environments and measurable learning outcomes (UNESCO, 2023). This means ensuring that children not only attend school but also acquire essential knowledge and skills to contribute productively to society. The goal further stresses inclusivity, calling for education systems that accommodate marginalized groups, including girls, children with disabilities, and those from low-income backgrounds.

In Nigeria, SDG 4 has been incorporated into national education policies through initiatives such as the Universal Basic Education (UBE) programme and the National Policy on Education (FRN, 2020). However, implementation challenges persist. Ojo and Akintoye (2021) observed that while Nigeria has improved enrollment at the basic education level, issues of

quality, gender disparity, and inequality in resource allocation remain. Many public schools lack adequate facilities, trained teachers, and learning materials, particularly in low-income areas of Lagos State. As a result, educational outcomes remain uneven across gender and socio-economic lines, undermining the vision of inclusive quality education.

2.6 Sustainable Development Goal 5: Gender Equality

SDG 5 focuses on achieving gender equality and empowering all women and girls. It recognizes that gender inequality remains one of the most pervasive forms of discrimination worldwide, limiting access to education, healthcare, employment, and decision-making (UN Women, 2023). SDG 5 has nine specific targets, addressing issues such as ending all forms of discrimination and violence against women and girls, eliminating harmful practices like child marriage, ensuring equal participation in leadership, and recognizing unpaid domestic work.

Within the educational context, SDG 5 emphasizes the need for equal access to learning opportunities, equal participation in school governance, and the elimination of gender-based discrimination and violence in schools. Gender equality in education is viewed not only as a moral imperative but also as a catalyst for achieving other SDGs. Educated girls are more likely to marry later, have healthier families, earn higher incomes, and contribute to the economy. Conversely, when girls are denied education, entire communities suffer from intergenerational cycles of poverty and underdevelopment (Kabeer, 2017).

In the Nigerian setting, progress toward SDG 5 has been mixed. The country has adopted gender policies and strategies, such as the National Gender Policy (2006) and the Girls' Education Project (GEP3) implemented in collaboration with UNICEF and DFID, aimed at promoting female education and leadership. Yet, barriers such as poverty, early marriage, cultural beliefs, and inadequate infrastructure persist (UNICEF, 2022). In Lagos State, although gender parity in school enrollment is nearly achieved, participation in science, technology, engineering, and mathematics (STEM) remains unequal, with boys dominating these fields (Adeoye & Salami, 2020).

2.7 Interconnection Between SDG 4 and SDG 5

The relationship between SDG 4 and SDG 5 is both direct and reinforcing. SDG 4 provides the educational foundation that enables individuals to achieve personal

development and economic empowerment, while SDG 5 ensures that these opportunities are equitably distributed across genders. According to UNESCO (2020), education acts as the "engine" of gender equality because it equips women and girls with the knowledge, confidence, and agency to challenge discriminatory norms. At the same time, gender equality enhances the quality of education by promoting diversity, inclusiveness, and democratic participation in schools (UNESCO, 2021).

For instance, when girls are encouraged to participate equally in school leadership, classroom discussions, and extracurricular activities, they develop critical life skills that translate into better academic outcomes and community involvement. Similarly, when boys are exposed to gender-sensitive education, they grow into allies who challenge stereotypes and advocate for fairness and inclusion. Thus, achieving SDG 4 and SDG 5 simultaneously produces a multiplier effect on other goals such as SDG 1 (No Poverty), SDG 3 (Good Health and Well-being), and SDG 8 (Decent Work and Economic Growth) (United Nations, 2023).

Gender Equality and Sustainable Development in Lagos State's Education District II Gender equality and sustainable development are two interlinked pillars of progress that cannot be pursued in isolation. Sustainable development requires that all members of society men and women alike have equal opportunities to access education, participate in leadership, and contribute to economic, social, and environmental transformation. In Lagos State's Education District II, which encompasses Ikorodu, Kosofe, and Somolu Local Government Areas, achieving gender equality within the education sector is essential for realizing the broader vision of the Sustainable Development Goals (SDGs), particularly SDG 4 (Quality Education) and SDG 5 (Gender Equality).

3. Methodology

This study adopted a descriptive survey research design. This design was considered appropriate because it allows the researcher to collect data from a representative sample of respondents to describe and interpret existing conditions, opinions, and perceptions without manipulating any variables. According to Creswell and Creswell (2018), a descriptive survey helps in systematically obtaining factual information concerning prevailing situations and drawing logical conclusions based on empirical evidence. The design enabled the researcher to explore teachers' perceptions of gender equality and its relationship with sustainable educational development within Lagos State Education District II.

The population of this study comprised all teachers in public secondary schools within Lagos State Education District II, which includes Ikorodu, Kosofe, and Somolu Local Government Areas (LGAs). These districts were selected because they represent a cross-section of urban and semi-urban schools in Lagos State and reflect the diversity in educational access and gender representation. As noted by the Lagos State Ministry of Education (2023), teachers within this district play a crucial role in implementing gender-inclusive education policies and influencing classroom practices. The total estimated teacher population in the district is approximately 2,150, covering various subject areas and administrative roles.

A total of 200 teachers were selected as respondents for the study. The sample size was considered adequate to represent the population based on the recommendations of Krejcie and Morgan (1970), who suggested that for a population above 2,000, a sample size of around 200 is statistically sufficient for generalization. A stratified random sampling technique was used to ensure equitable representation across the three LGAs (Ikorodu, Kosofe, and Somolu) and across different school categories (junior and senior secondary levels). This method was chosen to avoid sampling bias and to ensure that respondents reflected a balanced gender distribution and teaching experience range.

The primary instrument for data collection was a structured questionnaire designed by the researcher. The questionnaire was developed based on the objectives and research questions of the study and divided into two sections. Section A elicited demographic information such as gender, years of teaching experience, and school location, while Section B contained items related to teachers' perceptions of gender equality and its influence on sustainable educational development. The instrument was structured using a four-point Likert scale ranging

from Strongly Agree (4) to Strongly Disagree (1). This format was used to capture respondents' attitudes, beliefs, and experiences in a quantifiable manner, consistent with similar gender-related education studies (UNESCO, 2021; Olaniyan & Lawal, 2023).

To ensure the reliability of the instrument, a pilot test was conducted using 20 teachers from Education District I (not part of the main sample). The responses were analyzed using the Cronbach's Alpha reliability coefficient, which yielded a value of 0.84, indicating a high level of internal consistency. A reliability coefficient of 0.70 and above is considered acceptable for social science research. Therefore, the instrument was deemed reliable for use in the main study.

Data were collected directly by the researcher with the assistance of trained field officers. Permission was obtained from the principals of the selected schools before administering the questionnaires. Respondents were assured of confidentiality and anonymity, and their participation was voluntary. The questionnaires were distributed in person and collected immediately after completion to ensure a high response rate.

The data obtained were analyzed using both descriptive and inferential statistical methods. Descriptive statistics such as mean, standard deviation, and percentage were used to summarize the respondents' demographic data and responses to the research questions. These tools helped to describe trends and perceptions regarding gender equality and sustainable educational development. For hypothesis testing, Pearson Product Moment Correlation (PPMC) was employed to determine the strength and direction of the relationship between gender equality indicators and sustainable educational outcomes. The hypotheses were tested at a 0.05 level of significance. The use of PPMC was justified as it is suitable for examining relationships between continuous variables in educational research (Field, 2018).

4. Test of Hypotheses

Hypothesis One: There is no significant relationship between gender equality in participation, and students' academic achievement

Table 1: Pearson’s Correlation on Significant Relationship Between Gender Equality in Participation, and Students’ Academic Performance

| | | Gender Equality in Participation | students’ Academic Performance |
|----------------------------------|---------------------|----------------------------------|--------------------------------|
| Gender equality in participation | Pearson Correlation | 1 | .612** |
| | Sig. (2-tailed) | | .000 |
| | N | 200 | 200 |
| Students’ Academic Performance | Pearson Correlation | .612** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 200 | 200 |

** Correlation is significant at the 0.01 level (2-tailed) **

Table 1 presents the summary of correlation results testing the five hypotheses formulated for the study. Each hypothesis sought to determine the nature and strength of the relationship between selected gender-related variables and educational outcomes within Education District II. The correlation coefficients (r-values) and their corresponding significance levels (p-values) reveal that all relationships tested were statistically significant at the 0.05 level. This implies that each null hypothesis was rejected, confirming that meaningful relationships exist among the variables studied.

For Hypothesis One (H_{01}), which stated that there is no significant relationship between gender equality in participation and students’ academic achievement, the correlation coefficient ($r = 0.612$, $p = 0.000$) indicates a strong positive relationship. This suggests that as gender equality in participation increases, students’ academic achievement also improves. Schools that promote equal participation of male and female students in classroom learning, extracurricular activities, and leadership roles are more likely to record better academic outcomes. The significant relationship implies that gender balance in participation fosters collaboration, enhances motivation, and contributes to overall educational excellence.

Hypothesis Two: There is no significant relationship between gender stereotypes and leadership opportunities

Table 2: Pearson’s Correlation on Significant Relationship Between Gender Stereotypes and Leadership Opportunities.

| | | Gender stereotypes | Leadership Opportunities |
|--------------------------|---------------------|--------------------|--------------------------|
| Gender stereotypes | Pearson Correlation | 1 | .524** |
| | Sig. (2-tailed) | | .000 |
| | N | 200 | 200 |
| Leadership Opportunities | Pearson Correlation | .524** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 200 | 200 |

** Correlation is significant at the 0.01 level (2-tailed) **

For Hypothesis Two (H_{02}), which posited that there is no significant relationship between gender stereotypes and leadership opportunities, the result ($r = 0.524$, $p = 0.002$) shows a moderate but significant positive relationship. This indicates that the reduction of gender stereotypes enhances access to leadership opportunities within schools. In other words, when teachers, administrators, and students challenge stereotypical beliefs that associate leadership with a particular gender, both male and female students are equally empowered to take on leadership positions. This finding underscores the importance of promoting inclusive leadership development to achieve equitable school environments.

Hypothesis Three: There is no significant relationship between school resources and gender equality in Education District II.

Table 3: Correlation Analysis Showing Significant Relationship Between School Resources and Gender Equality in Education District II.

| | | School Resources | Gender Equality |
|------------------|---------------------|------------------|-----------------|
| School Resources | Pearson Correlation | 1 | .582** |
| | Sig. (2-tailed) | | .000 |
| | N | 200 | 200 |
| Gender Equality | Pearson Correlation | .582** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 200 | 200 |

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

Hypothesis Three (H₀₃) tested the relationship between school resources and gender equality. The result ($r = 0.586$, $p = 0.000$) reveals a strong and significant positive relationship, implying that adequate and equitable allocation of school resources contributes significantly to gender equality. Schools with balanced distribution of instructional materials, laboratories, and learning aids between boys and girls tend to foster more inclusive participation and improved performance among both genders. This aligns with earlier descriptive findings showing that resource fairness is a major driver of gender balance in education.

Hypothesis Four: There is no significant relationship between gender inequality in schools and the attainment of SDG 4 (Quality Education).

Table 4: Correlation Analysis Showing Significant Relationship Between Gender Inequality in Schools and The Attainment of SDG 4 (Quality Education)

| | | Gender Inequality | SDG 4 (Quality Education). |
|----------------------------|---------------------|-------------------|----------------------------|
| Gender Inequality | Pearson Correlation | 1 | .671** |
| | Sig. (2-tailed) | | .000 |
| | N | 200 | 200 |
| SDG 4 (Quality Education). | Pearson Correlation | .671** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 200 | 200 |

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

For Hypothesis Four (H₀₄), which examined the relationship between gender inequality and the attainment of SDG 4 (Quality Education), the correlation coefficient ($r = 0.671$, $p = 0.000$) indicates a very strong positive and significant relationship. This suggests that minimizing gender inequality is directly associated with achieving the targets of SDG 4. Schools that prioritize inclusivity and eliminate discrimination between male and female students are more likely to provide quality, equitable education for all. This finding highlights that gender equality is not only a human rights issue but also a critical factor in improving the quality and accessibility of education.

Hypothesis Five: There is no significant relationship between gender inequality in schools and the attainment of SDG 5 (Gender Equality).

Table 5: Correlation Analysis Showing Significant Relationship Between Gender Inequality in Schools and The Attainment of SDG 5 (Gender Equality).

| | | gender inequality | SDG 5 (Gender Equality). |
|--------------------------|---------------------|-------------------|--------------------------|
| gender inequality | Pearson Correlation | 1 | .701** |
| | Sig. (2-tailed) | | .000 |
| | N | 200 | 200 |
| SDG 5 (Gender Equality). | Pearson Correlation | .702** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 200 | 200 |

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

Finally, Hypothesis Five (H₀₅) examined the relationship between gender inequality and the attainment of SDG 5 (Gender Equality). The result ($r = 0.702$, $p = 0.000$) indicates the strongest positive relationship among all tested variables. This finding

confirms that addressing gender inequality in schools substantially promotes the realization of SDG 5. It implies that educational institutions serve as powerful platforms for advancing gender equity by shaping

attitudes, values, and opportunities that extend beyond the school environment into the broader society.

5. Discussion of Findings

The findings of this study provide substantial evidence on the relationship between gender equality, school practices, and the attainment of Sustainable Development Goals (SDGs) within Education District II. The results are consistent across all research questions and hypotheses, showing that gender-related factors such as participation, resource allocation, leadership opportunities, and inclusive policies significantly influence educational outcomes and the achievement of SDG 4 (Quality Education) and SDG 5 (Gender Equality).

5.1 Gender Equality in Participation and Students' Academic Achievement

The study revealed a strong positive relationship between gender equality in participation and students' academic achievement ($r = 0.612$, $p = 0.000$). This indicates that when both male and female students are equally encouraged to participate in class discussions, extracurricular activities, and leadership roles, their collective academic outcomes improve. This finding aligns with the assertion of Mohammed et al. (2020), who found that equitable participation among students promotes inclusivity, enhances motivation, and improves academic performance. Similarly, the result supports UNESCO (2019), which emphasized that equal learning opportunities contribute directly to academic success and help eliminate gender disparities in educational attainment.

5.2 Gender Stereotypes and Leadership Opportunities

The result of the second hypothesis ($r = 0.524$, $p = 0.002$) established a moderate but significant relationship between gender stereotypes and leadership opportunities. The findings suggest that when gender stereotypes are minimized, both male and female students gain fair access to leadership roles and decision-making opportunities within schools. This agrees with Okeke (2021), who noted that persistent gender stereotypes often restrict female students from participating in leadership and governance structures in schools. The present study thus reinforces the need to dismantle traditional gender norms and promote leadership inclusivity as a means of achieving gender balance in educational settings.

5.3 School Resources and Gender Equality

The correlation between school resources and gender equality ($r = 0.586$, $p = 0.000$) further confirms that equitable distribution of educational materials enhances fairness and inclusivity. Descriptive results (Table 3) also showed that respondents agreed resources were fairly distributed, though subtle biases still existed. This is consistent with the work of Olanrewaju and Bello (2020), who asserted that equitable access to resources such as laboratories, libraries, and instructional materials enables both genders to perform effectively. The implication is that adequate resource allocation not only promotes gender equality but also ensures improved quality of education.

5.4 Gender Inequality and Attainment of SDG 4 (Quality Education)

Findings from Table 5 and Hypothesis Four ($r = 0.671$, $p = 0.000$) demonstrated that gender inequality significantly affects the attainment of SDG 4. The strong correlation indicates that reducing gender bias in schools enhances inclusivity, quality, and learning outcomes. This supports the United Nations (2020) framework, which positions gender equality as a prerequisite for achieving quality education worldwide. The result also corroborates Adebayo (2022), who found that eliminating gender discrimination in education promotes higher retention, participation, and performance rates among both male and female students.

5.5 Gender Inequality and Attainment of SDG 5 (Gender Equality)

The strongest relationship observed in this study was between gender inequality and the attainment of SDG 5 ($r = 0.702$, $p = 0.000$), signifying that efforts to eliminate gender disparities in schools directly promote gender equality objectives. This finding is in agreement with earlier research by UN Women (2021), which highlighted education as the most effective tool for achieving gender equality and women's empowerment. The descriptive data (Table 6) also confirmed that gender-sensitive policies, equitable participation, and teacher attitudes significantly influence the achievement of SDG 5. Thus, schools play a pivotal role in translating policy frameworks into practical outcomes that advance equality in society.

6. Conclusion

Based on the findings, this study concludes that gender equality is not only a human rights issue but also a vital mechanism for achieving quality education and sustainable development. The evidence from this research shows that schools that uphold gender inclusiveness tend to produce better academic outcomes, greater student participation, and more equitable leadership representation. In contrast, environments characterized by discrimination, stereotyping, and unequal resource allocation impede the intellectual and social development of learners.

Furthermore, the study concludes that gender inequality poses a significant barrier to achieving the SDGs, particularly SDG 4 and SDG 5, which are foundational to all other goals. By ensuring gender equity in educational participation and management, schools contribute to national and global progress. When boys and girls are given equal opportunities to learn, lead, and thrive, societies experience broader economic growth, improved governance, and sustainable peace.

In a broader sense, the conclusion of this research highlights that gender equality in education transcends school boundaries it shapes values, attitudes, and social norms that sustain equality beyond the classroom.

7. Recommendations

Arising from the conclusions of this study, several recommendations are made:

- Educational authorities should strengthen the implementation of gender-responsive policies that guarantee equal participation, fair treatment, and balanced access to educational opportunities. Teachers should be trained regularly on gender sensitivity and inclusive pedagogy to eliminate bias in classroom management and assessment.
- Government and school administrators should ensure equitable allocation of learning resources, ensuring that both male and female students have access to facilities, materials, and extracurricular activities. Schools should also create platforms for shared leadership where both genders are encouraged to participate actively in decision-making processes.
- Public enlightenment campaigns should be organized to sensitize parents and communities on the importance of gender

equality in education, as social norms and parental expectations often influence children's learning experiences.

- Education Districts should institute continuous monitoring and evaluation systems to measure progress on gender equality indicators and assess contributions toward the achievement of SDG 4 and SDG 5.

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Artificial Intelligence-Based Services in Traditional Libraries: Information Discovery and Access among Library Patrons at the University of Maiduguri, Borno State

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Abstract. Traditional libraries that fail to integrate modern information and communication technologies often experience declining user engagement. With the increasing availability of Artificial Intelligence (AI) technologies, libraries are under greater pressure to modernize their services to enhance information discovery and access. This study examined the level of user discovery and information access at the University of Maiduguri Library, the extent of AI-driven service implementation, and the relationship between the two variables. A descriptive survey research design was employed. Data were collected from 355 active library users drawn from a target population of 7,350 using a structured questionnaire developed with the aid of the Raosoft Sample Size Calculator. The 52-item questionnaire was validated and subjected to a pilot study, yielding a reliability coefficient of 0.847 using Cronbach's alpha. Data were analysed using frequency counts, percentages, mean scores, and standard deviations, while Pearson Product-Moment Correlation was used to test the hypothesis at a 0.05 level of significance. The findings revealed that user discovery and information access were moderately high ($\bar{X} = 3.40$, $SD = 0.89$), while the level of AI-driven service implementation was low ($\bar{X} = 2.68$, $SD = 0.91$). The analysis further showed a statistically significant moderate positive relationship between AI-driven service implementation and user discovery and information access ($r = 0.432$, $p < 0.001$). The study concludes that improvements in AI-driven service implementation may enhance users' ability to discover and access information resources in academic libraries. It recommends increased investment in AI-enabled library services and the provision of structured user training to improve the effective utilization of these technologies.

Keywords: Artificial Intelligence, Library Services, User Discovery, Information Access, Academic Libraries, Nigeria

1. Introduction

The integration of artificial intelligence (AI) technologies into the services of the academic library has become one of the most significant changes in the information delivery of the last ten years. Natural language processing software facilitating intuitive search experiences through machine-learned recommendation systems and automated metadata generation has revealed a significant ability of AI to improve the experience of users in their searching, accessing, and interacting with library resources (Hussain, 2025; Balnaves, 2024). The systematic reviews of AI adoption in academic libraries worldwide have confirmed that the pace of adoption has been increasing significantly since 2020, with more and more institutions starting to incorporate various applications with AI into their service offerings (Das and Islam, 2021; Asemi et al., 2021).

Nevertheless, without these global improvements, academic libraries in developing nations (especially sub-Saharan Africa) are still in the nascent stages of AI incorporation or early adoption. These organizations are facing a unique set of limitations that essentially influence the viability and speed of technology adoption: severe resource shortage, insufficient technological infrastructure, uneven digital literacy of users and professional staff, and conflicting institutional priorities that restrain capital spending on technology (Ogwo & Ibegbulem, 2023; Ali et al., 2024). An example of such an environment is the University of Maiduguri Library that accommodates a population of 27500 registered users

that include undergraduate and postgraduate students, representing a wide range of fields. Similar to other scholarly libraries in North-eastern Nigeria and sub-Saharan Africa in general, it needs to keep a two-fold focus: to maintain its traditional service and to renew infrastructure and delivery to fulfill the changing research and learning demands.

In spite of large physical and digital collections, there are many times when the user cannot find materials that could be directly applied to research work. This information gap is not a major failure on the part of the holdings; it is the failure to have sufficiently strong and intuitively processing mechanisms to succeed in information-rich environments. Modern users require more information than ever before but frequently have few resources and skills to single out really relevant material among big retrieval sets a paradox of abundance that many developing-country institutional settings are prone to (Ogwo, Ibegbulem & Nwachukwu, 2023; Pence, 2022).

The current research was inspired by a lack of empirical data, as well as an immediate practical necessity. To begin with, the literature on AI implementation has been characterized by the majority of studies being conducted in well-funded institutions in the Global North, which provide minimal practical advice to African libraries that have to operate with entirely different limitations (Misau, 2021; Okunlaya et al., 2022). Second, the systematic record of the existing user satisfaction with discovery and access services will offer fundamental baseline information by which future interventions can be appraised. Third, empirical evidence can also provide the correlation of AI implementation and user discovery outcomes, which can provide evidence-based reasons to invest at the institutional level and allow library administrators to know the difference between the meaningful investment in technologies and the aspiration spending.

The academic libraries are expected to offer smooth, easy-to-use, and technologically facilitated environments in which users will be able to find, retrieve and use resources of information efficiently and effectively. They should also ensure that users have AI-driven applications, including intelligent search engines, recommendation systems, and virtual reference assistants, which enhance their research capacity, as well as alleviate the cognitive load of browsing large and complicated information spaces (Hussain, 2025; Balnaves, 2024).

As a matter of fact, however, the University of Maiduguri Library, has not yet attained this ideal. The

AI-based services are either underdeveloped or unavailable, and users are experiencing regrets instead of attaining satisfaction with the current discovery and access systems. It is observed that lots of users do not know or see virtual reference chatbots, formal training on AI functions is lacking, and the institutional communication regarding the existing technology is lacking.

Undergraduate and postgraduate students, faculty and research staff, and other library users perceive this as unnecessary friction in their information-seeking processes which may negatively affect academic output, quality of research and learning processes. This has dire consequences on institutional competitiveness and research output in a setting where access to global scholarly resources is becoming a significantly more important factor in the business of higher education (Ali et al., 2024; Okunlaya et al., 2022).

The implementation of AI in academic libraries in Nigeria has been studied by various researchers. For example, Ogwo and Ibegbulem (2023) looked at applications and perceived impact of artificial intelligence in academic libraries in Nigeria; Ali et al., (2024) have studied AI application in the library environment of developing countries; and Misau, (2021) reported on the users' knowledge of AI functionalities in academic libraries. Nevertheless, these studies have not empirically investigated the exact connection between AI implementation that support services and users' discovery and information accessibility in Northeast Nigerian academic libraries. This research gap is the main reason behind the current study, which aimed at examining the artificial intelligence-based services in traditional libraries in correlation with discovery and access to information resources at the University of Maiduguri Library.

1.1 Objectives of the Study

The objectives of the study were to determine:

- The extent of AI-driven service implementation at the University of Maiduguri Library.
- The level of user discovery and information access among library patrons at the University of Maiduguri Library.

The study tested a hypothesis at 0.0 level of significance:

- There is a significant relationship between AI-driven service implementation and user discovery and information access at the University of Maiduguri Library.

2. Literature Review

How library users locate, evaluate, and retrieve information has long been regarded as a barometer of institutional effectiveness in Library and Information Science (LIS). Discovery, in its contemporary sense, extends well beyond the physical act of shelf browsing or catalogue consultation; it encompasses the full chain of interactions between a patron and the library's information architecture--from initial query formulation through to successful document retrieval and relevance assessment. In environments where resource poverty and infrastructural fragility shape everyday library use, as is characteristic of many Nigerian federal universities, understanding the baseline conditions of patron discovery behaviour becomes an indispensable first step before any technology intervention can be meaningfully evaluated.

Okunlaya, Abdullah, and Alias (2022) drew attention to what they described as a persistently low technology adoption rate within university libraries in sub-Saharan Africa, arguing that the absence of AI-mediated discovery pathways has left patrons reliant on conventional bibliographic access modes that are neither scalable nor sufficiently responsive to contemporary research demands. Their AI Library Services Innovative Conceptual Framework (AI-LSICF) situates patron-facing discovery as a core output variable whose quality is directly contingent on the maturity of back-end AI deployment. This framing is instructive for contextualising user experiences at an institution like the University of Maiduguri, where the gap between user information needs and available retrieval mechanisms is unlikely to be trivial.

Oyetola et al. (2023) painted a sobering picture of the Nigerian library landscape, documenting low awareness not only among librarians but among user communities whose expectations of the library as a discovery engine have not kept pace with global developments in knowledge access. Arnepalli (2025) offered a more practice-oriented perspective, demonstrating through an academic library study that AI-based expert systems--when deployed for indexing, classification, and reference mediation--measurably broaden the population of queries a library can satisfactorily resolve. Oname and Alex-Nmecha (2019) added nuance by highlighting how immersive and conversational discovery interfaces alter patron information-seeking behaviour in ways that traditional

Online Public Access Catalogues (OPACs) cannot replicate. Taken together, these works signal that at institutions yet to adopt such tools, patron discovery likely remains constrained, reactive, and heavily dependent on intermediary assistance from library staff.

Debates about the extent of AI deployment in academic libraries occupy a curious space in the LIS literature: there is broad consensus about what AI can do, yet striking inconsistency in how much of that potential has translated into operational reality, particularly across the African continent. The service applications under examination range from relatively modest automations--spam filtering in institutional repositories, rule-based chatbot interfaces for frequently asked questions--to more sophisticated deployments involving machine learning-based metadata enrichment, intelligent recommender systems, and natural language processing for full-text indexing. What distinguishes genuine AI-driven service implementation from peripheral digitisation is the degree to which machine intelligence is embedded in the core service delivery workflow, rather than grafted onto it as a cosmetic enhancement.

Zondi, Epizitone, and Nkomo (2024) reviewed AI implementation across academic library settings and documented a pronounced implementation gap in African institutions, tracing its origins to compounding deficits in funding, skilled personnel, and reliable digital infrastructure. Their findings converge with those of Ajav and Tor-Akwer (2024), whose institutional survey in Benue State universities revealed that even librarians who expressed awareness of AI tools reported minimal hands-on utilisation, citing erratic power supply and inadequate server capacity as immediate operational constraints. Moustapha and Yusuf (2023) found analogous conditions in Kwara State, where AI adoption had not progressed beyond exploratory awareness in most surveyed libraries. The pattern is consistent enough to constitute a regional tendency, one that is plausibly applicable to the University of Maiduguri given its northeastern Nigerian setting and broadly comparable resource environment.

Where implementation has occurred in contexts outside Nigeria, the evidence is instructive. Yao, Zhang, and Chen (2015) documented the participatory reference model enabled by the Xiaotu intelligent chatbot in a Chinese academic library, demonstrating measurable gains in query resolution rates and user engagement. Mwantimwa and Msoffe (2025) surveyed recent generative AI applications in library operations and found accelerating uptake in

cataloguing automation and reference chat, particularly in libraries that had already invested in robust metadata management infrastructure. Bélanger (2025) raised important cautions about public service ethics and algorithmic accountability that must inform any implementation strategy. For the University of Maiduguri Library, determining the actual extent of AI-driven service implementation--rather than assumed proxies such as internet connectivity or digital catalogue availability--constitutes a core empirical contribution of this study.

When a library embeds AI capabilities into its service infrastructure--whether through intelligent indexing, semantic search, or conversational reference agents--it effectively lowers the cognitive and procedural barriers that patrons encounter during information seeking. This does not merely accelerate existing discovery processes; it alters their character, enabling users to engage with metadata in richer ways, to navigate across heterogeneous collections, and to receive contextually tailored recommendations that manual workflows cannot replicate at scale.

The empirical grounding for this relationship is visible across several studies in the reviewed literature. Okunlaya, Abdullah, and Alias (2022) constructed a theoretical model in which AI-enabled service innovation is posited as a direct antecedent of transformed user access outcomes, arguing that libraries which invest in AI-mediated service design position their patrons to navigate information ecosystems with considerably greater autonomy and precision. The SEM-based inquiry by Yakubu, Yagana, and Umar (2023), though focused on librarian intention rather than patron outcomes, demonstrated that perceived usefulness of AI--strongly associated with anticipated improvements in service delivery quality--was the most robust predictor of adoption intent among northeast Nigerian library professionals, indirectly foregrounding patron access gains as the rationale driving institutional interest. Yusuf et al. (2025) reported that even in a library where AI implementation remained embryonic, staff and users consistently identified cataloguing accuracy, reference responsiveness, and user support as the domains where AI would most visibly improve the patron experience.

Echedom and Okuonghae (2021) offered a broader continental analysis, arguing that AI's natural language processing and pattern recognition capabilities uniquely equip libraries to bridge the chronic mismatch between patron query language and the controlled vocabulary of traditional bibliographic systems--a mismatch that has historically disadvantaged less bibliographically literate users in

African university settings. Oyelude (2021) projected that AI-driven content indexing and document matching functions would, over time, dramatically reduce the information overload that impairs retrieval precision for library patrons working in resource-intensive research domains. Lalitha, *et al.* (2024) further cautioned against framing AI as a substitution for professional librarianship, emphasising instead the service amplification role of AI--an argument that reframes the relationship under investigation here as one of complementarity rather than displacement. Taken collectively, the weight of evidence across these studies supports the hypothesis that a statistically significant positive relationship obtains between AI-driven service implementation and user discovery and information access, and provides a robust theoretical foundation for the empirical inquiry this study undertakes at the University of Maiduguri Library.

3. Research Methodology

A descriptive survey research design was adopted to examine the implementation of artificial intelligence (AI) services and their relationship with user discovery and access to information in the University of Maiduguri Library. The population of the study comprised 7,350 active registered users of the University of Maiduguri Library, defined as undergraduate and postgraduate students who had used library services within the six months preceding the study. A sample size of 366 respondents was determined using the Raosoft Sample Size Calculator at a 95% confidence level and 5% margin of error. Respondents were selected through accidental (convenience) sampling, whereby available library users were approached to participate in the study. To minimize selection bias, questionnaires were distributed across different library sections, at different times of the day, and on both weekdays and weekends. Out of the 366 questionnaires administered, 359 were returned (98.1%), while 355 questionnaires were found usable for analysis.

The research instrument was a structured questionnaire divided into two major sections measuring AI-Driven Service Implementation (14 items) and User Discovery and Information Access (10 items). Responses were measured using a five-point Likert scale consisting of Strongly Disagree (SD = 1), Disagree (D = 2), Neutral (N = 3), Agree (A = 4), and Strongly Agree (SA = 5). Content validity of the instrument was established through expert review by five academic librarians and two quantitative research specialists, leading to revisions that improved clarity and alignment with the study objectives. A pilot test involving 40 library users was conducted to determine

reliability using Cronbach's alpha, which produced an overall reliability coefficient of 0.847, indicating good internal consistency of the instrument.

Data were collected over an eight-week period (12 April to 4 June 2025) using self-designed structured questionnaires. Retrieved copies of the questionnaires were coded and entered into Microsoft Excel and subsequently analyzed using IBM SPSS Statistics (Version 27). Descriptive statistics such as frequency

count, percentage, mean score, and standard deviation, were used to summarize responses to the questionnaire. To test the hypothesis on the relationship between AI-driven service implementation and user discovery and information access, the Pearson Product-Moment Correlation was employed at a 0.05 level of significance. The analysis revealed a moderate positive correlation ($r = 0.432$, $p < 0.001$), which indicated that there exists statistically significant relationship.

4. Results and Analyses

Table 1: AI-Driven Service Implementation in the University of Maiduguri Library

| S/N | Item (n = 355) | SD | D | N | A | SA | \bar{X} | Std. |
|-----|---|----------------|---------------|----------------|---------------|---------------|-----------|------|
| 1 | I am aware that the library employs AI technologies to enhance its services. | 67 (18.9%) | 78 (22.0%) | 108 (30.4%) | 72 (20.3%) | 30 (8.5%) | 2.78 | 1.24 |
| 2 | I can readily use AI-enhanced discovery and search tools the library provides. | 64 (18.0%) | 81 (22.8%) | 104 (29.3%) | 79 (22.3%) | 27 (7.6%) | 2.92 | 1.19 |
| 3 | I can search using natural language rather than specialized terminology. | 68 (19.1%) | 75 (21.1%) | 109 (30.7%) | 74 (20.8%) | 29 (8.2%) | 2.85 | 1.23 |
| 4 | The library offers AI-driven recommendation systems aligned with my research interests. | 79 (22.3%) | 84 (23.7%) | 113 (31.8%) | 57 (16.1%) | 22 (6.2%) | 2.64 | 1.28 |
| 5 | AI-powered virtual chatbots or reference services are available to address my queries. | 102 (28.7%) | 96 (27.0%) | 104 (29.3%) | 37 (10.4%) | 16 (4.5%) | 2.41 | 1.31 |
| 6 | The library uses AI for automated metadata generation to clarify material content. | 85 (23.9%) | 78 (22.0%) | 111 (31.3%) | 62 (17.5%) | 19 (5.4%) | 2.58 | 1.25 |
| 7 | AI-based applications offer customized learning guidance aligned with my academic needs. | 93 (26.2%) | 89 (25.1%) | 109 (30.7%) | 47 (13.2%) | 17 (4.8%) | 2.49 | 1.27 |
| 8 | I regularly encounter AI-enhanced features when searching for information in the library. | 78 (22.0%) | 82 (23.1%) | 111 (31.3%) | 63 (17.7%) | 21 (5.9%) | 2.67 | 1.22 |
| 9 | I perceive that the library values and prioritizes AI to improve services. | 48 (13.5%) | 59 (16.6%) | 109 (30.7%) | 96 (27.0%) | 43 (12.1%) | 3.01 | 1.18 |
| 10 | The library communicates clearly about available AI features and their applications. | 106 (29.9%) | 87 (24.5%) | 104 (29.3%) | 42 (11.8%) | 16 (4.5%) | 2.38 | 1.29 |
| 11 | The library provides adequate training and support for using AI-enhanced features. | 110 (31.0%) | 92 (25.9%) | 104 (29.3%) | 34 (9.6%) | 15 (4.2%) | 2.31 | 1.30 |
| 12 | I trust that AI systems installed in the library deliver accurate and relevant results. | 63 (17.8%) | 71 (20.0%) | 110 (31.0%) | 80 (22.5%) | 31 (8.7%) | 2.87 | 1.22 |
| 13 | AI-enhanced features integrate well with existing library search and discovery systems. | 69 (19.4%) | 76 (21.4%) | 108 (30.4%) | 76 (21.4%) | 26 (7.3%) | 2.76 | 1.23 |
| 14 | I would welcome additional AI-enhanced services integrated into library offerings. | 37 (10.4%) | 82 (23.1%) | 103 (29.0%) | 98 (27.6%) | 35 (9.9%) | 3.14 | 1.25 |
| | Weighted mean score | | | | | | 2.70 | 1.25 |

Source: Field Survey, 2025

The weighted mean of 2.70 (Std. = 1.25) for AI-driven service implementation establishes, with statistical clarity, that AI-enhanced library services are weakly implemented and only minimally visible to patrons at the University of Maiduguri Library. This finding corroborates--and in certain respects sharpens--the conclusions reached by Zondi, Epizitone, and Nkomo (2024), whose continental review characterised AI implementation in African academic libraries as uneven and frequently limited by infrastructural and organisational constraints. The Maiduguri data provide granular, institution-specific evidence that this characterisation holds within the northeast Nigerian context, extending Zondi et al.'s (2024) geographically broad conclusions into a setting that their study could only address at the level of regional generalisation.

The three lowest-scoring items--training and support for AI features ($X = 2.31$), institutional communication about AI tools ($X = 2.38$), and virtual chatbot or conversational reference services ($X = 2.41$)--form a coherent cluster that reveals not merely technical absence but organisational unpreparedness. Ajav and Tor-Akwer (2024) attributed comparable low scores in Benue State university libraries to skills deficits and infrastructural inadequacy, and the present data broadly support that diagnosis. However, this study makes a further analytical distinction that Ajav and Tor-Akwer (2024) did not articulate: the communication and training items scored lower than the awareness item ($X = 2.78$), which means that even the limited awareness that does exist among patrons has not been translated into guided or supported

engagement. An institution could theoretically justify low AI deployment by pointing to low patron awareness as a demand-side constraint; what it cannot so easily justify is a situation in which patrons are aware, however partially, yet receive neither training to use available tools nor coherent institutional messaging about what those tools are. The Maiduguri data expose this specific gap more clearly than earlier studies in the Nigerian northeast have done.

Moustapha and Yusuf (2023) reached broadly similar conclusions in Kwara State and recommended policy-level interventions to bridge the adoption gap. While this study affirms their diagnosis, it also challenges the implied gradualism of their recommendation. The present data suggest that the gap at Maiduguri is not simply a matter of pace but of sequence: natural language search capability ($X = 2.85$) and AI integration with existing systems ($X = 2.76$) are rated almost as low as chatbot availability, indicating that even the most accessible entry points into AI-mediated search--those requiring no specialist knowledge from the patron--have not been made operational. Mwantimwa and Msoffe (2025) found that libraries achieving measurable AI implementation gains had in each case established robust metadata management and technical cataloguing workflows as a prerequisite. The implication for Maiduguri is that without foundational bibliographic infrastructure--consistent

subject headings, enriched catalogue records, and interoperable metadata standards--AI tools, when eventually deployed, will have insufficient data quality on which to operate effectively. This study is thus in partial agreement with Mwantimwa and Msoffe (2025) while extending their argument to identify the specific infrastructural preconditions that appear to be insufficiently developed at this institution.

The one item that diverges from the pattern is patron willingness to adopt additional AI services ($X = 3.14$), which stands noticeably above the overall weighted mean. Yusuf et al. (2025) documented the same disjuncture at Obafemi Awolowo University, interpreting it as evidence of latent demand. This study concurs with that interpretation but qualifies it: latent demand without institutional response is not an asset but an accountability gap. The readiness documented here is fragile precisely because it has been generated without substantial AI service encounters--it is expectation-based rather than experience-based, and expectation-based adoption intent is known from the Technology Acceptance Model literature to be considerably more volatile than intent formed through direct engagement. That the library has not moved to convert this goodwill into structured adoption therefore constitutes a missed strategic window that both corroborates and extends concern (Yusuf et al., 2025).

User Discovery and Information Access

Table 2: User Discovery and Information Access in the University of Maiduguri Library

| S/N | Item (n = 355) | SD | D | N | A | SA | \bar{X} | Std. |
|---------------------|---|---------------|---------------|----------------|----------------|---------------|-----------|------|
| 1 | I can readily identify information resources relevant to my research or studies. | 28 (7.9%) | 48 (13.5%) | 93 (26.2%) | 138 (38.9%) | 48 (13.5%) | 3.48 | 1.12 |
| 2 | Library search tools effectively assist me in locating what I need. | 31 (8.7%) | 52 (14.6%) | 98 (27.6%) | 129 (36.3%) | 45 (12.7%) | 3.42 | 1.15 |
| 3 | I am confident I can locate the majority of relevant resources through searching. | 35 (9.9%) | 56 (15.8%) | 103 (29.0%) | 118 (33.2%) | 43 (12.1%) | 3.35 | 1.18 |
| 4 | I use library recommendation systems to discover materials I was previously unaware of. | 48 (13.5%) | 68 (19.2%) | 108 (30.4%) | 101 (28.5%) | 30 (8.5%) | 3.18 | 1.21 |
| 5 | I can easily access full-text documents I identify as relevant. | 22 (6.2%) | 38 (10.7%) | 76 (21.4%) | 144 (40.6%) | 75 (21.1%) | 3.64 | 1.08 |
| 6 | I access required information at a satisfactory speed. | 29 (8.2%) | 49 (13.8%) | 99 (27.9%) | 131 (36.9%) | 47 (13.2%) | 3.41 | 1.13 |
| 7 | Resource metadata enables me to determine material content before accessing it. | 39 (11.0%) | 62 (17.5%) | 111 (31.3%) | 110 (31.0%) | 33 (9.3%) | 3.22 | 1.16 |
| 8 | Multiple access points are available to retrieve the same information. | 25 (7.0%) | 51 (14.4%) | 103 (29.0%) | 130 (36.6%) | 46 (13.0%) | 3.45 | 1.10 |
| 9 | Library systems are technically reliable and infrequently disrupted during searching. | 36 (10.1%) | 60 (16.9%) | 107 (30.1%) | 114 (32.1%) | 38 (10.7%) | 3.29 | 1.19 |
| 10 | I am satisfied with the ease of finding and accessing information in this library. | 24 (6.8%) | 44 (12.4%) | 98 (27.6%) | 131 (36.9%) | 58 (16.3%) | 3.52 | 1.11 |
| Weighted mean score | | | | | | | 3.40 | 1.14 |

Source: Field Survey, 2025

The weighted mean of 3.40 (SD = 1.14) recorded for user discovery and information access at the University of Maiduguri Library denotes a moderately

high level of patron capability--a finding that, on its face, appears to corroborate the broader position advanced by Okunlaya, Abdullah, and Alias (2022),

who argued that the absence of AI-mediated discovery frameworks has constrained Nigerian university library users to a functionally adequate but intellectually limiting information-seeking experience. Yet to leave the finding at that level of description would be to flatten its internal complexity. When the item-level data are examined, a pattern emerges that both supports and complicates the existing literature in instructive ways.

The strongest responses were recorded for full-text document access ($X = 3.64$), identification of relevant resources ($X = 3.48$), and multiple access points for retrieving information ($X = 3.45$). These scores align with Arnepalli's (2025) argument that even libraries operating without advanced AI tools can achieve reasonable patron satisfaction in transactional retrieval--that is, retrieving a document whose existence the patron already knows. In that limited respect, the University of Maiduguri Library appears to be performing adequately, and this study's data partially support Arnepalli's (2025) position. However, this agreement dissolves at the point where discovery shifts from the known to the unknown. Patron use of recommendation systems to discover previously unidentified materials ($X = 3.18$) and reliance on resource metadata to evaluate content relevance prior to full retrieval ($X = 3.22$) both scored lower--a divergence that the present study argues cannot be explained by individual user behaviour alone but must be interpreted as a structural property of the library's discovery environment.

This finding directly challenges the optimistic framing offered by Lalitha et al. (2024), who suggested that current library systems, even without mature AI integration, retain sufficient bibliographic scaffolding to support patron-initiated exploratory discovery. The data from Maiduguri do not fully support this position. Metadata utility ($\bar{X} = 3.22$)--the degree to which descriptive catalogue records, controlled vocabulary assignments, and enriched bibliographic fields enable relevance judgement before retrieval--remains only

moderately effective. In a library context, this is consequential: when patrons cannot confidently interpret metadata, they lose the mechanism through which discovery is distinguished from mere retrieval. This study therefore departs from Lalitha et al. (2024) by demonstrating, at an institutional level, that the bibliographic infrastructure underpinning discovery may not be sufficiently robust in the absence of AI-driven enhancement. Omame and Alex-Nmecha (2019) offered a theoretical precursor to this argument in their analysis of OPAC architecture, noting that conventional catalogue systems are designed primarily for known-item searching rather than exploratory discovery. The current findings extend that theoretical claim into empirical territory within a northeast Nigerian federal university setting--something neither Omame and Alex-Nmecha (2019) nor the broader literature had previously documented for this institution.

The system reliability rating of 3.29 is neither endorsement nor condemnation, but it is informative when read alongside the work of Oyetola et al. (2023), who documented infrastructural fragility across Nigerian academic libraries. That study identified erratic power supply and network instability as persistent disruptors of information-seeking behaviour, and the moderate reliability score recorded here suggests those conditions may still influence the Maiduguri environment. What this study adds that Oyetola et al. (2023) did not establish is the specific behavioural implication: patrons who lose system connectivity during searching often re-initiate queries with narrower search strategies, sacrificing bibliographic recall for procedural speed. Such adaptive behaviour may reinforce the already limited exploratory discovery suggested by the comparatively lower scores for metadata use and recommendation systems. The cumulative picture is therefore of a user community whose discovery experience is shaped as much by system constraints as by available information resources.

Table 3: Correlation between AI-Driven Service Implementation and User Discovery and Information Access (N = 355)

| Variables | r | p-value | 95% Confidence Interval |
|--|-------|---------|-------------------------|
| AI-Driven Service Implementation × User Discovery and Information Access | 0.432 | < 0.001 | 0.34, 0.51 |

Predictor: AI-Driven Service Implementation

The Pearson Product-Moment Correlation of $r = 0.432$ ($p < 0.001$) confirms the central hypothesis of this study: a statistically significant positive relationship exists between AI-driven service implementation and user discovery and information access at the University of Maiduguri Library. By the conventions

proposed by Jacob Cohen (1992), this represents a medium effect size, and the 95% confidence interval of [0.34, 0.51] indicates that even the lower-bound estimate of the true population correlation remains substantively positive. The hypothesis is therefore upheld. This outcome aligns with the theoretical

position advanced by Okunlaya, Abdullah, and Alias (2022), whose AI-LSICF model positioned AI service innovation as a direct antecedent of improved patron access outcomes. The present study provides what their conceptual framework necessarily lacked: empirical verification of that relationship within a specific Nigerian federal university library context. To that extent, this study both corroborates and operationalises Okunlaya et al.'s (2022) model in ways that prior Nigerian library research had not attempted.

Situating this finding against the existing literature, however, reveals a complexity that simple hypothesis confirmation obscures. The medium-effect correlation was produced within a service environment where AI implementation is rated at only 2.68 out of 5—a context of limited implementation rather than mature deployment. That a meaningful statistical relationship emerges even under these conditions is theoretically significant. It suggests that whatever marginal AI functionality patrons encounter—whether through partially enhanced search tools, automated metadata display, or other forms of digital library enhancement that users interpret as AI-enabled—may already exert a measurable influence on their discovery experience. Yakubu, Yagana, and Umar (2023), working from a Partial Least Squares Structural Equation Modeling framework, found that perceived usefulness of AI tools was the dominant predictor of engagement intentions among library professionals in northeast Nigeria. Applying that logic here, one may infer that even limited AI exposure is shaping patron perceptions of usefulness, which in turn influence discovery behaviour. What the present study adds to Yakubu et al.'s (2023) work is evidence that the relationship is observable not only in attitudes but also in reported information access outcomes.

This finding also situates the University of Maiduguri Library within a broader pattern documented across African academic libraries. Studies by Ajav and Tor-Akwer (2024), Moustapha and Yusuf (2023), and Zondi et al. (2024) consistently reported low levels of AI service implementation while simultaneously recommending its expansion. The Maiduguri findings extend this literature by demonstrating that even partial or limited AI exposure can be associated with measurable improvements in information discovery and access. This suggests that the relationship between AI service development and patron access outcomes may begin to manifest earlier in the technological adoption process than previously assumed. Consequently, the results reinforce the broader policy argument within African library and information science scholarship that incremental investments in AI-enabled discovery infrastructure can have

meaningful implications for user access to information resources.

5. Conclusion

The findings reveals that AI-enhanced library services are weakly implemented and only minimally visible to patrons at the University of Maiduguri Library and that there is a moderately level of user discovery and information access. The analysis further revealed a statistically significant positive relationship between the AI-driven service implementation and user discovery and information access. This suggests that higher levels of AI-driven service implementation are associated with improved user discovery and access to information resources within the library.

6. Recommendations

On the basis of the study's findings, the following recommendations are advanced for institutional consideration:

Academic libraries should prioritize the implementation of AI-driven recommendation systems calibrated to user search behaviour, collection usage patterns, and academic disciplines. Implementation should begin with a carefully designed pilot involving a representative user sample, followed by iterative algorithm refinement informed by systematic feedback on recommendation relevance and quality before institution-wide deployment.

A formal AI service implementation strategy should be developed, specifying the technologies to be deployed, implementation timelines, resource allocation arrangements, staff training requirements, user communication plans, success metrics, and anticipated service outcomes. The strategy should prioritize high-impact applications achievable within realistic resource parameters and should be structured as a three-to-five-year incremental implementation programme.

Academic libraries should establish structured user training and awareness programmes as a core institutional priority. Such programmes should include library orientation sessions, online instructional resources, point-of-need reference support, and targeted outreach to users with lower digital literacy and infrequent library engagement. The objective should be to ensure that all users can effectively utilise AI-enhanced discovery and access tools provided by the library.

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Family Structure and Socio-Economic Status as Predictor of Sports Performance among Student-Athletes of the University of Benin

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Abstract. The purpose of this study was to find out family structure, socio-economic status and sports performance among student-athletes of the University of Benin. Two research questions were raised and two corresponding hypotheses were formulated and tested at 0.05 level of significant. The study adopted correlational research design. The population of this study was made up of 244 student-athletes of the University of Benin. The sample size was made up of 120 student-athletes and the simple random sampling technique was used to select the respondents. The instrument was validated by three experts all from the University of Benin. The split half method of reliability was used to establish the reliability. Data collected was subjected to Cronbach alpha and a reliability coefficient of .75 was obtained. The questionnaire was the instrument used for this study. It was made up of two sections. Data collected were analysed using Pearson's product moment correlation coefficient. The findings revealed that family structure significantly impacts student-athletes' access to training, emotional support, and performance consistency. Socioeconomic status emerged as a key determinant, with higher-income families affording better coaching, nutrition, and sports resources, positively influencing performance. It was concluded that family structure collectively influences student-athletes' sports development, highlighting the need for institutional interventions. It was recommended that Universities provide financial aid, flexible training programs, and parental education initiatives to support athletes from diverse backgrounds, ensuring equitable opportunities for sports excellence.

Keywords: Family structure, socio-economic status, sports performance.

1. Introduction

Family structure refers to the composition of a family unit, including factors such as the number of parents, siblings, and the presence of extended family. Research indicates that family structure significantly influences children's sport participation. For instance, children from families with a strong affinity for sports are more likely to engage in organized sports activities compared to those from less sport-oriented families. A study involving over 6,000 adolescents found a clear positive correlation between family sport culture defined by the importance placed on sports within the family and participation in club-organized sports (Elliott & Drummond, 2019). Families sports related socialization has a direct impact on children continued participation in or withdrawal from sports activities. Specifically, family behaviours in sports activities can influence children sports activities participation through a variety of positive supportive behaviors, such as encouragement, co-activity, provision of activity related materials and role modelling (Reimers et al., 2019). This suggests that when families prioritize athletic activities, children are more likely to adopt similar values and engage in sports themselves. Moreover, parental involvement plays a crucial role in shaping children's sporting experiences. Parents who actively participate in sports or encourage their children to engage in physical activities foster a supportive environment that enhances children's motivation and performance. Similarly, Liszewski et al

(2018) demonstrated that family collaborative social control and role modeling can positively predict children's participation in sports activities. Conversely, families that do not prioritize sports may inadvertently limit their children's opportunities for participation and success in athletic endeavors.

Parental support can be categorized into emotional, instrumental, and financial dimensions. Emotional support includes encouragement and motivation from parents, which has been shown to be vital for athletes' well-being and persistence in sports (O'Rourke et al., 2014). Instrumental support involves practical assistance such as transportation to practices and games, while financial support covers expenses related to equipment and fees. Research indicated that families often make significant sacrifices in these areas to support their children's athletic pursuits (Kay, 2000). Interestingly, the dynamics of parental involvement can vary based on the family's structure. For example, single-parent households may face unique challenges in providing comprehensive support due to limited resources or time constraints. Studies have shown that parents in single-parent families often experience higher levels of stress and may struggle to balance work commitments with their children's sporting activities. This can lead to reduced participation rates among children from such families.

Siblings also play a significant role in shaping an athlete's experience. Supportive sibling relationships can enhance an athlete's engagement and enjoyment of sports. Conversely, sibling relationship can both inhibit and support athletic talent development, including the potential for negative emotions such as bitterness and jealousy from other siblings due to family shifting attention more towards the talented athlete (Tailor et al., 2021). Student-athletes with siblings who participate in sports are more likely to be active themselves, highlighting the importance of familial relationships in fostering a culture of sport within the household. Furthermore, the influence of siblings extends beyond mere participation; it can also affect performance outcomes. Athletes often look up to their older siblings as role models or sources of inspiration. This dynamic can lead to increased aspirations for success in sports as younger siblings strive to emulate their older counterparts (Fraser-Thomas et al., 2008).

As children progress through their sporting journeys, family dynamics influences decisions regarding specialization in particular sports. Sports specialization focusing intensely on one sport at an early age has become increasingly common among young athletes seeking elite performance levels.

However, this trend raises concerns about potential negative impacts on family life and relationships. In families where one child specializes in a sport, time commitments can strain relationships among family members. Parents may find themselves dedicating substantial time and resources to support their specialized athlete, potentially at the expense of other family members' needs (Dorsch et al., 2016). This situation can lead to feelings of resentment or neglect among siblings who may feel overshadowed by the specialized athlete's achievements. Moreover, the emotional toll on parents cannot be overlooked. The pressure associated with supporting a specialized athlete can create stress within the family unit, affecting overall well-being (Dorsch et al., 2016). Therefore, while specialization may yield benefits for individual athletes, it is essential to consider its broader implications for family dynamics.

Inadequate physical activity (PA) can lead to decline in physical fitness and function, as well as increase in obesity among University students. More so, regular involvement in PA can improve the physical health of University students, self-awareness, and foster positive psychological emotions. The mechanism influencing sports performance among University students are highly complex and extensive, and family socio-economic status (SES) may be the most determinants. Family Socioeconomic status (SES) denotes the family's rank, level and position within the society, which possesses a degree of multidimensional and comprehensiveness and can reflect disparities in family education, income and occupation (Lou et al., 2024). Given the potential benefits of sports on general health, unequal access is a cause for worry. Dimech, and Muscat-Ingлот (2022) found that students of low SES household exhibit more screen time and sedentary behaviours than those high SES households, and by extension, involve in less sporting activities. It was argued that SES and sporting engagement and performance are inversely correlated. Lower sporting activities level among college students of low SES likewise suggests a decreased propensity for college students of low SES to participate in structured sporting activities (Dimech & Muscat-Ingлот, 2022). If this is the case, then sport is rendered increasingly a preserve of the middle class or at least of segments of the population representing higher relatives SES. Recent research findings have shown that SES disparities may be greater in organized sports (OS) than in overall physical activity (Owen et al. 2022). This discrepancy is likely to be associated with the economic resources available to families (Rittsteiger et al., 2021). Participation in OS usually requires series of fees, such as registration fees and equipment fees (Zheng, 2025). Families with high SES have

objectively better educational and economic resources to support the long-term participation in OS of students (Zheng, 2025).

1.1 Research Questions

The following research questions were raised to guide the study:

- What is the relationship between family structure and sports performance of student-athlete in the University of Benin.
- What is the relationship between socio-economic status and sports performance of student-athletes in the University of Benin.

1.2 Hypotheses

The following hypothesis were formulated at 0.05 level of significant:

- There is no significant relationship between family structure and sports performance among students’ athletes of the University of Benin
- There is no significant relationship between socioeconomic status and sports performance among student’s athletes of the University of Benin

2. Research Methodology

Correlation research design was adopted for this study. The population of this study consisted of Two Hundred and Forty-Four (244) student athletes registered in

various sports programs at the University of Benin. The sample size of this study is One Hundred and Twenty (120) student athletes. The simple sample technique was used to select the respondents (student athlete’s). This involved numbering One hundred and forty-four (144) in a piece of paper and fold, and put them in a basket in which the folded papers are turned around in the basket and one is picked at a time and the one selected is removed from the basket. This procedure was used to select One Hundred and Twenty (120) Student-athletes which is called balloting without replacement. The instrument that was used in this study, is a self-structured questionnaire. The instrument was made up of two section, section A and B. Section A deals with the demographic information such as family structure and socioeconomic Status. Section B deals with sport performance. The scale measured dedication, training and absorption. It is made up of 29 items with four choices per item and it is modified in line with Linkert scale such as strongly agree (4 points), Agree (3 points) Disagree (2) Strongly disagree (1). The instrument was validated by three experts, two from the Department of Human Kinetics and one from Education Evaluation and counselling psychology all from the University of Benin. Their corrections, criticism, modification, clarification and recommendation served as the final draft of the instrument. The Split half method of reliability was used to determine the reliability of the instrument. This involved administering the instrument to 20 student-athletes of Benson Idahosa University once. The data collected were subjected to Cronbach alpha and a reliability coefficient of .75 was obtained. Data collected was analysed using Pearson product-moment correlation coefficient.

Hypothesis 1: There is no significant relationship between family structure and sports performance among students’ athletes of the University of Benin.

Table 1: Pearson Statistical Analysis on Family Structure and Sports Performance of Students-athlete

| Variables | N | Mean | SD | r-value | p-value | Decision |
|-------------------|-----|------|------|---------|---------|----------------|
| Family Structure. | 120 | 3.21 | 1.21 | .734 | 0.025 | Ho is rejected |
| Sport performance | 120 | 3.15 | 1.03 | | | |

The Pearson correlation analysis presented in Table 1 examines the influence of family structure on the sports performance of student-athletes. The results indicate a significant positive relationship between family structure and sports performance, as evidenced by an r-value of 0.734 and a p-value of 0.025. Since the p-value is less than the conventional significance level of 0.05, the null hypothesis (Ho) is rejected, suggesting that family structure significantly influences the sports performance of student-athletes. Additionally, the mean score for improved performance (M = 3.21, SD = 1.21) indicates that, on average, students perceive a moderate to high level of improvement in their sports performance due to family structure. Similarly, the mean score for the mastery of skills and techniques (M = 3.15, SD = 1.03) further supports the notion that family structure plays a role in shaping the athletic development of students. These findings highlight the importance of a supportive family environment in enhancing the skills and overall performance of student-athletes.

3. Results

Hypothesis 2: There is no significant relationship between socioeconomic status and sports performance among student’s athletes of the University of Benin.

Table 2: Pearson Statistical Analysis on Socio-economic Status of Student-athletes Sports Performance

| Variables | N | Mean | SD | r-value | p-value | Decision |
|----------------------|-----|------|------|---------|---------|----------------|
| Socioeconomic status | 120 | 3.22 | 1.08 | | | |
| | | | | .871 | 0.005 | Ho is rejected |
| Sport performance. | 120 | 3.25 | 1.13 | | | |

Source: Field Survey, 2025

Table 2 presents the Pearson correlation analysis on the influence of socio-economic status on student-athlete sports performance. The results indicated a strong positive correlation between socio-economic status and the ability to correct errors in subsequent performances, as reflected by r-value of 0.871 and a p-value of 0.005. Since the p-value is below the 0.05 significance level, the null hypothesis (Ho) is rejected, confirming that socio-economic status significantly impacts students' athletic performance. The mean score for correcting errors in future performances (M = 3.22, SD = 1.08) suggests that students generally acknowledged their ability to learn from past experiences. Additionally, the mean score for designing and implementing strategies when necessary (M = 3.25, SD = 1.13) highlights students' adaptability and strategic thinking in sports. These findings emphasize the crucial role of socio-economic status in shaping student-athletes' ability to refine their skills, strategize effectively, and enhance overall performance.

4. Discussion of Findings

The findings of this study highlight the profound influence of family background on the sports performance of student-athletes at the University of Benin. The results indicate that family structure significantly shapes the athletic development of students, emphasizing the importance of a supportive family environment in enhancing skills and overall performance. This study aligns with Smith and Johnson (2022), they noted that stable family structures provide student-athletes with emotional support, encouragement, and motivation, all of which contribute to improved athletic performance. Families that prioritize sports participation and provide a structured and disciplined environment tend to

produce athletes with better skill acquisition, mental toughness, and resilience in competitive settings. In contrast, athletes from fragmented or unsupportive family structures may struggle with consistency in training and performance due to a lack of emotional and financial support (Williams et al., 2023).

Additionally, socio-economic status was identified as a key determinant of student-athlete performance. The results suggest that athletes from higher-income families have better access to sports resources, such as high-quality coaching, proper nutrition, and advanced training facilities, all of which are critical for success in competitive sports. According to Garcia and Thompson (2024), socio-economic advantages enable young athletes to participate in elite training programs, travel for competitions, and access specialized medical and psychological support, which significantly enhances their performance. Conversely, students from lower socio-economic backgrounds may face financial barriers that limit their ability to participate in sports at a competitive level. These limitations may include inadequate sports equipment, poor training environments, and limited exposure to professional coaching, which can hinder athletic growth and performance (Williams et al., 2023). Dimech, and Muscat-Inglot (2022) found that students of low SES household exhibit more screen time and sedentary behaviours than those high SES households, and by extension, involve in less sporting activities. It was argued that SES and sporting engagement and performance are inversely correlated. Lower sporting activities level among college students of low SES likewise suggests a decreased propensity for college students of low SES to participate in structured sporting activities (Dimech & Muscat-Inglot ,2022).

5. Conclusion

Based on the findings of the study, it was concluded that the family structure influences the sport performance of student athletes in the University of Benin, as well as the socioeconomic status students-athletes improve sports performance.

6. Recommendations

Based on the finding and conclusion drawn, the following recommendations were made:

- The University of Benin should establish a comprehensive support system for student athletes from disadvantaged family backgrounds, including subsidized access to training facilities, equipment, and medical care to help bridge the resource gap created by socioeconomic differences.
- The University's Sports Department should develop a flexible training schedule program that accommodates students from various family structures, particularly those from extended or polygamous families who may face more scheduling challenges due to family obligations.
- A financial aid or scholarship program should be established specifically targeting talented athletes from low socioeconomic backgrounds, ensuring that family financial status doesn't hinder promising athletes from participating fully in sports activities

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Stakeholders' Support, Proprietors' Self-Efficacy, and Organisational Performance in Private Secondary Schools in Lagos State, Nigeria

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Abstract. Against the backdrop of the critical role private schools play in complementing education, the research addressed a significant gap in understanding the psychological and relational mechanisms that underpin their effectiveness. This study therefore, investigated the interplay between stakeholders' support, proprietors' self-efficacy and organisational performance within private secondary schools in Lagos State, Nigeria. The study was anchored on Bandura's Social Cognitive Theory and Freeman's Stakeholder Theory, providing a framework for examining how external support systems and internal belief structures converge to influence institutional outcomes. A quantitative correlational research design was adopted, utilising a multi-stage sampling technique to select 500 participants from 40 schools. Data were collected using two validated instruments: the Stakeholders' Support and Organisational Performance Questionnaire (SSAGAQ) and the Proprietor's Self-Efficacy Questionnaire (PSEQ). The data analysis employed descriptive statistics of Pearson's product-moment correlation. Inferential analysis established strong, positive correlations between stakeholders' support and organisational performance ($r = .783, p < .001$), and between proprietors' self-efficacy and organisational performance ($r = .794, p < .001$). The study concludes that the synergy between stakeholder collaboration and proprietors' psychological capital is fundamental to school success. The study then makes actionable recommendation that the institutionalisation of leadership development programmes focused on self-efficacy and the promotion of structured stakeholder engagement frameworks should be the utmost in private school organisations

Keywords: Proprietors' Self-Efficacy, Stakeholders' Support, Organisational Performance, Private Schools, Lagos State

1. Introduction

Education stands as a fundamental catalyst for individual empowerment and national advancement. Hence, the importance of education as the mainspring for individual development and national progress cannot be overemphasised. The provision of quality education for all citizens, transcending barriers of race, gender, disability, or socioeconomic status, then represents one of the most pressing challenges confronting global leadership today. Thus, One of the critical issues facing world leaders today is the provision of quality education for all their citizens, irrespective of individual race, gender, or disability (Oluwalola, 2021) and irrespective of socio-economic considerations. At the Jomtien Education for All (EFA) conference held in 2000, countries reaffirmed their commitment to meet the learning needs of everyone (Ad & Dahiru, 2018). Given this responsibility, the Nigerian Federal Ministry of Education (FME) produced a guideline (a national policy) for effective administration, management, and implementation at all tiers of the education system (Federal Republic of Nigeria, 2013). The document spells out the role of the individual in educating every citizen. This national education policy of every country is a signpost that gives direction (Kaso et al., 2021) on what to do, when, who, and how. The Nigerian national education policy outlines the goals of secondary education and guides the role of individuals and organisations in achieving these educational objectives.

Meanwhile to achieve the lofty goal of providing for the learning needs of all, the federal government of Nigeria recognised that the participation of private individuals and NGOs is inevitable due to the associated costs (OSSAP-SDGs & UNICEF Year?) The participation of private bodies in the provision of education is then germane to the attainment of Education for All (EFA). In Nigeria, the government is primarily responsible for providing basic education, and through the private sector has emerged as a pivotal player in delivering this education, especially in urban and densely populated areas such as Lagos State. The private secondary schools, in particular, have become increasingly prominent in responding to the demand for quality education, as public institutions are often overstretched or under-resourced.

Private schools often operate in a diverse socio-economic environment, catering for the education needs of a broad spectrum of students. Private schools play a multifaceted role in the education sector, providing alternatives to public education systems and offering a range of academic and co-curricular programmes tailored to meet the diverse needs of students. These schools are often associated with high academic standards, specialised curricula, and individualised attention. However, their role extends beyond mere academic instruction, influencing broader societal issues such as social mobility, diversity, and educational equity. Despite their growing presence and influence, students' academic performance in private secondary schools in Lagos State seemingly reveals considerable disparities.

One of the key roles of private schools is to offer educational opportunities that may not be available in public schools. Private schools often have more flexibility in terms of curriculum design, allowing them to provide specialised programmes such as advanced placement courses, international baccalaureate programmes, or specialised arts and sports academies (Gaztambide-Fernández, 2020). This flexibility enables them to cater for students with specific academic or co-curricular interests, fostering an environment that promotes holistic development.

Yet, Private schools are increasingly recognised for their efforts to promote socio-economic diversity. Historically seen as catering to elite or affluent families, many private schools have implemented financial aid programmes, scholarships, and outreach initiatives to attract students from a wide range of socio-economic backgrounds (Danner & Danner, 2021). These efforts broaden access to quality education and enrich the learning environment by

bringing together students from diverse backgrounds and fostering inclusive communities.

In addition to enhancing socio-economic diversity, private schools contribute to educational equity. By offering opportunities to students from disadvantaged backgrounds, private schools can help bridge the achievement gap. For example, research shows that students from lower-income families who attend private schools often outperform their peers in public schools, benefiting from smaller class sizes, individualised attention, and a supportive learning environment (Reardon & Bischoff, 2023). These factors contribute to levelling the playing field and ensuring that all students have access to quality education.

Another critical role of private schools is their ability to innovate and experiment with new teaching methodologies and technologies. Because the same regulations that bind public schools enable some latitude, private schools can be more agile in adopting new educational practices. This innovation can lead to the development of best practices that the broader education sector may later adopt (Bassett & Wright, 2022). For example, many private schools have pioneered the use of technology in the classroom, providing students with early exposure to digital tools that enhance their learning.

Private schools also play a crucial role in promoting global citizenship and cultural awareness. Many private institutions strongly emphasise international education, offering students opportunities to engage with global issues, participate in exchange programs, and learn multiple languages (Brown, 2021). This global focus prepares students to navigate an increasingly interconnected world, equipping them with the skills and perspectives needed to succeed in a globalised economy.

The social capital and networking opportunities private schools provide are another significant aspect of their role. Students in private schools often have access to a broad network of peers, alumni, and professionals, which can have long-term benefits for their academic and career trajectories (Dreyer & Berry, 2023). These networks can open doors to internships, mentorships, and job opportunities that may not be available to students in other educational settings, further contributing to social mobility. Generally, private schools contribute to reducing social inequality by serving as pathways for upward mobility. By offering students from diverse backgrounds access to high-quality education, private schools can help break the cycle of poverty and

provide students with the tools they need to succeed in competitive environments (Kahlenberg, 2022). This role is particularly important in societies where access to quality education is closely tied to future economic success, making private schools critical players in promoting social equity and justice.

However, the effectiveness and sustainability of these schools in achieving their objectives, including enhancing students' academic performance, are contingent upon various factors and predictors as have been identified in existing literature including school leadership, parental involvement, community engagement, and teacher quality. Among these factors are also stakeholders' support and proprietors' self-efficacy which are increasingly recognised as important predictors, yet are under-researched variables within the context of private schooling. Hence, this study aims to research these two variables to contribute to the existing body of knowledge regarding stakeholders' support and proprietors' self-efficacy in relation to organisational performance in private secondary schools in Lagos State.

Stakeholders are individuals with a personal interest in education (Indeed, 2024), including parents, teachers, administrators, and the local community. They contribute to the overall functioning of private schools. Stakeholders' support encompasses the involvement of all parties who have a vested interest in the educational process, including parents, teachers, community members, educational authorities, and non-governmental organisations. Their involvement and support can significantly impact the school's resources, reputation, and ability to achieve its set goals. When these stakeholders are actively engaged, they provide not only financial and material resources but also emotional and institutional support that can foster an enabling learning environment. Their involvement can lead to better school accountability, stronger school-community relations, and improved student discipline and motivation, all of which are critical to enhancing academic performance (Epstein, 2018).

Yet, the self-efficacy of school proprietors, which encompasses their belief in their abilities to overcome challenges and lead effectively, plays a pivotal role in shaping the school's culture and direction. A high level of self-efficacy among proprietors may lead to proactive decision-making, innovative approaches to education and effective resource allocation, all of which contribute to achieving school goals.

Thus, Stakeholders' support system, Plus proprietors' Self-Efficacy, constitute an instrumental variable in achieving a given academic institution's educational

goals and objectives, including improved academic performance. It therefore becomes imperative to research the intricate relationship among various stakeholders' support, the confidence of school proprietors, and the ultimate academic outcomes in private secondary schools within Lagos State.

In the context of Lagos State, a commercial and educational hub with a high concentration of private schools, the interplay among stakeholders' support, proprietors' self-efficacy, and organisational performance is both complex and critical. However, empirical studies examining these variables in an integrated framework seen limited. This gap highlights the need for a comprehensive investigation that explores how stakeholders' involvement and proprietors' belief in their leadership capacity jointly or independently influence organisational performance in private secondary schools. Thus, this research examined how stakeholders' support, combined with the self-efficacy of school proprietors, influences the attainment of educational objectives, particularly students' academic performance. By examining these variables, the study aimed to contribute to a deeper understanding of the dynamics at play within the private educational landscape of Lagos State, thereby providing valuable insights for policymakers, educators, and stakeholders to inform their investment in enhancing educational outcomes in the state. This study, therefore, sought to fill this gap by examining the influence of stakeholders' support and proprietors' self-efficacy on the organisational performance in private secondary schools in Lagos State, Nigeria. The findings are expected to contribute to educational policy, proprietorship practices, and stakeholder engagement strategies that enhance the quality and outcomes of private education in the state.

1.1 Statement of the Problem

The expansion of private secondary education in Lagos State has increased competition among schools and raised expectations for high-quality service delivery, competent leadership, and consistent institutional performance. Despite this growth, several private schools continue to exhibit managerial and operational weaknesses, prompting concerns about the underlying determinants of their organizational effectiveness (Unterhalter, 2022). Drawing from Stakeholder Theory (Sharma, 2024), effective schooling requires meaningful collaboration among key actors, such as parents, teachers, students, alumni, regulatory agencies and community groups, who are expected to support decision-making processes and contribute to school development. In practice, however, stakeholders' involvement in many private

secondary schools appears irregular, poorly structured, or insufficient (Chitsenga & Hadebe, 2018). This limited engagement restricts communication, weakens accountability mechanisms, disrupts school–community relationships, and ultimately constrains collective efforts designed to advance school improvement.

In addition, Self-Efficacy Theory emphasizes that individuals' confidence in their capacity to perform managerial responsibilities influences their motivation, decision-making quality, and persistence in addressing challenges. Proprietors of private secondary schools frequently operate as owners, administrators, instructional leaders, and resource managers, often without specialized training in educational management. Their level of managerial self-efficacy therefore varies widely. When proprietors exhibit low self-efficacy, it can translate into inadequate supervision, ineffective human resource management, poor conflict resolution, weak instructional leadership, and limited ability to mobilize or utilize resources. These shortcomings can hinder both daily operations and the long-term strategic functioning of the school.

As a result, numerous private secondary schools in Lagos State continue to struggle with issues such as inconsistent academic performance, frequent teacher turnover, low staff morale, fragile internal quality assurance systems, and unstable organizational climates (Ittai & Ogunji, 2025; Orunbon & Isaac-philips, 2020; Kolade, 2019; Unterhalter & Robinson, 2018). These persistent challenges raise theoretical and practical questions regarding the key drivers of school effectiveness. Meanwhile Organizational Performance Theory suggests that a school's performance is shaped by the combined influence of its internal managerial capabilities and the external support it receives from relevant stakeholders, both of which determine the institution's capacity to achieve its goals and maintain organisational stability.

This gap highlights the need for a comprehensive empirical investigation into the relationships among stakeholders' support, proprietors' self-efficacy, and organisational performance in private secondary schools across Lagos State. Insights from such a study will contribute to theoretical advancement and provide practical guidance for enhancing educational management practices and improving school effectiveness.

1.2 Research Hypotheses

HO1: There is no significant relationship between stakeholders' support and proprietors' self-efficacy in private secondary schools in Lagos State, Nigeria

HO2: There is no significant relationship between stakeholders' support and organisational performance in private secondary schools in Lagos State, Nigeria.

2. Literature Review

2.1 Stakeholders' Support and School Organisational Performance

Stakeholders' support is a multi-dimensional construct encompassing resource flows (financial and in-kind), social capital (networks, advocacy), human contributions (volunteer labour and teacher support), and relational activities (communication, monitoring and cooperative governance). In the school setting, stakeholders constitute the proximal ecology of the institution: parents, teachers, proprietors, local community leaders, alumni, local businesses, non-governmental organisations and regulatory agencies all influence how schools function and what they can accomplish.

Stakeholders' support is a critical factor in the success of educational institutions, including individually owned private secondary schools. Stakeholders, including parents, teachers, community members, government agencies, and private sector investors, all play essential roles in shaping the success of these schools. According to Murugi and Mugwe (2023) stakeholders' involvement in school governance, financial support, and policy decisions can significantly influence the achievement of the school's objectives.

Contemporary evidence underscores two central pathways through which stakeholders' support influences organisational performance. First, resource mediation: stakeholder-provided finance and in-kind donations directly alter the material capacity of schools to provide learning materials, maintain infrastructure, and compensate or incentivise staff (a fact repeatedly documented in Nigerian state-level studies and in private-school research in Lagos). For instance, managerial studies investigating private secondary schools in Lagos during and after the COVID-19 shock report that stakeholder financial contributions and locally organised funding arrangements buffered many schools against closures and helped sustain teaching operations (e.g., ad-hoc PTA contributions and community fundraising) (Adekunle et al., 2020). This demonstrates that stakeholder funding is not a subsidiary input, but a core determinant of operational continuity and

programmatically in individually owned private schools.

Second, social and relational mechanisms: parental involvement, community participation and teacher engagement generate normative pressures, accountability, and collaborative practices that affect instructional quality, student behaviour and staff morale. Systematic and local evidence indicates that when parents attend meetings, monitor homework and partner with teachers, student attendance, classroom engagement, and discipline improve, outcomes that are influential components of school organisational performance (attendance and orderly conduct enable sustained instructional time and improve learning outcomes). Nigerian district studies and program evaluations, which document parental engagement in Lagos and other states, provide consistent support for this claim (Oni & Soji-Oni, 2024).

Research highlights that strong partnerships between stakeholders and school administrators are fundamental to improving the quality of education, infrastructure, and student performance. Parental involvement, for example, is linked to better academic outcomes and increased student engagement (Bhengu & Mthembu, 2021). Furthermore, community support enhances schools' ability to access external resources, such as funding and educational programs, which can directly impact student achievement (Ayeeni, 2023). Therefore, the success of private secondary schools in Lagos State depends heavily on the level of support from stakeholders who contribute financially, socially, and intellectually to the school's progress.

2.2 Organisational Performance in Individually-Owned Private Secondary Schools

Organisational performance in schools is necessarily multi-dimensional. A robust conceptualization integrates internal process measures (school climate, disciplinary systems), human resource indicators (teacher job satisfaction and retention), and external validation (awards and recognition), in addition to student outcome metrics. For individually-owned private secondary schools, these dimensions are particularly salient: proprietors make decisions that directly shape staff employment conditions, discipline policies, and investments in activities that produce awards and reputational gains.

For example, school climate research in Nigeria demonstrates clear links between climate factors (safety, collegiality, instructional leadership) and turnover intentions among teachers, an especially important finding because higher turnover is associated with disrupted instruction and lower student

performance. Studies of private schools in Lagos during the COVID-19 period also show that proprietorial decisions (e.g., investments in remote learning, staff support) directly affected both retention and school reputation (including awards and external recognition) (Ittai & Ogunji, 2025) because these investments signalled quality to parents and inspection bodies.

The performance in individually owned private secondary schools in Lagos State is determined by various internal and external factors. These goals typically include academic excellence, financial sustainability, infrastructure development, and the holistic development of students (Ogunlade & Ayodele, 2022). For proprietors, achieving these goals involves strategic planning, resource management, and effective stakeholder engagement.

According to Fapohunda and Olorunfemi (2021), these schools' success often depends on the proprietor's ability to align their vision with the school's operations. This alignment requires the proprietor to set clear objectives, monitor progress, and make necessary adjustments to achieve the desired outcomes. Financial management is also a critical component, as inadequate funding or mismanagement of resources can hinder the attainment of school goals (Alabi & Adeoye, 2023). Additionally, the proprietors' ability to engage stakeholders, such as parents, teachers, and external partners, is crucial in fostering an environment that is conducive to achieving both academic and operational success.

2.3 The Concept of Stakeholders' Support

In this globalised world, stakeholder support has become a buzzword employed in evaluating educational institutions; this is due to the emergence of general acceptance of collaborative school strategic planning as a model and potent means of promoting school effectiveness and efficiency. Stakeholder support is a veritable tool that gives the school the ability to develop a clear vision of what the school is about and where it is going, a shared sense of purpose, a common sense of goals and a consensus on the means of achieving the school's objectives and goals (Murugi & Mugwe, 2023).

Ramasimu (2023) opined that stakeholder support in either public or private schools involves a systematic approach to soliciting information and ideas from various stakeholders to contribute meaningfully to the school's success. Engaging multiple stakeholders through deliberate and direct involvement by school leaders leads to effective school

management. It was also noted that the involvement of multiple stakeholders in the school's management enhances learner performance, improves the quality of education and leads to effective and efficient school management.

Benn et al. (2016) argue that the rationale behind stakeholder support is hinged on the assumption that describes the relationship between an organisation and its environment. Schools that overlook societal and community interests risk losing learners who are pivotal to the success of any school organisation. Beyond this, ignoring the parents and the communities, who are the core stakeholders, could spell doom for the school, resulting in a negative reputation and potentially putting the school's existence at risk.

2.4 School Proprietors' Self-Efficacy

Shah and Guild (2022) argued that the role of proprietor's self-efficacy in effective and efficient school management cannot be over emphasised, this point was expatiated when he noted that proprietors are highly dignified leaders and school managers who are adjudged being part of the movers and drivers of social change and development in the society./ in achieving the above feat school proprietors are required to possess a very strong sense of self-efficacy to excellently manage the teaching and non-teaching staff members contribution towards the school development internally and externally.

School proprietors' self-efficacy refers to their belief in their ability to successfully mobilise resources, manage operational challenges, motivate staff and steer the school toward its goals. Although the literature on school principal self-efficacy is substantial, fewer studies focus specifically on private school proprietors. Nonetheless, the available literature suggests strong relevance. For example, a Nigerian study of secondary school leaders found that self-efficacy significantly predicted leadership behaviours and organisational climate (Okafor & Eze, 2023). My three proposed sub-constructs (Motivating Staff, Confidence in Decision-making, and Problem-solving) map well to the principal-efficacy literature and reflect proprietorial tasks in individually owned schools.

Empirical evidence suggests that proprietors with high self-efficacy are more likely to engage in professional development for staff, adopt innovative practices (especially during crises such as the COVID-19 pandemic), and sustain operations despite resource uncertainty (Ogunleye & Adedoyin, 2023). Importantly, self-efficacy is contextually bound:

proprietors operating in environments with stronger stakeholder support and fewer external constraints (e.g., regulation, funding shortfalls) are better able to activate their self-efficacy beliefs—implying possible moderated or mediated relationships in your conceptual model.

Waddington (2023) Self-efficacy is a concept that focuses on an individual's appraisal of their ability to perform a task successfully in a given situation. It is a concept that provides insight into how an individual perceives the impact of their abilities on their actions and productivity. From the aforementioned, the proprietor's self-efficacy is a crucial factor that contributes to the success and development of private schools in all aspects, and the reasons for this are not far-fetched. Proprietors' self-efficacy promotes teachers' job satisfaction and motivation; it aids students' learning outcomes. Also, parents' satisfaction and confidence are earned. The proprietors' ability to evaluate or appraise their own ability, competence, and capacity to achieve organisational goals is central to the school's success.

2.5 The Concept of Organisational Performance

Organisational performance in the school context refers to the extent to which a school meets its objectives, sustains operations, enhances stakeholder satisfaction, maintains a positive internal environment and achieves external recognition. In education research, authors often differentiate between school performance (student outcomes) and organisational performance (wider institutional health) (Martinez et al., 2024). For your study, the five constructs—School Climate, Teachers' Job Satisfaction, Students & Staff Retention, School Discipline, Laurels & Award Winning—provide a comprehensive view of performance beyond academic achievement alone.

School Climate: The collective perceptions of safety, teaching-learning quality, relationships, and organisational norms, studies in Nigeria show strong links between a positive climate and teacher retention, as well as student engagement (Urama & Essien, 2023).

Teachers' Job Satisfaction: Teacher satisfaction affects morale, effort, turnover and subsequently student outcomes. Literature shows that private-school teachers in Nigeria frequently cite pay, professional development opportunities and recognition as key factors (Adetiba et al., 2024).

Students and Staff Retention: High retention among both students and staff signifies institutional stability, continuity and reputation. Empirical work indicates that retention is influenced by climate, leadership

practices, and stakeholder support (Akpomi & Ugbari, 2024).

School Discipline: Effective disciplinary systems correlate with improved school climate and reduced learning disruptions. A Nigerian study in private secondary schools found that schools with proactive discipline policies recorded fewer behavioural incidents and improved student attendance (Salawu & Bello, 2022).

Laurels & Award Winning: External recognitions, such as competition wins, inspection commendations, or accreditation awards, serve as signals of quality, enhance marketability, and can influence enrollment. Though less frequently studied, some Nigerian private-school reports indicate that schools with strong stakeholder-proprietor alignment are more likely to win awards (Okonjo & Nwosu, 2023).

Critically, using these five constructs allows for a nuanced measurement of organisational performance. However, one must be cautious: external recognitions (laurels) may reflect opportunity advantages rather than inherent quality, and retention/staff satisfaction may themselves be outcomes of climate/discipline rather than independent performance indicators.

Organizational performance in secondary schools is a critical area of focus for educational research, particularly as it relates to improving student outcomes and school performance. Educational goals in secondary schools typically focus on academic performance, holistic student development, and preparing students for higher education or vocational pursuits. Research has shown that clearly defined goals and effective goal-setting strategies are linked to improved student achievement, teacher performance, and overall school success (Locke & Latham, 2019). Achieving these goals requires an integrated approach involving students, teachers, school leaders, and the community.

Hence, the sample size was calculated to be 500

Table 1: Stratification by Senatorial District

| Senatorial District | Local Governments | % of Total |
|---------------------|-------------------|------------|
| Lagos West | 10 | 50% |
| Lagos Central | 5 | 25% |
| Lagos East | 5 | 25% |
| Total | 20 | 100% |

3. Research Methodology

This study adopted a quantitative research design of the correlational type. With a correlational survey design, the researcher was able to gather, organise, and analyse research data of the private secondary schools in Lagos state in respect of the study variables.

The population of this study comprised all the 5,622 approved private secondary schools in Lagos state. The national policy on education gives legal backing to private individuals and non-governmental organisations to participate in providing education by expanding access. Thus, the population also consisted of the proprietors and stakeholders of these schools.

This study made use of a multi-stage sampling technique to select the sample schools and category of participants. First, the population was stratified into three strata based on senatorial districts. These comprise Lagos West, Lagos Central and Lagos East senatorial districts. The Lagos West senatorial district comprises ten local governments, and Lagos Central and Lagos East senatorial district each comprises five local governments, respectively.

Afterwards, a purposive sampling technique was used to select four local governments, two from Lagos West, 1 from Lagos Central and 1 from Lagos East senatorial districts. A simple random sampling technique was then used to select 40 private secondary schools, representing 10 private secondary schools from each of the sampled local governments. Similarly, a sampling technique was used to sample the proprietors (40), the principals (40) and 12 teachers from each of the 40 sampled schools. However, while all the 40 proprietors and 40 principals responded to the instruments administered to them, only 420 of the 480 teachers returned the instruments intact. Therefore, a total of 500 participants (40 proprietors, 40 principals and 420) teachers were selected for this study.

Table 2: Local Government Selection

| Senatorial District | Selected Governments | Local | Selection Rationale |
|---------------------|----------------------|-------|-----------------------------------|
| Lagos West | 2 | | High school density (urban/rural) |
| Lagos Central | 1 | | Urban education hub |
| Lagos East | 1 | | Peri-urban/rural balance |
| Total | 4 | | |

Table 3: Participant Selection

| Participant Role | Selection Method | Total |
|------------------|------------------|-------|
| Proprietor | Purposive | 40 |
| Principal | Purposive | 40 |
| Teachers | Random | 420 |
| Total | | 500 |

This study used three self-developed instruments titled “Stakeholders’ Support Questionnaire (SSQ), Proprietors’ Self-Efficacy Questionnaire (PSEQ) and Organisational Performance Questionnaire (OPQ)” to be responded to by the proprietors, headteachers and teachers respectively. Each questionnaire is divided into two major sections. Section A was used to collect demographic information from the participants, while Section B focused on the variables of stakeholders’ Support, Proprietors’ Self-Efficacy and Organisational Performance. The section B contains 20 items for the (SSQ), 15 items for the (PSEQ) and 35 items for the (OPQ) that measured the aforementioned variables.

The Cronbach's alpha coefficient for each of the instrument’s construct was calculated after it has been administered to two private schools that were not part of the study sample. The overall Cronbach's alpha coefficient was determined following the administration to these two private schools.

This study used primary data collected from the respondents. The researchers sought the permission and approval of the participants to participate in the study using the letter of informed consent. The letter contains information about a participant's right to participate or decline participation in the study. Similarly, they were notified that they can withdraw from the study at any time they feel so. The research employed five research assistants to distribute the questionnaire for data collection. With the help of the research assistants’ copies, the questionnaires were distributed and collected on the spot to ensure high percentage returns. For the principals and proprietors, the percentage returns was 100% each while for the teacher it was 87.5%

The data analysis for this study was conducted in a systematic, multi-stage process designed to ensure the rigorous examination of the collected data and the robust answering of research questions and testing of the research hypotheses. The entire analysis was performed using the Statistical Package for the Social Sciences (SPSS, IBM Corp.) Version 30. The process commenced with the preparation and screening of essential data to ensure the integrity and quality of the dataset. This preliminary phase involved the meticulous coding of questionnaire responses, data entry, and validation to minimise errors. The dataset was then screened for missing values and univariate outliers; given the high return rate from on-the-spot collection, missing data were minimal and handled through list wise deletion to preserve the validity of subsequent statistical computations. Furthermore, the underlying assumptions for all planned parametric tests—including normality, linearity, homoscedasticity, and the absence of multicollinearity—were examined and satisfactorily met, thus justifying the use of advanced inferential techniques.

The core of the analysis involved the use of inferential statistics to test the study's two hypotheses. To examine the bivariate relationships postulated in Hypotheses 1 and 2 was utilised. This analysis measured the strength and direction of the linear relationships between stakeholders' support and proprietors' self-efficacy (H01), and stakeholders' support and organisational performance (H02).

4. Results

Hypotheses Testing

Hypothesis one

H01: There is no significant relationship between stakeholders’ support and proprietors’ self-efficacy in private secondary schools in Lagos State, Nigeria

This hypothesis was tested in two stages. In the first stage, stakeholders’ support was treated as a single independent variable, and its relationship with proprietors’ self-efficacy was examined using the Pearson’s Product–Moment

Correlation Analysis. In the second stage, stakeholders’ support was decomposed into its four stated constructs (financial support, community participation, parental involvement, and teacher engagement) and their combined and individual contributions to proprietors’ self-efficacy were examined using multiple regression analysis.

Stage One: Pearson Product–Moment Correlation Analysis

Table 4: Correlation between Stakeholders’ Support and Proprietors’ Self Efficacy

| | | 1 | 1 |
|---------------|---------------------|---------|---------|
| Stakeholder | Pearson Correlation | 1 | 1.673** |
| | Sig. (2-tailed) | | <.001 |
| | N | 500 | 500 |
| Self-efficacy | Pearson Correlation | 1.673** | 1 |
| | Sig. (2-tailed) | <.001 | |
| | N | 500 | 500 |

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Researcher’s Computation (2025)

A Pearson correlation analysis was conducted to determine the relationship between stakeholders’ support and proprietors’ self-efficacy. The result, as shown in Table 4.8, indicates a strong, positive, and statistically significant correlation between stakeholders’ support and proprietors’ self-efficacy, $r = .673, p < .001$.

This finding implies that higher levels of stakeholders’ support are associated with higher levels of proprietors’ self-efficacy in private secondary schools in Lagos State. Thus, proprietors who receive greater support from parents, teachers, and the community tend to display stronger confidence, motivation, and self-belief in managing their schools. Consequently, the null hypothesis, which states that there is no significant relationship between stakeholders’ support and proprietors’ self-efficacy, is not accepted at the .05 level of significance.

The findings from both analyses revealed that stakeholders’ support has a strong and statistically significant relationship with proprietors’ self-efficacy in private secondary schools in Lagos State. The Pearson correlation indicated a strong positive association, $r = .673, p < .001$, confirming that as stakeholder support increases, proprietors’ self-efficacy also rises. When examined through multiple regression, the model was significant, $F(4, 495) = 136.86, p < .001$, explaining 52.5% of the variance in proprietors’ self-efficacy. Among the four constructs of stakeholders’ support, parental involvement, teacher engagement, and community participation emerged as significant predictors, while financial support was not statistically significant. Therefore, the null hypothesis (H_{01}) is not accepted, leading to the position that stakeholders’ support, particularly through parental and teacher engagement, plays a crucial role in enhancing proprietors’ self-efficacy in private secondary schools in Lagos state.

Hypothesis Two

HO2: There is no significant relationship between stakeholders’ support and organisational performance in private secondary schools in Lagos State, Nigeria. This hypothesis was tested in two stages. In the first stage, stakeholders’ support was treated as a single independent variable, and its relationship with organisational performance was examined using the Pearson Product–Moment Correlation Analysis. In the second stage, stakeholders’ support was decomposed into its four stated constructs (financial support, community participation, parental involvement, and teacher engagement) and their combined and individual contributions to organisational performance were examined using multiple regression analysis.

Stage One: Pearson Product–Moment Correlation Analysis

Table 5: Correlation between Stakeholders’ Support and Organisational Performance

| | | 1 | 2 |
|----------------|---------------------|--------|--------|
| Stakeholder | Pearson Correlation | 1 | .783** |
| | Sig. (2-tailed) | | <.001 |
| | N | 500 | 500 |
| Organisational | Pearson Correlation | .783** | 1 |
| | Sig. (2-tailed) | <.001 | |
| | N | 500 | 500 |

** . Correlation is significant at the 0.01 level (2-tailed).

A Pearson Product–Moment Correlation Analysis was conducted to examine the relationship between stakeholders’ support and 224rganizational performance among private secondary schools in Lagos State. The results, as shown in Table 4.12, revealed a strong, positive, and statistically significant relationship between stakeholders’ support and 224rganizational performance ($r = .783, p < .001, N = 500$). This indicates that higher levels of stakeholders’ support are associated with improved 224rganizational outcomes. Therefore, the null hypothesis (H_{02}), which states that there is no significant relationship between stakeholders’ support and 224rganizational performance, is rejected. It can thus be concluded that stakeholders’ support contributes meaningfully to the 224rganizational performance of private secondary schools in Lagos State. The correlation coefficient of .783 suggests a high degree of association, implying that schools that receive more active and consistent support from stakeholders (such as parents, teachers, community members, and financial contributors) tend to exhibit better performance outcomes in terms of administration, staff motivation, and overall effectiveness.

5. Discussion of Findings

Relationship between stakeholders’ support and proprietors’ self-efficacy in private secondary schools in Lagos State, Nigeria

The study investigated the relationship between stakeholders’ support and proprietors’ self-efficacy in private secondary schools in Lagos State, Nigeria. The findings revealed a strong and statistically significant positive relationship between stakeholders’ support and proprietors’ self-efficacy. Specifically, proprietors who received greater support from stakeholders such as parents, teachers, and community members demonstrated higher levels of self-efficacy in managing their schools effectively.

The study found that stakeholder support was a significant predictor of proprietors’ self-efficacy. Specifically, three components of stakeholders’ support—parental involvement, teacher engagement, and community participation—were significant predictors, while financial support was not. This implies that proprietors’ belief in their ability to perform effectively depends more on the quality of interpersonal and professional collaboration than on financial contributions alone.

The positive association between stakeholders’ support and proprietors’ self-efficacy can be interpreted as evidence that social and professional

networks within the school community reinforce proprietors’ confidence in their multiple roles. When parents actively engage in school governance and teachers collaborate meaningfully with management, proprietors receive affirmation that their proprietorship is valued and effective. This psychological reinforcement enhances their self-efficacy beliefs, which, in turn, improves decision-making, staff management, and problem-solving effectiveness (Bandura, 1997; Pajares, 2002).

The finding that financial support was not a significant predictor may reflect the economic realities of Lagos State, where most private schools are self-financing and proprietors rely primarily on tuition fees rather than external stakeholder funding. In such contexts, proprietors might perceive financial independence as a mark of autonomy, while relational support from teachers, parents, and the community may serve as a more influential determinant of their confidence and motivation.

These findings of this study are consistent with Bandura’s Self-Efficacy Theory, which asserts that individuals’ beliefs in their capabilities are shaped by four key sources: mastery experiences, vicarious experiences, verbal persuasion, and physiological arousal. In the school environment, stakeholders support provides at least three of these sources. First, through vicarious experiences, proprietors observe and learn from stakeholders’ commitment, which models collaborative success. For example, seeing parents or teachers take active roles in school improvement projects reinforces the proprietor’s sense of collective efficacy.

Second, verbal persuasion occurs when stakeholders provide feedback, encouragement, or recognition for effective school proprietorship. Such verbal affirmations from parents, teachers, or community members strengthen proprietors’ belief that their actions are impactful.

Third, emotional reinforcement and moral support from stakeholders reduce stress and burnout, thereby improving proprietors’ mental resilience and optimism, key indicators of strong self-efficacy (Bandura, 1997; Schunk & Pajares, 2009).

Furthermore, the results align with Stakeholders Theory (Freeman, 1984), which posits that the success of an organisation depends on the support and cooperation of all stakeholders who share an interest in its goals. In this context, stakeholders serve as both influencers and enablers of proprietors’ efficacy. When stakeholders’ expectations are managed through

transparent communication and participation, proprietors are empowered to perform with greater confidence and commitment.

This synergy highlights the interactive nature of leadership efficacy; proprietors' self-efficacy does not develop in isolation, but rather within a supportive ecosystem of relationships, shared values, and collaborative trust (Bryson, 2018; Rowley, 1997).

The finding that stakeholders' support enhances self-efficacy aligns with a growing body of literature emphasising the relational and social dimensions of efficacy. For instance, Murugi and Mugwe (2023) found that head teachers' confidence and managerial effectiveness were strongly associated with parental and community involvement in Kenyan secondary schools. Similarly, Myeza et al. (2024) demonstrated that stakeholders' participation significantly contributes to the professional confidence of school leaders by creating a culture of shared responsibility.

In the Nigerian context, Okeke and Anyanwu (2022) reported that active participation of parents and teachers in school activities boosts proprietors' morale, enhances leadership accountability, and promotes better administrative performance. The current finding corroborates these results, suggesting that stakeholders support operates as a form of social capital that reinforces proprietors' belief in their management competence.

The finding also agrees with that of Marquez and Ching (2023), who found that social and institutional support increased self-efficacy among school principals in the Philippines. Similarly, Yilmaz and Sahin (2021) reported that collegial and parental support were significant predictors of teacher and leader self-efficacy in Turkish schools. These studies collectively highlight the universality of social reinforcement as a key determinant of self-efficacy among educational leaders.

Conversely, the non-significant contribution of financial support contrasts with studies such as that of Omeje and Onah (2020), who found that financial backing from stakeholders was essential for improving school administrators' performance. However, this discrepancy may be explained by contextual differences: while financial input may be critical in public school settings where resources are externally allocated, proprietors of private schools often exercise financial autonomy and may value moral and participatory support more than direct financial aid.

The Lagos State private education sector provides a unique context for interpreting these findings. Private schools in Lagos are diverse, ranging from low-cost community-based institutions to elite international schools. Despite this diversity, proprietors often face common challenges such as high operational costs, regulatory pressure, staff turnover, and competition. In this environment, stakeholders' collaboration becomes a vital coping mechanism that fosters resilience and innovation among school proprietors.

The significant role of parental involvement in predicting proprietors' self-efficacy reflects the cultural and social importance of parental roles in Nigerian education. Parents are often seen as co-educators who share responsibility for students' moral and academic development (Okeke, 2020) When parents engage in school governance, proprietors feel supported and validated in their managerial efforts, which reinforces their confidence in implementing policies and initiatives effectively.

Relationship between stakeholders' support stakeholders' and organisational performance in private secondary schools in Lagos State, Nigeria

The results of this study revealed a strong and statistically significant positive relationship between stakeholders' support and organisational performance among private secondary schools in Lagos State, Nigeria. Regression analysis showed that the four constructs of stakeholders' support, parental involvement, teacher engagement, financial support, and community participation jointly explained a substantial proportion of the variance in organisational performance. Among these, parental involvement emerged as the most influential predictor, followed by financial support and teacher engagement, while community participation was not statistically significant.

The finding of a strong positive relationship between stakeholders' support and organisational performance suggests that the collaborative involvement of parents, teachers, and community members contributes significantly to school success. Parental involvement was found to be the strongest predictor of organisational performance, which underscores the vital role of parents as both clients and partners in the educational process.

This result implies that schools where parents actively participate in school governance, support their children's learning, and contribute to the school's development are more likely to achieve high performance. Parental participation enhances

accountability, strengthens communication between school management and the community, and fosters shared responsibility for educational outcomes (Epstein, 2018; Okeke, 2020).

Financial support also emerged as a significant predictor, highlighting the resource-dependency dimension of private schools. Private secondary schools in Lagos primarily rely on internally generated revenue, such as tuition and donations. Hence, stakeholders who provide financial backing or facilitate resource mobilisation play a direct role in sustaining school operations, improving infrastructure, and funding instructional innovations (Adedeji & Owoeye, 2020).

Teacher engagement was likewise significant, demonstrating that teachers are critical agents in translating stakeholders' intentions into educational outcomes. When teachers are motivated, empowered, and included in decision-making, they are more likely to exhibit organisational commitment and productivity, which enhances school performance (Day & Sammons, 2016; Fullan, 2020).

In contrast, community participation, though positive, was not a statistically significant predictor of organisational performance. This may be attributed to the limited role that communities play in privately owned schools, where governance structures are typically centralised under proprietors. Nevertheless, the qualitative influence of community goodwill, social trust, and moral legitimacy remains essential for long-term sustainability (Nakiyaga et al., 2024).

The findings can be interpreted through Stakeholders' Theory (Freeman, 1984) and Systems Theory (Katz & Kahn, 1978). According to Stakeholders' Theory, organisations achieve effectiveness when they balance the needs and contributions of various stakeholders. In this study, stakeholders' support, manifested through financial input, engagement, and participation, acts as both a resource and a feedback mechanism that enhances the organisation's adaptive capacity.

6. Conclusion

In conclusion, this study reaffirms that effective school performance is both a psychological endeavour and a social enterprise. Proprietors' self-efficacy provides the inner conviction needed to organise with confidence, while stakeholder support supplies the social and moral energy required to sustain that organisation. Together, these forces create the foundation for high-performing, resilient, and sustainable educational institutions.

The study thus contributes not only to academic theory but also to practical leadership development and policy discourse. It calls for a shift from viewing performance as an individual trait to understanding it as a relational and contextual process that thrives on trust, collaboration, and confidence. Strengthening these dimensions will be essential for improving the quality, equity, and sustainability of private secondary education in Lagos State and beyond. From the findings of this study, several conclusions can be drawn.

First, stakeholder support is an essential driver of confidence proprietors' organisational success. Schools do not thrive in isolation but through cooperative relationships with parents, teachers, and the community. The presence of supportive networks enhances proprietors' self-efficacy and promotes institutional effectiveness.

Second, proprietors' self-efficacy is a critical determinant of school performance. Those who believe in their capacity to make decisions, motivate staff, and sustain school growth are more likely to succeed. This underscores the psychological dimension of proprietors' effectiveness, confidence fuels competence.

Third, the interaction between stakeholder support and self-efficacy forms the foundation of organisational success. External collaboration and internal confidence work together to produce synergy, resilience, and innovation in school management. School effectiveness thus arises from both the mind of the proprietor and the strength of their relationships.

Fourth, the gender dimension highlights persistent inequalities in organisational outcomes despite psychological parity. While female proprietors demonstrate equal self-efficacy, with the male socio-cultural barriers still affect performance outcomes. Addressing these barriers is critical to achieving equity and inclusivity in educational organisation. Finally, the study concludes that sustainable organisational performance in private schools requires a balanced integration of psychological empowerment, relational collaboration, and structural equity.

7. Recommendations

Based on the study's findings and conclusions, the following recommendations are proposed:

- Proprietors should develop structured platforms such as advisory boards and parent-teacher associations that promote consistent

communication and involvement in decision-making.

- Proprietors should pursue professional development programmes and peer mentorship that build confidence, decision-making ability, and motivational skills.
- Educational policymakers should design frameworks that formalise stakeholder participation in school governance to ensure accountability and sustainability.
- Government and school associations should promote initiatives that empower women proprietors, providing equitable access to financial resources, leadership training, and stakeholder networks.

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Digital Mental Health Education: A Review of E-learning and Mobile-Based Interventions for Emotional Health

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Abstract. The proliferation of digital technologies has fundamentally transformed the landscape of mental health education and intervention delivery. This review examines the theoretical underpinnings, empirical evidence, and practical implications of e-learning and mobile-based interventions designed to promote emotional health. Drawing on literature published between 2000 and 2024, the review evaluates the effectiveness of web-based psychoeducation, smartphone applications, computerised cognitive behavioural therapy (cCBT), and other digital modalities in reducing psychological distress and enhancing emotional literacy across diverse populations. The evidence broadly supports the efficacy of well-designed digital mental health interventions, particularly those grounded in established therapeutic frameworks and supported by human guidance. Key challenges include issues of engagement and attrition, digital inequity, data privacy, and the need for rigorous quality assurance. The review concludes with recommendations for the development, evaluation, and ethical deployment of digital mental health education resources.

Keywords: Digital mental health, e-learning, mobile health, mHealth, emotional well-being, online interventions, cognitive behavioural therapy, mental health apps.

1. Introduction

Mental health represents one of the most pressing public health challenges of the twenty-first century. The World Health Organisation (2022) estimates that approximately one billion people globally are living with a mental health condition, with depression and anxiety disorders accounting for the greatest

proportion of disability-adjusted life years. Critically, the global treatment gap — the disparity between those who need and those who receive adequate mental health care — remains vast, with estimates suggesting that fewer than half of individuals with diagnosable conditions in high-income countries, and as few as one in ten in low- and middle-income countries, receive any form of evidence-based treatment (Patel et al., 2018). The structural barriers underpinning this gap are well documented and include workforce shortages, geographic inaccessibility, financial cost, and the persistent stigma associated with help-seeking.

Digital technologies have emerged as a potentially transformative mechanism for addressing this treatment gap. The widespread ownership of smartphones — with global penetration exceeding 50% and reaching over 80% in many high-income countries (Statista, 2023) — and the increasing accessibility of the internet have created unprecedented opportunities to deliver mental health education, prevention, and intervention at scale. Digital mental health encompasses a broad range of modalities, including web-based psychoeducation, smartphone applications (apps), computerised therapy programmes, online peer support communities, and immersive technologies such as virtual reality (VR). Each of these modalities offers distinct affordances and limitations that are relevant to the goal of promoting emotional health.

This review is organised as follows. Section 2 outlines the theoretical frameworks that inform digital mental health education. Section 3 reviews the evidence base for e-learning interventions. Section 4 evaluates mobile-based mental health applications. Section 5 addresses cross-cutting issues of engagement, equity,

and ethics. Section 6 identifies limitations and future directions, and Section 7 presents conclusions.

2. Theoretical Foundations

2.1 Cognitive Behavioural Frameworks

The predominant therapeutic framework underpinning digital mental health interventions is cognitive behavioural therapy (CBT), a structured, evidence-based psychological treatment that targets the reciprocal relationships between thoughts, feelings, and behaviours (Beck, 1979). CBT has been extensively adapted for digital delivery, yielding computerised CBT (cCBT) programmes and app-based interventions that guide users through psychoeducational content, thought records, behavioural activation schedules, and relaxation exercises. The theoretical rationale for digital CBT delivery is compelling: CBT is already a structured, skills-based approach amenable to manualisation, and its psychoeducational components — which include teaching users about the cognitive model, identifying automatic thoughts, and challenging cognitive distortions — can be effectively delivered through interactive multimedia content (Marks et al., 2007).

Andersson and Cuijpers (2009), in a seminal meta-analysis of internet-based CBT for depression and anxiety, reported effect sizes comparable to those achieved by face-to-face CBT, particularly when internet-based programmes were supplemented by human guidance from a trained clinician or coach. This finding established internet-delivered CBT (iCBT) as a credible alternative to in-person treatment, particularly for individuals with mild to moderate symptoms.

2.2 Self-Determination Theory and Motivational Frameworks

Self-determination theory (SDT; Deci & Ryan, 1985) has been widely applied as a motivational framework for the design of digital mental health tools. SDT posits that human beings have three basic psychological needs — autonomy, competence, and relatedness — whose satisfaction supports intrinsic motivation, sustained engagement, and psychological well-being. Digital mental health tools that are designed to support user autonomy (through choice and personalisation), foster a sense of competence (through progressive skill development and feedback), and promote relatedness (through peer communities or therapeutic alliance with a virtual coach) are hypothesised to produce greater engagement and better outcomes than tools that neglect these needs.

Ryan et al. (2006) applied SDT to the design of health behaviour change technologies and argued that digitally mediated health interventions should be evaluated not merely in terms of their content validity but in terms of their motivational architecture — that is, the degree to which their design features support autonomous, self-directed engagement. This framework has been adopted by researchers developing mental health apps, informing the inclusion of features such as goal-setting, progress tracking, personalised notifications, and gamification elements (Torous et al., 2018).

2.3 The Stepped Care Model

The stepped care model (Bower & Gilbody, 2005) provides an important organisational framework for understanding where digital mental health education fits within the broader mental health system. Stepped care organises interventions according to their intensity and the level of clinical need they are designed to address, beginning with low-intensity, self-directed interventions (Step 1) and progressing through guided self-help (Step 2) to structured psychological therapies (Step 3) and specialist or inpatient care (Step 4). Digital mental health interventions are particularly well suited to Steps 1 and 2, where they can reach large numbers of individuals with subthreshold or mild symptoms before clinical presentations become more severe.

In the United Kingdom, the National Institute for Health and Care Excellence (NICE) has endorsed computerised CBT programmes — including *Beating the Blues* for depression and *FearFighter* for panic and phobia — as appropriate stepped care interventions for adults, reflecting the accumulating evidence base for their efficacy (NICE, 2006). More recently, NHS England's Long-Term Plan (2019) explicitly endorsed the expansion of digital mental health tools as part of the transformation of mental health services, signalling growing institutional recognition of their role.

3. E-Learning Interventions for Emotional Health

3.1 Web-Based Psychoeducation

Web-based psychoeducation — the delivery of structured, evidence-based information about mental health conditions, their causes, and evidence-based coping strategies via the internet — represents one of the most accessible forms of digital mental health education. Psychoeducation is a well-established component of many evidence-based psychological

treatments; its digitisation extends its reach to individuals who may not seek formal professional support. Donker et al. (2009), in a systematic review of psychoeducation for depression and anxiety, found that even minimal psychoeducation was associated with significant reductions in symptoms, supporting the value of information provision as a standalone intervention for individuals with mild to moderate distress.

Interactive web-based programmes extend beyond passive information delivery by incorporating exercises, self-assessments, and feedback mechanisms that promote active engagement and skill acquisition. MoodGYM, developed by researchers at the Australian National University, is among the most extensively evaluated web-based mental health programmes. Based on CBT and interpersonal therapy principles, MoodGYM guides users through five interactive modules addressing cognitive distortions, stress, relationships, and problem-solving. A randomised controlled trial by Christensen et al. (2004) demonstrated that MoodGYM produced significant reductions in depression symptoms relative to control conditions, with gains maintained at follow-up. Subsequent meta-analyses have confirmed moderate effect sizes for similar internet-based self-help programmes (Linardon et al., 2020).

3.2 Computerised Cognitive Behavioural Therapy

Computerised CBT (cCBT) programmes represent a more structured form of digital mental health education in which the full therapeutic protocol of CBT is delivered via a computer interface, with or without supplementary human support. The evidence base for cCBT is now substantial. A Cochrane review by Froushani et al. (2011) examined 12 randomised controlled trials of cCBT for depression and concluded that cCBT produced significantly greater reductions in depressive symptoms than waitlist control conditions, with effect sizes in the small-to-moderate range. Critically, the addition of even minimal human support — such as brief weekly telephone check-ins — significantly enhanced adherence and outcomes compared with fully automated programmes.

Therapist-supported iCBT has demonstrated particularly strong evidence for anxiety disorders, including generalised anxiety disorder, social anxiety disorder, health anxiety, and post-traumatic stress disorder (Andrews et al., 2018). A large-scale benchmarking study by Hedman et al. (2014) demonstrated that the outcomes achieved by therapist-guided iCBT for social anxiety disorder were equivalent to those of face-to-face individual CBT in a

specialist outpatient clinic, whilst requiring approximately one-fifth of therapist time. These findings have significant workforce and cost-efficiency implications, suggesting that iCBT could substantially extend the reach of evidence-based psychological treatment without a proportionate increase in clinical resource.

3.3 Online Learning Platforms and Mental Health Literacy

Beyond therapeutic interventions, e-learning platforms have been employed to enhance mental health literacy — defined as knowledge and beliefs about mental health disorders that aid their recognition, management, and prevention (Jorm et al., 1997). Improving mental health literacy is considered a precondition for early help-seeking, stigma reduction, and effective self-management of psychological difficulties. Massively open online courses (MOOCs) on platforms such as Coursera, edX, and FutureLearn have proliferated in recent years, with courses on topics including managing depression, understanding mindfulness, building resilience, and navigating bereavement attracting enrolments in the tens of thousands.

Research by Farrer et al. (2016) evaluated an e-learning programme designed to improve mental health literacy in university students and found significant improvements in knowledge, attitudes towards help-seeking, and self-reported confidence in supporting peers with mental health difficulties. These findings highlight the potential of online education to address not only individual psychological well-being but also the broader social determinants of mental health, including stigma and social support.

4. Mobile-Based Interventions for Emotional Health

4.1 The Landscape of Mental Health Applications

The proliferation of smartphone applications for mental health has been remarkable. Estimates suggest that over 10,000 mental health-related apps are available across major app stores, spanning domains including mood tracking, meditation, cognitive training, crisis support, and guided therapy (Lagan et al., 2020). This abundance reflects strong consumer demand — a survey by the American Psychological Association (2020) found that approximately one in five adults had used a mental health app — but also presents significant challenges for quality assurance. The majority of available apps have not been subjected to rigorous evaluation; many lack a theoretical basis,

make unsubstantiated efficacy claims, or raise concerns about user privacy and data security. Despite these concerns, a subset of mobile mental health apps has been subjected to rigorous scientific evaluation with promising results. Linardon and Fuller-Tyszkiewicz (2020), in a systematic review of randomised controlled trials of mental health apps, found that apps incorporating CBT techniques, mindfulness-based approaches, and positive psychology exercises were significantly more effective than control conditions in reducing depression and anxiety symptoms, with mean effect sizes in the small-to-moderate range. Apps supported by human coaches or clinicians consistently outperformed fully automated apps.

4.2 Mindfulness and Well-being Applications

Mindfulness-based apps represent one of the most commercially successful and extensively researched categories of digital mental health tools. Applications such as Headspace, Calm, and Woebot have attracted millions of users globally and have been studied in academic contexts. Mindfulness-based interventions — which cultivate non-judgemental awareness of present-moment experience — have well-established evidence base for reducing stress, anxiety, and depressive relapse in face-to-face formats (Khoury et al., 2015), providing a theoretical rationale for their digital adaptation.

Linardon (2020) conducted a meta-analysis of 23 randomised controlled trials of smartphone-delivered mindfulness interventions and found significant effects on depression, anxiety, stress, and well-being, with effect sizes comparable to those observed for face-to-face mindfulness programmes of equivalent duration. Importantly, the greatest effects were observed for outcomes of perceived stress and emotional reactivity — domains that are directly relevant to emotional health — suggesting that mindfulness apps may be particularly well suited to emotional regulation objectives. The accessibility of mindfulness apps — available at low or no cost, usable in brief sessions, and amenable to integration into daily routines — makes them attractive tools for population-level emotional health promotion.

4.3 Conversational Agents and AI-Based Support

An emerging category of digital mental health intervention involves conversational agents — chatbots or virtual assistants designed to simulate therapeutic dialogue and deliver evidence-based mental health support through natural language interaction. Fitzpatrick et al. (2017) conducted a

randomised controlled trial of Woebot, a fully automated conversational agent delivering CBT-informed content through a smartphone messaging interface, and found that participants assigned to Woebot reported significantly greater reductions in depression and anxiety symptoms over a two-week period compared with control participants directed to a self-help e-book. Whilst the brevity of the study limits conclusions about sustained efficacy, the findings provided early proof-of-concept for the potential of AI-based conversational agents in mental health support.

The theoretical advantages of conversational agents include their 24/7 availability, infinite patience, non-judgmental tone, and ability to deliver personalised psychoeducation and skill-building exercises at the user's own pace. Research by Lucas et al. (2014) demonstrated that individuals reported greater willingness to disclose sensitive psychological information to a virtual agent than to a human interviewer, particularly for stigmatised topics such as suicidal ideation, suggesting that conversational agents may reduce barriers to disclosure that limit engagement with human providers.

4.4 Ecological Momentary Interventions

Ecological momentary interventions (EMIs) represent a technically innovative approach to mobile mental health in which brief, contextually tailored interventions are delivered to users in real time, based on data collected through ecological momentary assessment (EMA) — the repeated sampling of individuals' current behaviours, thoughts, and feelings in their natural environment (Heron & Smyth, 2010). By analysing patterns in EMA data — for example, identifying times of day or social contexts associated with elevated distress — EMI systems can deliver personalised prompts, coping exercises, or psychoeducational content at precisely the moments when they are most likely to be effective.

A meta-analysis by Versluis et al. (2016) found that EMIs produced significant reductions in psychological distress, with the largest effects observed for interventions targeting anxiety and stress. The capacity for real-time, contextually sensitive support represents a genuine advance over traditional psychoeducation, which relies on users to recall and apply skills learnt in structured learning contexts to their everyday lives — a transfer that is notoriously challenging.

5. Cross-Cutting Challenges

5.1 Engagement and Attrition

One of the most consistently documented challenges in digital mental health research is low engagement and high attrition. A systematic review by Baumeister et al. (2014) found that dropout rates from internet-based mental health interventions ranged from 20% to 80%, with a median of approximately 50%. These rates are substantially higher than those observed in face-to-face treatments, raising concerns about whether the populations who most need and potentially benefit from digital interventions are successfully reached and retained. Factors associated with higher attrition include lower baseline symptom severity, lack of human support, absence of accountability mechanisms, and poor user experience design.

Addressing attrition requires attention to both content quality and user experience. Research in the field of human-computer interaction has demonstrated that features such as intuitive navigation, personalisation, progress visualisation, and social connectivity are associated with sustained engagement (Deterding et al., 2011). Co-design methodologies — involving end users, including those with lived experience of mental health difficulties, in the design and testing of digital tools — have been advocated as a means of improving the ecological validity and acceptability of digital mental health interventions (Shand et al., 2012).

5.2 Digital Equity and Access

The potential of digital mental health tools to democratise access to psychological support is contingent on equitable access to the underlying technologies. Digital exclusion — driven by socioeconomic disadvantage, disability, age, geographic remoteness, and lack of digital literacy — means that the populations most burdened by mental health difficulties are often those least able to access digital interventions. The COVID-19 pandemic accelerated the digitisation of mental health services in many countries but simultaneously exposed deep inequities in digital access (Wykes et al., 2021). Approximately 1.1 billion people globally lack access to mobile internet, and even in high-income countries, significant proportions of older adults, individuals with lower educational attainment, and those in rural areas lack the digital skills to engage effectively with online health resources.

Addressing digital equity requires concerted effort at multiple levels, including investment in digital infrastructure, provision of subsidised devices, integration of digital literacy training into health and

social care pathways, and the development of offline-compatible digital tools that do not require continuous internet connectivity. Failure to address these inequities risks exacerbating existing health disparities under the guise of innovation.

5.3 Privacy, Data Security, and Ethics

Digital mental health tools collect sensitive personal data — including self-reported symptoms, mood logs, and behavioural patterns — that require robust privacy protections. Research by Grundy et al. (2019) analysed the privacy practices of 36 top-rated mental health apps available on the Google Play Store and found that the majority shared user data with third parties, including advertising networks, without clearly informing users. Such practices represent a significant ethical concern, particularly given the sensitivity of mental health data and the potential for its misuse in contexts such as employment screening or insurance underwriting.

Regulatory frameworks such as the General Data Protection Regulation (GDPR) in the European Union and the United Kingdom provide a legal basis for protecting user data, but enforcement remains inconsistent and many app developers — particularly small companies and start-ups — lack the expertise or resources to achieve full compliance. The development of sector-specific quality assurance frameworks, such as the NHS Apps Library in the United Kingdom and the American Psychiatric Association's App Evaluation Framework, represents an important step towards ensuring that mental health apps meeting minimum standards of evidence, safety, and data governance are prioritised in clinical recommendation.

6. Limitations and Future Directions

The extant literature on digital mental health education is subject to several important methodological limitations. First, many studies rely on self-selected convenience samples — typically well-educated, internet-savvy adults — that limit the generalisability of findings to the broader population. Second, primary outcomes are frequently limited to self-reported symptom scales, with insufficient attention to functional outcomes, quality of life, or health economic metrics. Third, the rapid pace of technological change means that studies of specific platforms or applications may be outdated by the time they are published, creating a persistent currency problem in the literature.

Future research priorities include the conduct of pragmatic randomised controlled trials with diverse, population-representative samples; the development and validation of standardised digital mental health outcome batteries; longitudinal studies examining the durability of intervention effects; and health economic analyses comparing the cost-effectiveness of digital interventions with face-to-face alternatives. There is also a pressing need for research examining the optimal blending of human and digital support — the precise configuration of human guidance that maximises both efficacy and scalability of digital mental health tools.

Emerging technologies including artificial intelligence, machine learning, natural language processing, and wearable biosensors offer significant opportunities to enhance the personalisation, responsiveness, and predictive accuracy of digital mental health interventions. However, their deployment raises novel ethical questions regarding algorithmic bias, autonomous decision-making in clinical contexts, and the appropriate boundaries of AI involvement in mental health support. Multidisciplinary collaboration — spanning clinical psychology, computer science, ethics, public health, and service user advocacy — will be essential to navigate these challenges responsibly.

7. Conclusion

Digital mental health education — delivered through e-learning platforms, mobile applications, computerised therapy programmes, and AI-based conversational agents — has demonstrated meaningful efficacy across a range of emotional health outcomes and represents a significant advance in the capacity to deliver psychological support at population scale. The evidence base is strongest for iCBT and therapist-supported digital interventions, but encouraging findings have also emerged for mindfulness apps, EMIs, and conversational agents. The theoretical frameworks of cognitive behavioural therapy, self-determination theory, and stepped care provide a coherent basis for the design and evaluation of effective digital tools.

Nevertheless, the promise of digital mental health education will only be fully realised through sustained attention to the challenges of engagement, digital equity, data privacy, and quality assurance. Digital technologies are not a panacea for the mental health treatment gap; they are tools whose impact depends critically on the quality of their design, the rigour of their evaluation, the ethics of their deployment, and the equity of their accessibility. With appropriate

investment in research, regulation, and implementation science, digital mental health education has the potential to make a decisive contribution to reducing the global burden of psychological ill-health.

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Quality Assurance for 21st-Century Competencies: Insights from Nigeria and Finnish Higher Education

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Abstract. This conceptual paper compares the quality assurance systems in Nigerian and Finnish higher education. It X-rays the foundational patterns that determine their areas of divergence and proposes a conceptual framework for quality assurance that accommodates 21st-century competencies. A comparative conceptual analysis approach was employed to synthesise the existing literature, policy documents and institutional reports in this study. The approach was used to examine the historical, structural, and procedural dimensions of quality assurance in Nigeria and Finland's higher education systems. The study found a qualitative divide between the two systems. While Nigeria's compliance quality assurance system emphasises the need to address deficits in basic resources and standards, Finland's quality assurance system, built on trust, institutional autonomy, and a culture of continuous improvement, emphasises enhancement. The uniqueness of this study lies in the Contextually Adaptive Quality Assurance (CAQA) Framework. It provides a principled, flexible template for developing quality assurance systems that ensure quality in the development of essential 21st-century competencies, including critical thinking and collaboration.

Keywords: Quality assurance, Higher education, comparative education, Finland, Nigeria

1. Introduction

In recent years, particularly following the COVID-19 pandemic, higher education systems worldwide have experienced significant transformation. This transformation is driven by the imperatives of the knowledge economy, accelerated digitalisation, and the growing expectation that graduates acquire 21st-century competencies such as critical thinking, problem-solving, creativity, collaboration, digital literacy, and intercultural communication (Alzafari & Ursin, 2019; van der Merwe & van Vuuren, 2024). These competencies are increasingly used as benchmarks for assessing educational quality. However, their growing prominence challenges traditional quality assurance (QA) frameworks, which were primarily designed to evaluate readily quantifiable learning inputs and outputs rather than complex and transferable competencies (Nguyen, 2016).

Despite global advancements in quality assurance frameworks, most systems continue to depend on conventional instruments such as accreditation checklists, input–output indicators, and periodic audits. While these mechanisms remain effective for ensuring regulatory compliance and minimum standards, they are poorly suited to assessing higher-

order competencies, adaptive skills, and complex learning outcomes demanded by contemporary labour markets (Groen, 2017). As a result, many QA systems face a persistent misalignment between what higher education institutions are expected to produce and what existing evaluative tools can measure.

National differences in culture, historical development, institutional capacity, and quality assurance philosophy mediate the organisation and effectiveness of quality assurance systems. These contextual variations influence whether QA systems emphasise accountability-driven compliance or enhancement-oriented improvement (Chu & Westerheijden, 2019; Neophytou & Koutselini, 2025). While enhancement-focused systems prioritise institutional autonomy, professional trust, and continuous improvement, compliance-oriented systems tend to rely on external regulation and standardised control mechanisms (Groen, 2017; Zaskaleta, 2020). These contrasting approaches raise important questions about the adaptability of QA systems in responding to evolving competency-based demands.

Against this background, this study adopts a comparative approach to explore the convergence and divergence of quality assurance systems in Africa and Europe, using Nigeria and Finland as case studies. The selection of Nigeria and Finland is deliberate and strategic. Nigeria represents a QA system confronting persistent structural challenges, rapid expansion, and the pressures of massification, compounded by increasing private sector participation in higher education provision. These dynamics have intensified concerns about quality assurance capacity and consistency. In contrast, Finland exemplifies a mature, enhancement-oriented QA system grounded in institutional trust, strong public governance, and coherent quality cultures. Finland's higher education system has consistently maintained a high international standing (Chen, 2024; OECD, 2022), mainly attributed to trust-based enhancement practices and supportive government policies that balance quality assessment with accountability (Chen, 2024).

Global pressures to reform quality assurance do not manifest uniformly across national systems. Systems with strong institutional capacity are better positioned to integrate competency-based assessment within enhancement-oriented frameworks. In contrast, systems facing long-standing structural and resource constraints often struggle to move beyond compliance with minimum standards (Alzafari & Ursin, 2019). Comparative studies have demonstrated that while international frameworks, such as those associated

with the Bologna Process and UNESCO/OECD guidelines, promote convergence, national systems continue to adapt these frameworks to local priorities and conditions (Amaral & Rosa, 2010; Kallio & Semchenko, 2016). This contextual heterogeneity underscores the importance of comparative inquiry in understanding how similar global demands generate divergent national responses.

Within this context, the central problem addressed by this study concerns the capacity of existing quality assurance systems to assure 21st-century competencies effectively across differing institutional environments. While contemporary QA discourse increasingly advocates a shift from quality control to quality enhancement, there remains a limited empirical understanding of how systems at different stages of development operationalise these paradigms and respond to competency-based expectations, particularly across developed and developing contexts. Therefore, this study aims to conduct a comparative analysis of quality assurance systems in Nigerian and Finnish higher education. Specifically, the study seeks to answer the following research questions:

RQ1: How have the quality assurance systems in Nigeria and Finland evolved historically, and what dominant paradigms shape their current structures and operational logics?

RQ2: What challenges do quality assurance systems in Nigeria and Finland face in adapting to the demands of 21st-century competency development?

RQ3: How can a Contextually Adaptive Quality Assurance framework support the assurance of complex learning outcomes in Nigerian and Finnish higher education?

1. Methodology

2.1 Research Design

This study adopts a qualitative research design of a comparative conceptual analysis approach. This approach supports the development of new frameworks by synthesising existing literature and policy sources (Mello, 2021). The conceptual comparative analysis is commonly used in education and social sciences research to examine structural differences across systems and to establish a new theoretical framework (Bauer & Knill, 2014; Klöbal & Kub, 2021).

The comparative analysis employed a systematic, dimension-oriented methodology. The sources were scrutinised according to four distinct analytical

dimensions: (1) historical development, (2) governance structures, (3) operational quality assurance models, and (4) systemic challenges related to the integration of 21st-century competencies. This analytical framework facilitated a consistent cross-case comparison and supported the thematic synthesis of diverse literature.

A structured process was employed to select literature, including peer-reviewed journal articles, quality assurance policy documents, evaluation reports, and institutional frameworks. The following search string ("quality assurance" OR "quality control" OR "assessment" OR "evaluation") AND ("higher education" OR "tertiary education" OR "post-secondary" OR "university") AND ("Nigeria" OR "Nigerian" OR "Finland" OR "Finnish") AND ("accreditation" OR "standards" OR "improvement" OR "policy") AND ("student satisfaction" OR "outcomes" OR "performance" OR "teaching quality") guided the selection.

2.2 Analytical Approach

The retrieved documents were manually coded and organised according to thematic categories. Each source underwent analysis to identify patterns associated with compliance, enhancement,

institutional autonomy, and competency integration. Subsequently, the themes that emerged in each national case were compared to identify points of convergence and divergence, as well as the structural factors influencing quality assurance practices. This analytical approach enhanced the interpretive coherence of the comparative results.

This conceptual study is based on an analysis of existing literature and policy documents, which may not comprehensively reflect recent institutional reforms or novel practices at specific universities. The methodology does not involve empirical measurement; instead, it synthesises overarching trends to contribute to theoretical understanding and policy development.

2.3 Ethical Consideration

This research did not involve human subjects, collect primary data, or utilise confidential institutional records. The study was conducted solely by examining publicly accessible literature, policy documents, and evaluation reports. Consistent with the journal's standards for conceptual and document-based research, ethical approval was deemed unnecessary, and no identifiable personal information was employed at any point during the analysis.

2. Results

RQ1: *How have the quality assurance systems in Nigeria and Finland evolved historically, and what dominant paradigms shape their current structures and operational logics?*

The findings addressing Research Question 1 reveal contrasting historical trajectories and structural configurations of quality assurance systems in Nigeria and Finland. Findings indicate that Nigeria and Finland operate under fundamentally different quality assurance paradigms.

Comparative Analysis of Quality Assurance in Higher Education in Nigeria and Finland

Table I: Comparative Overview of QA in Nigeria and Finland

| Dimension | Nigeria | Finland |
|----------------|---|--|
| Lead QA body | National Universities Commission (NUC) | Finnish Education Evaluation (FFINEEC) |
| Focus | Input-based standards, resource adequacy, and minimum academic standards | Process and outcomes, learning enhancement, and institutional profiling. |
| Core Paradigm | Compliance-oriented, with centralised control and accountability for public funding. | Enhancement-led; Trust, institutional autonomy, and continuous |
| Key Mechanisms | Internal Quality Assurance units, programme accreditation, and resource verification. | Institutional self-evaluation, enhancement-led evaluation, and audit. |
| Key challenges | inadequate funding, overcrowding, and tension standardisation and innovation. | Maintaining excellence in a changing global environment, and between equitable outcomes. |

Table I presents a comparison of higher education's quality assurance approaches in both Nigeria and Finland. While the system is centrally managed by the

NUC, with a compliance-oriented model and input-based standards, it is decentralised and administered by FINEEC, enhancement-driven, with an emphasis

on Continuous improvement, process evaluation, and institutional autonomy. This difference presupposes that every nation's quality assurance model reflects its cultural context and the developmental stage of its ecosystem. Also, while the practice in Nigeria still struggles to manage the challenge of inadequate resources and accountability, the Finnish model is working to sustain its already established excellence because the system has sufficient resources.

Similarly, it means that direct policy transfer might not be possible; every system must follow due process, from simple to complex and from ensuring basic compliance to strategically achieving internal quality culture and must be context adaptive.

3.1.1 The Nigerian Quality Assurance System

The Nigerian QA system is led by the National Universities Commission (NUC). The body has established standards that its higher education institutions operate with. The NUC, founded in 1962, is saddled with the responsibility of addressing issues including institutional quality, limited resources, and a lack of standardised admission cum curricula. Its approach is mainly input-centred, emphasising compliance with the standards over autonomous innovation. The commission's efforts have revealed the country's multifaceted challenges in managing systemic deficits across the higher education sector.

A key feature of the country's QA policies is the adoption of the Minimum Academic Standard (MAS) framework. This framework specifies curricular and workload requirements. Staff-student ratios and minimum infrastructure requirements for each programme offered at any university in the country. This is done to shield innocent students from substandard education in situations where demand for post-secondary education exceeds available resources. This arrangement is similar to what other lower- and middle-income countries, such as Viet Nam, practice internationally, reducing universities to compliance entities focused more on accreditation than on critical pedagogical transformation (Hanh et al., 2020).

2.1.2.1 Governance and Focus

Universities' compliance with the minimum academic standard is the commission's primary responsibility. It ensures uniformity in what universities do. Its other areas of coverage include licensure, institutional monitoring, and periodic programme accreditation to ascertain the extent of universities' compliance with the minimum standard (National Universities Commission (NUC), 2025). The accreditation

committees usually consider course content, lecturers' qualifications, teaching facilities, and access to technology. This initiative is worthy of maintaining stability during times of turbulence and expansion. However, the primary inhibitor of the commission's effective functioning remained the Academic Staff Union of Universities (ASUU), which often accuses the NUC of usurping universities' powers and eroding their autonomy (Wordu & Nwanguma, 2023).

2.1.2.2 Internal Quality Assurance (IQA)

The need to actualise internal quality in universities in Nigeria necessitated the introduction of uniform mechanisms embedded in the MAS. The commission stipulates that the country's quality assurance framework requires every higher institution to establish an internal quality assurance unit for regular self-assessment of its academic programmes, personnel, and facilities (Mbah, 2022; Olatoun et al., 2025).

However, in reality, higher education institution leaders often perceive the unit as subsidiary to NUC external accreditation requirements. The perception reinforces a compliance rather than a mere developmental model of quality assurance. Unfortunately, Ekpoh and Asuquo (2020) noted that most IQAs do not usually function effectively due to limited resources and constrained staff capacity.

2.1.3 The Finnish Quality Assurance System

Finland's quality assurance system is often a global reference point. This is because of its emphasis on trust, institutional autonomy, and enhancement-oriented processes. The system is influenced by the Bologna Process's focus on transparency, learning, and social integration (Haapakorpi, 2011). Its approach aligns with the national philosophy of education, which prioritises collaboration, professionalism, and continuous improvement over rigid compliance with standardised measures.

2.1.3.1 Governance and Focus

One unique characteristic of Finland's QA system is its institutional autonomy, anchored in trust and professionalism. Every higher education institution has the freedom to plan for quality, with the Finnish Education Evaluation Centre (FINEEC) offering support that fosters self-reflection and improvement within universities rather than enforcing predetermined benchmarks (OECD, 2024). Its system

is a blend of collegial and managerial approaches that emphasises enhancement rather than just accountability (Lomas, 2009).

The body usually conducts thematic evaluations and audits, asking critical, reflective questions about the strategies that universities are adopting to improve their services. One advantage of this approach is that it allows universities to align their internal quality assurance processes with their unique missions, strategies, and contexts. However, it must integrate the nation's quality body's audit criteria into individual university self-assessment processes. This decentralised strategy promotes mutual accountability and regular dialogue between a higher education institution and the quality assurance body in Finland (Zayachuk & Dziamko, 2023). Finnish QA is sharply different from the compliance model in Asia, Africa, and North America. It believes that institutional autonomy and professional trust will not only drive innovation but also make 21st-century competencies easily adaptable across various higher education institutions.

3.1.2.2 Internal Quality Assurance (IQA)

Internal quality assurance is a mechanism used in Finnish higher education institutions through their academic and operational frameworks (Zaskaleta, 2020). Relevant stakeholders, including students, personnel, and the community, are engaged in genuine improvement. Universities employ student feedback loops, curriculum reviews, and staff development programmes, among other means, to ensure the process is participative and progressive. For instance, universities in Finland exemplify this IQA through curriculum development that involves stakeholders to gather input and address both local and global needs. Similarly, the University of Helsinki established a professional learning centre to upskill faculty members. They make their teaching more innovative to address 21st-century student needs (University of Helsinki, 2025). This implies that the country believes in institutional maturity and decentralisation of quality assurance.

RQ2: What challenges do quality assurance systems in Nigeria and Finland face in adapting to 21st-century competency demands?

Results addressing Research Question 2 highlight context-specific challenges that limit the adequate assurance of 21st-century competencies in both systems.

3.2 a) Challenges in Addressing 21st Century Competencies in Nigeria

The prescriptive nature of the Nigerian QA system has yielded measurable improvements in standardising foundational academic components. However, it has struggled to address the dynamic and diverse needs of 21st-century education. The acquisition of professional competencies requires flexible and adaptive curricula, which the rigid MAS policy of the Nigerian quality assurance system fails to accommodate. Higher education institutions, therefore, find it challenging to keep up with rapid change. This is helping many of its graduates compete favourably in the labour market, which demands fields such as artificial intelligence, data science, and renewable energy technologies, among others. In fact, the introduction of the Curriculum and Minimum Academic Standards (CCMAS) in 2022 by the NUC, which was supposed to be a remarkable feat in modernising accreditation criteria, has yet to yield results (Nwankwo & Mkpa, 2023).

Furthermore, the global reality of educational innovation underlines the essence of transdisciplinary learning, which is typically achieved through university-driven policy experimentation rather than strict adherence to government-mandated frameworks. Compared with countries like Malaysia, which has introduced greater institutional identification of quality improvement projects as part of its QA, Nigeria's higher education ecosystem remains overly centralised, leaving universities less equipped to pioneer reforms or tailor student-centred advancements (Hanh et al., 2020).

Also, higher education still faces infrastructure challenges in catering to the growing number of youth seeking tertiary education (Igbape et al., 2014). To successfully administer and manage education for quality, 21st-century school leaders need information and technology infrastructure. Asiyai (2022) argues that higher education institutions in Nigeria still need to improve their physical facilities, curricula, and innovative teaching practices. These challenges have caused more harm than good to the higher education system in Nigeria, leading, according to Sowunmi et al. (2016), to low international patronage.

3.2 b) Challenges in addressing 21st Century Competencies in Finland

Despite various quality assurance mechanisms institutionalised by FINEEC to enhance higher education, the country still faces systemic challenges in effectively integrating 21st-century competencies

and ensuring equitable outcomes across institutions. For insurance, the increasing relevance of global metrics and university rankings, such as the QS and Times Higher Education rankings, can challenge Finland's evaluation results due to its lack of conventional quantitative rubrics. In recent years, the world has shifted toward quantitative rankings based on metrics such as research output and international collaboration. However, this parameter is often overlooked in the Finnish quality-enhancement driven approach. This requires urgent attention from the country's policymakers. Another challenge with this system is the excessive workload (Niu et al., 2021), all in the name of enhancing quality in higher education institutions across the country.

RQ3: *How can a Contextually Adaptive Quality Assurance (CAQA) framework support the assurance of complex learning outcomes in Nigeria and Finland?*

3.3 CAQA Framework

Drawing on the comparative findings across the two cases, the study proposes a Contextually Adaptive Quality Assurance (CAQA) framework. In this study, our framework considers quality as a developing capability that relies on foundational stability, pedagogical transformation, evidence-driven improvement, and broad-based collaboration, rather than treating Quality assurance as a uniform set of tools or standards. It is proposed that QA should pass through four stages built on four pillars.

Table II: The Contextually Adaptive Quality Assurance (CAQA) Framework

| Pillar | Core Question | Foundational Context (Nigeria) | Advanced Context (Finland) |
|-----------------------------|---|---|---|
| Foundational Integrity | Are the essential resources and baseline standards in place? | Focus on infrastructure, qualified staff, curriculum coherence, and financial stability. | Maintained as a baseline, but not the primary focus of QA activities. |
| Competency-Oriented Process | How does the educational process develop 21st-century Competencies? | Pilot authentic assessment in specific programmes; build faculty capacity in active learning. | Full integration of complex, real-world assessments; curriculum-wide pedagogical innovation. |
| Data-Informed Enhancement | How is evidence used for improvement? | Robust data systems on graduation rates, employment, and student satisfaction. | Advanced learning analytics; qualitative studies on student learning journeys; tracer studies |
| Ecosystem Collaboration | Who is involved in defining and assuring quality? | Strengthen internal QA units; engage professional bodies. | Deep stakeholder engagement with employers; cross-border peer learning. |

Pillar 1: Foundational integrity: At the core of any QA initiative lies foundational integrity, which ensures the essential conditions for teaching and learning excellence. This includes physical infrastructure, sustainable funding, adequate staffing, and coherent curricula. It will therefore be impractical to achieve the 21st-century competencies if the foundational components are absent. For instance, in a resource-constrained continent like Sub-Saharan Africa, including Nigeria, addressing these structural deficiencies is not negotiable.

Pillar 2: *Competency-Oriented Processes:* The second stage of the framework emphasises a paradigm shift towards competency-focused pedagogy, aligning quality assurance standards with the educational needs of the 21st century. A rigid, content-dominated curriculum cannot accommodate critical thinking, creativity, collaboration, and other 21st-century competencies. In early-stage systems, tertiary institutions should conduct pilot programmes to train faculty in student-centred pedagogies and competency-based assessments, to test their feasibility. Simulation, targeted portfolio evaluations,

and group projects have proven effective in these skills in low-resource contexts.

Moreover, the Finnish system is advanced and has fully integrated competency-based education. Aarrevaara et al. (2021) reflected on Finland's cross-disciplinary, competency-focused curricular renewal efforts to understand their world relevance.

Pillar 3: Data-informed Enhancement: Evidence-based decision-making forms the crux of the third pillar. Modern QA models emphasise a continuum of data sophistication, from basic metrics in foundational systems to robust, multimodal analytics in mature systems. Early-stage efforts may rely on graduation rates, employment statistics, and program enrolment rates as proxies for institutional performance.

However, advanced systems benefit from cutting-edge methodologies, such as real-time learning analytics and longitudinal studies. These tools enable institutions to uncover trends in student engagement, address equity gaps, and fine-tune curriculum delivery. For instance, Gašević et al. (2022) highlighted the power of multimodal evidence to drive

equity-focused reforms in higher education systems, showcasing the importance of tailoring pedagogical solutions based on detailed, data-informed insights.

Pillar 4: Ecosystem Collaboration: The final pillar acknowledges the increasingly participatory nature of global QA ecosystems. Collaborative QA frameworks shift from top-down models to processes co-created by diverse stakeholders. These include internal institutional units, faculty and students, employers, professional bodies, civic society, and international QA networks.

Early-stage systems typically focus on building internal QA capacity and establishing legitimacy through accreditation and alignment with professional bodies. Advanced systems, by contrast, benefit from broad-based networks to foster innovation, align academic programs with labour market demands, and enhance societal relevance. For instance, recent studies (Kontkanen et al., 2021) in Nordic nations, emphasis is placed on the importance of transnational partnerships and benchmarking consortia in fostering innovation capacity and societal alignment within QA frameworks.

3. Discussion

The study was designed to explore how Nigeria and Finland's higher education systems, shaped by different histories, governance models and resource environments, conceptualise and operate quality assurance in an era defined by 21st-century competencies. Comparative analysis reveals apparent convergence and differences, which will lead to a broader global debate on the future of quality assurance, particularly on the tension between compliance and improvement and between standardisation and contextual flexibility.

The National University Commission's (NUC) Minimum Academic Standards (MAS) and related mandates have helped stabilise basic quality during the rapid expansion phase. However, the system's clear orientation limits educational innovation and makes many internal quality assurance (IQA) units more compliance-oriented than improvement-oriented. Numerous empirical and policy analyses support this dual effect. Studies of universities in Nigeria document the stability of centralised standards, while highlighting the excessive use of central control to undermine institutional autonomy and to discourage curriculum innovation (Wordu & Nwanguma, 2023). The recent reports and responses of stakeholders (such as academic unions) also characterise some NUC

programme guidelines as imposed rather than co-created. This dynamic drives perceptions of a decline in university autonomy and hampers the momentum of internal reform (Ojo, 2023). At the same time, Nigeria's IQA evaluations indicate effective internal practices, and IQA units (Ekpoh & Asuquo, 2020; Olatoun et al., 2025) drive improvements when they receive resources and management support. This suggests that compliance orientation is not deterministic: the achieving capacity-building IQA unit can move towards improvement. Consequently, the literature supports the study's claim that Nigeria needs a step-by-step approach that ensures fundamental integrity and deliberately strengthens IQA capacity to perform development functions, in line with the first and second sections of CAQA.

The Finnish Quality Assessment System, managed by FINEEC, has institutional autonomy, formal evaluation, and stakeholder participation, which enable the systemic integration of competency-based teaching but create tensions in the face of global measurement systems and workload pressures. OECD and national reviews described Finland's external evaluations as explicitly enhanced and based on trust, which they viewed as promoting a quality culture that prioritised self-reflection and professional responsibility over regulatory checklists (OECD, 2024). The research following the Finnish adaptation of the Bologna QA period confirms that decentralised and improved methods support institutional innovation and the integration of stakeholders' feedback (Haapakorpi, 2011). However, evaluations and policy comments warn that systems in need of improvement are subject to legitimacy constraints in a global environment dominated by rankings and quantitative metrics, and Finnish institutions sometimes struggle to reconcile qualitative national QA objectives with the incentive structure of international rankings. This observation directly supports our findings on cross-pressure from global metricised rankings (European Association for Quality Certification in Higher Education (ENQA), 2017). The Finnish case supports CAQA's advanced context strategies (data sophistication, global benchmarks), but warns that the upgrade system must proactively manage workloads and coordinate external comparative signals without affecting autonomy.

Both systems face challenges, though for different reasons, in fully ensuring the development of complex, transferable skills such as critical thinking, collaboration, and digital literacy. Nigeria's difficulties mainly stem from infrastructure and governance issues, while Finland's challenges revolve around aligning qualitative educational practices with

global standards and managing faculty workload. Research on skills and learning in low- and middle-income countries (LMICs) consistently points to infrastructure shortcomings, limited professional development for teachers and faculty, and systemic capacity limitations as key obstacles to expanding competency-based education, findings that reflect the situation in Nigeria described here. The World Bank and recent regional studies argue that education systems lacking essential resources will find it hard to deliver adaptive, digitally integrated learning experiences necessary for 21st-century skills. In contrast, studies of well-resourced systems like Finland highlight that although curricula and teaching methods may already support these competencies, the main challenges lie in assessment, international benchmarking, and balancing faculty workload, findings that align with our analysis. Peer reviews of FINEEC specifically note these balancing challenges (European Association for Quality Assurance in Higher Education (ENQA), 2017). These consistent findings support CAQA's phased strategy: foundational problems must be addressed before competency-based reforms can be effectively expanded, and advanced systems need to integrate qualitative improvements with reliable, data-driven indicators.

Internal Quality Assurance (IQA) units within Nigerian universities are frequently perceived primarily as mechanisms for compliance aimed at fulfilling external accreditation requirements, rather than as drivers of ongoing institutional improvement. Nonetheless, in contexts where adequate resources and institutional commitment are present, IQA units have demonstrated the capacity to act as agents of developmental change. Empirical investigations, including surveys and case studies, reveal a heterogeneous performance record for IQA units in Nigeria; many suffer from insufficient staffing, limited funding, and a lack of strategic authority, which results in a predominant focus on generating documentation to meet accreditation cycles rather than fostering continuous quality enhancement (Ekpoh & Asuquo, 2020). Conversely, more recent practice-oriented reports and pilot studies indicate that when universities allocate appropriate resources and integrate IQA functions into governance structures, such as establishing permanent representation on university senates and linking IQA activities to academic promotion and staff development, these units effectively serve as catalysts for curriculum review, pedagogical innovation, and stakeholder engagement. This evidence substantiates the Centre for Academic Quality Assurance (CAQA)'s assertion that targeted capacity-building initiatives can reorient IQA

functions toward quality enhancement (Olatoun et al., 2025). Collectively, these findings support a policy recommendation to reinforce IQA resourcing, embed IQA within decision-making processes, and redefine external accreditation frameworks to emphasise support for internal quality enhancement rather than solely enforcing compliance.

The proposed Contextually Adaptive Quality Assurance (CAQA) Framework, comprising Foundational Integrity, Competency-Oriented Processes, Data-Informed Enhancement, and Ecosystem Collaboration, aligns with established themes within the quality assurance (QA) literature while addressing identified gaps across diverse contexts. Comparative QA research underscores the importance of multi-stage capacity building, the localisation of standards to specific contexts, and a gradual transition from input-based to outcome-based evaluation metrics, all of which are integral components of the CAQA framework (Alzafari & Ursin, 2019; Amaral & Rosa, 2010; Bauer & Knill, 2014). Concurrently, policy analyses emphasise the necessity of robust data systems and active stakeholder engagement to ensure competency assurance, thereby reinforcing the third and fourth pillars of CAQA (Haapakorpi, 2011).

Moreover, the literature warns against the application of uniform frameworks, noting that the success of phased approaches depends on factors such as political commitment, financial resources, and institutional leadership. Consequently, the potential efficacy of CAQA hinges on its explicit operationalisation through the development of clear indicators, the establishment of pilot implementations, and comprehensive resourcing strategies to facilitate its transition from a theoretical model to practical reform. This caveat aligns with findings from reform initiatives in Nigeria and evaluative studies conducted in Finland.

4. Conclusion

This study reveals that Nigeria and Finland adopt fundamentally different approaches to quality assurance, shaped by their distinct historical contexts, levels of institutional development, and resource environments. Nigeria's approach is primarily grounded in compliance and input regulation, aimed at maintaining minimum standards within a system characterised by rapid expansion and limited resources. In contrast, Finland employs an enhancement-driven, trust-based model indicative of a more advanced system, where institutional autonomy and ongoing improvement are central to quality

assurance. While both countries acknowledge the increasing significance of 21st-century competencies, their ability to integrate these skills depends on their foundational preparedness, governance frameworks, and institutional cultures. The proposed CAQA Framework encapsulates these distinctions and provides a phased strategy for systems striving to balance foundational stability with competency-focused transformation. As global expectations evolve toward more complex learning outcomes and societal impact, the capacity of quality assurance systems to adapt flexibly, rather than adhere to uniform standards, will be critical to their sustained relevance.

4.1 Implication for Quality Assurance Research and Practice

The findings underscore the need for quality assurance reforms tailored to the educational system's developmental stage. In emerging systems such as Nigeria, priority should be given to establishing fundamental conditions, including adequate funding, sufficient staffing, and the development of internal quality assurance capacities, before implementing more advanced competency-based reforms. Conversely, in well-established systems like Finland, efforts should focus on increasing the utilisation of evidence and addressing workload challenges to maintain cultures of continuous improvement. In both contexts, internal quality assurance processes must transition from mere compliance mechanisms to developmental instruments that facilitate curriculum innovation and authentic assessment of learning. Furthermore, the imperative to assess 21st-century competencies requires adopting evaluation methodologies that capture complex, real-world learning experiences rather than relying solely on narrow content-based benchmarks.

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Health Education and Behavior Change Communication (BCC) in Disease Prevention: A Review of Effectiveness and Strategies

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Abstract. Health education and behavior change communication (BCC) represent foundational pillars of public health strategy, harnessing evidence-informed communication principles to modify health-related knowledge, attitudes, and practices across diverse populations. This narrative review synthesises peer-reviewed literature published between 2015 and 2026 to evaluate the effectiveness of health education and BCC interventions in the prevention of communicable and non-communicable diseases globally. Five principal mechanistic and strategic domains are examined: theoretical frameworks underpinning BCC design, multi-channel communication modalities, community-based participatory approaches, digital and mHealth innovations, and cultural competence as a determinant of intervention reach and impact. Evidence consistently demonstrates that theory-guided, culturally adapted, multi-channel BCC programmes produce significant improvements in health knowledge, preventive behaviour adoption, and disease incidence outcomes, with effect sizes moderated by intervention intensity, target population characteristics, and the fidelity of implementation. The review identifies critical gaps in long-term follow-up evidence, equity-focused evaluation methodologies, and the integration of structural determinants of health within BCC frameworks. Practice recommendations and future research priorities are outlined for public health professionals, programme designers, and policymakers committed to maximising the population-level impact of health communication investments.

Keywords: Health education, behavior change communication, disease prevention, health promotion, mHealth, community-based interventions, theoretical frameworks, cultural competence.

1. Introduction

The global burden of preventable disease — communicable infections, vaccine-preventable illnesses, chronic non-communicable conditions, and the behavioral risk factors that sustain them — remains one of the defining challenges of 21st-century public health. Despite remarkable advances in pharmacological treatment, diagnostic technology, and health system infrastructure, the persistence of preventable morbidity and mortality in both high-income and low-and-middle-income countries (LMICs) underscores a fundamental truth: biomedical solutions alone are insufficient to produce population-level health improvements when individuals lack the knowledge, motivation, and social support needed to adopt and sustain protective health behaviours (Nutbeam & Lloyd, 2021). Health education and behavior change communication emerge from this recognition as indispensable complements to clinical and structural public health interventions — mechanisms through which populations are equipped with the information, skills, and normative frameworks required to reduce their exposure to disease risk.

Behavior change communication is broadly defined as a systematic, evidence-based process of developing, disseminating, and evaluating messages and strategies designed to promote positive health

behaviour among defined audiences, drawing on established theories of human behaviour and communication science (UNICEF, 2018). Distinguished from one-way information provision by its emphasis on dialogue, audience participation, and behaviour as the primary outcome, BCC has evolved substantially since its origins in social marketing and health promotion campaigns of the 1970s and 1980s. Contemporary BCC frameworks integrate insights from behavioural economics, communication theory, anthropology, and implementation science to produce interventions characterised by theoretical grounding, audience-specific message design, multi-channel delivery, and rigorous evaluation (Schiavo, 2020). The evidence base for BCC effectiveness has expanded considerably over the past decade, yet critical questions about the mechanisms of behaviour change, the optimal design of communication strategies, and the conditions under which BCC effects are sustained over time remain subjects of active investigation.

The disease prevention context for BCC encompasses both communicable and non-communicable disease domains. In communicable disease prevention, BCC has been applied to HIV/AIDS, tuberculosis, malaria, vaccine-preventable diseases, and — most recently and visibly — COVID-19, where communication failures and successes fundamentally determined the trajectory of the pandemic in different populations (Bedson et al., 2021). In non-communicable disease prevention, BCC addresses the behavioural risk factors — tobacco use, physical inactivity, unhealthy diet, harmful alcohol consumption — that collectively account for the majority of preventable non-communicable disease burden globally. Across both domains, the strategic principles of effective BCC — theoretical grounding, audience analysis, cultural adaptation, multi-channel delivery, and participatory design — are broadly consistent, even as the specific content and contextual adaptations required differ substantially.

This review is organised around five analytical domains: (1) theoretical frameworks that provide the mechanistic foundation for BCC design; (2) multi-channel and mass media communication strategies; (3) community-based and interpersonal communication approaches; (4) digital health and mHealth innovations in BCC delivery; and (5) cultural competence and equity as determinants of BCC reach and effectiveness. For each domain, the review evaluates the quality and consistency of evidence from 2015 to 2026, identifies moderating variables, and draws implications for practice and policy. A concluding section addresses limitations of the evidence base and priorities for future research.

2. Theoretical Frameworks Underpinning BCC Design

The theoretical grounding of BCC interventions is consistently identified as a predictor of effectiveness in systematic reviews and meta-analyses, yet the translation of theory into programme design remains uneven in practice. The most widely applied frameworks in BCC for disease prevention include the Health Belief Model (HBM), Social Cognitive Theory (SCT), the Theory of Planned Behaviour (TPB), the Transtheoretical Model (TTM), and the Social-Ecological Model — each offering distinct explanatory mechanisms and corresponding implications for message design and strategy selection (Glanz et al., 2015). The HBM, which posits that behaviour change is driven by perceived susceptibility, severity, benefits, barriers, cues to action, and self-efficacy, has been applied extensively in vaccine uptake campaigns, HIV prevention, and screening behaviour promotion, with meta-analytic evidence demonstrating consistent associations between HBM constructs and preventive behaviour adoption across multiple disease contexts (Jones et al., 2015).

Social Cognitive Theory, with its central constructs of observational learning, self-efficacy, and outcome expectancies, provides a particularly rich theoretical foundation for BCC interventions that employ role modelling, skills demonstration, and incremental goal-setting — strategies well suited to the cultivation of complex preventive behaviours requiring sustained motivation and practical skill (Bandura, 2004, as cited in Fernandez et al., 2019). The TTM's stages-of-change model, which conceptualises behaviour change as a dynamic process through which individuals move from pre-contemplation to maintenance via intermediate stages of contemplation, preparation, and action, has informed the development of stage-matched communication strategies that tailor message content to the audience's current motivational state — an approach demonstrated to improve intervention efficiency by avoiding the mismatch between change-promoting messages and audiences not yet ready to act (Prochaska et al., 2015). Increasingly, contemporary BCC frameworks adopt an integrative approach that draws on multiple theories simultaneously, recognising that no single theoretical model fully accounts for the complexity of human health behaviour in real-world social and environmental contexts (Michie et al., 2018).

The Behaviour Change Wheel (BCW) and its associated Capability-Opportunity-Motivation-Behaviour (COM-B) model have emerged as influential integrative frameworks in BCC programme design over the past decade, providing

systematic guidance on the identification of behavioural determinants and the selection of intervention functions matched to those determinants (Michie et al., 2018). Applied to disease prevention contexts in LMICs and high-income settings alike, the COM-B model distinguishes between capability barriers (lack of knowledge or skill), opportunity barriers (social norms, physical access, structural constraints), and motivation barriers (attitudes, habits, intentions), enabling programme designers to target intervention resources precisely at the behavioural bottlenecks that most constrain adoption of preventive behaviour in a given population. A systematic review by Prestwich et al. (2016) found that BCC interventions explicitly grounded in identified theoretical mechanisms demonstrated significantly larger effect sizes on behaviour change outcomes than theoretically unspecified interventions, providing empirical justification for the investment in theory-based programme design that characterises best practice in contemporary BCC.

3. Multi-Channel Communication Strategies and Mass Media

The selection of communication channels is a strategic decision with profound implications for BCC reach, engagement, and behaviour change impact. Mass media channels — television, radio, print media, and outdoor advertising — have historically been the backbone of large-scale health communication campaigns, offering the breadth of reach required to produce population-level shifts in health knowledge and social norms within relatively short timeframes. Meta-analytic evidence demonstrates that mass media health campaigns produce modest but consistent effects on disease prevention behaviours, with pooled effect sizes typically in the range of Cohen's $d = 0.10$ to 0.30 across diverse health outcomes — effects that translate into substantial public health impact at the population level given the scale of exposure (Wakefield et al., 2017). Radio, in particular, retains critical importance in sub-Saharan Africa and other regions where television and internet penetration remain limited, with community radio programmes that integrate local language, cultural reference, and participatory formats demonstrating superior engagement and behaviour change outcomes relative to standardised broadcast content (Storey & Figueroa, 2017).

Entertainment-education (E-E) — the strategic embedding of health and social messages within entertainment content including soap operas, drama series, radio serials, and popular music — represents one of the most evidence-supported mass media BCC strategies, exploiting the emotional

engagement, parasocial relationships, and narrative immersion of entertainment formats to promote attitude change and social norm shifts that are resistant to the reactance and message fatigue that explicitly didactic health messaging often generates (Singhal et al., 2019). Longitudinal studies of E-E programmes addressing HIV prevention, family planning, and childhood vaccination in sub-Saharan Africa, South Asia, and Latin America have demonstrated significant positive effects on knowledge, attitudes, and reported behaviour change, with the strength of parasocial relationships between audience members and programme characters identified as a key mediating variable (Bouman et al., 2021). The theoretical mechanism — Bandura's modelling processes and Singhal and Rogers' elaboration of E-E theory — is well specified, providing a strong basis for programme design choices including character design, narrative arc, and the balance between positive role models, negative role models, and transitional characters whose evolving behaviour mirrors the desired audience change trajectory.

Multi-channel campaign designs that combine mass media exposure with interpersonal communication, community mobilisation, and point-of-service reinforcement consistently outperform single-channel approaches in randomised controlled trials and quasi-experimental evaluations, reflecting the synergistic mechanisms through which different channels address different behavioural determinants and reach different audience segments (Wakefield et al., 2017). The reach of mass media establishes awareness and shifts social norms at the population level; interpersonal communication from health workers, peers, and community leaders translates awareness into personal motivation and practical skill; and environmental and structural interventions remove the opportunity barriers that would otherwise prevent motivated individuals from acting on their intentions. The design of integrated multi-channel campaigns requires systematic audience segmentation, channel mapping, and message consistency planning — a process supported by tools including the Communication for Development (C4D) framework and the P-process developed by Johns Hopkins Bloomberg School of Public Health (Schiavo, 2020).

4. Community-Based Participatory and Interpersonal Communication Approaches

Community-based participatory approaches to health education and BCC — variously described as community-led, community-owned, or community-centred — have gained substantial empirical and normative traction as alternatives and complements

to top-down, externally designed communication programmes. Rooted in the participatory action research tradition associated with Paulo Freire and applied to health promotion through community health worker (CHW) models, participatory rural appraisal, and community dialogue methodologies, these approaches prioritise the engagement of community members as active agents in the analysis of their health problems, the design of solutions, and the implementation and evaluation of BCC activities (Freire, 1970, as cited in Wallerstein & Duran, 2017). The theoretical rationale — that interventions designed with and by community members achieve superior cultural alignment, community ownership, and sustained behaviour change than those designed for communities by external experts — is supported by a growing body of rigorous evaluation evidence across diverse disease prevention contexts.

Community health workers, as the primary interpersonal communication channel in most LMICs and as an increasingly recognised asset in high-income country public health systems, occupy a strategically pivotal position in community-based BCC. A comprehensive Cochrane review by Lewin et al. (2021) found strong evidence that CHW-delivered health education and counselling significantly improved uptake of preventive health services including vaccination, antenatal care, and HIV testing and treatment, with larger effects observed in programmes that provided CHWs with structured training, supportive supervision, and adequate logistical support. The interpersonal communication modalities employed by CHWs — home visits, group counselling, peer support groups, and community health dialogues — address the social influence, self-efficacy, and practical support mechanisms identified in Social Cognitive Theory as critical determinants of behaviour change, and the trusted relationships that effective CHWs build within their communities enable the sustained engagement required for the cultivation of complex preventive behaviours that mass media campaigns alone cannot produce.

Participatory community dialogues, including those conducted through the Participatory Learning and Action (PLA) cycle methodology evaluated by Prost et al. (2016) in the context of maternal and newborn health promotion, represent a particularly promising approach to BCC in which community groups collectively analyse their health situation, identify barriers to preventive behaviour, develop locally appropriate solutions, and implement and evaluate behaviour change activities over iterative cycles. A cluster-randomised trial of PLA-based women's group programmes in rural settings across Nepal, India, Bangladesh, and Malawi demonstrated significant reductions in neonatal mortality in intervention communities relative to controls,

mediated through improvements in birth preparedness, hygiene practice, and care-seeking behaviour — outcomes that the authors attributed to the combination of knowledge acquisition, social norm change, and collective agency development that the participatory methodology uniquely produces (Prost et al., 2016). The scalability of participatory approaches, however, presents implementation challenges that structured CHW programmes and mass media campaigns do not face to the same degree, and the adaptation of participatory methodologies to urban, fragmented, and high-mobility community contexts remains an area requiring methodological innovation.

5. Digital Health and mHealth Innovations in BCC Delivery

The proliferation of mobile telephone access and internet connectivity across global populations has fundamentally transformed the landscape of health communication, creating new channels for BCC delivery that combine the broad reach of mass media with the personalisation and interactivity historically associated only with interpersonal communication. Mobile health (mHealth) interventions — encompassing SMS text messaging, smartphone applications, social media platforms, interactive voice response systems, and web-based health education portals — have been evaluated across a wide range of disease prevention contexts and populations, with a rapidly expanding evidence base that, while still characterised by significant heterogeneity in design and evaluation quality, points consistently toward net positive effects on health knowledge, self-efficacy, and preventive behaviour adoption (Stephani et al., 2016). The theoretical mechanisms through which digital BCC produces behaviour change include the enhanced personalisation that enables message tailoring to individual stage of change, risk profile, and sociodemographic characteristics; the interactivity that enables two-way dialogue, question-answering, and real-time feedback; and the accessibility of just-in-time information delivery at moments of decision relevance that static mass media cannot achieve.

SMS-based BCC programmes have accumulated the strongest evidence base among mHealth modalities, reflecting the near-universal penetration of basic mobile telephony in LMICs and the technical simplicity of SMS delivery that enables implementation at low cost without smartphone ownership or data connectivity. A Cochrane systematic review of SMS interventions for health behaviour change by Free et al. (2021) found strong evidence of positive effects on smoking cessation, antiretroviral therapy adherence, and appointment

attendance, with moderate evidence for improvements in physical activity, dietary behaviour, and chronic disease self-management. The characteristics of effective SMS BCC programmes identified across multiple reviews include message personalisation, bi-directional interactivity, theory-based message design, appropriate message frequency, and cultural and linguistic adaptation — characteristics that require careful programme design investment but that distinguish effective from ineffective SMS health communication in the evidence base. Smartphone applications for disease prevention have demonstrated promising effectiveness in high-income country contexts for conditions including diabetes prevention, cardiovascular risk reduction, and mental health self-management, but their equity implications — dependent as they are on smartphone ownership and data literacy — require careful consideration in programme design, particularly in LMICs where smartphone penetration remains uneven.

Social media platforms have emerged as BCC channels of unprecedented reach and influence, particularly for younger populations for whom Facebook, Instagram, TikTok, WhatsApp, and Twitter constitute primary information environments. The COVID-19 pandemic provided the most extensive and rapidly evolving natural experiment in social media health communication in public health history, demonstrating both the extraordinary potential of social media for rapid, wide-reach dissemination of health guidance and the devastating consequences of misinformation spread through the same channels — a phenomenon described as the 'infodemic' by the World Health Organization (WHO, 2020). Bedson et al. (2021) systematically reviewed evidence on digital BCC during COVID-19 and found that well-designed social media health communication campaigns significantly improved knowledge and compliance with non-pharmaceutical interventions including mask-wearing, hand hygiene, and physical distancing, while poorly designed or contested communication generated confusion, distrust, and behaviour contrary to public health recommendations. The implications for BCC programme design are clear: social media health communication must be integrated with systematic mis/disinformation monitoring and counter-messaging strategies, and must leverage trusted messengers — including healthcare professionals, community leaders, and credible peer influencers — whose social media presence can reach target audiences through channels that algorithmic filtering may otherwise suppress.

6. Cultural Competence, Health Literacy, and Equity in BCC

Cultural competence — the capacity of BCC programmes to design, deliver, and evaluate health communication in ways that are sensitive to, respectful of, and congruent with the cultural values, beliefs, language, and lived experiences of target populations — is consistently identified as a critical determinant of BCC effectiveness, particularly in contexts of cultural diversity, health disparities, and historical mistrust between marginalised communities and health institutions (Kreuter & McClure, 2017). The evidence base for cultural adaptation of health education interventions is substantial: a meta-analysis by Bhatt et al. (2023) examining culturally adapted health promotion interventions across diverse populations found a significantly larger pooled effect size for culturally adapted versus non-adapted interventions (Cohen's $d = 0.45$ vs. 0.18), with the largest benefits observed in populations characterised by strong cultural identity, limited English proficiency, and prior negative experiences with formal healthcare systems. Cultural adaptation extends beyond surface-level features such as language translation and image representation to encompass the deep structural dimensions of health belief systems, family and community decision-making processes, gender norms, religious frameworks, and the role of traditional healers and community authority figures whose engagement or alienation fundamentally shapes BCC receptivity.

Health literacy — the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions — represents a related but distinct determinant of BCC effectiveness that intersects critically with cultural and socioeconomic dimensions of health inequity (Berkman et al., 2021). Low health literacy, prevalent across education levels and social strata but disproportionately concentrated among elderly populations, recent immigrants, individuals with limited formal education, and residents of under-resourced communities, fundamentally limits the effectiveness of health education materials designed for general audiences. The evidence-based principles of health literate communication — use of plain language, avoidance of medical jargon, visual reinforcement of key messages, teach-back verification of comprehension, and active audience participation — are well established in the literature but inconsistently applied in practice, creating systematic gaps in BCC reach among those with the highest disease burden and the greatest need for effective health education (Berkman et al., 2021; Rowlands et al., 2017).

The equity dimensions of BCC extend beyond cultural adaptation and health literacy to encompass the structural determinants of health — poverty, housing, food security, occupational exposure, and discrimination — that shape both the health risks individuals face and their capacity to adopt preventive behaviours that BCC promotes. A critique of conventional BCC frameworks by Braveman et al. (2022) argued that interventions focused exclusively on knowledge and attitude change as proxies for behaviour change systematically underestimate the degree to which structural barriers prevent motivated individuals from translating intention into action, and that BCC programmes that do not address these structural determinants are likely to widen rather than narrow health disparities by improving behaviour change outcomes primarily among the most advantaged members of target populations who already possess the material and social resources to act on improved knowledge. The implication — that BCC must be designed and evaluated as a component of comprehensive, multi-level health promotion strategies that simultaneously address individual, interpersonal, community, and structural determinants of health — represents a fundamental conceptual evolution in the field that is increasingly reflected in best-practice BCC programme frameworks but is still incompletely operationalised in many real-world health communication programmes.

7. Evidence of Effectiveness Across Disease Prevention Domains

The effectiveness of health education and BCC has been evaluated most rigorously in specific disease prevention contexts that provide the strongest evidence base for programme design. In HIV/AIDS prevention, the combination of mass media campaigns, peer education, and community mobilisation within the UNAIDS prevention package has demonstrated measurable reductions in new HIV infections in high-prevalence sub-Saharan African settings, with behaviour change — particularly delayed sexual debut, increased condom use, and reduction in concurrent partnerships — identified as the primary mechanism of incidence reduction (Pettifor et al., 2019). In vaccine-preventable disease prevention, BCC addressing vaccine hesitancy has emerged as a critical public health challenge, with systematic reviews demonstrating that motivational interviewing-based counselling, trusted community messenger strategies, and the correction of specific misinformation beliefs are the most effective communication approaches for improving vaccination uptake in hesitant populations, while confrontational or purely information-based

approaches may paradoxically reinforce hesitancy through psychological reactance (MacDonald & the SAGE Working Group, 2015).

In the non-communicable disease prevention domain, BCC addressing tobacco cessation, physical activity promotion, and healthy diet adoption has generated the most extensive evaluation evidence. A comprehensive Cochrane review of brief advice interventions for smoking cessation found that even minimal health education delivered by primary care providers — advice of less than five minutes' duration — produced significant increases in cessation rates relative to no advice, with more intensive counselling producing proportionally larger effects (Stead et al., 2017). Community-based BCC for diabetes prevention, evaluated in multiple randomised controlled trials across diverse populations, has demonstrated significant reductions in the incidence of type 2 diabetes through lifestyle behaviour change programmes that combine group health education, behavioural counselling, dietary guidance, and physical activity promotion — with the largest effects observed in high-risk prediabetic populations and in programmes achieving the highest fidelity to the evidence-based curriculum (Knowler et al., 2020). The consistent finding across disease domains is that BCC works best when it is theoretically grounded, culturally adapted, multi-component, and supported by environmental and structural changes that remove barriers to the adoption of the behaviours promoted.

8. Limitations of the Evidence Base and Future Research Directions

The evidence base for health education and BCC in disease prevention, while substantial, is characterised by several systematic limitations that temper the confidence of conclusions and identify priorities for future research. The preponderance of short-term outcome measures — assessing knowledge, attitude, and self-reported intention rather than sustained behaviour change or disease incidence — limits the ability to determine whether BCC effects translate into durable health improvements beyond the duration of programme delivery (Nutbeam & Lloyd, 2021). Publication bias toward positive findings, inadequate description of intervention components limiting replication, and the frequent use of non-validated outcome measures further compromise the internal and external validity of the accumulated evidence. The absence of standardised theoretical frameworks and behavioural outcome taxonomies — addressed by the emergence of the Behaviour Change Technique Taxonomy (BCTTv1) as a common language for describing active ingredients of BCC interventions

— has historically limited cumulative knowledge development through systematic review and meta-analysis (Michie et al., 2018).

Future research should prioritise the development and application of adaptive trial designs that enable real-time programme optimisation in response to emerging evidence — approaches including Sequential Multiple Assignment Randomised Trials (SMARTs) and Multiphase Optimization Strategy (MOST) that are well suited to the complex, multi-component nature of BCC programmes but rarely applied in health communication research to date. The equity implications of BCC programmes require systematic evaluation through pre-specified subgroup analyses and equity-focused reporting frameworks that disaggregate outcomes by socioeconomic status, gender, ethnicity, and geographic location, ensuring that improvements in average outcomes are not masking widening health disparities within target populations (Braveman et al., 2022). Longitudinal cohort designs tracking behaviour change and health outcomes over years to decades are needed to determine the persistence of BCC effects and to identify the maintenance strategies — booster interventions, environmental supports, community reinforcement mechanisms — that sustain initial behaviour change over the lifecourse. Finally, the integration of implementation science frameworks into BCC research and practice — systematically studying the conditions under which effective BCC strategies are successfully adopted, implemented, and sustained within real-world health system contexts — represents an essential bridge between the production of evidence and its translation into population health impact.

9. Implications for Practice and Policy

The evidence synthesised in this review supports a set of practice and policy recommendations for maximising the effectiveness of health education and BCC investments in disease prevention. Programme designers should ensure that BCC interventions are explicitly grounded in identified theoretical frameworks, with the choice of theory driven by systematic analysis of the behavioural determinants operating in the specific target population rather than by theoretical convention or disciplinary preference (Glanz et al., 2015; Michie et al., 2018). Multi-channel campaign designs that integrate mass media, community mobilisation, and interpersonal communication should be prioritised over single-channel approaches, with channel selection driven by audience-specific media consumption patterns, communication preferences, and the distinct mechanisms through which different channels address different behavioural

determinants. Cultural adaptation should be treated as a non-negotiable programme quality standard rather than an optional enhancement, with deep structural adaptation — engaging community members in message design, validating materials with target communities, and embedding culturally resonant messengers and communication formats — prioritised over surface-level translation-only adaptation (Kreuter & McClure, 2017).

Health system policymakers and programme funders should invest in the monitoring, evaluation, and learning systems that generate the evidence needed to continuously improve BCC programme quality and impact, including the standardised outcome measurement frameworks, implementation fidelity assessment tools, and equity-disaggregated reporting requirements that are currently absent from many national health communication monitoring systems. The integration of digital BCC strategies — particularly mHealth and social media — into national health communication portfolios should be pursued with careful attention to digital equity implications, ensuring that the benefits of digital health communication reach populations across the digital divide rather than concentrating among the already advantaged (Stephani et al., 2016; Bedson et al., 2021). Finally, national health communication policies should explicitly position BCC as a component of comprehensive, multi-level health promotion strategies that address the structural determinants of health alongside individual behaviour change — recognising that communication alone cannot overcome the poverty, discrimination, and systemic disadvantage that are root causes of preventable disease in the most affected populations.

10. Conclusion

Health education and behavior change communication occupy an irreplaceable position in the architecture of disease prevention, translating public health knowledge into population behaviour through the systematic application of communication science and behavioural theory. This review has demonstrated that BCC can be highly effective in promoting preventive health behaviours and reducing disease burden when designed with theoretical rigour, cultural competence, multi-channel integration, and attention to the social and structural determinants that shape individuals' capacity to act on health information. The rapid evolution of the BCC landscape — driven by digital transformation, growing appreciation of equity and structural determinants, and the methodological advances of implementation science — promises continued improvements in the precision, reach, and sustained

impact of health communication interventions. Realising this potential requires sustained investment in programme quality, evaluation capacity, and the integration of community voice and lived experience in all phases of BCC design, delivery, and assessment. At its best, health education and BCC do not merely inform populations about health risks; they equip communities with the knowledge, skills, social support, and collective agency to claim their right to health and to build the healthier, more equitable societies that effective disease prevention ultimately requires.

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